Sustainability **2013**, *5*, 3640-3664; doi:10.3390/su5093640

OPEN ACCESS

sustainability

ISSN 2071-1050

www.mdpi.com/journal/sustainability

Article

Avoiding the *Limits to Growth:* Gross National Happiness in Bhutan as a Model for Sustainable Development

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Received: 2 July 2013; in revised form: 2 August 2013 / Accepted: 12 August 2013 / Published: 26 August 2013

Abstract: In their 30-year update to *Limits to Growth*, Meadows *et al.* call for a vision of sustainable development that includes systemic change brought on by new perspectives on the purpose of development, new ways of measuring progress, and changes in social norms. Here, I discuss Meadows *et al.*'s work in the context of the literature on sustainable development and well-being as well as the development trajectory of Bhutan. I suggest that Bhutan's development approach mirrors Meadows *et al.*'s recommendations and provides one model for sustainable development. The ideal of maximizing Gross National Happiness (GNH) exemplifies Bhutan's commitment to holistic development and dovetails with arguments about the shortcomings of approaches that emphasize economic growth. I provide examples of how GNH has been put into practice, describe how happiness is being measured, and discuss the emergence of social norms and a shared Bhutanese identity that may contribute to sustainable development. Bhutan's development success suggests that an alternative to growth-centric development is viable. However, while Bhutan's standard of living has increased, the country faces challenges, the most important of which may be their ability to manage rising consumption levels. Importantly, other nations have begun measuring well-being and considering similar development approaches.

Keywords: limits to growth; sustainability; sustainable development; Buddhism; social norms; well-being; sustainability indicators; economic growth

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1. Introduction

In 2006, I visited a village in the district of Bumthang in central Bhutan that had a small schoolhouse perched on a hill surrounded by the distant peaks of the Himalayas. Inside this school,

which had no electricity, was a sign that the children made using markers on yellow poster board. The sign had two columns. On the left was a list of "needs", which the students had filled in with items like food, water, oxygen, fire, shelter, clothing, and shoes. On the right was a list of "wants", which included items like a car, television, water boiler, new school dress, expensive pen, and gold.

The exercise these students went through is an important starting point for this paper because it symbolizes two characteristics of Bhutan. First, it captures the Bhutanese government's overarching goal of a reflexive and deliberate approach to development aimed at maximizing well-being. Conscious reflection on the difference between wants and needs will be important as the country struggles to embrace the aspects of globalization and modernity that provide individual and societal benefits while avoiding those aspects that lead to undesirable social, cultural, and environmental change. Second, it foreshadows the challenges that Bhutan is currently facing as they become exposed to consumer-oriented societies and face decisions and evolving social norms pertaining to shifting boundaries between wants and needs.

Bhutan has become well known for its development vision that seeks to balance economic growth with other development objectives and its goal of maximizing Gross National Happiness (GNH). Importantly, "visioning" is the first tool for the transition to a sustainable society that Meadows *et al.* list in the last chapter of their 30-year update to *Limits to Growth* [1] (all future mention of Meadows *et al.* refers to their 2004 book unless otherwise specified). They write that, "A sustainable world can never be fully realized until it is widely envisioned." ([1], p. 273). Meadows *et al.* argue that we need to illuminate the causes of the pressures that humans put on natural resources, change the structure of the socio-economic system, and pursue goals more satisfying and sustainable than perpetual material growth. This paper is about how Bhutan's development goals match Meadows *et al.*'s calls for change and the degree to which these goals are being, and can continue to be, met.

The Bhutanese government's development approach and metrics for measuring progress have much in common with what Meadows *et al.* and others argue is required to avoid economic, social and environmental collapse. Further, this approach provides a model that has begun to be applied in other contexts. While challenges remain, and more will likely emerge, Bhutan has made impressive progress on a number of economic, environmental, and social fronts (see Table 1 and discussion below for details). However, Bhutan's approach will be tested by how well the government manages complex tradeoffs, by the consumption patterns of Bhutanese citizens and by the degree to which social norms, government regulations, religious convictions and other constraints on behavior can direct consumption in ways that maximize well-being rather than simply satisfying short-term desires [2,3]. In the sections that follow, I outline Meadows *et al.*'s recommendations, describe Bhutan and the study methods, discuss support for these recommendations from the relevant literature, and discuss the ways that Bhutan's development philosophy and policies exemplify these recommendations.

2. The 30-Year Update to *Limits to Growth*—Recommendations for Moving towards Sustainability

In 1972, Meadows *et al.* published the results of a series of modeling scenarios that lead to the conclusion that, left unchecked, the human population and economy would grow beyond the physical limits of the planet. A recent study provided evidence that observed trends in population dynamics, services provision, per capita food outputs, industrial output, remaining non-renewable resources, and

pollution match the standard model presented in the 1972 book fairly well [4]. In their own 30-year follow-up, Meadows *et al.* provide additional support for the conclusions derived from their original World3 scenarios, update those scenarios, and outline the changes they feel are required for the shift towards a more sustainable society.

Meadows *et al.* describe three ways humanity can respond to the impending limits to growth. First, they write that we can "…deny, disguise, or confuse the signals" ([1], p. 235). In this business-as-usual scenario, we attempt to maintain or increase our current levels of economic growth. Governments and corporations often use this approach to divert attention from the damage caused by the current socio-economic system, and society is complicit by reacting to environmental change by minimizing personal discomfort while perversely exacerbating environmental impacts (e.g., using air conditioning in response to rising temperatures, which further contributes to CO_2 emissions and global climate change) [1]. However, given trends in resource depletion, biodiversity loss, climate change, rising income inequality, and other indicators of unsustainable human activity, this approach is incompatible with long-term social and environmental sustainability. This approach not only fails to address the underlying causes of our trajectory towards, and beyond, the limits to growth, it actively denies the need to change this trajectory.

The second option is to rely on markets and technological efficiency. While Meadows *et al.* emphasize that more efficient use of energy and resources is necessary, they also firmly state that relying on market signals and technological advancements alone will not solve the problem. One concern about an over-reliance on technology is that the costs associated with technological advancements tend to increase as resource limits are approached. For instance, the exploration and extraction costs for natural resources increase as the easiest to reach sources are depleted. The declining energy return on investment (EROI—the ratio of the amount of energy extracted per unit of energy required to extract it) for fossil fuel extraction is a similar process [5]. While hydraulic fracturing, or fracking, technology may have improved the EROI and lowered the cost of fossil fuel extraction in recent years, there is still concern about the lack of a transition to alternative energy sources that will be needed for long-term sustainability (see [6] for a discussion). Meadows *et al.* note that while technological advances and efficiency measures can push back the point of overshoot, they do not ultimately solve the problem.

An additional concern is that market responses and technological innovations are often encumbered by delays in feedback that hinder our ability to respond in a timely fashion to environmental or social problems. For example, the impacts of climate change may not be observed soon enough for markets to react or technologies to change before tipping points in the global climate system are reached [7]. Meadows *et al.* also note that markets and technology can only facilitate progress towards sustainability to the degree that society orients them towards that goal. Fracking again provides an example of this in that investments in fracking research and development [8] reflect society's desire for continued access to affordable energy over the short-term, which may come at the expense of investment in renewable resource technology. Large investments in fossil fuel extraction have occurred despite concern about rising atmospheric CO_2 levels and climate change [9,10]. While cleaner burning natural gas extracted through fracking has the potential to serve as a "bridge" to a renewable energy future, it remains to be seen whether, in light of the fracking boom, investment in renewables will be sufficient for the bridge to be completed.

Meadows *et al.* are not the only scholars to caution against relying on purely technological or market-based solutions to environmental problems. Several authors have suggested that rebound effects can limit the effectiveness of efficiency approaches [11–13]. Direct rebound effects occur when overall energy use increases due to more efficient and thus less costly technology, which can reduce or eliminate gains in efficiency. For instance, individuals who switch to efficient compact fluorescent light bulbs may leave the lights on longer or use more lighting than they would have with traditional bulbs. Indirect rebound effects occur when the monetary savings gained from efficiency are used for energy intensive consumption. The money saved by using a fuel efficient furnace or vehicle could be combined to pay for international air travel that may end up increasing personal CO_2 emissions [13].

In addition, increased consumption among the growing global middle class threatens to overwhelm efficiency gains [14]. For example, as meat consumption has leveled off in the developed world, it has been increasing in the developing world, which has implications for energy use and land conversion [15]. As Jackson [12] notes, achieving global reductions in CO_2 emissions through technological efficiency alone will be nearly impossible given population growth and rising incomes. Thus we should focus on the more difficult challenge of reducing overall material consumption rather than using resources efficiently (*i.e.,* using the bus or walking rather than buying a fuel-efficient car, both of which require social and physical infrastructures that support such behaviors). This challenge necessarily requires change in our social and economic systems, which brings us to Meadows *et al.*'s third approach; structural, systemic change.

Meadows *et al.* write, "Running the same system harder or faster will not change the pattern as long as the structure is not revised."([1], p. 43). A number of scholars have echoed this concern about the unsustainability of the current global economic system, arguing that the emphasis on economic growth as a measure of progress is a key factor underlying the environmental and social problems we now face [16–18]. The focus on economic growth has become particularly problematic as the proportion of the global population with the desire and the means to increase their consumption to Western levels grows [12,14]. At the same time, there is a good deal of evidence that economic growth does not, beyond a certain level, increase well-being [19].

While recognition of the need for systemic change is important, the question of how to achieve large-scale structural change is less easily answered. Meadows *et al.* suggest that the first step is to produce a clear alternative vision of what we as a society want. Bhutan's development approach provides one such vision. Before describing that vision and its alignment with Meadows *et al.*'s recommendations, I first introduce the study sites and methods.

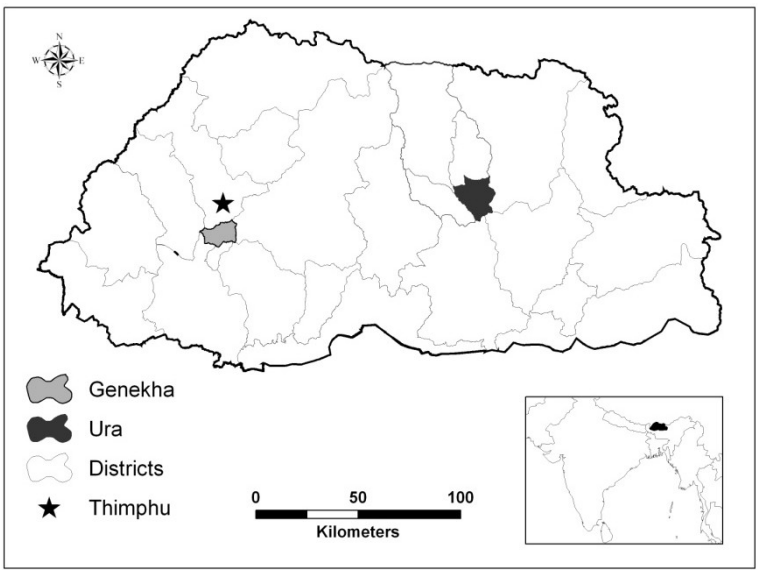
3. Study Site and Methods

Bhutan is a small, mountainous country in the eastern Himalayas with a population of slightly over 725,000 and a total land area of 38,394 km [20] that is bordered by China and India. Bhutan was never colonized and remained relatively isolated until 1961 when concerted development efforts began. In part due to the late onset of development (internet access and televisions were not widely available until the early part of the past decade), the influence of external values and practices has been limited and the country's culture and biologically diverse environment remain largely intact. These factors gave the Bhutanese government the ability to develop at their own pace and the luxury of observing

the successes and failures of other nations [21,22]. For instance, to avoid debt-servicing problems that they witnessed in other nations, the Bhutanese have in some cases refused foreign aid [23]. However, Bhutan has begun experiencing some of the social changes that accompany modernization such as shifting perspectives on tradition and an increase in materialism [24,25]. Importantly, Bhutan has a rich, largely Buddhist cultural heritage. While not all Bhutanese are Buddhist (most *Lhotsampas,* or Southern Bhutanese are Hindu), one cannot talk about Bhutanese culture and history without touching on Buddhism. As I describe below, this Buddhist heritage is the foundation of Bhutan's development philosophy.

The majority of information presented on Bhutan in this paper is derived from a review of government documents and other sources of information related to Bhutan's development approach. It is supplemented by data collected in Bhutan from March–August 2005 and January–October 2006 as well as observations from visits in June 2008 and November 2011. The 2005–2006 study was carried out in the capital city of Thimphu as well as the rural, largely traditional *geogs* (administrative units comprised of several villages) of Genekha and Ura. These study sites were chosen for variation in market integration and development (with Thimphu being the most developed followed by Genekha and Ura) and variation in adherence to traditional cultural values and practices (with Ura being the most "traditional" community followed by Genekha and Thimphu). For more information on these communities see Brooks [26]. See Figure 1 for a map of the study communities.

Figure 1. Map of Bhutan and Study Communities.



Data were collected through focus group meetings, informal interviews, participant observation and a structured survey with individuals from 252 households. The survey focused on resource use, environmental values, household economic conditions, and perceptions of social, cultural, economic, and environmental change. This survey data contributed to previous papers on environmental behavior [27] and environmental values [26]. These data are used here to add an individual-level perspective to the national-level perspective provided by government documents, to give richness to the story of Bhutan's development approach, and to give insights into the challenges Bhutan faces. Each of the sections below describes Meadows *et al.*'s recommendations for how to change the current,

unsustainable socio-economic system. These recommendations are put into the context of the broader literature on sustainable development environmental behavior, and psychological and economic perspectives on well-being before the parallels with Bhutan's development approach are highlighted.

4. How Can the System Be Changed?

Meadows *et al.*'s recommendations fit into three related categories. The first is a call for new perspectives on the purpose of development that include, but go well beyond, economic growth. The second, and related, recommendation is for changes in the information and signals that guide decision-making. As scholars and policy-makers adjust their perspectives on the ultimate purpose of development, there is a need for metrics to understand how best to meet new development goals. The third recommendation is for changes in social structures like social norms that can constrain individual desires and behaviors and support sustainable lifestyles. Below, these recommendations are explored in more depth.

4.1. New Perspectives on Development

Meadows *et al.* write,

> "…a sustainable society would be interested in qualitative development, not physical expansion. It would use material growth as a considered tool, not a perpetual mandate. Neither for nor against growth, it would begin to discriminate among kinds of growth and purposes for growth…it would ask what the growth is for, and who would benefit…and whether the growth could be accommodated by the sources and sinks of the earth."([1], p. 255).

This call for a new perspective on development mirrors the work of many scholars who have critiqued the standard economic approach to development. The dominant paradigm in development thinking since the 1950s has been the ideal of economic growth [28,29]. In this perspective, economic growth is often implicitly (and sometimes explicitly) viewed as the end goal of development with human beings as the productive workers that are the means to this end [30]. Amartya Sen has challenged this view of development and has aimed to replace the economic growth paradigm with a focus on *human* development, which views human beings as the ends of development and economic growth as one means of achieving human potential [28,31,32]. Sen's capabilities approach focuses on the "functionings" of humans and argues that the goal of development should be to expand people's capabilities [30,33]. Rather than emphasizing utility maximization, he argues that we ought to focus on providing people the freedom and opportunity to pursue activities, states of being, and an overall life that they value. One of the key aspects of the capabilities approach, and one way in which it meshes with the quote from Meadows *et al.* above, is that it allows for a holistic and heterogeneous perspective on development and one in which economic growth is one of many potential enabling conditions rather than an end in and of itself (see [28] for a summary of human development approaches).

The human development approach can be an integral part of sustainable development because it changes the unit of analysis from the economy to individual humans, which necessarily affects how progress is perceived and measured. When the focal variable is the economy, economic growth is the primary metric for tracking progress. With a people-centered approach, a broader suite of measures is

needed to capture the opportunities that individuals have to pursue a meaningful life. The underlying principles of this approach and the view of what constitutes "the good life" have a long history [28] and sentiments about the value of spiritual growth rather than material wastefulness can be found in many religions [34]. However, these values have proven difficult to incorporate into modern governance and policy making. The Bhutanese Government is attempting to do just that with a development philosophy that has much in common with the human development perspective.

Gross National Happiness in Bhutan

A holistic perspective on development is at the core of Bhutan's development philosophy. Similarities with the human development approach are captured in one of the main development objectives in Bhutan, which is, "To maximize the happiness of all Bhutanese and to enable them to achieve their full and innate potential as human beings."([35], p. 12).

The cornerstone of Bhutan's development approach is the concept of Gross National Happiness (GNH). Bhutan's fourth King, Jigme Singye Wangchuck, first introduced this idea to the world in the early 1970s when he proclaimed that "Gross National Happiness is more important than Gross National Product" [36]. However, GNH did not take its place as the guiding principle of Bhutan's development until much later when it was mentioned in Bhutan's eighth five-year planning document (1997–2002) (all five year plans are available online [37]).

GNH is inspired by the Buddhist concept of "The Middle Path" and seeks to balance multiple goals. The four pillars of GNH are: (i) sustainable and equitable economic development, (ii) environmental conservation, (iii) preservation and promotion of culture and heritage, and (iv) good governance [38]. As a development philosophy, GNH was fleshed out in 1999 in the document that laid out the government's vision for the next twenty years of development [39]. The language in this document corresponds with that used by scholars to describe alternative perspectives on development. For instance, Bhutan's development seeks to:

> "…achieve a balance between the spiritual and material aspects of life, between peljor gomphel (economic development) and gakid (happiness and peace). When tensions were observed between them, we have deliberately chosen to give preference to happiness and peace, even at the expense of economic growth, which we have regarded not as an end in itself, but as a means to achieve improvements in the well-being and welfare of the people." ([39], p. 19).

GNH exemplifies the Bhutanese government's holistic approach and is an example of the kind of vision that Meadows *et al.* feel is necessary for sustainable development. While this departure from standard development approaches is important in its own right, it would be less impressive without evidence that it was being put into practice and producing positive social, environmental, and economic outcomes.

There are several examples of the manifestation of GNH starting with each of the largest sectors of Bhutan's economy (hydropower, agriculture, and tourism). For instance, the majority of Bhutan's hydropower is produced by run-of-the-river dams that have less of an impact on ecosystems and local human communities than more extensive and lucrative dams might [40] (although it is important to note that two recently announced projects will be reservoir dams that will displace approximately 50 households [41]). While many agricultural practices are organic by default, herbicides, pesticides, and

fertilizers are used for some crops in some locales [27]. However, the Bhutanese government recently announced their goal of 100% organic agriculture with a new national organics policy [42,43]. In terms of tourism, Bhutan has a "high value, low impact" approach. Tourist numbers are kept low to minimize environmental and socio-cultural impacts by maintaining high tourist tariffs that generate revenue [44]. Other examples of GNH in practice include a nation-wide ban on plastic bags, a monthly, car-free pedestrian day in the capital, and larger-scale policies like the mandate in Bhutan's Constitution that ensures at least 60% forest cover is maintained in perpetuity. The commitment to environmental conservation is also seen in heavy restrictions on private logging and a protected areas network and habitat corridors that cover 50% of the land [45]. In addition, the goal of improving rural life to reduce rural-urban migration can help maintain traditional cultural practices and a sense of community [46], and decentralizing control over natural resources [47] can generate feelings of local ownership, promote good governance, and may provide more effective resource management [48].

Each of these policies is open to criticism because there may be multiple perspectives on where the optimal balance point lies and how to manage tradeoffs. For instance, one can argue that 100% organic agriculture is unbalanced because it places too much emphasis on environmental concerns and not enough on higher yields and economic returns, or on issues of equality (e.g., will those who can afford more labor for organic practices benefit more than those with a labor shortage?). Similarly, while decentralized resource management can empower local communities, there are concerns about the environmental sustainability of local resource management leading to questions about the balance between top-down and bottom up control [49]. These and other debates highlight the importance of measuring the multiple socio-cultural, economic, and environmental factors that indicate whether a particular policy has produced the intended outcomes. This point is returned to below.

In general the Bhutanese government's recognition of trade-offs and quest for balance has served it well. Rather than resulting in economic and social hardship, Bhutan's development approach has improved quality of life over the past several decades (see Table 1).

Bhutan has seen reductions in poverty and improvements in basic health, air quality, access to clean water and sanitation, education, road and mobile phone connectivity, gender equality, and access to justice [50,51]. In addition, in a relatively short time, Bhutan has transitioned from a barter economy to the country with the highest per-capita GDP in South Asia and is unique in the region in being on target to meet all of the Millennium Development Goals [52]. Perhaps Bhutan's economic growth would have been higher without the Middle Path approach, but this likely would have come with socio-cultural and environmental costs.

In addition to these improvements in quality of life, there have been dramatic political changes in Bhutan. Political decentralization began with the establishment of district committees, or DYTs (*Dzongkhag Yargye Tshogchung*) in 1981, and community-level committees, or GYTs (*Geog Yargye Tshogchung*), in 1991 [53]. The revised DYT and GYT Acts of 2002 gave even more authority to elected community leaders and committees, allowing them to function as agents of decentralization.

The decentralization process culminated in the transition from a hereditary monarchy to a constitutional parliamentary democracy with the first national elections occurring in 2008. These changes are critical because freedom of political expression and involvement in political affairs are important components of human development and well-being [54,55]. They also contribute to the provision of good governance, one of the four pillars of GNH.

Although the idea of GNH has been useful in guiding policy decisions to date, the Bhutanese government will need better information to evaluate the more complex trade-offs between economic growth and environmental or cultural conservation as development proceeds. To gather this information, the Bhutanese have created a robust, multi-dimensional metric for measuring GNH and informing policy. The creation of this metric brings us to the second of Meadows *et al.*'s recommendations.

Table 1. Selected indicators of improvements in quality of life in Bhutan [39,50] (projected values from [50]).

Indicator	Prior level (year)	Current level & projections
Percentage of underweight children under 5 yrs	17% (1999)	12.7% (2010) projected 9% in 2012
Proportion of population living below minimum level of dietary energy consumption	3.8% (2003)	5.9% (2007) projected 1.9% in 2012
Proportion of population living below poverty line	31.7% (2003)	23.2% (2007) projected 15% in 2012
Income inequality (Gini)	0.416 (2003)	0.352 (2007)
Unemployment	1.9% (2001)	3.1% (2011)
Percentage of households with electricity	54% (2007)	73% (2011) projected 100% in 2013
Percentage of women in Civil Service	21.2% (2000)	31.62% (2010)
Maternal mortality rate (per 100,000 live births)	255 (2000)	140 (2012)
Percentage of births covered by skilled attendants	24% (2000)	64.5% (2010) projected 90% in 2012
Total fertility rate	4.7 (2000)	2.6 (2010)
Infant mortality rate (per 1,000 live births)	70.7 (1999)	47 (2010) projected 25 in 2012
Number of doctors (per 1000 of population)[A]	0.13 (2005)	0.26 (2010)
Percentage of population with access to safe drinking water	68 (2001)	96 (2010) projected 100% in 2012
Percentage of population with access to sanitation	88 (2000)	93 (2010) projected 95% in 2012
Net primary school enrollment	62% (2000)	93.7% (2010) projected 100% in 2012
Gender parity in primary education	82% (2000)	99.4% (2010)
Gender parity in secondary education	78% (2000)	103.5% (2010)
Adult literacy rate	52.8% (2005)	Projected 65% in 2012

A. The CIA World Factbook reported this number to be 0.02 from 2007.

4.2. New Metrics for Development

Meadows *et al.* repeatedly mention the need for better, more holistic indicators to guide policy. For instance, they write that a

> "…sustainable society is one that has in place informational, social, and institutional mechanisms to keep in check the positive feedback loops that cause exponential population and capital growth." ([1], p. 254).

They reiterate this point later when describing a series of guidelines for moving a system towards sustainability. One suggestion they make is to,

> "Learn about and monitor both the real welfare of the human population, and the real impact on the world ecosystem of human activity. Inform governments and the public as continuously and promptly about environmental and social conditions as about economic conditions. Include environmental and social costs in economic prices; recast economic indicators such as the GDP, so that they do not confuse costs with benefits or throughput with welfare or the deterioration of natural capital with income" ([1], p. 259).

In short, governments and decision-makers need information that goes beyond how to increase economic growth in order to craft policy that leads to a more sustainable society.

Gross Domestic Product (GDP) is the dominant source of feedback upon which policy decisions are based [19]. GDP estimates market throughput by measuring the value of goods and services produced within a country. Its cousin Gross National Product (GNP) does the same but includes all production by domestic companies regardless of where they are located in the world. Neither GDP nor GNP provides feedback on economic or social well-being or whether an economy or society is operating sustainably [29,56,57]. In fact, relying on GDP as a measure of "progress" may encourage activities that reduce rather than enhance long-term well-being [56].

There are numerous critiques about the use of GDP as measure of general "progress" or standard of living [19,29,56]. GDP misrepresents environmental damage by, for example, counting the expenditures devoted to environmental cleanup as a net positive. While the work and concomitant throughput of funds to clean up an oil spill or fight a wildfire are captured in GDP, the loss of key services that the affected ecosystems provided are not. GDP also fails to include non-economic services like volunteer work and housework/home childcare. These services can provide family stability, contribute to social capital, and provide psychological benefits. However, because they require no exchange of money, they are not captured in GDP. In addition, GDP can hide the growth of income inequality. Rising inequality can led to a host of social and economic problems [58], which can ultimately result in a lower quality of life despite rising GDP.

The fixation on GDP has also been critiqued on the grounds that, beyond a certain level, further increases in GDP produce diminishing returns in life expectancy, infant mortality, participation in education, life satisfaction and happiness [12]. This disconnect between GDP and well-being has been found in a number of studies (see [19,59–61]) and may be a function of factors like the loss of leisure time, natural resource depletion, social comparison and the ratcheting up of consumption desires, hedonic adaptation, and/or the erosion of community cohesion and healthy relationships that can accompany the pursuit of economic growth [56,61]. In a comprehensive study using both cross-sectional and longitudinal data, Inglehart *et al.* [55] find a curvilinear effect of per capita GDP on subjective well-being. Easterlin *et al.* [61] use time series data to argue that while there is often a positive relationship between well-being and GDP in the short-term, there is no relationship between well-being

and GDP in the long term. In some countries periods of high growth rates coincided with slight declines in well-being scores.

The absence of a long-term relationship between well-being and GDP at the national-level has parallels at the individual-level. While income increases subjective well-being to a point, further pursuit of higher income or materialistic lifestyles is associated with lower self-esteem, less empathy, less intrinsic motivation, and lower levels of well-being and life satisfaction [19,62,63]. Just as with national-level policies, the pursuit of income and material growth can be detrimental to individual well-being while contributing to social and environmental degradation [64].

The over-reliance on GDP as an indicator of "progress" rather than as a basic measure of economic throughput has not provided the information necessary for policy makers to make informed decisions about how to increase overall well-being [57]. As such, there is a need for alternative indicators to guide policy. A number of alternatives have been proposed such as the Human Development Index (HDI), the Genuine Progress Indicator (GPI), Green GDP, the ecological footprint, and the Happy Planet Index. Costanza *et al.* [56] provide a summary of many of these indicators including the concept of Gross National Happiness (GNH).

Gross National Happiness Index

Bhutan's initial measure of GNH was included in its first national census in 2005. There was a single question measuring subjective happiness levels and 97% of Bhutanese reported being "happy" or "very happy" [20]. Bhutan's measurement of happiness has come a long way and now involves a robust suite of measures that make up the Gross National Happiness Index (GNHI). The GNHI includes thirty-three indicators in nine domains (see Table 2).

The multidimensional nature of the GNHI is important because (i) it distinguishes the index from simplistic measures of subjective well-being [28], (ii) it meshes well with the concept of human development, and (iii) by showing which aspects of well-being are insufficiently fulfilled, it can be more useful for policy makers. For a detailed description of indicators and domains and how the survey was constructed and tested see [36].

The first GNHI survey was conducted in 2010 with a sample of 7142 respondents from each of the 20 *Dzongkhags* in Bhutan. Forty-one percent of Bhutanese were identified as happy (defined as achieving sufficiency in two-thirds of the indicators) and 59% reached a level of sufficiency in an average of 57% of the domains [36]. These results indicate a lower level of happiness than has previously been reported, but with a much higher bar. Additional results from from the GNHI study are discussed later in the paper.

The GNHI is intended to give the government an idea of where its development approach is succeeding and which areas require more attention. Therefore, it is directly related to the work of the Gross National Happiness Commission (GNHC), which is the government agency tasked with incorporating GNH into policy-making and planning. Its primary function is to:

> "… coordinate the formulation of all policies, plans and programmes in the country and ensure that GNH is mainstreamed into the planning, policy making and implementation process by evaluating their relevance to the GNH framework." [65].

Table 2. Domains and Indicators in the GNHI survey from [36].

Domains	Indicators
Education	- Literacy (ability to read and write in any one language) - Education level (years of schooling) - Knowledge (of local legends and folks stories, local festivals, traditional songs, HIV/AIDS transmission, the Constitution) - Values (justifiability of killing, stealing, lying, creating disharmony in relationships, sexual misconduct)
Health	- Mental health (12-item questionnaire) - Self-reported health status - Number of healthy days in the last month - Experience with disability/illness lasting over 6 months
Ecological diversity and resilience	- Ecological issues (perceived intensity of seven environmental issues) - Personal responsibility towards environment - Wildlife damage (rural) (perceptions of wildlife as constraint to farming, severity of crop loss due to wildlife) - Urban use (concerns about traffic congestion, inadequate green space, lack of pedestrian streets, urban sprawl)
Good governance	- Perceptions of government performance in seven areas) - Fundamental rights (perception of human rights in Bhutan, seven questions) - Services (distance from nearest health care center, waste disposal method, access to electricity, water supply and quality) - Political participation (intention to vote and participation in meetings)
Time Use	- Number of hours of work (including unpaid work) the previous day - Number of hours of sleep the previous day
Cultural diversity and resilience	- Self-reported fluency in native language - Self-reported participation in socio-cultural activities in the past 12 months - Artisan skills (self-reported capabilities in the 13 traditional crafts (*Zorig Chusum*) - Conduct (importance and level of practice in *Driglam Namzha* (the way of harmony)—expected behavior in formal occasions and spaces
Community Vitality	- Donations (time and money) - Community relationships (sense of belonging, trust in neighbors) - Family (six questions about family relationships) - Safety (was respondent a victim of crime in the past 12 months)
Psychological well-being	- Self-reported life satisfaction - Self-reported experience of positive emotions in the past few weeks - Self-reported experience of negative emotions in the past few weeks - Spirituality (self-reported spirituality, frequency with which karma is considered, prayer frequency, meditation frequency)
Living standards	- Assets - Housing - Household per capita income

Proposed policies are reviewed and scored by the GNHC to determine whether expected policy outcomes are compatible with the principles and goals of GNH. The critical point is that Bhutan has made serious efforts to put its vision of maximizing GNH into practice both through a robust metric of

well-being, and through a government agency mandated to use the GNHI "…as a guide for the formulation of sectoral policies and plans, and…as a yardstick to monitor development performance" [65]. As such Bhutan's development is being guided by a different philosophy and metric from that employed by most other national governments. Importantly, the emphasis on GNH may also have implications for the third of Meadows *et al.*'s recommendations: changes in social structures.

4.3. Changes in Social Structures

Meadows *et al.* suggest that it will be important to change "… the ideas, goals, incentives, costs and feedbacks that motivate or constrain behavior" ([1], p. 237), as well as the "…deeply ingrained beliefs and practices…" ([1], p. 238) associated with population growth, resource exploitation, and overconsumption. A number of scholars have highlighted the important role that social norms can play in fostering more sustainable, environmentally-friendly behaviors [66–69]. However, where these norms come from and how they change is another matter [70,71]. Social scientists have long had an interest in the processes by which social structures and social norms change .

One way norms and other social structures can change is through the influence of social and political institutions. For instance, Frank *et al.* [72] suggest that environmentalism can spread globally through a top-down process that results in the creation of protected areas, the emergence of environmental institutions, and membership in international environmental organizations. These national-level institutional and policy changes can serve as indicators of what the government values, which may then affect social norms about the importance of conservation and sustainable development. Kinzig *et al.* [69] discuss a number of ways in which policy instruments can affect social norms including the signaling effects of the kinds of regulations and institutions that Frank *et al.* [72] discuss. Jackson [12] makes a similar argument and notes that the formal institutions that structure society (including government, schools, and the media) send signals that have implications for the norms that emerge and spread in that society. Finally, religion, and Buddhism in particular, is a social institution that can shape environmental values and perceptions and is thought to promote sustainable ways of living [73,74].

Each of these processes may be occurring in Bhutan. Buddhism is an important component of Bhutanese identity and a clear component of their development approach. The government has enacted policies that could result in the emergence of environmental norms and having GNH as the focal point of their development approach sends a clear indicator to the Bhutanese people of what the country values.

There are several lines of evidence that support the notion that environmental norms may be emerging as a result of top-down processes. The first is the fact that the Bhutanese government has been clear about their desire to engender a distinct Bhutanese identity that is rooted in traditional Buddhist beliefs and values.

> "The emergence of Bhutan as a nation state has been dependent upon the articulation of a distinct Bhutanese identity, founded upon our Buddhist beliefs and values... This identity, manifest in the concept of 'one nation, one people', has engendered in us the will to survive as a nation state… It is a unity that binds us all together and enables us to share a common sense of identity." ([39], p. 1).

This cultural identity has multiple sources including Bhutan's Buddhist heritage, customary rules and norms, and a code of conduct, *Driglam Namzha*, that dictates dress, behavior, and conventions in formal settings [21]. The concept of GNH and the goal it represents, has also become an important aspect of Bhutanese identity.

The only study measuring public awareness of Bhutan's development approach of which I am aware, found that in 2004, 48% of over 700 survey respondents across Bhutan were familiar with the "Middle Path" approach [38]. The proportion of Bhutanese knowledgeable about GNH is likely much higher now for several reasons. First, the GNHC is tasked with raising awareness of GNH as a development goal. Second, the government has begun incorporating the idea of GNH in Bhutan's education system through a program called 'Educating for GNH' [75]. Third, the campaigning that has accompanied the political changes in Bhutan has likely played a role in making the public aware of the efforts to maximize GNH. Finally, one can find examples of spirited internal discussions of GNH in the national newspaper, Kuensel [76] as well as other Bhutanese media.

In addition to promoting GNH, the Bhutanese government has made efforts to link conservation with traditional Buddhist cultural beliefs and practices. Buddhist philosophy is referenced in many government planning documents related to the environment [39,77–79] and articles linking Buddhism and conservation appear with regularity in Kuensel. These efforts may influence environmental attitudes and associated environmental norms.

Data on environmental attitudes and values suggests that there is an emerging national-level norm related to environmental conservation and sustainable development [26]. For instance, 48% of respondents said they would prefer a slower development approach to a faster approach that would have greater environmental impact; 65% said they felt they should restrain their resource use in the absence of government regulations; 63% said that, if they had more money, they would spend it on non-materialist pursuits (religious ceremonies, charitable donations, education) rather than material goods (new clothes, tractor, household items); and "improving income" ranked behind "improved education" and "improved health care", and just above "maintaining cultural traditions" in rankings of development priorities for the country. These attitudes are in line with other countries in the region that are either more economically advanced and/or have experienced greater levels of environmental degradation; two factors thought to contribute to environmental attitudes .

The postmaterialist values hypothesis suggests that environmental concern can be explained by severe environmental degradation that makes environmental issues hard to ignore in developing countries or the affluence in developed countries that facilitates the emergence of postmaterialist values [80]. However, Bhutan had neither widespread economic security nor widespread environmental and ecological degradation. Thus, the attitudes expressed by the Bhutanese in my sample could be a result of a traditional Buddhist conservation ethic or top-down processes and awareness raising. While it may be some of both, the latter is more likely. First hierarchical logistic regressions indicate that there was little evidence that Buddhist beliefs and practices were associated with pro-environmental atitudes [26] or behaviors [27]. This is important because many middle-aged Bhutanese in rural villages follow religious practices absent a deep and nuanced understanding of Buddhist philosophy. Farmers I spoke with in nearly all of the villages I visited, including those that were not a part of my final sample, suggested that the general understanding of Buddhist teachings is increasing through media exposure, government outreach, and their children's education. The

following statements from focus group meetings represent this common sentiment (all translated from Dzongkha):

> "There are more religious people these days because there is more awareness of the teachings and preachings. Now there are more shedras (monk school of the Nyingmapa tradition of Buddhism) which are increasing the awareness of the community." [81].

> "Compared to the past, there are more religious people now because the teachings are more common. People are more aware now because they can hear teachings through the media [radio and newspapers]." [82].

> "Religious people have increased over the years because nowadays there are a lot of great saints and lamas that are coming and giving preachings. The current Je Khempo (Chief Abbot of the Central Monastic Body of Bhutan) is giving more teachings in rural areas now, so people are more aware. Even small kids are aware of good and bad deeds." [83].

> "Nowadays religion has increased because everyone goes to school and they are educated. Religion is incorporated into the curriculum and they teach values also. People are learning and there are 10 Geylongs (lay monks) now here whereas in the past there weren't any." [84].

These sentiments suggest that people's understanding of Buddhism is increasing with development rather than eroding because of it. The confluence of (i) the government's stated goal of creating a unique Bhutanese identity, (ii) the Buddhist foundations of many of Bhutan's cultural traditions and national policies, (iii) the government's explicit linking of Buddhist philosophy with conservation efforts, and (iv) the unifying development principle of GNH, provides the scaffolding for social norms for conservation and sustainable development. This creation of a national narrative around sustainable development and conservation is indicative of the idea of a reflexive community. A reflexive community has a common identity and a "story about itself" [59]. In this case, Bhutan's story is built around the balance between culture, environment, and economic development. Reflexive communities may support the kinds of lifestyles and values that are thought to be critical for sustainable consumption.

It remains to be seen whether a coherent identity and functioning conservation norms can solidify among the Bhutanese populace. This solidification is crucial as the allure of Western-style consumerism creeps in and individual consumption rates increase. In fact, social norms that support more conscientious consumption practices maybe the most critical challenge for Bhutan because overconsumption could undermine the very goals of GNH. It is as if there is a race for the soul of Bhutan between those promoting the balance inherent in GNH and the allure of the short-term rewards of consumerism.

5. The Challenges ahead for Bhutan

Sustainability is a process, not an endpoint and it is a process that is ongoing in Bhutan. While Bhutan has made tremendous progress, the development process has not always been smooth or uncontroversial and challenges remain. For instance, the government's efforts to create a common cultural identity lead to unrest and violence in Southern Bhutan and the subsequent eviction/relocation of Nepali immigrants and, allegedly, Bhutanese citizens of Nepali ethnic descent in the 1990s [25]. This conflict created a scar that has not yet fully healed. In addition to the need to balance the desire

for a common Bhutanese identity with the value of linguistic and cultural heterogeneity there are other challenges.

Despite ranking high in global analyses of life satisfaction [85], the first GNHI survey indicates that there is room for improvement [86]. There is sufficiency in a number of domains, including safety, mental health, government performance, responsibility towards the environment, and satisfaction in life. However, the Bhutanese are lacking in adult literacy, schooling, employment, and cultural participation and knowledge [36]. Other scholars have also noted existing or emerging problems related to drugs and violence in the capital [46,87], social complications of rural-urban migration, and challenges of waste management in growing urban centers. In addition, the Bhutanese are aware of their high economic vulnerability, and the need for improved sanitation and access to cooking fuel and electricity in rural areas, higher quality education, and gender balance in education and government [86]. There are also concerns about the social and environmental impacts of road building and reservoir-based hydropower generation on Bhutan's fragile mountain environment [40], and about the high rates of fuelwood use [88] and its impacts on local ecosystems and human health. The Bhutanese must address these and several other challenges as development proceeds.

Perhaps the greatest challenge that the Bhutanese will face, however, is how to manage their slow, deliberate development approach in the face of increasing exposure to Western consumer lifestyles through the media, travel, interaction with tourists, advertising, and other forms of cultural transmission. Bhutan has been criticized for enforcing certain cultural practices like traditional dress codes, but here again questions of balance arise. On the one hand is the freedom of choice that contributes to well-being and on the other is the enforcement of cultural practices that facilitate a shared identity and the social structures that may be important for sustainable development.

Bhutan may be entering the most crucial phase of this process now that a growing proportion of the population is exposed to consumerism and is beginning to have disposable income. Evidence of the tension between the pull of modernity and the restraint required by GNH has become increasingly stark through several visits to Bhutan. The capital region of Thimphu has expanded greatly since 2005 both in total area and population. A trip to Bhutan in 2011 revealed additional highways, new car dealerships, greatly increased traffic, the construction of Bhutan's first indoor mall complete with air-conditioning, and many more businesses advertising with colorful strings of lights along the main commercial strip in the capital. Western dress has become much more common, fashion shows have sprouted up in the capital and changes in diet and exercise habits have resulted in an increase in diabetes. Aside from diabetes, these are not necessarily negative developments; the freedom to dress as one chooses, and the creativity associated with fashion design can boost well-being. However, I mention these changes in Thimphu because they get at the core challenge of sustainable development. To what degree will Bhutan, or any developing country, be able to minimize those aspects of development and modernity that lead to dissatisfaction, discontent, and anxiety while embracing those that contribute to well-being?

In 2006 there was already evidence that the forces of status seeking were pulling the Bhutanese to Western-style consumerism. For instance, while administering the survey in 2006, I asked a 30-year old male respondent about his primary mode of transportation around the city. He informed me that he does not own a car and that, while he could walk, he takes a taxi regularly because he thinks he would be looked down upon by his friends for walking.

Comments from focus group meetings held in communities across the country in 2006 also reflect concern about the implications of development on cultural traditions and social interactions and on the desires and consumption patterns of people in rural communities. For instance, when asked whether the chance to earn more money and buy more things has changed the way people interact, one woman in a focus group meeting said:

> "It depends on the person and the way he thinks. If he's kind enough, he's happy when people get better off. But some, they are competitive. When one family does better, their neighbors feel like they need to do better." [89].

Another woman in the same meeting said that it is more common now for people to be competitive than for people to be happy that their neighbors are doing better. Similarly, in a focus group meeting containing largely women, one woman stated:

> "In the past, people were more cooled down. Now that the country is developing, people's hearts are getting harder. Now with development, there is a chance for wealth and people have to fight for wealth so they are that way now." [90].

When asked whether people desire things more now that in the past, one woman responded that people:

> "…don't feel jealous when people get new equipment, but what they think is that I would also be happy if I could buy such things. It doesn't make them unhappy, but they wish they could also buy things, so if they can afford to buy it, they will." [91].

Another participant in a focus group meeting in a village in central Bhutan stated:

> "now people are starting to wear fashionable ghos and kiras (traditional male and female dress) and their kids want expensive things. Before everything was simple." [84].

These quotes indicate that the Bhutanese are not immune to social comparison and the phenomenon of keeping up with the Joneses. The rise in material aspirations can be found in all societies [61] and consumption levels will increase in Bhutan. The question is whether consumption levels increase beyond what is optimal for individuals and society [2] and whether and how *over*consumption can be avoided. This dilemma is precisely the crux of the problem the Bhutanese face and highlights the importance of developing social norms that enforce values besides materialism and consumerism.

The rising consumption that accompanies development and globalization [14] brings us back to the list of wants and needs posted in the schoolhouse in Central Bhutan. The real test of GNH lies in the ability of the Bhutanese to distinguish between consumption in the service of well-being and *over*consumption that detracts from well-being. The Bhutanese government is setting the standard for balance with its policy decisions. However, the populace is now vulnerable to the market economy and the consumer-lifestyle that accompanies it. There is only so much a government can or should do to guide norms. In many ways, it is now up to the Bhutanese people and the social norms and structures that emerge from their values and behaviors that will dictate whether this large-scale social experiment with an alternative development approach can really work. Bhutan's transition to democracy now gives the public a greater voice in the direction of the country and the degree to which GNH remains a guiding principle. Interestingly, the party of one of the champions of GNH, former Prime Minister

Jigme Thinley, lost the recent election to the opposition party in part because of a perceived overemphasis on promoting GNH at home and abroad. However, this election result may simply be part of a healthy debate about the prioritization of domains *within* the overarching construct of GNH.

6. Discussion and Conclusion

Meadows *et al.* argue that structural and systemic change for sustainability requires (i) a new vision of the purpose of development, (ii) better information to direct policy towards this vision, and (iii) changes in social and cultural norms. I have argued that Bhutan has provided an example of such a vision (GNH), a metric that supports this vision (GNHI), and the potential emergence of social norms that can coevolve with, and reinforce, that vision. In addition, there is evidence that Bhutan's development approach has largely been successful. In recent years Bhutan has experienced significant gains in standard of living, the transition to a democratic form of governance, and has largely maintained its cultural and ecological heritage. While the process has not been perfect, it is just that, a continuous, long-term process, which will provide opportunities for reflection and course correction.

Partly because of the emphasis on the positive outcomes of Bhutan's development approach, it is easy for observers to project their utopian wishes onto Bhutan, and in doing so, to place unfair expectations on a society confronted by the challenges that many societies face. Critics who believe economic growth should take priority over other concerns are often quick to emphasize previous mistakes, current set-backs, and shortcomings of Bhutan's approach. In many cases, critiques of Bhutan's approach are also the result of high expectations that no developing country should be expected to meet. It is easy to forget that the social, economic, cultural, and political changes that accompany the development process are never smooth or evenly felt. For all of the promise that it holds and all of the attention that it has received, the process of creating a sustainable society and of succeeding in maximizing GNH was never going to be easy. This process is especially likely to be complicated by the growing pains of a nascent democracy. It is unreasonable to expect the Bhutanese to meet all of the goals they have established and to always make the correct decision regarding the complex trade-offs with which they are faced. One can forget that the government still must address the basic needs of a fairly large proportion of its population.

The Bhutanese are beginning to feel the pressures of globalization and modernization and the Bhutanese themselves will admit that there is much work to be done. Perhaps the biggest challenge is managing the rising levels of consumption so that it contributes to, rather than detracts from well-being. A certain level of economic growth is necessary for continued development; it is one of the pillars of GNH. However, determining and settling upon the optimal level of national-level growth and individual-level consumption will not be easy and will likely require an intricate combination of policies and social norms. How can a population know what level of consumption is too much for individual and societal well-being and ecological integrity? Too much for whom? Who gets to decide? Perhaps tracking GNH will be sufficient to determine when this point has been reached and policy and norms can adapt accordingly. But, this will be difficult and it is unclear how quickly norms and policies will be able to react even with viable measures of well-being. In addition it will be difficult to maintain the social and cultural values that support Bhutan's GNH-based development approach in the face of modernization and development—particularly in a world where economic growth remains the predominant policy goal.

Importantly, other nations have begun to take notice of GNH and the value of robust measures of well-being. The French national statistics office (INSEE) followed the Sarkozy report on economic measures and social progress [57] by pursuing more holistic measures of well-being to guide policy [92]. The British [93], German [94], Canadian [95] and Chinese governments [96] have also begun to adopt similar measures.

These countries are demonstrating that Bhutan's development approach is not necessarily limited to small, Buddhist, developing countries. Bhutan's small size, progressive monarch, cultural heritage, and ability to use the successes and failures of other nations to guide its development approach were advantageous and likely contributed to the success it has experienced. However, Bhutan's emphasis on well-being and careful attention to the form development takes is an approach that could theoretically be applied in any nation. Similarly, the Buddhist principles underlying Bhutan's approach (e.g., a holistic, ecological worldview, valuing compassion and interconnectedness, the idea of balance inherent in the "middle path", and an emphasis on spiritual rather than material growth) have direct or indirect corollaries in many world religions as well as within secular "Western" cultures [97,98], which other nations could use to support alternative visions of progress. As such, the guiding principles of GNH can be adopted elsewhere with appropriate adjustments to how it is measured in a given socio-cultural and economic context.

While there are obstacles facing other nations wishing to adopt this approach, they are not insurmountable. In fact, the Bhutanese government is working to place GNH on the global agenda, as evidenced by the recent international meeting on well-being and happiness [99] and the subsequent resolution drafted for the United Nations General Assembly [100]. The decision by other nations to measure well-being and begin re-thinking the primacy of economic growth are critical for avoiding the limits to growth and provide small, yet positive signs that the momentum is shifting towards a more sustainable approach to development.

By adopting a development perspective similar to Bhutan, these nations are facilitating the spread of Bhutan's approach, which is a process that may be necessary for successful sustainable development in Bhutan. Bhutan is a small country. Although its contribution to how we think about sustainable development is laudable, its efforts are unlikely to reach fruition if it is alone in a sea of nations pursuing economic growth and if it swamped by competing interests emerging from a global socio-economic system that itself does not change. One of Bhutan's goals is to serve as a beacon to other nations and to show the world that it is "…possible to embrace the many benefits of modernization without being overwhelmed by its negative and disruptive forces." ([35], p. 69). However, a beacon only has value if it others are attracted to its light. Meadows *et al.*'s model suggests business-as-usual is carrying us an involuntary contraction in resources and population. To avoid the fate of surpassing the limits to growth, it is vitally important for the rest of the world to heed Meadows *et al.*'s recommendations and recognize the value of Bhutan's development model.

Acknowledgements

I would like to thank the people of Genekha, Ura, and Thimphu for their hospitality, patience, and willingness to accept me in their communities. I would also like to thank P. Choephyel, NK Pradhan, N. Norbu, D. Penjor, C. Wangdi, K. Jamtsho, D. Tshering, and S. Wangyal Wang, for facilitating my

research and recognize the hard work of S. Dendup, K. Wangdi, P. Tashi, and Samdrup. I would also like to thank two anonymous reviewers for their very helpful comments and suggestions.

Conflicts of Interest

The author declares no conflict of interest.

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