Curtin University Sustainability Policy Institute

Traditional Sustainability Accounting Principles and Practices in Rural Bangladesh

Mahmood Hasan Khan

This thesis is presented for the

Degree of Doctor of Philosophy

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Declaration of originality

I certify that the intellectual content of this thesis is the product of my own research work. The thesis contains five papers which have either published or accepted for publication. The papers are co-authored by Prof. Dora Marinova, Dr. Amzad Hossain, Prof. Vladislav Todorov and Asif Siddiqui.

Other assistance received in preparing this thesis has been acknowledged. I also certify that, the thesis has not been submitted for any degree in any other university.

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Mahmood Hasan Khan

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Abstract

This thesis by publication includes five articles which discuss the principles and practices of traditional sustainability accounting in rural Bangladesh. Modern accounting only recently started to embrace environmental and social values under concepts, such as corporate social reporting, corporate social disclosure, environmental and social accounting. The research however makes the argument that the traditional practices, local knowledge, inter-generational wisdom and eco-spirituality of rural Bangladesh and its spiritual leaders are the real basis for sustainability accounting. Without formal quantification, this traditional sustainability accounting guides people in their activities and lifestyle promoting a culture of sustainability.

The five papers forming the body of the PhD provide a framework of conceptual value principles which qualify the three dimensions of sustainability, namely: modesty (in consumption and use of resources) as representing economic development, kindness (to the non-human world) as representing environmental protection and improvement and resilience (social ability to cope with unforeseen changes) as representing social development. These principles are distilled from the culture of rural Bangladesh through its folklore, including the teachings of the Baul philosophers – saintly mendicants, mostly unlettered singing gurus. Numerous folkloric proverbs, adages, wisdom, folktales and folksongs are analysed to describe the links with sustainability accounting and the practice of transmitting knowledge from one generation to another as a powerful sustainability tool.

The central research question of the thesis is: What are the main themes communicated to the Bangladeshi rural people and how do they relate to sustainability accounting? Two specific case studies are included in the suite of papers to answer this question. The first examines the link with agriculture as it relates to food security and the other focuses on energy and decarbonisation in response to the global climate change agenda.

The thesis with its five publications interprets the folklore themes relating to cultural values and traditional practices organized around modest lifestyle, kindness to all

creatures and the more-than-human world, and manifesting resilience in adverse situations as the key factors in sustainability accounting. The folklore themes encouraged by the Bangladesh's Baul philosophers inspire sustainable self-reliant lifestyle in harmony with nature and provide a sound basis for accounting beyond self-interest. One of the papers also links the developed traditional sustainability accounting value principles with the newly adopted United Nations Sustainable Development Goals making the argument that Goal 11 Sustainable Settlements and Communities is at the core of achieving sustainability in rural Bangladesh.

Thus the thesis argues that sustainability accounting is a spiritual as well as values-driven tool. Its principles are in a position not only to complement but guide established conventional reporting approaches and practices.

List of publications included as part of the thesis

The following refereed published and accepted for publishing journal papers and a book chapter form the basis of this PhD by publication:

1. **Khan, M.,** Hossain, A., Marinova, D. (2015). Traditional sustainability accounting principles in Bangladesh, *World Journal of Social Sciences*, 5(2): 201–210
2. **Khan, M.,** Hossain, A., Marinova, D. (2016). Sustainability Accounting for Natural Resource Management in Bangladesh, in Kerr, T., Stephens, J. (eds) *Indian Ocean Futures: Communities, Sustainability and* Society, Cambridge Scholars Publishing, Newcastle, UK (forthcoming, date of acceptance 29 February 2016)
3. Hossain, A., **Khan, M.,** Marinova, D. (2014). Self-reliance and living on the edge of climate change, *Transformations*, 3–4 (82–83): 220–233
4. **Khan, M.,** Marinova, D., Todorov, V. Siddiqui, I. (2016). Linking folklore to agricultural sustainability accounting in Bangladesh, *International Journal of Information Systems and Social Change* (forthcoming, date of acceptance 27 June 2016)
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Part 1. Introduction and overview

Introduction and overview

Preface

The preface provides a background to the origin of my thoughts and motivation to carry out this research. My approach to sustainability accounting is based on the spiritual thinking and simple living which are the essence of life for the Baul Fakir and Sufi philosophers in rural Bangladesh. Their key phrases 'simple living' and 'realistic thinking' teach humankind that everything on earth, including natural resources, is finite. This means, overexploitation and misuse of precious natural resources like air, water or land may have a devastating impact on earth resulting in such consequences as climate change, social unrest and poverty. The message of the Baul Fakir and Sufi philosophers can be utilised to promote sustainability. In addition, sustainability can be hampered severely in the absence of peace and harmony. The three magic words taught by the Baul Fakir and Sufi philosophers are modesty, kindness and resilience and they can be crucial for sustainable development.

The combination of my academic background and personal experience facilitated my understanding of sustainability accounting. My accounting and finance background and intense interest in economics, politics and the environment motivated me to conduct this research. Economics is related to growth and economic development, politics is related to social responsibility and equity and environment is related to care for the current and future generations. It is so obvious that every civilized citizen of this world has a responsibility to do everything for the betterment of the earth and its inhabitants.

I was born in Bangladesh in a moderate simple living family. My upbringing was in a much disciplined way and had to follow certain rules. For example I was not allowed to mix with any disobedient children, never allowed to stay out after dark and telling a lie was strictly forbidden. Breaking any of those rules had severe consequences. My parents taught me how to respect others and their property, kindness, forgiveness, gratefulness, patience, ethics and how to be resilient. The simple lifestyle of my family, its happiness with a few possessions, tolerance and spontaneous teaching about the importance of moral values in people, all creatures, natural resources and environment are things that made big impact on me.

In 1971 a civil war broke out in Bangladesh. The war lasted for nine months. During the war we had to move to the remote countryside of Bangladesh for the safety of my family. We stayed there until the war was over. Those nine months in the countryside of Bangladesh helped me to get to know very closely the village people and their culture. The majority of village people may not be wealthy in monetary terms but are definitely very rich morally. We saw their sacrifice, tolerance and patience. They gave us food and even gave up their master bedroom for us to stay, while they slept in the kitchen. These lessons stayed with me for life.

In terms of area, Bangladesh is not a big country, only 56000 square miles. Its population is 170 million. Bangladesh has 86,000 villages and 77% of the population lives in the village. The village people of Bangladesh are often considered to be the root of the Bengali culture. The Bauls (folk singers and philosophers) are the centre of village culture with their beliefs and practices. I have been introduced to the Bauls by my father in law, who is fond of their songs and culture. He completed his post-graduate research (Hossain, 1990) in relation to the creator-centric Baul tradition and its mystical songs seeking God in human hearts (Macdaniel, 1989; Tagore, 1970). He then undertook two PhD's – one on the role of Baul guru and Sufi shrines which are ever immortal in the hearts of people (Hossain, 1995) and the other on the importance of energy, self-reliance, spirituality and sustainability realities in Bangladesh (Hossain, 2001). While he was pursuing his second thesis I used to discuss with him the importance of the spiritual and cultural side of humankind in the perspective of the Baul philosophers. This helped me to understand sustainability as a holistic approach that can only be achieved through the integration of social, economic and environmental issues. In addition, sustainability accounting can be a tool for any development to sustain, which includes the goal of intergenerational equity. The way the Bauls think is quite different from the modern and materialistic life. In fact they enjoy living a simple and nature-centred lifestyle. They have no interest in modernising their way of living. This made me wonder why they did not surrender to the temptations of a modern lifestyle as many rich and city people did in Bangladesh, albeit on a small scale.

The sustainability of Bangladesh largely depends on its natural resource base and ecological conservation. Hence the age-long practice of sustainability accounting for maintaining the culture of self-reliance, simple living and ecological conservation

deserves policy support. The Baul philosophers of Bangladesh play an important role in upholding people's socio-spiritual resilience and sustainability accounting practices for sustainable living.

This approach is very different to the economic market-oriented development of the industrialised world where profits and consumerism have been the leading philosophies of the last 200 years. The dominant accounting practices are still driven by one value principle – that of financial profitability limiting reporting to the stewardship of financial resources. The only goal is to concentrate on the financial performance of the organization or society. This practice had been performed either driven by greed or lack of proper knowledge and understanding about consequences. Irrespective of the actual reason, it has been well established that the current accounting practice is grossly flawed and needs to be viewed as counterproductive when it comes to maintaining social cohesion and conserving ecological resources. The conventional accounting system has failed to take into account the social and environmental impact when it comes to economic development.

In response to these limitations, more recently, a new aspect of accounting emerged, namely sustainability accounting represented by the triple bottom line framework (Elkington, 1997) which covers financial, environmental and social performance. It requires corporations not to ignore social and environmental issues in the pursuit of economic performance. For development to be sustainable it should also be measured in terms of these three dimensions – economic, social and environmental, also represented by the profit (or prosperity), people and planet concept embraced by management (e.g. Frisk, 2010) as well as government (Government of Western Australia, 2003).

Despite undertaking some steps in a positive direction, we are still far from the reality of inventing and implementing a set of comprehensive theories and principles for sustainability accounting which can address the collective interest rather than mere self-interest.

To bridge this gap, a holistic approach is needed to integrate the biophysical and social responsibilities humans possess. This research explores an alternative approach to accounting through the teaching of the rural spiritual leaders of Bangladesh who influence the vast majority of rural people in the country. Seeking wisdom from their

traditional knowledge, the thesis redesigns the principles of accounting practices is a new direction.

It is highly needed for understanding sustainability to take into account present and future generations of all species, including humans. This research is based on the argument that some cultural values and traditional customs, including folklore, should be acknowledged as leading principles in sustainability accounting. By doing this, a just and fair accounting system which goes beyond self-interest emerges. Such practices are encouraged and demonstrated by the spiritual leaders and Baul philosophers of Bangladesh. The value principles synthesised and explained in this PhD thesis by publication lay the basis for sustainable co-existence of humans with other living species and the protection of the natural world on which we all depend.

Literature review

In order to describe sustainability accounting, it is important to know that it is a social science concept rather than mathematical, physical or pure science. Social science is based on logic and argument but always holds room for improvement as our knowledge and understanding continuously evolve. Sustainability accounting is a tool which can be used to assess performance in order to avoid collapse or extinction.

The roots of accounting go very far. The crude form of informal accounting existed from the beginning of human civilization when individual people traded their goods for the exchange of other goods, within their community. This practice used to be called a barter economy, as there once had been no currency allowing universal exchange. The formal record keeping started after the industrial revolution. With industrialization, accounting also became an area of record keeping for commercial transactions between companies and other organizations. As a contemporary academic discipline, accounting has two main branches – financial accounting which aims to provide information to people beyond the organization; and managerial accounting which serves the needs of those who internally direct and control its operations (Garrison and Noreen, 2011).

For centuries, the practice of accounting was limited to reporting on the stewardship of financial resources – the currency for exchange of goods and services. Informed and guided by principles such as revenues/costs ratios and return on investment figures,

industrial development concentrated on efficiently using the planetary resources without book keeping records with the main "trading partner" of humanity – nature, or the ecological systems that provide the essential assets for any human activities. The current environmental and social problems, including climate change, biodiversity loss, poverty and consumerism, are a direct result from the failure of both financial and managerial accounting to keep their checks and balances. Sustainability accounting is the most evolved form of accounting in the exchange between people and nature (Elkington, 1997). It has received continuing attention in the academic accounting literature beginning with the work of Gray in the early 1990s, through to the release of Sustainability Accounting Guidelines at the World Summit on Sustainable Development in Johannesburg in August, 2002.

Sustainability accounting emerged two decades ago with the attempt of the accounting discipline to reinvent itself outside the area of finances (May et al, 2007). It attempts at "improving social justice and contributing to social and environmental benefits on a global level" (Tilt, 2009 p11). This produced reporting frameworks, known as the triple bottom line (economic, social and environmental) or triple Ps (planet, people and profits), adopted by the private sector as a commitment to corporate social responsibility. The public sector also responded with the guidance of the UN, International Council for Local and Environmental Initiatives (ICLEI) and the global reporting Initiative (GRI).

Corporate social responsibility reporting and sustainability accounting have been practiced by the developed world as a new way of disclosing nonfinancial information about the ecological, social and economic performance of an organization (Tilt, 2009). This novel entity, also referred to as green accounting (UNDP, 1993; Rogers et al., 2008), is an attempt of the accounting discipline to capture negative ecological and social externalities and address the deteriorating global environment by providing information additional to the financial data (May et al., 2007). Despite its good intentions, many recognize that "we do not have a theory of accountability that would support the overwhelming need for an accounting to the other rather than to self-interest" (May et al., 2007, p. 237).

Every academic scholar who deals with sustainability will certainly agree that conventional accounting has failed to deliver equity when it comes to social and

environmental issues. However, it is also true that a universally accepted measuring or accounting framework to account or measure social, economic and environmental sustainability performance is yet to be developed and it may take decades to engineer a standard accounting system for sustainable development (Hitchcock and Willard, 2006).

The efforts of the global community to arrest global warming, such as the negotiations under the UN Framework Convention on Climate change and the work of the intergovernmental Panel on Climate Change (e.g. the 2014 IPCC 5th Assessment Report), so far have not produced any measurable positive outcome. Similarly, there has been only partial progress in achieving the Millennium Development Goals (UN 2013) and UNESCO's Decade of Education for Sustainable Development is yet to move beyond research to real changes in the educational systems (Hopkins, 2012). The international policy arena continues to be active with the current promises and activities surrounding the new Sustainable Development Goals (Sarabhai, 2014; UN, 2016).

Although these initiatives aim to raise awareness and promote the principles of sustainability accounting, they have serious difficulties finding their way to the mainstream business sector which continues to operate under the guidance of financial accounting. According to Glover (2006), the efforts by the international community based on modernity's usual scientific, economic, and governmental tools are inherently flawed and therefore have been controversial, contentious and largely unsuccessful. There needs to be a different approach to ignite people's social, environmental and economic responsibility.

In an attempt to define the principles that can inform environmentally, socially and economically responsible behaviour, the approach to sustainability accounting taken in this research is based on traditional knowledge, beliefs and spirituality (Flood, 2012) as they exist in Bangladeshi society. Spirituality is the deepest meaning by which people seek to live with values and visions in order to achieve the full potential of the human body and spirit (Sheldrake, 2007, p. 1). While spirituality represents universal wonder and a quest for individual perfection, tradition is a dynamic process through which cultural forms, practices and meanings are continually reshaped in response to internal and external factors within society (Seal and Marinova, 2015). As a shared

phenomenon, it conditions the specific ways in which different communities and social groups interact with the notions of sustainability accounting with this research focusing on one particular country.

Sustainability issues in Bangladesh

Agriculture continues to play a major role in the Bangladesh economy. The supply of agriculture products and ecosystem services are both essential to human existence and quality of life. However, recent agriculture practices that have greatly increased global food supply have had inadvertent, yet detrimental impacts on the environment and on ecosystem services, highlighting the need for more sustainable agricultural methods (Tilman et al., 2008).

Bangladesh food industries encompass a wide range of products, including rice, wheat, sugarcane, tea, jute, vegetables, fruits etc. This food industry is a vital component of the Bangladesh economy, as it accounts for 46% of all retailing turnover in Bangladesh.

Retail trade is a traditional business in Bangladesh. Its expansion is keeping pace with the country's population growth. Bangladesh Supermarket Owners Association indicates that the size of the food retail sector in Bangladesh will grow to $38.8 billion by 2021 (Global Agricultural Network, GAIN Report Number BG3014, Date 7/3/2013). Retail is a large source of employment in Bangladesh (14%), and together with wholesaling it contributed a combined 14.3% to Bangladesh's GDP in 2010/11 (Bangladesh Bureau of Statistic 2012).

Bangladesh has a primarily agrarian economy. Agriculture is the single largest producing sector of the economy since it comprises about 18.6% of the country's GDP and employs around 45% of the total labour force (Bangladesh Bureau of Statistics 2010). The performance of this sector has an overwhelming impact on major macroeconomic objectives like employment generation, poverty alleviation, human resources development and food security. As the country's population grow, the demand for food significantly increases. This in fact causes intensive high yield agricultural production, which is dependent on the use of fertilizers, especially industrially produced NH3 and NO3. Nitrogen fertilization can increase emissions of greenhouse gases that have critical roles in tropospheric and stratospheric chemistry

and air pollution. For example, N2O is a very powerful greenhouse gas, 310 times more powerful than CO2 (IPCC, 2007).

By 2050 the global population has been projected to be 50% larger than at present and the global grain demand is projected to double. Doubling food production again and sustaining food production at this level are major challenges for agricultural producing countries like Bangladesh from both economic and environmental perspectives (Tilman et al., 2008). In addition to causing the loss of natural ecosystems, agriculture adds globally significant environmentally detrimental amounts of nitrogen and phosphorus to terrestrial ecosystems at rates that may triple if the prevalent farming practices are used to achieve another doubling in food production. Some predominant environmental impacts that will result from the emissions of these chemicals are global warming impact, eutrophication, photo chemical smog and acid rain (Biswas and John, 2009).

While food industries offer economic and social benefits, a broad look at trends in agricultural production shows that many of the relevant environmental impacts projected for the next 50 years are tied to increased consumption of agricultural products (Tilman et al., 2008). This also indicates that the agricultural industry in Bangladesh including grain industries, will be at environmental risk in near future. Amongst the rest of the world, water shortages are widely predicted to be one of the major problems associated with agricultural and livestock industries. For example, the amount of water use in agriculture is astronomical. The current global water withdrawals for irrigation are estimated to be about 2000-2500 cubic kilometres per year (World Water Development Report, FAO, 2003, Crops and Drops- FAO, 2002). Production of crops and livestock is water intensive and agriculture alone accounts for 70% of all water withdrawn. Best estimates of future global agricultural water consumption (including both rain fed and irrigated agriculture) are of increase of about 19% by 2050, but this could be much higher if crop yields and the efficiency of agriculture do not improve dramatically. Much of the irrigation will be in regions (including Bangladesh) already suffering from scarcity of water (World Water Assessment Report, United Nation, 2015). In addition, intensive high yield pastures depend on the addition of fertilisers, especially industrially produced NH4 and NO3. Fertiliser use and legume crops have almost doubled total annual nitrogen inputs to global terrestrial ecosystems (Vitousck et al., 1993). Nitrogen fertilisation can increase

emission of N20 gases that have critical roles in tropospheric and stratospheric, chemistry and air pollution and a very powerful GHG. The excess nitrogen is acidifying soils, killing vulnerable species and saturating ecosystems so that they lose the ability to recycle the nitrogen back in the air. Meanwhile, some over-fertilised lakes and seas in heavily found regions filled with 'blooms' of aquatic life which then die and decompose, sucking all the oxygen out of the water in the process (Fred Pearce, 2010). The industry already releases harmful GHGs, about 18% anthropogenic GHG emission (i.e. 7 billion tonnes of CO_2), including 9% CO_2, 37% of methane and 64% N2O (WSPA, 2008). This N2O is 310 times more powerful than CO_2, therefore this industry would have significant global warming impacts (Biswas and John, 2009), while Bangladesh is committed to addressing climate change. Through the problems emanating globally, it can be seen how Bangladesh itself is being affected by pollution, in particular, most of the rivers in the country are drying down due to climate change and building dams by India (on the international river which passes through Bangladesh) for diverting water for irrigation, so it is more susceptible to water shortages.

From this background information, it appears that Bangladesh food industries would face tremendous environmental challenges to market its agricultural products locally and globally for two reasons. Firstly, WTO discussion on food trade recognizes that to successfully develop and implement food trade policies, government needs to create better linkages between trade and environmental policy and industries, develop mechanisms to demonstrate that their production practices are compatible with "Clean and Green" product trade policy (Heinze, 2000). Secondly, future emission trading schemes will encourage food industries to reduce their supply chain environmental footprints (Biswas et al., 2010). As a result, food industries are required to have their production process assessed, identify 'hotspots' and apply mitigation strategies. Also Kyoto 2 that specifically deals with the carbon management system would influence Bangladesh to take out CO2 emissions from the atmosphere, much more needs to be done.

Thus, Tilman et al. (2000) suggested the pricing and levelling of each type of food product to reflect the true cost of its production. The aforementioned situation suggests the implementation of sustainability accounting systems to develop environmental management systems, which will help industries to mitigate their environmental

impacts (Boyd et al., 2007; Georgeakopoulos et al., 2005; Gray et, al., 1994, Elkington, 2003). The sustainability accounting system covers issues in conventional accounting as well as ecological accounting. While the focus of conventional accounting is on financial impacts related to the industrial operation, the sustainability accounting measures the monitory value of ecological impact that a company has on the environment.

Social Sustainability in Bangladesh

Bangladesh is a predominantly Muslim country with almost 90% of its 160 million population being Muslims (Miller, 2009). It is a very spiritual country where Muslim and Hindu Baul fakirs together with Muslim Sufi philosophers have a strong influence. The social aspect cannot be ignored, for sustainability is economic development that enhances environmental development and social equity (Diesendorf, 2000). When social accounting is incorporated with financial and ecological accountings, it is known as sustainability accounting (Elkington, 2003). Thus the research takes into account the triple bottom line approach for developing sustainability accounting in order to combat environmental pollution from industries in the most economically feasible and socially equitable ways (Elkington, 2003).

The sustainability accounting system will, therefore, should be enhancing the environmental situation for the future generations in many ways. Firstly, the crisis resulting from climate change and water shortage which jeopardise food production to meet the hunger and nutrition demands of future generations will be reduced. Salinity and land contamination, resulting from food product (i.e. dairy products) that affect agriculture and overall food production will be reduced. Intergenerational equity needs to be maintained to enhance the sustainability of Bangladesh. The current sustainability accounting systems will, thus, assess social along with environmental and economic benefits for both current and future generations.

Various natural resources have their different characteristics of sustaining ability. Sustaining of free flowing resources such as air and sunshine has an infinite sustainability capacity as they do not (seem to) deplete or replenish with human consumptive activities. On the other hand, the finite natural resources such as water, land and biodiversity are subject to change as a result of the rate of extraction by humans and the pace of their natural regenerative capacity. It is now widely accepted

that sustainability can also be affected or jeopardised by excessive greenhouse gas emissions; and by pollution of air, land and water with environmentally unfriendly chemicals and radioactive materials. At present, there is a global hue and cry that natural resources are rapidly becoming unsustainable: climate is changing; biodiversity is depleting; soil and water are being contaminating; and air polluting is at an unprecedented extent. Technological solutions are continuingly incapable to control the situation as researchers observe that technical fixes ultimately fail (EI Guindi, 1999, p. 225-41). Innovation would still continue as people cannot afford to see an increasing unsustainability but it needs to include social equity and opportunities for all in a holistic approach.

Economic Sustainability in Bangladesh

Beside primary industry, including agriculture, secondary industry, such as garments industry, has a significant contribution to the economy of Bangladesh. The readymade garments sector has emerged as the biggest earner of foreign currency and the industry provides employment to around 4.2 million Bangladeshis, mainly women from low income families (Bangladesh Bureau of Statistics, 2012; Huq et al., 2014). They are from the rural areas that previously did not have any opportunity to be part of the formal workforce. This has given women the chance to be independent and have a voice in the family because now they contribute financially.

Readymade garments accounted for 77% of Bangladesh's total merchandise exports (Bangladesh Bureau of Statistics, 2012). It is a $19 billion a year export-oriented industry (Bangladesh Bureau of Statistics, 2012). Bangladesh is second only to China, the world largest apparel exporter of western brands. In 2012 the textile industry accounted for 45% of all industrial employment in the country and contributed 5% of the Bangladesh's total national income (Bangladesh Bureau of Statistics, 2012)

Beside agriculture, the garments industry is also an economic lifeline for Bangladesh. It makes significant contribution to the country's economy through creating employment and earning foreign currency as it is an export-oriented industry. Thus, the garments industry is a vital component of the country's economic and social wellbeing but its environmental and social aspects also need to be monitored to maintain sustainability for intergenerational equity.

Economic growth, which is an increase in quantity, cannot be sustainable indefinitely on a finite planet (Costanza et al., 1994). Conversely, Costanza et al. (1994) point out that economic development, which is an improvement in the quality of life without causing an increase in the quantity of consumed resources could be sustainable.

Over-extraction of finite resources for over consumption in order to lead wasteful lifestyle is discouraged by the Baul and Sufi philosophers. It is repeatedly prohibited by Islam (2:60, 2:205, 5:64, 7:56, and 28:4). Islam also prohibits the generation of financial growth by charging interest or excessive profit. From a religious point of view Islam considers money just a convenient medium of exchange. Its use as a commodity to lend or hoard for excessive profit can injuriously deprive others and is strictly prohibited. To maintain economic health, money ought to circulate in a community like blood. The Quran warns against the piling up of wealth: "Who pileth up wealth and layeth it by, Thinking that his wealth would make him last for ever! He will be sure to be thrown into That Hell which breaks to Pieces" (104:2-4). Living simply and without greed for more than the required is the standard for maintaining economic sustainability in Islam.

Fluehr-Lobban argues that poverty is not for the sake of hardship (2004:188) but for the sake of managing long-term sustainability within the regenerative capacity of renewable resources. In many ways attempts coming from outside Islam directed towards what is known as "poverty alleviation" clash with the fundamental Muslim values and effectively push such countries, including Bangladesh, towards unsustainability (Hossain and Marinova, 2005).

Environmental Sustainability in Bangladesh

Bangladesh as one of the world's poorest nation is also very vulnerable to sea level rise. With the expected 2^0C rise in the world's average temperature in the next decades, other associated changes are rising sea levels, more extreme heat and more intense cyclones threatening food production livelihoods and infrastructure as well as slowing the reduction of poverty (World Bank, 2015).

In Bangladesh, 40% of the productive land is projected to be lost in the southern region of the country with a 65 cm sea level rise by the 2080 (Shamsuddoha, & Chowdhury, 2007). About 20 million people in the coastal areas of Bangladesh are already affected

by salinity in drinking water. Rising sea level, severe cyclones and storm surges could intensify the contamination of the ground water causing health hazards (Shamsuddoha, & Chowdhury, 2007, World Bank, 2016). A 1.5m sea level rise in Bangladesh means approximately 17% of the land will go under water and 15% of the total population will be affected (UNEP/Delft, 1989).

The Sundarbans is the largest mangrove forest in the world. It is situated in the southern part of Bangladesh. The area of Sundarbans is 140,000 hectares (UNESCO, 2016). About 334 plant species of trees and herbs and 425 of wildlife including the Bengal Tiger survive in this ecosystem (Islam, 2011). The Sundarbans mangrove forest is a salt-tolerant ecosystem with the exception of the sundari trees (Heritiera foams). There are approximately 900 sundari trees threatened by extinction primarily due to suffering from top-dying disease caused mainly by the increasing salinity in their surrounding waters (Haq, 2010).

Sea level rise is occurring due to the rising of temperatures and this is why the salinity levels are increasing. The mangrove forest of the Sundarbans provides an important defence in limiting the climate change impacts, providing protection to coastal areas from tsunamis and cyclones. The sea level can rise through three different processes with respect to climate change (DNREC, 2016). First, as the oceans warm due to an increasing global temperature, sea water expands taking up more space in the ocean basin and causing a rise in water level. The second mechanism is the melting of glaciers and polar ice caps over land, which then adds water to the ocean. Finally, as with glaciers and land ice caps, the increased heat is causing the massive ice sheets that cover Greenland, Arctic and Antarctica to melt at an accelerated space (Worldwatch Institute, 2016).

Over the past century, the burning of fossil fuels and other human and natural activities have released enormous amounts of hit-trapping gases into the atmosphere. These emissions have caused the earth's surface temperature to rise, and the oceans found to absorb half of all manmade CO_2 (National Geographic, 2010).

All these facts show how disastrous the rising sea level can be for Bangladesh, despite the negligible contribution the country has made to climate change. Since its independence in 1971 from Pakistan, Bangladesh's contribution to global emissions of the greenhouse gas CO_2 has been 0.4% only (World Bank, 2016). On the other hand

the world average CO_2 emissions have increased by 4.6% (World Bank, 2013). Therefore, Bangladesh is simply a victim country rather than a serious polluter. Its per capita CO_2 emissions still remain very low (World Bank, 2016).

It is important for Bangladesh to maintain its low ecological footprint, particularly given the country's large population and relatively small bio capacity (Global Footprint Network, 2016). Hence, sustainability accounting is most needed.

Traditional Sustainability Accounting

It appears that Bangladeshi people have been seeking and continue to seek sustainability without knowing its form of existence or understanding the complexity of the problems. Some say sustainability is a concept to implement, some see it as a journey to pursue, a goal to achieve, and others see it as a reality. Possibly all are right from their respective perspective. In my view, sustainability is a reality that prevails naturally as an entity generated through the (totality of) unity of diverse natural resources.

Traditional sustainability accounting is armed with moral tools such as kindness, resilience, modesty, righteousness and responsibility. It has been practiced by the rural populous of Bangladesh for centuries as a driving tool. Contained within the country's teaching of the path of sustainability (physical and spiritual) is guidance for the entire range of human life – social, political, economic and environmental. Viewed from this perspective, traditional sustainability accounting is a synergy of all values and a way to address every sustainability circumstance.

Traditional sustainability accounting encourages sustainability in terms of individual, social, economic and ecological aspects. The concept of traditional sustainability accounting deals with sustainability in several ways, such as doing right by removing ignorance (righteousness), safeguarding people from deliberate evil-doings or negligence (responsibility), refraining from wasteful behaviours and activities (modesty), and striving to follow the spiritual guidelines – the straight path suggested in the Scriptures (Quran). With Bangladesh being a predominantly Muslim country, the Scriptural concept of pursuing sustainability accounting is understood in terms of discharging human obligations 'Vicegerency' or 'Stewardship' on earth

The acquisition of moral values required to initiate and implement sustainable development is part of sustainability accounting for sustainability management. Traditional sustainability accounting is inherent in the Islamic beliefs and practices, which are widely practiced by the rural populace of Bangladesh under the guidance of Baul Fakirs and Sufi philosophers. It engages the practitioners in all-rounded efforts or struggle for improvement at an individual, social, economic and ecological level. Traditional sustainability accounting has both spiritual and material significance. Chittick (1983:56) sees right and wrong as a product of knowledge and wisdom: 'knowledge and wisdom exist to distinguish the right from the wrong'. Hence, spirituality comprises both knowledge and wisdom that are exercised in deeds, words and contemplations

Traditional sustainability accounting is a means of overcoming wrong-doings by humans in the course of pursuing satisfaction of materialistic needs, an outcome of desires in terms of food, housing and indulgence in materialism. However, it is a human obligation to develop the spiritual values that support sustainability, though differently, depending on the various climatic, geographical and cultural circumstances.

Although Bangladesh is most vulnerable to frequent natural disasters such as floods, cyclones and droughts, historically people had developed coping mechanisms including the use of traditional practices for making their homes and homesteads resilient, climate and season based cropping, fish farming and sustainable transportation by boat and bicycles/rickshaws. They applied traditional knowledge for agriculture, flood plain management and use of natural and traditional defence systems. These are all parts of the traditional sustainability accounting principles, which have been practiced by the rural people of Bangladesh for centuries. This PhD thesis draws on the traditional wisdom of the Baul fakirs and Sufi philosophers to distil the value principles of sustainability accounting that can continue to play an important role in rural Bangladesh but also could potentially set up a new pathway for global development.

Research design

In order to explore and understanding the contribution of Baul and Sufi philosophers and the role of tradition for sustainability accounting in Bangladesh, participant

observation and qualitative analysis were used (Denzin and Lincoln 2000). These available materials come from the oral tradition of the country, including Baul songs and discourses, religious summons, wisdom of the elders, storytelling, performing arts (drama, opera and cinema), educational debates and radio and television talks. The analysis also drew on relevant and reliable websites and newspaper materials. I have personal first hand experiences in observing and collecting evidence about the work of the Baul philosophers and their impact on lifestyle and livelihoods in rural Bangladesh. This covers folk beliefs, spiritual and materialistic practices as they relate to sustainability accounting.

Despite recognized by UNESCO (2008) as intangible cultural heritage of humanity, research on the role of the Baul spiritual leaders for rural Bangladesh and West Bengal is scarce Most existing literature refers to the poetic and cultural values of their songs (e.g. Bhattacharyya, 1993: Hossain, 1995; Openshaw, 2002). Only recently have some publications appeared which link the Baul culture to the sustainability concept (Hossain, 2001; Hossain and Marinova, 2013, 2015). This is the first study to examine the messages in the Baul discourses from a sustainability accounting lens.

The adopted approach allows for covering issues that are meaningful and culturally salient, no attempts are made to anticipate or test hypotheses related to the data. The aim is to provide in the respective publications a rich and explanatory description of the role of traditional and spiritual values for sustainability accounting in Bangladesh. Domain analysis was used (Atkinson and Abu el Haj 1996) to distil the most important themes based on the oral and the textual material collected for the study.

Regular observational and field research was conducted in rural Bangladesh between 2010 and 2014 with several trips during which participant observation (Kawulich 2005) was used. It allowed to explore various aspects of Bangladesh including poverty characteristics, food insecurity and use of technologies, folk culture and self-reliance.

As with any qualitative research, the nature of the findings depends on the interpretation, re-interpretation and reflection when examining any existing evidence. The importance of such an approach is also incorporated in the OECD Frascati manual's technical definition of research and development (R&D) as the use of the existing stock of knowledge to devise new applications (OECD, 2002). These new applications would vastly differ depending on the applied cultural lens. For instance,

it would not be appropriate to presume that sustainability accounting in rural Bangladesh could take the same meaning and form as it is the case in the developed parts of the world. In reality, what western accountants are formally trying to capture, measure and represent is often common wisdom in people's thought and action in Bangladesh. "Look before you leap", "save a little before you use" and "the less you consume, the longer you live" are the core principles of Bangladesh for rural sustainability and accounting.

In this research we have also applied traditional sustainability accounting to explain, why natural resource conservation matters as part of holistic sustainability management. The answer can be found in the words of a Baul philosopher: "leave this beautiful earth beautiful".

Contribution of the publications

The contributions of the thesis 'Traditional Sustainability Accounting Principles and Practices in Rural Bangladesh' brings together five papers in a comprehensive and cohesive way to make contributions to knowledge in the following three aspects:

- the role of folklore and the teachings of the Baul philosophers in shaping sustainable behaviour and responsibility in rural Bangladesh – this source of traditional knowledge is analysed for the first time in terms of its contribution to sustainability accounting;
- reframing the concept of sustainability accounting by arguing that it should be value-laden and should rely on a qualitative framework that is clear and comprehensible – this is done within the context of rural Bangladesh but can have a broader applicability;
- formulating three conceptual value principles which shape the three integrated aspects of sustainability, namely modesty (in consumption and use of resources) as representing economic development, kindness (to the non-human world) as representing environmental protection and improvement, and resilience (social ability to cope with unforeseen changes) as representing social development – this new interpretation allows a better understanding of the sustainability concepts as well as the new UN Sustainable Development Goals.

Below is a summary of the contributions that each individual paper makes.

1. **Khan, M.,** Hossain, A., Marinova, D. (2015) Traditional sustainability accounting principles in Bangladesh, *World Journal of Social Sciences*, 5(2): 201–210

This paper establishes academic recognition of traditional sustainability accounting. It defines it as an essential tool for maintaining livelihoods in rural Bangladesh. It builds on personal observation, analysis of relevant literature sources and interpretation of rural folklore and Baul teachings. It also explores the role of spiritual leaders in upkeeping traditional practices of self-reliance and encouraging sustainable behaviour and accounting for the changing human and natural conditions of the country. Three new qualitative conceptual accounting principles are identified, namely modesty, kindness and resilience which respectively correspond to economic, environmental and social performance.

Based on traditional knowledge, beliefs and spirituality as they exist in Bangladeshi society, this paper is significant in its quest for recognizing values driven human activities towards a harmonious concept of sustainability. It defines the principles that can inform environmentally, socially and economically responsible behavior.

Every culture on the planet has local tradition, knowledge and wisdom which can inform sustainability accounting and allow for values principles to be derived. In the case of rural Bangladesh, where the majority of the population is illiterate, traditional accounting is disseminated by the rural elders, religious leaders and singing Baul philosophers. Its principles form the basis for understanding the synergies of sustainability.

2. **Khan, M.,** Hossain, A., Marinova, D. (2016) Sustainability accounting for natural resource management in Bangladesh, in Kerr, T., Stephens, J. (eds) *Indian Ocean Futures: Communities, Sustainability and Society*, Cambridge Scholars Publishing, Newcastle, UK, pp. 173–192 (forthcoming, proofs checked 28 June 2016)

This paper broadens and expands the three principles of sustainability accounting identified in Paper 1. It uses the same conceptual framework informed by local tradition and the wisdom of the spiritual leaders of rural Bangladesh, to explore the application of the principles of modesty, kindness and resilience to natural resource management. This is done against the background of the negative impacts caused by the Green Revolution of the 1970s which now require to be remedied. Although the

practice of sustainability accounting is an age-long tradition in Bangladesh, it is described for the first time through the three underlying value principles.

The paper argues that by integrating traditional sustainability accounting in their practices the rural people of Bangladesh have the potential capacity and ability to create a different economy – one that can restore ecosystems and protect the environment while bringing forth innovation, prosperity, meaningful work and true security. In the integrated global world of today, traditional societies which have maintained and continue to promote sustainable development are an important source of wisdom for sustainability accounting.

3. Hossain, A., **Khan, M.,** Marinova, D. (2014) Self-reliance and living on the edge of climate change, *Transformations*, 3–4 (82–83): 220–233

This paper is an exploration of the challenges rural Bangladesh faces in the age of climate change. It provides the context for the two case studies of traditional sustainability accounting – agriculture and carbon-neutral living, which are to follow. Because of the country's geography and topography, the three aspects of living on the edge of climate change are: understanding the dangers and risks; acting responsibly to avoid irreversible consequences; and handling the uncertainty of the situation through spirituality and moral values. These challenges encourage people to achieve self-reliance as a self-regulating way for practicing sustainable development that leaves nature unharmed, allows optimal resource consumption and dynamic ability to cope with the changing situation.

The paper argues that the way humanity handles climate change depends not only on scientific evidence and expertise but also on human values and care for the Earth and future generations. A shared value system is needed for the world to retreat from living on the edge of climate change.

4. **Khan, M.,** Marinova, D., Todorov, V. Siddiqui, A. (2016) Linking folklore to agricultural sustainability accounting in Bangladesh, *International Journal of Information Systems and Social Change* (forthcoming, date of acceptance 27 June 2016)

In the context of rural Bangladesh, folklore, culture and agriculture are integrally linked. For this populous nation, agriculture is at the core of its long-term development and future aspirations. The paper links the value principles of traditional sustainability

accounting to the numerous expressions of folklore, including proverbs, adages, wisdom sayings, folktales and folksongs, including the songs of the Baul mystic minstrels, as they relate to various aspects of agriculture – from tilling to harvest, storage of yields and consumption. The paper draws on this folklore to develop the concept of traditional sustainability accounting in agriculture which guides agricultural practices in rural Bangladesh maintaining a socio-economic system that promotes sustainable activities.

Two aspects of folklore are extremely important: first, it is the source of developing knowledge, beliefs, values, attitudes and understanding; and second, it guides the way of life in rural Bangladesh, including consumption habits and technology use. Hence, agricultural accounting is both the message and the medium of sustainability.

Bangladesh has achieved many of the Millennium Development Goals but has also witnessed environmental deterioration. An agro-ecological management informed by folklore and traditional wisdom has the potential to transform the country's progress along the lines of the new UN Sustainable Development Goals (SDGs). The paper re-interprets the SDGs within the value principles of sustainability accounting. It positions folklore at the heart of Goal 11 Sustainable Settlements and Communities identifying this as the core goal for achieving the SDGs.

5 **Khan, M.,** Hossain, A., Marinova, D. (2016) Sustainability accounting for carbon neutral living in Bangladesh, *Transformations*, 5–6 (84–85) (forthcoming, date of acceptance 27 June 2016)

Decarbonising and carbon-neutral living in Bangladesh is the second case study of traditional sustainability accounting which has always been part of the culture and tradition of rural people. On the other hand, sustainability accounting is an emerging discipline in the CO_2-intensive developed world. The paper draws comparisons between the carbon and ecological footprint of Bangladesh and the developed world, including Australia. It shows that the impact of Bangladeshi people is much lighter as they are spiritually guided by the principles of modest consumption, development without destruction and simple living.

The paper concludes that although sustainability accounting has a long way to go as a means of addressing the environmental and social consequences from human activities, it is obvious that its value principles can guard against impacts associated with carbon intensive economic development. Thus, the carbon neutral living philosophy is well-established in rural Bangladesh, helps upkeep its sustainability and can inform a paradigm shift for decarbonisation.

Conclusion

Traditional sustainability accounting principles and the importance of spiritual leaders in rural Bangladesh is the first study to link values – the intangible human heritage, to sustainability accounting. It contributes a new dimension different from self-interest that can also inform and take the understanding of financial and management accounting to a new level which includes broader biophysical and social concerns beyond the immediate monetary measures.

Examining information from the oral Baul tradition in order to solve the research question, this study identified three principles for sustainability accounting which constitute the mainstream reporting on economic, environmental and social performance from a completely new perspective. The three principles of modesty, kindness and resilience shed light on what sustainable development means for the rural masses and how the country's spiritual leaders encourage the rural citizens to restrain from self-interest and ecological, social and economic destruction. In these times of global challenges, the approach embedded in the principles also holds a lot of potential and promise for the rest of the world.

The world is no more an isolated place for any nation, rather it is now a global community, we must take this opportunity to search and find many sources of sustainability accounting. Starting from East to the West or vice versa, have much to learn from each other's (Prime 1994:5). A reflective education, such as sustainability accounting for natural resource management with the emphasis on social and environmental sustainability engineering is readily available in Bangladesh. Sustainability accounting is a symbol of the synergies between social security perspectives and finite natural resources which is often linked to self-reliance

(Marinnova et al., 2006) as a way of life where most essential things are procured on peoples own accord. The Baul philosophers and spiritual leaders can play an important role to the establishment of such an integrated sustainability accounting education system. Their traditional culture and practices can be an important tool for demonstrating a reflective teaching of engineering. Such philosopher and spiritual scholar can guide the society to go forward with a vision of holistic sustainability that include the social, economic and environmental aspects of sustainability.

This study recognizes the importance of folklore and traditional knowledge in the case of rural Bangladesh by drawing out conceptual value principles or sustainability accounting. There is however much more work to be done to fully understand what and how needs to be monitored and reported for achieving sustainable development. Future research directions include:

- Analysis of the role of traditional knowledge for sustainability accounting in other geographic locations – a good example of this would be Aboriginal knowledge about caring for country and how it can inform sustainability accounting;
- Other industry examples of approaches to sustainability accounting – such case studies are important to understand how different value principles are reflected across different sectors and economic activities;
- Reporting and measuring of the implementation of the seventeen UN Sustainable Development Goals within particular countries and Bangladesh in particular – the Bangladesh government has committed to working towards implementing the SDGs and is engaging on an ambitious program of making changes on the ground which improve the conditions of people and the environment. Although there are many concrete indicators associated with each SDG, how progress is reported and what are the guiding principles of understanding change need to be investigated;
- Policy analysis and policy implications from adopting value principles in sustainability accounting – this is an important aspect as it relates to how positive changes can be encouraged and supported.

Climate change and food security – the two areas that this particular study explored, are likely to remain significant challenges for human population across the globe. The implementation of the SDGs poses further immediate tasks in the transformation and transitioning to a new sustainable future. Support from all areas of science and knowledge, including those held within the community, is most needed to make this a reality. In this journey, it is important to understand the spiritual values and principles that guide human actions and care about other species and future generations. The PhD study made a contribution in this direction but much more work lays ahead.

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Part 2. Publications included as part of the thesis

World Journal of Social Sciences
Vol. 5. No. 2. April 2015 Issue. Pp. 201 – 210

Traditional Sustainability Accounting Principles in Bangladesh

Mahmood Hasan Khan*, Amzad Hossain** and Dora Marinova**

On the basis of personal experience in rural sustainability management and research intensive secondary data the paper interprets the values and practices of the rural people of Bangladesh in terms of sustainability accounting. It explores the role of spiritual leaders and the work of the Baul philosophers. Three new sustainability reporting principles are identified which correspond to economic, environmental and social performance, namely modesty, kindness and resilience. They allow for a better account of the changes happening in the human and natural world and continue to inspire people to upkeep traditional beliefs and practices for sustaining a self-reliant lifestyle.

JEL Codes: Q5, P32 and P28

1. Introduction

Accounting existed ever since people and nations have been trading with one another. With industrialization it also became an area of record keeping for commercial transactions between companies and other organizations. As a contemporary academic discipline, accounting has two main branches – financial accounting whose aim is to provide information to people outside the organization, and managerial accounting which serves the needs of those who internally direct and control its operations (Garrison and Noreen 1999; Edwards and Hermanson 2012). For centuries the practice of accounting was limited to reporting on the stewardship of financial resources. Informed and guided by principles such as revenues/costs ratios and return on investment figures, industrial development concentrated on using efficiently the planetary resources without bookkeeping records with humanity's main "trading partner" – nature or the ecological systems that provide the essential assets for any human activities. The current environmental and social problems, including climate change, biodiversity loss, poverty and consumerism, are a direct result from the failure of both financial and managerial accounting to keep their checks and balances. The emerging problem is that accounting in this form could not contribute to keeping track of transactions as they relate to the natural ecological and social human environment.

In response to these concerns, sustainability accounting or corporate social responsibility reporting emerged in the developed world in the 1970s as a new way of disclosing non-financial information about the ecological, social and economic performance of an organization (Tilt 2009). This novel entity, also referred to as green accounting (UNDP 1993; Rogers et al. 2008), is an attempt of the accounting discipline to capture negative ecological and social externalities and address the deteriorating global environment by providing information outside the area of finances (May et al. 2007). The Global Reporting Initiative of the United Nations established in 1997 began to develop guidelines as to how

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sustainability reports should be produced. According to its database, more than 4,000 organizations from 60 countries have adopted and are using sustainability reporting on a voluntary basis (GRI 2015). The slow uptake of this legally non-mandatory initiative by the world's largest economy prompted the establishment in 2011 of the American Sustainability Accounting Standards Board (SASB) with the aim to provide concise guidance for specific industry sectors (Lydenberg et al. 2012).

Despite all good intentions, many recognize that "we do not have a theory of accountability that would support the overwhelming need for an accounting to the other rather than to self-interest" (May et al. 2007: 237). To bridge the gap between accounting for self-interest and the broader biophysical and social responsibilities humans have the paper explores the teachings of the formally uneducated rural spiritual leaders of Bangladesh who influence the vast rural populace of the country. Its research question is: what are the main themes communicated to the Bangladeshi rural people and how do they relate to sustainability accounting?

Looking at traditional wisdom to inform accounting practices is a new approach; it is most-needed to provide insights for sustainability that take into consideration present and future generations of all species, including humans. This paper argues that some cultural values and traditional[1] practices, such as greening of nature, modest lifestyle and kindness to all creatures, should be recognized as key factors in sustainability accounting. They provide a sound basis for accounting beyond self-interest and are encouraged by the country's Baul philosophers who also inspire sustainable self-reliant lifestyle in harmony with nature and other living species.

After a short review of literature which covers the areas of sustainable development, sustainability accounting and traditional knowledge and spirituality, we present the methodology of the current study. The section to follow outlines the findings from the qualitative analysis and personal observations on the role of the Baul spiritual leaders in Bangladesh identifying three main themes – kindness, modesty and resilience. It also relates them to a new approach to sustainability accounting that can provide more meaningful interpretation and connections between conceptual principles and technical accounting practices. The conclusion summarizes the contribution of this study which is the first to build on oral and intangible traditional knowledge to inform sustainability accounting.

2. Literature Review

Widely accepted ways to measure or account social, economic and environmental sustainability performance are yet to come and it may take decades to produce a standard accounting system for sustainable development (Hitchcock and Willard, 2006: 215). The efforts of the global community to arrest global warming, such as the negotiations under the UN Framework Convention on Climate Change and the work of the Intergovernmental Panel on Climate Change (e.g. the 2014 IPCC 5th Assessment Report), so far have not produced a measurable positive outcome. Similarly, there has been only partial progress in achieving the Millennium Development Goals (UN 2013) and UNESCO's Decade of Education for Sustainable Development is yet to move beyond research to real changes in the educational systems (Hopkins 2012). The international policy arena continues to be dynamic with the current promises and activities surrounding the new Sustainable Development Goals (Sarabhai 2014).

Although these initiatives aim to raise awareness and promote the principles of sustainability accounting, they have serious difficulties finding their way to the mainstream business sector which continues to operate under the guidance of financial accounting. According to Glover (2006), the efforts by the international community based on modernity's usual scientific, economic, and governmental tools are inherently flawed and therefore have been controversial, contentious and largely unsuccessful. There needs to be a different approach to ignite people's social, environmental and economic responsibility.

In an attempt to define the principles that can inform environmentally, socially and economically responsible behavior, the approach to sustainability accounting taken in this paper is based on traditional knowledge, beliefs and spirituality (Flood 2012) as they exist in Bangladeshi society. Spirituality is the deepest meaning by which people seek to live with values and visions in order to achieve the full potential of the human body and spirit (Sheldrake 2007: 1). While spirituality represents universal wonder and a quest for individual perfection, tradition is a dynamic process through which cultural forms, practices and meanings are continually reshaped in response to internal and external factors within society (Seal and Marinova 2015). As a shared phenomenon, it conditions the specific ways in which different communities and social groups interact with the notions of sustainability accounting and this paper focuses on one particular country.

Bangladesh is a populous country on the Indian sub-continent. What makes it distinctively unique is the role the singing Baul philosophers have on shaping the country's culture (Hossain 1995; 2001). The Bauls educate the general masses through songs and riddles which convey specific messages about individual longevity but also how to care for nature and other people.

3. Methodology

In order to understand the role of tradition for sustainability accounting in Bangladesh, we use participant observation and qualitative analysis (Denzin and Lincoln 2000) of materials available in the oral tradition of the country, such as Baul songs and discourses, religious summons, wisdom of the elders, story telling, performing arts (drama and cinema), educational debates, radio and television talks. The analysis also draws on reliable websites and relevant newspaper material. The first two authors of the paper have personal first-hand experiences in observing and collecting evidence about the work of the Baul philosophers and their impact on lifestyle and livelihoods in rural Bangladesh. This covers folk beliefs, spiritual and materialistic practices as they relate to sustainability accounting.

Although recognized by UNESCO (2008) as intangible cultural heritage of humanity, research on the role of the Baul spiritual leaders for rural Bangladesh and West Bengal, India is limited. Most existing literature refers to the poetic and cultural values of their songs (e.g. Bhattacharyya 1993; Hossain 1995; Openshaw 2002). Only recently have some publications appeared which link the Baul culture to the sustainability concept (Hossain 2001; Hossain and Marinova 2013, 2015). This is the first study to examine the messages in the Baul discourses from a sustainability accounting lens.

The adopted approach allows for covering issues that are meaningful and culturally salient, no attempts are made to anticipate or test hypotheses related to the data. What we aim to do is provide a rich and explanatory description of the role of traditional and spiritual values for sustainability accounting in Bangladesh. We have used domain analysis (Atkinson and

Abu el Haj 1996) to distil the most important themes based on the oral and textual materials collected for the study.

4. The Findings

Three qualitative themes emerged from the domain analysis about the importance of traditional values and practices for sustainability accounting, namely modesty, kindness and resilience. They are explained below. This is followed by a new interpretive model of sustainability which we put forward based on these three constituent principles. To the best of our knowledge, no previous research on sustainability accounting has drawn on traditional wisdom and spiritual folklore. Our analysis shows that these are very important not only with the persuasive power of the messages expressed by the Bauls but also with the mode of delivery that allows rural people to feel passionate and committed to follow them.

4.1 Modesty

Lifestyle in rural Bangladesh, where about 85% of the population lives, is the product of traditional socio-cultural values such as respect for nature, modesty, simplicity, responsibility, commitment, creativity and happiness with less; while the natural resource base is believed to be the gift of Almighty God/Mother Nature. El Guindi (1999: 155) notes that modesty prevails where people do not hoard their wealth. While modesty in the West is often perceived as lack of confidence in one's potential for accomplishment, Gandhi's philosophy resents achievements that boost up consumerism. He argues for modest consumption and material possessions in the paraphrase: "The more I have, the less I am" (Joshi, 1993:53).

Another implication of modesty is the simplicity of technology that a community uses. In Gandhi's words technology has to be "home-scale". In most non-western communities human resources are hardly abundant to provide more than for fundamental human needs and simple living. For example, organic agriculture can only meet basic needs, but can generate a high level of satisfaction as well as a means to guarantee a better future.

The most striking example in Bangladesh is the modesty in food consumption where sustainability accounting is part of everyday living[2]. Bangladesh is the country in the world with the lowest meat consumption on a per capita basis (FAO 2013). Given the large ecological footprint of meat, estimated at more than 51% of the global greenhouse gas emissions (Goodland and Anhang 2009), this means that Bangladesh is a very small contributor to climate change. Further on, 10% of any harvest must be kept for the sustainability of others in need, such as fruit eating birds and animals who spread the seeds to grow naturally as well as for people without fruit trees (Hossain 2001). It is also a custom in Bangladesh to serve begging people with a donation in kind, such as food, or cash. It appears from the rural revelations that the philosophy of sustainability accounting is well established.

The sphere of modesty in Bangladeshi culture is so vast that it inspires people to dismantle the culture of consumerism, which according to Jackson (2009: 273) is the main reason for the global ecological footprint to double "over the last 40 years, now standing at 30 percent higher than the Earth's biological capacity to produce for our needs, and is poised to go higher". El Guindi (1999: 155) notes in regard to modesty that people should not be wasteful. The 2013 World Environment Day was observed in Bangladesh by the Institute of

Environmental Science at Rajshahi University with the theme *'Vebe chinte khai, opochoy komai* (Do ponder for lessening waste when consuming)[3]. This slogan is intended to trigger rural eco-spirituality towards waste neutral lifestyle and modesty in consumption.

4.2 Kindness

In Bangladesh culture sustainability values are integrated core-shared values between the numerous living faiths, including Hinduism, Islam, Buddhism, Christianity and Animism. These prominent core-shared values relate traditional sustainability accounting practices to keep nature lush green by organic agriculture and tree plantation[4], modest living and kindness to all in nature. A popular saying attributed to Swami Vibekananda and popular in Bangladesh (as well as in India) manifests traditional sustainability accounting in terms of kind services to nature: "Jibe prem kore je jon, se jon shebise Ishwar' (One who loves all creatures serves God)[5].

Formally uneducated, the rural folks of Bangladesh traditionally practice sustainability account keeping in terms of the aesthetics of greening. The term "greening accounting" in the Bangla vocabulary "Dirgha-ayur Hishab" means longevity accounting or sustainability accounting. Greening is a symbol of infinite sustainability or longevity in Bangladesh religiosity. In a popular discourse the Bauls relate the story of a supra-natural personage known as "the Ever Green"[6] (i.e. the ever-living) in order to make people aware that longevity is achievable by greening of life and nature.

With regards to CO_2 emissions, the rural people of Bangladesh understand 'carbon' in the Bangla term 'Kalo dhua' (i.e. back smoke). They are aware of 'Kalo dhua' and believe it to be carbon intensive. The black smoke was hardly seen in Bangladesh except for the occurrence of bush or home fire, which people consider as good for sustainability. A certain amount of gases is necessary to sustain life (Dauvergne, 2009: 85). The world of trees and plants that inhales CO_2 and converts it into oxygen supports the lives of other living biodiversity, including humans. This balance in the photosynthesis cycle can easily be disturbed with extra greenhouse gas emissions from industry, transport, energy production but also from excessive livestock farming and intensive agriculture. Bangladesh continues to be kind to nature with its national per capita CO_2 being one of the lowest in the world currently sitting at only 0.3 metric tons[7].

This analysis shows that eco-spirituality and kindness for greening and nurturing nature are an integrated religious part of Bangladesh culture. To rural Bangladeshis sustainability means sustainable management of the land and water based natural resources as well as cultural traditionalism. Natural resources satisfy basic physical needs (food, shelter and clothing) while cultural traditionalism is required to upkeep spiritual health by being kind and protective towards the country's natural resources.

4.3 Resilience

Resilience refers to the ability to cope with unforseen changes, shocks, surprises and hazardous disturbances, events or trends while still maintaining normal functioning, identity and structure as well as learning, adapting and transforming (IPCC 2014). It is a concept that applies across many fields of science and areas of life (Xu and Marinova 2013) but from a sustainability accounting point of view its economic, environmental and social dimensions are most important. How to withstand adversities is a question constantly addressed by the Baul philosophers as Bangladesh is naturally exposed to floods, cyclones,

droughts and other weather calamities. They acknowledge all natural phenomena as inherently positive. Timely floods, droughts or cyclones represent Mother Nature's capability to refurbish and (re)generate the resource base, its resilience.

The need for sustainability accounting emerged very strongly in the 1990s with the consequences of the Green Revolution introduced in Bangladesh a few decades earlier. A product of modernity, the Green Revolution put confidence in the power of humans to address any challenge (Sheldrake 2007). The outcomes were exceedingly negative with the loss of the country's historic carbon neutrality, depletion of water tables triggering arsenic poisoning, dependence on chemical fertilizers and disruption of the natural nitrogen and phosphorous cycles as well as concentration of the power in the hands of a very few people (Hossain and Marinova 2011). A popular wisdom reveals that 'things are sought after only when they are scarce or lost' and therefore 'things need protection before being threatened'. The resilience principle, which is a vital characteristic of social-ecological systems, should be a major consideration in accounting for sustainability.

The rural people in Bangladesh believe that "nature does nothing in vain" (Lyle, 1985: 16). Timely floods wash away dirt and germs, recharge the water table and fertilize the land; timely droughts produce bumper yields and energise the soils with nitrogen fixation. The Baul philosophers consider this as nature's agent for renewal and regeneration of the Earth's carrying capacity. Fluehr-Lobban (2004: 188) argues that poverty due to famine, such as crop failure, is not for the sake of hardship but for managing the long-term sustainability of finite renewable resources. This view, largely supported by ordinary people, builds internal resilience.

However, people are worried about matters that affect their daily life and that make their future vulnerable. The increasing cost of using the Green Revolution technologies is one of them and it creates economic hardships leading to poverty. The Baul philosophers and village elders are concerned about how to build stronger resilience to cope with these ongoing impacts on the land and water resources on the one hand, and how to redress the situation by integrating sustainable techno-traditional means and traditional sustainability accounting practices.

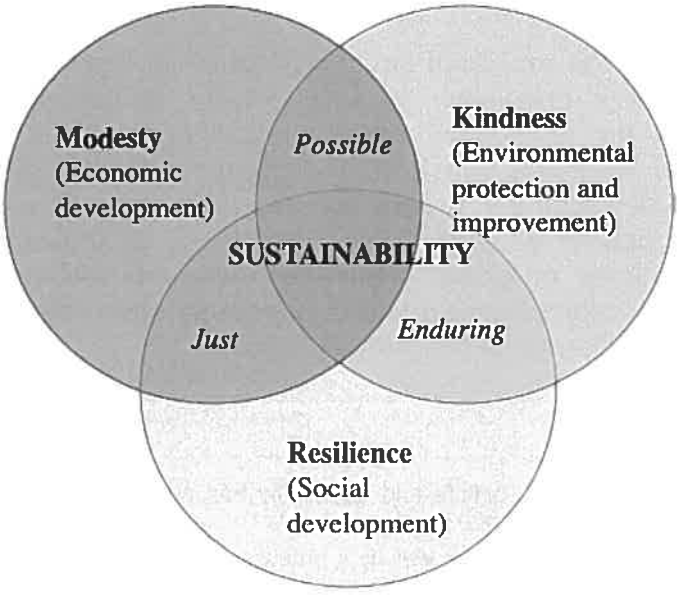
4.4 New Model for Sustainability Accounting

The three thematic domains identified through the qualitative analysis, namely modesty, kindness and resilience, in fact act as new policy themes and principles for sustainable development and sustainability accounting (see Figure 1). They correspond to the mainstream corporate reporting on economic, environmental and social performance (Adams 2006) but bring a new value system and conceptual interpretation. Instead of continuing economic growth and improvement in the quality of life, economic development is geared by modesty expressed through just distribution of resources and possible co-existence with all other species on the planet. Social development becomes resilience, namely strength and ability to endure despite adversities and challenges. The natural environment is no longer perceived as something that humans own, control and manage; the responsibility of people becomes to be kind and caring to make life possible and enduring.

There are also direct links between the three new thematic domains or principles elicited through this analysis and the general assumptions behind financial and managerial accounting. According to Edwards and Hermanson (2012), the underlying concepts of

accounting theory are: (1) business entity; (2) continuity; (3) money measurement and (4) periodicity. Although these assumptions are narrowly specified for the financial world and the economic market mechanisms reigning business enterprises and organisations, they can be re-interpreted from a broader and more elicitive perspective. Continuity refers to the expectation that a business entity will continue to operate indefinitely, unless there is evidence that it will terminate. The main presumption behind the concept of sustainability is the continuity of the natural and human world to which business entities belong. This world is being threatened and existentially challenged by climate change, pollution, political turmoil, social inequalities and upheaval. In order to achieve sustainability, the other three assumptions need to also be re-conceptualized. While legal entities operate in the business environment, in everyday life each human individual has to take responsibility for the consumption and use of resources guided by modesty to allow the planet's sustainability. The monetary unit of gauging achievements needs to be replaced by physical measurements, such as available food, freshwater, clean air and living space – all represented with the theme of kindness. Finally the concept of periodicity which divides the business entity's life into periods of economic activity, such as months and years, needs to be informed by the theme of resilience – the ability to survive and prosper in the periods of different seasons.

Figure 1: Conceptual principles for sustainability accounting



The three conceptual principles for sustainability accounting provide direction and meaning complementing the technical accounting frameworks put forward by organisations, such as the Global Reporting Initiative and SASB. For example, Lydenberg et al. (2012) explain that the disclosure of business activities should be based on simplicity (ease of representation and understanding), materiality (acknowledgement of the significance of sustainability issues, such as climate change, energy, release of pollutants, equal opportunities, availability of water, use of land and resources) and transparency (open availability to all stakeholders). While rules for representing and communicating information are important, particularly from a management perspective, conceptualizing development and its long-term implications should be taken away from the self-interests of business and individuals.

Hence, three sustainability reporting principles were derived from the analysis of the traditional culture of Bangladesh and the wisdom of its spiritual leaders, namely modesty, kindness and resilience. Their interactions can generate possible, just and endurable sustainability outcomes (see Figure 1). These principles have been intuitively adopted and followed by rural Bangladeshi people. However they can also inform the assumptions behind sustainability reporting, financial and managerial accounting in a meaningful way that relates to the biophysical environment and human existence.

5. Summary and Conclusions

Every culture on the planet has local tradition, knowledge and wisdom that can inform sustainability accounting. Bangladesh, a melting pot of many religions, ethnicities and cultures, is renowned for its deep spiritual base. Local knowledge, wisdom, proverbs and beliefs all play significant roles in the lives of people, especially for most rural people who are not formally educated. Disseminated through rural elders, religious leaders and the singing Baul philosophers, they form the basis for understanding the synergies of sustainability. This is the first study to link and analyze the contribution of this intangible human heritage to sustainability accounting. It provides a new perspective away from self-interest that can also inform and take the understanding of financial and management accounting to a new level, which includes broader biophysical and social concerns beyond the immediate monetary measures.

Analyzing materials from the oral Baul tradition in order to answer the research question, this study identified three principles for sustainability accounting which represent the mainstream reporting on economic, environmental and social performance from a completely new angle. The three principles of modesty, kindness and resilience shed light on what sustainable development means for the rural masses and how the country's spiritual leaders steer people away from self-interest and ecological, social and economic destruction. In these times of global challenges, the approach embedded in the new sustainability accounting principles of modesty, kindness and resilience also holds a lot of potential and promise for the rest of the human world.

Endnotes

[1] 'Tradition' means kinds of knowledge, beliefs and spirituality that are handed down through the generations along with the day-to-day practices (Flood 2012: 16).

[2] Food-print is a Baul philosophical concept as well as a practice of moderate consumption of food. In the cultural context of Bangladesh, an individual is supposed to fill one-third of his/her stomach with food, one-third with water and the remaining third can be left empty to facilitate spiritual exercise (Prana Yoga) in order to love longer. It is believed that the 'food-print' practice not only help enhance human longevity, but also assure ecological sustainability.

[3] http://www.thedailystar.net/beta2/news/news-in-brief-107/

[4] Each year, the first fortnight of July is nationally observed as the tree plantation period in Bangladesh.

[5] http://helpfulhub.com/1894/jibe-prem-kore-je-jon-se-jon-sobchce-ishwor-kar-kotha-eti

[6] Ever Green refers to an ever-living saint (popularly known as Khidr). The Prophet Moses was sent by God to receive the higher knowledge about the Ever Sustainability – God.

[7] http://www.tradingeconomics.com/bangladesh/co2-emissions-kt-wb-data.html

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CHAPTER NINE

SUSTAINABILITY ACCOUNTING FOR NATURAL RESOURCE MANAGEMENT IN BANGLADESH

MAHMOOD HASAN KHAN, AMZAD HOSSAIN AND DORA MARINOVA[1]

Accounting is considered a contemporary academic discipline with two main branches: managerial accounting, which allows those who direct an organisation to assess its economic performance; and financial accounting, which aims to provide information for stakeholders and other interested bodies as to how the organisation functions in terms of its commercial transactions.[2] This kind of accounting reports on a particular aspect of human activity, mainly from a financial, business or economic perspective. More recently, efforts have been made to broaden this reporting to include activities that relate to the social and ecological environments where businesses operate. This has given rise to concepts such as corporate social responsibility and sustainability accounting as new ways of disclosing non-financial information about the ecological, social and economic performance of an organization.[3] Ultimately, irrespective of what economic indicators say, people and nature have physical characteristics about which we want to be informed and which need to be maintained for supporting life on Earth. This new type of activity assessment is also referred to as green or environmental accounting,[4] and its intention is to capture any ecological and social externalities of human activity.[5] Unless the purpose of the business is specifically to restore ecological or community health, these externalities are usually negative. This sustainability reporting is in essence a way of informing the rest of society as to how responsible human actions are in relation not only to economic wellbeing but also towards the environment and society as a whole.

Perhaps the most commonly used representation of sustainable development, and hence sustainability reporting, is a Venn diagram (Figure 9.1) showing the three overlapping circles of economic, social and

environmental priorities where the intersection represents sustainability.[6] This diagram conveys some of the complexities involved in pursuing a balanced development and creating awareness about "current, and potentially future, economic disparities, environmental degradation, and social ailments."[7] Nevertheless, it does not provide an indication as to what the underlying ethical values behind human activities are. Leading institutional values often claimed in the corporate world are rarely at the core of its business activities and are "added" to gain competitive advantage.[8]

A recent analysis of the local tradition, knowledge and wisdom of spiritual leaders in Bangladesh revealed a new perspective for understanding the synergies between economic, environmental and social performance as they relate to three principles of sustainability reporting: namely modesty, kindness and resilience (Figure 9.2).[9] These correspond to the three sustainability (economic, environmental and social) aspects which are transformed into modesty in consumption, kindness towards the non-human world and resilience to cope and withstand unforeseen changes, shocks and calamities. This chapter explores further how these three principles apply to natural resource management in Bangladesh, one of the most densely populated countries in the world.

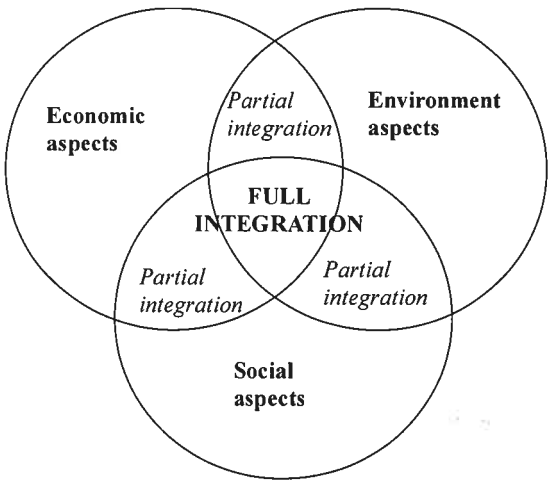

Figure 9.1. Representation of sustainability with a Venn diagram.

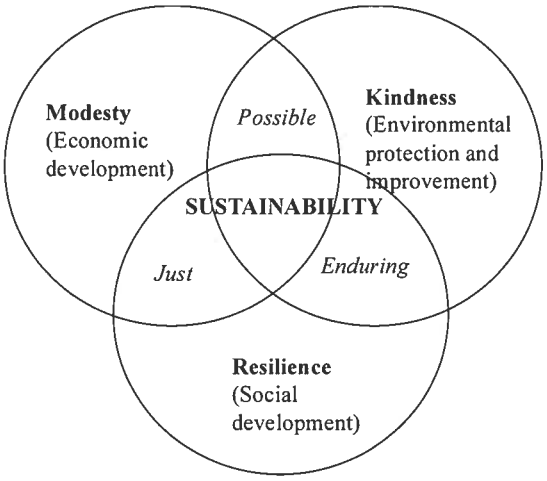

Figure 9.2. Representation of sustainability accounting principles.

The majority of the Bangladeshi population (estimated at 71 percent),[10] lives in 86,500 villages and many people are considered to be poor by western standards (estimated at 43 percent).[11] The livelihoods of most rural people rely on the numerous natural resources of Bangladesh–from fertile soils and myriad waterways to lush vegetation. They live largely on agriculture, fishing and craftsmanship related activities. Forty years ago Maloney[12] described village Bangladesh as the nest of nature:

> Once off the main roads and on the winding mud paths, one would soon begin to pass homestead after homestead, surrounded by clusters of various fruit and timber trees including bamboo plants, and inter-sparsed almost randomly among stretches of crop (largely rice crop) fields. One would also see men caring for their lands/crops, and women caring for household affairs, homestead gardening and harvest management. There would be no end to the scene of homesteads, ponds and ditches, rivers and canals, rice fields, and people.

Little has changed since and the country's villages continue to provide livelihood to the millions of rural people. Bangladesh's overall literacy rate is 58 percent and the majority of rural people are formally uneducated.[13] Nevertheless, the practice of oral education for sustainability accounting remains an ongoing dynamic tradition for addressing the diverse challenges related to agricultural productivity, poverty management and ecological stability.

Rural people have a close relationship with and dependence on natural resources for their livelihoods, which requires them to have skills and practices to look after those resources in a careful manner. Martinez-Alier describes this as environmentalism of livelihood triggered by the need to manage natural resources in a sustainable way to preserve their existence.[14] Sustainable natural resource management is described as strong sustainability[15] because it is based on the understanding that there are certain functions that the environment performs, such as providing food, water or aesthetic pleasure, which cannot be replaced through other means.[16] In this sense, rural Bangladesh needs to embrace strong sustainability as its population depends on the environment.

We argue that sustainable natural resource management and use of natural resources for consumption purposes should be integrally linked through sustainability accounting and its underlying value principles. By using examples from folk tradition, we convey how the principles of kindness, modesty and resilience are being communicated and displayed in Bangladesh where accounting for sustainability is essential for survival, endurance and joy of life. We use participant observation[17] as well as analysis of talk and texts[18] to collect the data for this study. The first two authors of the chapter have direct experiences over the last five years in participating in the natural settings and activities in village Bangladesh as well as observing and collecting evidence about the work of the Baul philosophers and their impact on the lifestyle and livelihoods in rural Bangladesh.

Kindness

In our modern lives, kindness generally refers to "enacting kind behaviour towards other people" and is rarely seen as being kind to other non-human beings or the natural world which the principle of sustainability accounting requires people to do.[19] As a human value (shared between the living faiths), kindness is expressed by the motivation to be kind and the ability to recognise the kind deeds of others and, as a virtue, is manifested by the actual enacting of kind actions. Bangladesh is an example of a topographically and culturally rich country where kindness to others, including the natural world, is at the core of the spirituality of many of its people.

Topographically, Bangladesh is largely a country of plain land. The floodplain areas are comprised of river floodplains (55 percent) and coastal floodplains (25 percent). The country also has terraces (8 percent) which include the Barind, and tracts (12 percent) such as the Hill Tracts.[20]

Bangladesh is criss-crossed by a network of several major rivers, their numerous tributaries and canals forming a lace of interconnecting channels. There are 230 rivers including numerous tributaries totalling 38,600 kms in length. Rivers throughout the country are prone to flooding caused by the Himalayan ice melt and heavy monsoonal rains resulting in erosion, alluvium and silt deposition within the floodplain area. People see this as nature helping them towards a healthy crop and soil management. For rural people, this is nature's sustainability accounting for its own resource management. Nature re-creates and embodies the landscape of Bangladesh, as a tapestry of green renewables.[21] According to Aziz and Maloney, there is probably no other society in the world in which such a large population can subsist on land of these dimensions and still sustain its natural resource base.[22]

However, not many natural resources are unaffected by human activities, with the possible exception of sunshine. Most resources can be depleted and lose their natural regenerative capacity because of excessive extraction and consumption. The Club of Rome was first to raise the alarm about the expanding human population and the limits of the planet.[23] This was followed by many other studies[24] and the creation of indicators to monitor the state of natural resources such as fresh air, forests, grasslands and marine resources.[25] This data continues to raise concerns about our ability to safeguard the foundations of human life. It is now widely accepted that human activities have generated excessive greenhouse gas emissions, impacting the planet's climate; that industrialisation has caused pollution of air, land and water with environmentally unfriendly chemicals; that biodiversity has been severely affected.[26] We are reaching and exceeding the planet's limits in all essential indicators such as biodiversity, nitrogen cycle, climate change.[27] Technological solutions are continuingly failing to address the created problems and even when innovation proves to provide a more sustainable way in developed economies, technology transfer to the Third World is consistently unsuccessful.[28] According to Bendul et al., "empirical findings suggest that donor organisations often entail hidden agendas while the corruption, multiple layers of influence and decision-making mark local agencies with diverging objectives within."[29] Consequently, technological solutions more often than not are unavailable to the poor.[30] Technology experts time and again observe that wisdom, not machines, helps the world move forward.[31]

Bangladesh is a disaster-prone country where floods and cyclones are a regular occurrence.[32] Over the centuries people in Bengal have also changed their environments through destroying forest, extending agriculture, altering

river courses and over-fishing many areas. It has always been a story of survival and adaptation with people living in "vulnerable areas either because they are confident that they can face the inevitable consequences, or in the knowledge that eventually they may be driven out by natural forces."[33] Their traditional and intrinsic response has been to face the natural calamities with indigenous wisdom.[34] This traditional wisdom has long advised the Bangladeshi people to accept the annual processes of inundation and erosion but also to care about the natural environment in order to continue to rely on it.

A major role in guiding people in their behaviour in the rural villages of the country is played by the Baul mystics. These mystic minstrels are recognised by UNESCO as intangible cultural heritage of humanity.[35] The Bauls come from Hindu, Muslim, Christian and Buddhist backgrounds.[36] Without identifying with any formal religion or caste system, they play a very important role in Bangladesh, which is a predominantly Muslim society. Through their songs and oral teachings they provide syncretic views derived from Sufism and Vasinavism. Although in urban environments their importance has somehow paled in the 20th century because of strong western influences, they are still very popular and revered by the rural populace. With the spread of telecommunications and social media in this century, the Bauls' influence is now stronger, penetrating both the urban and rural fabric of Bangladeshi society. This is manifested through their participation in many TV shows and live performances, as well as the increasingly popular pilgrimage tourism to temples, shrines and sacred places of worship.

People are exposed to the Bauls' teaching, philosophical messages and spiritual values. Their songs are continuously modernised giving them contemporary relevance.[37] For example, Baul Bijoy Sarkar[38] exclaims in one of his songs: "How beautifully the Creator has created the Earth providing things appropriate for their respective places!" In another he calls: "We are obliged to leave this beautiful earth, keeping the Earth as it is." These songs articulate the obligation people have to preserve the planet's natural resources for future generations–a concept very much aligned with the notion of strong sustainability calling for the environment to be physically and aesthetically unchanged. The Baul philosophers influence the practices of rural people–irrespective of their religion or cultural background–in relation to the management of water,[39] biodiversity[40] and many practices of Bengali culture.[41] They also encourage sustainability accounting in rural Bangladesh as livelihood practices without violence towards nature so that its physical regenerating

capacity is not negatively affected; as Baul Bijov Sarkar advocates: leave this beautiful earth beautiful.[42]

With Bangladesh being a highly densely populated country (1,222 people per square kilometre), sustainability accounting practices must also consider the ecological footprint so that less land area is used to produce the resources that people need to consume. According to the Global Footprint Network, Bangladesh's ecological footprint was only 0.7 hectares per person compared to 1.8 for Asia, 2.65 for the world and 8.3 for Australia.[43] Joshi describes this human obligation to keep the planet within its sustainability integrity as adopting development without destruction.[44]

Bangladesh is increasingly being known as the country of regular floods, droughts and river erosion, particularly as climate change brings more extreme weather events.[45] Some outsiders might see only the negative consequences from these natural phenomena, while the Baul philosophers and the locals understand them as the renewal tools of nature which revitalise its resource base and nurture people's spirituality.[46] People observe that timely floods wash away dirt and germs, and that timely droughts energise the soils with nitrogen fixation. Although untimely floods and droughts can cause temporary inconveniences for the affected people, the more frequent ones bring benefits that outweigh the losses. There may be cases when some communities are affected beyond recovery. However, the rural people accept the fact that they may have to migrate to a new place or become landless.[47] River erosion breaks riverbanks and shoals, but also makes new ones. This gives new vitality to the soil and renews the spirituality of the people of the shoals.[48] Weather calamities obviously have negative effects by disrupting the normal course of events; though they are not for the sake of hardship but for managing the regenerative capacity of renewable resources.[49]

However, rather than kind, people can be destructive and utterly unsustainable towards nature. This was the case with the application of the technological systems of the Green Revolution in Bangladesh and the Indian subcontinent, including mechanical irrigation by extracting underground water, using chemical inputs for food production and processing, mono-cropping and genetically modified high yielding varieties of crops.[50] These technological factors have caused unsustainability, accelerated poverty, widened the gap between rich and poor, degenerated cultural values and lead to water crises and soil fertility degradation. Kindness towards nature and its resources is needed to allow replenishment and healing. People should be aware that "[t]echnological progress can help as well as harm the natural environment" and

sustainability accounting provides the framework to make this most important distinction.[51]

Sustainability accounting at the village level teaches that it is a human obligation to care for the regenerative aspects of natural resources while harvesting or disturbing them. The message about kindness to nature can be summarised by the popular saying attributed to Swami Vibekananda: "One who loves all creatures serves God."[52] The religious leaders (Ulama) transmit scriptural sermons orally to the audience at home ceremonies, mosque congregations and organised lectures at schools and other educational institutions. Baul gurus sing spontaneous songs about this before crowds of people. Storytellers reveal episodes to children. The Shamans prescribe locally available curatives (medicinal plants, herbs and substances) for fighting various diseases.

It is a common perception that the greater the guru, the simpler the technique of teaching and reflecting. Jalil maintains that folk tales and traditional educational customs are more effective education about the villagers' day-to-day life management than written instructions.[53] It is almost impossible to manage problematic village poverty and environment effectively without the restoration of sustainability accounting related folk tales and other traditional customs. Local knowledge in Bangladesh has its own accounting standards which look after nature.

A lot of destruction of the natural environment is done out of ignorance, particularly when people are disconnected from nature in urban environments[54] or engaged in pursuing economic activities where markets, "efficiency and competition decide everything."[55] By comparison, rural people have always been directly exposed to the fragility of the natural world and its finite capacity to restore itself. This realisation that nature is vulnerable requires people to be kind to it as well as behave responsibly. Baul guru Darvish Aziz Shah Fakir[56] in his discourse to devotees about the obligations to care for natural resources says that ten per cent of any crops including fruit on the trees must be left as Zakat,[57] the Islamic term for "charity," so that landless poor people and birds can eat them and broadcast the seeds elsewhere. According to him, the fingerlings and the mother fish must be spared; when a tree needs to be cut, few young trees must be planted as the demand for wood is rising with the increase of human population. The Fakir explains that as soil, water, air and biodiversity are rapidly being degraded due to human unethical intervention and exploitation, the ideology of Zakat must be widely taught and practised in order to regulate sustainability accounting for natural resource management.[58]

How to use Zakat wisely extends to the entire Muslim community; pertinent rulings from the Hanafi School of Islam apply in Bangladesh. It is a way to use resources in a sustainable way that applies particularly to the produce of crops and vegetation when grown for agricultural purposes. Zakat is not only a charitable act to assist the poor, but an act of kindness to both other human beings and nature.

Modesty

Similar to kindness, modesty is a sphere of core-shared values that refers to freedom from conceit and vanity.[59] Although in the West it is often perceived as a lack of capacities and social skills, and thus confidence in one's potential for accomplishment, it has a completely different meaning in the area of sustainability accounting–that of a virtue. It encompasses all aspects of human spending and consumption habits, expressing the quality of being moderate and fair and resenting arrogance and achievements that boost consumerism. Gandhi's philosophy synthesises modesty well: "The more I have, the less I am."[60] El Guindi notes that people should not be wasteful in spending their money, nor should they be miserable by hoarding their wealth.[61] Modesty prevails when people walk on earth with humility. In our interlinked planet with limited resources, Skolimowski explains that immodest are the people who live in affluence and consume too much without considering others.[62]

Bangladesh is a country of secular spiritual Islam, which is an admixture of medieval Sufism with native Animism, Hinduism and Buddhism. According to Hossain, simplicity and a poverty-like, self-reliant lifestyle are pre-dominant and this observation is shared by the authors' personal experience.[63] This lifestyle encourages low consumption and respects all in nature including fellow human beings. Living simply is a major factor for retaining the country's holistic sustainability account keeping, and this is evident in the practices of the rural populations.

Gandhi's philosophy of sustainable living is to "live simply so others can simply live,"[64] because "Earth... provides enough to satisfy every man's need but not for every man's greed."[65] This philosophy is popular in Bangladesh. Traditional life in rural villages is simple with subsistence farmers living together with fishers, handicraft workers, carpenters, smiths, weavers and other craft-people using tools mostly made of local materials. The "pro-poor" oriented economic growth of the country in the last few decades has delivered better rural infrastructure, faster improving basic education and better primary and preventative health care in village areas.[66] Nevertheless, the Bangladeshi rural people continue to depend on

the land for food[67] and on finite renewable ecological resources to meet other basic needs such as housing, clothing and working gear for pursuing agricultural or non-agricultural economic activities.[68] Their homesteads prior to the emergence of the Green Revolution were neither cottages nor houses as the West knows them. Sleeping, living and cooking quarters and reception rooms were built under separate roofs.[69] The houses were made of mud and bamboo matting, with roofing of local fibre.[70] There were only a few tin-roofed houses belonging to villagers with money, and brick houses were very rare.[71] Most homesteads had fruit trees, bamboos and useful non-fruiting timber trees.[72] The large portion of homesteads were covered with forests, maintaining ecological sustainability.

Although the idea that nature exists solely to serve human needs is an old one and extensively used through the colonial era, in more recent times the tradition of modesty started to suffer significantly since urbanisation and brick-based development started in the 1960s.[73] Brick makers required wood fuel from the villages and many big timber and fruit trees were cleared.[74] As most trees take a long time to grow and mature, people considered them a long-term ecological asset and did not immediately recognise the negative future impact of these practices. After the 1974 famine caused by flooding and the mismanagement of foodgrain stocks distribution, the situation changed with NGOs introducing micro-credit schemes which allowed the poor to build tin-roofed homes. To maintain their social status, the villagers with money started to build brick homes and toilets. Nevertheless, rural people continued to live a modest lifestyle with low to moderate consumption. An example of this is the low meat diet. With only 4.1 kilograms of meat per person per year, Bangladesh has one of the lowest consumption levels in the world;[75] mainly thanks to rural areas as city dwellers are actively exposed to the global marketing of Western consumerism, including that of animal-based proteins.[76] The Baul philosophers consider meat eating to be sinful, a moral violence and expression of greed.[77] They utterly encourage others to avoid meat eating and have millions of followers.

Rural people continue to be influenced and guided by the stock of traditional oral teaching material in the form of folklore, including proverbs.[78] Many comprise sustainability accounting messages for modest living such as: eat less to live longer; to desire too much is damaging; a sustainable house needs a pond, bamboo and banana plants and open space in the south; share a neighbourhood with relatives and also with others.

Harun Baul sang: "Simple living is the pathway to sustainable development."[79] Most of the discourses on sustainability accounting including moderate consumption, strong family ties, being happy with

fewer possessions etc., come from a communitarian perspective in the search for accountability "to the Other," including other species, future generations and the community looking after the public sphere.[80] The Baul philosophers are a Bangladeshi expression of this communitarian approach.[81] People follow their discourses and they encourage them to live naturally and modestly. Orality continues to be an essential way of knowledge transmission and helps the rural people of Bangladesh to reconcile their simple livelihood impacts on the environment including natural resources. It is a social practice that touches them every day.

Resilience

Resilience is the best way to adapt to environmental and social change including hazardous events characterised by surprise and unknown risk.[82] Traditionally the rural people of Bangladesh are religiously nature abiding. In the past, they believed that nature itself was the best teacher for those who want to learn capacities for renewal, reorganisation, learning, adaptation and development.[83] This is what made rural people strong and resilient to calamities. The technology of nature was the source for their sustainability. As nature's technology is specific to the site, the season and the geography, it needs guidance by naturalist Gurus such as the Baul philosophers.[84]

However, the Green Revolution technologies led to a decline in the country's natural resource base as well as traditional customs and cultural values.[85] Initially it appeared to raise agricultural output but then it became clear that there were many negative consequences.[86] Land productivity, yet with diminishing returns, depended on the ever-increasing use of chemical and mechanised inputs which gradually became unaffordable. Rivers silted up and became dry, many fish and other aquatic species vanished. There are hardly any grazing fields for cows, fewer fruit trees and fewer insect-eating birds. Crops and vegetables that are grown using chemical inputs are less nutritious and not tasty.

The consequences of the shrinking of grazing lands and reduction in water areas forced many poor and marginal farmers to clear forests for crops and grazing. The Green Revolution destroyed subsistence agricultural practices and created dependence on foreign aid and technologies.[87] Fishers had to flee elsewhere–to West Bengal in India, the coastal areas for sea fishing or to urban areas for alternative employment. The rest of the farmers and fishers became under-employed and poorer. The mechanised irrigation system supplanted labourers. Some of them started to clear forests to sell wood fuel in the cities. In response to this

demand, the forest department, agricultural department and various NGOs in Bangladesh promoted the fast-growing Eucalypts and Shishu trees instead of native big trees. People planted those species widely but they are now considered to be injuriously inappropriate for the Bangladesh environment.[88]

International organisations began to pour aid into Bangladesh from 1972, after the war for independence in 1971, to help rebuild the war-stricken economy and infrastructure. The country experienced a devastating famine in 1974.[89] The aid work intensified with national and international NGOs disseminating aid commodities and Green Revolution technologies, including a micro-credit instrument for alleviating poverty.[90] Since its independence, development in Bangladesh has brought huge economic, cultural and environmental changes in its rural areas. It has negatively impacted the traditional economic balance of self-reliance, cultural fulfilment, social morality, people's happiness, and environmental aesthetics. Finally, Bangladesh became an aid-dependent country assuming the label "Bangladesh – The Test Case for Development" until the 1990s.[91]

The country's natural resources, including ground and rainwater, biomass, cropland, water bodies, forest resources and rural labour force have significantly shrunk to meet all the needs of villages in Bangladesh.[92] The resource base is insufficient, many have to migrate in search of work and livelihood. Ground water is over-exploited and often wasted.[93] The poor of the country have been pushed increasingly to marginal and fragile areas of the environment, and they have lost traditional rights as the protectors and preservers of the forests, fields and water resources.[94] Consequently, new types of poverty have emerged among the peasantry.[95] They often have more children to counter the situation, contributing to the existing population explosion.[96] Village social and cultural cohesion began to crumble: with the growth of large-scale industries in and around the big cities, migration from rural to urban areas started to create socio-political problems.[97] This is also confirmed by the authors' experience.

Many traditional sustainability accounting practices were forgotten. People now need to ask their elders about what sustainable practices existed in the pre-1970 development eras. Under the guidance of their spiritual gurus, the rural people of Bangladesh are rediscovering their resilience by retreating back to the age-long tradition of natural resource management by way of sustainability accounting practices. They are now regaining traditional knowledge about nature management from this diverse oral tradition.

Being a deltaic and floodplain country greatly enriched with renewable natural resources and cultural heritage, the tradition of sustainability

accounting is of utmost significance for the resilience of the Bangladeshi people in order to maintain a harmonious and synergistic relationship with nature. The cultural underpinning for maintaining social sustainability induces the rural people to think about a type of economic progress for achieving self-reliance through self-employment. The Bauls stress that without sustainability accounting, the people of Bangladesh and of any country with growing consumption of finite renewable natural resources will suffer from insecurity, even in the midst of enough provisions. This is why Baul Fakir Lalon Shah (1774-1890) grieves: "Lalon suffers from thirst while the river Meghna is at hand." Building resilience is important for achieving sustainability.

A different economy–with kindness, modesty and resilience

While the practice of sustainability accounting is an age-long tradition in Bangladesh, it was only recently discovered as a way to provide information relating to social and environmental responsibilities. It appears that because of sustainability accounting practices, the rural people of Bangladesh have the capacity and ability to create a remarkably different economy, one that can restore ecosystems and protect the environment while bringing forth innovation, prosperity, meaningful work and true security. The country is yet to find ways to measure the extent to which local practices have transitioned to align better with sustainability accounting as well as the impact the Baul mystics have on this. Nevertheless, there is already strong evidence that village Bangladesh is being transformed by the Baul philosophy.

Based on the value principles of kindness (using without destruction), modesty (consuming less to save for others) and resilience (being self-reliant and strong to overcome adversities), sustainability accounting for restorative development processes in Bangladesh can unite ecology and economic activities into one sustainable act of production and distribution that mimics and enhances natural processes. Our world is now an integrated global community within which traditional societies, such as rural Bangladesh and its Baul leaders who promote sustainable development, are a source of important wisdom in practising sustainability accounting for natural resource management.

Notes

[1] We want to thank the editors of the book and the two anonymous referees whose constructive comments helped improve the quality of the manuscript.
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and Measurement." *Ecological Economics* 61: 617-626. Also see Brand, Fridolin. 2009. "Critical Natural Capital Revisited: Ecological Resilience and Sustainable Development." *Ecological Economics* 68: 605-612. Also see Dedeurwaerdere, Tom. 2014. *Sustainability Science for Strong Sustainability*. Cheltenham, UK: Edward Elgar. The concept of strong sustainability implies preservation of critical elements of the natural environment without loosing vital physical features described as natural capital. Under weak sustainability it is possible to substitute natural capital with other forms of capital, such as financial, social, manufactured or human built. What matters is the total aggregated value of capital in all of its forms that needs to be preserved or increased for the wellbeing of future generations

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SELF-RELIANCE AND LIVING ON THE EDGE OF CLIMATE CHANGE

INTRODUCTION

Self-reliance is the act of the relying on one's (that is individual's, society's or nation's) own capabilities and the concept emphasises the power of independence, creativity, originality and belief in generating strength and resilience (Marinova et al., 2006). In the past, when societies and nations were largely isolated, self-reliance referred to "self-confidence, reliance primarily on one's own resources, human and natural, and the capacity for autonomous goal-setting and decision-making" (Changula et al., 1977: 4). Traditional communities worldwide survived entirely on their own efforts but this drastically changed with industrialisation, urbanisation and globalisation, including the division of labour within and across nations. People at large are now dependent on others for their quality of life. This allows those who are wealthier to consume more resources and generate more pollution and waste without equity considerations for present and future generations. Climate change is the ultimate manifestation of the consequences from industrialisation.

The title of the paper, namely self-reliance and living on the edge of climate change has a two-fold meaning:

a) living in the state of self-reliance or living self-reliantly is a tenable condition that inherently protects humans from their environmentally damaging socio-economic activities which are conducive to and responsible for unnatural human-induced climate change; and
b) self-reliant communities, such as the traditionally rural (especially in Third World countries) or non-urban (as is the case of Australian indigenous people in the country's Outback) societies, are inherently sensitive to climate change as their exposure to various natural hardships forces them to practice resilience as a way of life.

Self-reliance is a self-regulating way for practicing sustainable development in its full meaning, that is development which leaves nature unharmed, context – optimal resource consumption, and dynamics – ability to cope with the changing situation. Living on the edge of climate change implies (1) understanding the dangers and risks; (2) acting responsibly to avoid irreversible negative consequences; and (3) handling the uncertainty of the situation. These are the three aspects of self-reliance addressed in this paper.

UNDERSTANDING THE DANGERS AND RISKS OF CLIMATE CHANGE

Climate change is largely "attributed directly or indirectly to human activity that alters the composition of the global atmosphere" (Hardy, 2003:11). The growing convincing scientific evidence shows that the physical pressures on the natural environment are caused by socio-economic factors associated with a greenhouse gas (GHG) emissions intensive way of living of human population (IPCC, 2007; IPCC, 2013). The current climate change concerns publicised through the broad media (e.g. Al Gore's movie *An Inconvenient Truth*) as well as the reports produced by credible sources (such as the 2006 Stern Review, 2008 Garnaut Climate Change Review and the latest 2013 IPCC assessment) have raised the awareness about the impact of greenhouse gas emissions and the prospects of a grim future if the current trends continue. The physical evidence from the 5th Assessment Report of the Intergovernmental Panel on Climate Change shows the different global contributions of various economic sectors based on 2010 total GHG emissions (IPCC, 2014) with energy and agriculture having the highest global warming potential (both on a 100- and 20-year time horizon).

It is important to understand the nature of contributions of these two sectors. The use of fossil fuels is the main factor behind carbon dioxide (CO_2) emissions which are strongly associated with industrialisation and developed countries, such as Australia, Canada and US, but also emerging economics, such as China. Although these nations are slowly moving towards a low carbon future with the

deployment of renewable energy technologies, there is a long way to go until carbon neutrality is achieved by the energy sector. The contribution of the agricultural sector is substantially linked to methane (CH_4) and nitrous oxide (N_2O) emissions which are associated with the livestock sector (Raphaely and Marinova, 2014b) and which have global warming potential exceeding hundred times that of CO_2. Alarmingly, the trends of meat consumption are on a continual increase both in the developed and developing world causing many analysts to argue that the livestock sector alone will be responsible for a run-away climate change and increase in temperature above safety levels (Pimentel and Pimentel, 2003). Overall factory farming, industrial production of meat and excessive meat consumption however are characteristics of western type of diets (Raphaely and Marinova, 2014a).

High level of GHG emissions linked to energy and agriculture are typical for societies, or sections of societies, which do not have a self-reliant life style. They are also characteristic of modern development which disrespects ecological limitations and the rights of future generations. By comparison, self-reliant people possess skills underpinned by values and spirituality that enable them to pursue socio-economic culture in harmony with nature and its bio-systems' carrying capacity. According to Baul Bijoy Sarkar[1] of rural Bangladesh, the meaning of sustainable development lies in the human obligation to keep this earth within its sustainability integrity. Joshi (1993) calls this "development without destruction". Bangladesh where large section of the population are still self-reliant is one of the lowest per capita GHG emitter in the world and also has the lowest per capita meat consumption.

If we are to properly understand the dangers and risks triggered by climate change, we need to correctly grasp its anthropogenic causes associated with both fossil fuel-based energy and excessive meat consumption. As these are trends associated with development which in tern is linked to increase in consumption, for any society to endorse self-reliance, it will need to be guided by Gandhi's teaching that the "Earth has enough to meet everyone's need, but not everyone's greed" (Misra, 2007: 352). Harun Baul from Bangladesh words this

[1] Bauls are mystics of Bangladesh who are as true animators, lead people on the path to spiritual transformation. We can see this in the lives of countless mystics – Rabia and Rumi in Islam; Hildegard of Bingen, Teresa of Avila, Meister Eckhart and Thomas Marton in Christianity; Mirabai and Ramakrishna in Hinduism; the Buddha and so many of his followers, like Thich Nhat and the Dalai Lama today (King, 2008:27).

as shunning superfluous consumption – consume less to let all in nature live and to live longer.

Taking responsibility to avoid irreversible negative consequences

Living on the edge also means constantly having to adapt to changing circumstances to avoid irreversible mistakes, such as falling into the abyss of climate change and pushing nature's adaptive capacities beyond its physical boundaries. A retreat from the present state of living on the edge towards the comfort of the natural biosystems requires practising an ecologically self-reliant lifestyle. This change is particularly needed for urbanised communities whose way of life and consumption culture are subversive to nature. For these communities to re-establish their connectivity with and place within the ecological world, they need to not only respect nature but also take responsibility for their actions.

Responsibility is a core-shared or common human value (Bok, 2002). According to Judo-Christianity, humans are a superior species in creation and they have stewardship responsibilities in their activities. The Islamic concept of responsibility claims that humans are created as vicegerents on the earth and were given knowledge of all things, so that they can conduct the "right action" for the sustainability of all diverse things in nature. These special position and functions of humans in creation are referred to as being the "trustees" of nature (Chittick, 1983). With their powers comes responsibility to other living and non-living things. Aborigines in Australia also had spiritual attachment and a sense of belonging to the land (Burke et al., 1998). They "did not exhaust the resources of an area… The protective myths, rituals and attitude of land stewardship meant, in part, the right to share resources with others" (Bourke et al., 1998: 220).

A lot of destruction of the natural environment has been done out of ignorance (Hill, 1998:61). Only a century ago we thought that the natural world was limitless, infinite in its possibilities for our own use and that of future generations (Newton, 2005: 220). Industrialisation was a manifestation of the might of human inventiveness and effectiveness in generating useful consumption goods. The Green Revolution in agriculture was supposed to provide food for the starv-

ing millions across the globe. They both caused a sharp decline in the self-reliance of many communities as well as detachment from nature enticing farmers towards intensive practices through the application of mechanical cultivation, clearing of forest land, extraction of underground water for irrigation, application of chemical fertilisers and highly toxic insecticides, pesticides and herbicides, and the use of water-intensive mono-cropping. Subsistence agricultural practices were destroyed in countries, such as Bangladesh, which caused dependence on foreign aid and technologies (Schumacher, 1974; Willoughby, 1990) and diminishing sustainability prospects (Rogers et al., 2008).

The view of a boundless planet is no longer valid and nature is recognised as limited and vulnerable. Environmentalists ague that at the pace natural resources are used and the land and air are being polluted, "modern consumer societies will have rendered the planet uninhabitable within a century" (Jardine, 2004: 126–127). The projections of climate scientists about irreversible temperature changes within a business as usual scenario are even bleaker indicating a window of opportunity of less than ten years (IPCC, 2014). Despite this, we continue with irresponsible actions that seriously affect the future as well as the present. To address the consequences of our ignorance but also our arrogance, it would require taking the responsibility for the replenishment of natural resources as well as to ensure sustainable use.

Self-reliant rural and non-urban communities inherently take responsibility for the long-term health of the biosystems to which they belong and would not trade economic rewards in exchange of environmental and social degradation. Edwards (2006:115) argues that in order to convert oneself to develop a sense of kinship with and responsibility for all beings and things of earth, one must strive to get involved in the struggle for a more just and ecologically sustainable world that can be fulfilling and meaningful. This is possible by creating a way of life and a culture that provide the motives, stimulation and facilities to retreat from the edge of climate change, and to live responsibly.

Handling the uncertainty of living on the edge

What is means to be self-reliant changes from time to time and place to place

depending on the varying climatic and socio-economic conditions. The dynamics of sustainable development is to build strong resilience enabling people to adjust to changing circumstances, including climate change, by means of itigation, coping and adaptation. Amidst the ample scientific evidence of human induced climate change linked to unsustainable exploitation of natural resources and generation of greenhouse gas emissions in order to facilitate superfluous consumption, a retreat from the present norms of development is likely to be a solution. Sustainability practices within the concept of self-reliance need to be encouraged but what will trigger such a shift? What will counteract the new ruling demonic religion of consumerism (Esposito and Watson, 2000)?

The antithesis of the materialism of today's consumerist society is spirituality – "our relationship with the sacredness of life, nature and the universe" (King, 2008: 16). Although spirituality currently occupies a precarious place in our world (Yust et al., 2006: 1), billions of people view it as a source of meaning, purpose, direction and devotion. From a practical point of view, spirituality can be understood as wisdom for living. Put simply, it is "explicit dedication to the meanings and values, the ideas and ideals, the beliefs and ethics that a person holds" (Helminiak, 2008: 16). Spirituality is the source of the will to act morally (Smith and Standish, 1997), an immanent activity aimed at affirming the moral values of people. According to Rogers et al (2008: 67), "76% of the world's population live in the developing countries. People living in the developed countries are consuming 64% of the meat, 50% of the cereals, over 80% of the metals, 86% of the chemicals, and 92% of the cars. Americans consume 52 times as much meat, have 320 times the number of private vehicles". The developed world has long given up self-reliance and with this it seems many universal moral values.

The search for sustainability is the main way of handling the uncertainty of living on the edge of climate change and it is based on the effort to lay hold upon goodness. Spirituality lies at the basis of the sustainability concept and is the only way to understand and explain why people care about future generations (Narayanan, 2007). Shaped by many influences in family, community, society, culture and nature, it propels the search for connectedness, meaning, purpose and ethical responsibility. Spirituality is an inherent part of humanness (Yust et al., 2006: 8) as well as the intrinsic capacity for self-transformation involving

growth and change.

Climate change can be tackled by way of technological and policy solutions but at its core it "is an urgent moral and spiritual issue for all people of our world" (Hayes and panelists, 2008: 260). The way humanity handles climate change and any associated environmental and social challenges "will depend as much on human values as on scientific expertise" (Heyd and Brooks, 2009: 280). Many spiritual leaders, such as the Baul gurus Aziz Shah Fakir and Harun Baul, call for self-reliance as a way of reconnecting to nature and other people with a lifestyle of moderate consumption and low greenhouse gas emissions (Dauvergne, 2009). Similar values education is needed in the West (Aspin, 2002). In order to retreat from living in the edge of climate change towards the state of self-reliance, it is essential for humans to make living on their own accord pursuing an ethically righteous value-driven socio-economic culture in harmony with nature.

Implications for policy

There is hardly any policy framework at global level that can transform the present culture of wasteful exploitation towards a sustainable culture of self-reliant development. This policy vacuum exists despite acknowledging the threats of climate change. On the global political agenda there are many examples of

This could be a far-reaching task, in fact, next to impossible. Because whoever be in the making of a policy framework, it is highly likely that they would be members of nations who are widely blamed for working against nature. They are, along with other stakeholders who have conflicting interest, also pursuing the destructive development so deeply that they cannot even think for a retreat; for retreat is sacrificing. For instance, people who have commercial interest in fossil-fuel based energy business would not support a policy plan that would lead them to switch over to renewable energy industry. Rogers et al. (2008:68) support this view revealing that it is difficult for a person laden with materialism to climb the steep path to spiritualism for happy with less, even though it can lead to blissful sustainability. Berkhouse et al. (2003: 261) have striking evidence: "We will be working with our allies to reduce GHG, but I will not accept

a plan that will harm our economy and hurt American workers".[2] This verdict of President Bush reflects the American attitude, and has resulted into a situation that if everyone on the earth consume as much as the average American do, scientists estimate that we would need at least four additional planets to provide the necessary resources and absorb the resulting wastes (Environmental Career Organisation, 2006:357).

This is why values education that teaches how to balance socio-economic and spiritual life deserves to be part of foundation education starting from primary level through to all levels of the lifelong learning processes. In the absence of a proven technological solution to negative climate change impacts, and to prevent human made climate change by way of retreating from extravagant consumption culture; a values-driven policy network at national and global level is crucial, for it can act as a force of survival, but also as a power of change; and rightly developed spiritual awareness can extend to civil society, to economics, business, management, and good governance" (King, 2008:11).

In the Muslim tradition of Bangladesh, values education aiming at spiritual advancement is a lifelong pedagogy. Values education in the Hindu culture teach that if humans like to see themselves as superior, then with this comes as well a duty to protect anything under the food chain. Judging from this angle, Western animal-centred food production is an injustice to socio-economic and environmental injustice, while vegetarianism is linked to values-driven sustainability spirituality (Nesbitt, 2004: 30). Due to a lack of this spirituality development education in America's educational policy plan, Wilks (2008:227) observes that "students from American suburbs grow up in a culture antithetical to genuine appreciation for the environment. Children use automobiles and may be 'outside' only for a minute or two a day, going from house to car to school, doctor or shopping...Students from this background nevertheless have kind hearts. Ethics and international development education can move students toward a deeper understanding." Lemons et al., (1998:108) also observe that a lack in values education has led Americans to use about 400 litres/capita/day of water for drinking, cooking, washing, disposing of wastes, and other personal use.

[2] President George Bush, commenting on his administration's decision to withdraw American support from the Kyoto climate change agreement, 30 March 2001.

This is much higher than the average of 90 litres/capita/day.

From the above orientation, the policy implications for developing people towards spontaneous departure from living on the edge of climate change to enter into a simply lived self-reliant lifestyle would need to stress on sustainability-intensive policy plan incorporating values education for education for sustainability as a lifelong learning process. This would intrinsically prepare people to go for self-reliant sustainable development practices – a departure from wasteful consumerism.

Conclusion

To live on one's own accord in the midst of changing natural conditions and social environments, including the impacts of climate change and climatic abnormalities, is a central theme in self-reliant living. As such self-reliance becomes a flexible conceptual framework as well as a practical tool for human survival activities depending on the conditions of a given place at a given time.

We define self-reliance as a state that communities exposed to climate change can pursue to become sustainable. It implies living on their own accord pursuing an ethically righteous socio-economic culture in harmony with nature.

Self-reliance is a self-regulating edge for (of?) practicing sustainable development in its full meaning, context and dynamics.

The paper develops the above notions about the significance of self-reliance or self-reliant living in the contexts of living on the edge of climate change. It reveals that (re)achieving lifestyles in harmony with the principles of self-reliant way of living as indicated above can be a sustainable pathway to be a natural retreat from the edge of climate change, for

Both human and nature need to adapt various styles to sustain their respective sustainability. Self-reliance is an innate style of human living, while climate change is a style of nature's sustainability maintenance. Both go hand in hand and exist in a synergistic relationship. More the global societies or nations can live self-reliantly in meeting their basic needs by means of sustainable production and consumption, more natural climate change scenarios are likely to prevail. This implicates that livelihood has to be inherently carried out by art (i.e. self-reliance) and ethics (i.e. values) of production and consumption, both for present living and allowing future generations to also live sustainably. In other words, more easily human can coexist with nature, more it is likely that nature would reciprocate. Wisdom calls it: As you sow, so you reap. Thus, achieving self-reliance or self-sufficiency in itself is a form of resistance. It seeks to oppose to the present mode of economic and technological globalisation that tend to harm nature, and most importantly, rarely acknowledges the cultural wisdom and values, and wealth of the land in which globalisation operates (Bowers, 2006: 102).

It is only people who are rich in values and local wisdom are persuaded to lead their lives within the available renewable resources. Even when the available resources are in abundance, they would not still go beyond their traditional consumption culture/spirituality: 'eat less to let others to survive; no over consumption and no wastage.' This spirituality for caring nature in diverse ways including respect and naturalism for the sake of both present and future sustainability for all in nature is apparent in their way of living and thinking. Importantly, these practices tend people to live simply – the key to retreat from consumerism and addressing adversity by way of resilience improvement. According to Gandhi's philosophy, living simply or simplicity refers to modest consumption and material possessions, resenting consumerism, for consumerism leads to: "The more I have, the less I am" (Joshi, 1993: 53).

Achieving self-reliant living is a iconic parameter of sustainable development. Sustainable development in terms of optimum or minimum ecological footprint is related to the total area of productive land required to support one's lifestyle. Self-reliance clearly requires least footprint to produce local consumable resources. In other words, in order to live in the state of self-reliance, one needs to have a sustainable livelihood for oneself and also to support the livelihoods of others in one's socio-environmental vicinity. Thus, self-reliance with simple living is essential for sustainable living and the prospect of sustainable development (Lemons et al., 1998: 136-37).

Judging from the above inputs, values vis-a-vis spirituality-driven simple and self-reliant living is clearly a way forward for retreating from the edge of cur-

rently occurring unsustainable development that can cause unnatural climate change. For the last two centuries, consumerism-driven international development with nature damaging technologies has created a lot of environmental and social damage. Changing the direction of development towards self-reliance implies commitment and work on capacity building. This has helped indigenous and traditional societies to survive in their changing environmental circumstances. In this age of rapid climate change, the traditional pathway to meeting survival needs to be encouraged globally in order to tackle unnatural climate change.

Finally, in the absence of a proven policy framework to prevent human made climate change, it is crucial to consider a policy network at national and global level that is capable of retreating people from the present culture of wasteful exploitation towards the culture of traditional self-reliant and simple living. A full-fledged comprehensive curriculum for sustainability education focusing on the know-how of acquisition of social, economic and environmental values for the countries that lack such education has to be addressed first. There is an utter urgency for this, especially to encounter the counter-productive aspects of the present form of education promoting consumerism.

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Linking Folklore to Agricultural Sustainability Accounting in Bangladesh

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ABSTRACT

The Bangladeshi folklore cultural heritage embraces a myriad of proverbs, adages, wisdom sayings, folktales and folksongs, including the songs of the Baul mystic minstrels. Many are linked to various aspects of agriculture – from tilling to harvest, storage of yields and consumption. The paper draws on this folklore to develop the concept of traditional sustainability accounting in agriculture. Although without formal quantification, these proverbs and songs guide agricultural practices in rural Bangladesh maintaining a socio-economic system that promotes sustainable activities and counteracts the damage caused by the Green Revolution in the 1970s. In recent years Bangladesh has achieved many of the Millennium Development Goals but has also witnessed environmental deterioration. An agro-ecological management informed by folklore and traditional wisdom has the potential to transform the country's progress along the lines of the new UN Sustainable Development Goals.

Keywords: Agriculture, Bauls, culture, folklore, kindness, modesty, resilience, sustainability accounting, traditional knowledge, value principles

INTRODUCTION

Being a complex phenomenon, folk or mass culture was created during pre-industrial times through face-to-face personal interactions in the organic village communities of small-scale, predominantly agrarian societies where communications were mainly oral-aural, visual, direct, shared and enjoyed by most people (Briggs, 1990). This popular culture developed a large body of shared knowledge and beliefs through vernacular expressions as well as practices described by the term "folklore". Although there is not one clear-cut definition of folklore, what is represents or comprises (Bendix and Hasan-Rokem, 2012), there is wide-spread understanding that it is shared by a group of people who share some common characteristics, such as belonging to a particular ethnic, national, religious or spiritual community. According to Bauman (1990), folklore is recognized for its durability and social efficacy. Albala (2013) points out the importance of folklore in anthropology, religious studies, literature, arts and most other humanities disciplines as well as for public policy, community development, social justice, cultural interpretation and education.

In many industrialized societies folklore might seem to have lost its social importance and may appear to be anachronistic or belonging to the past. This however is not the case in rural Bangladesh where unwritten stories and tales, proverbs and wisdom sayings, folk and spiritual

songs, beliefs in myths and legends, adages and riddles together with many other expressions of folklore continue to be created, believed, valued and used by the folk masses. The Bauls – saintly mendicants, mostly unlettered singing gurus, are very popular in rural Bangladesh and their poetic, musical and philosophical talent is often seen as being at the root of the Bengali folk culture (Hossain, 1991; Hossain and Marinova, 2009a). Combining principles from Hinduism and Islam (Chaudhury, 2013) as well as Christianity, Buddhism and any other spiritual path (King, 2008), the Bauls are unique in socio-religious syncretization. The famous Lalon Fakir "used to say that... the only religion he believed in was humanism" (Chaudhury, 2013, p. 5). In 2005, the Bauls were recognized by UNESCO (2008) as part of the intangible heritage of humanity as they have been influencing the popular culture of Bangladesh for centuries.

Because of their lifestyle and experience, the Bangladeshi rural people rely more on the guiding messages embedded in their folklore with which they are familiar, than on modern knowledge to which they have more limited access. Being an inherently oral tradition, folklore is transmitted from one generation to another. It offers common perspectives and allows people with diverse backgrounds and occupations to live in socio-cultural unity.

A very good example of this is food and its production through agriculture (Albala, 2013). This paper explores the link between folklore, agriculture and traditional sustainability accounting. Food production is required for human survival but agriculture is also the foundation of the national culture of Bangladesh. The following proverbs clearly state these links: "No culture without agriculture"[1]; "There is no living culture where there is no agriculture"[2] and "As is a nation's dependence on agriculture, so is the dynamic strength of its culture"[3]. This kind of proverbial wisdom sends powerful messages not only about the synergy between culture and agriculture but also that food production needs to be strong and maintained in order to sustain Bangladesh. It puts agriculture at the core of the long-term development of Bangladesh and links this to future goals and aspirations. The remainder of the paper draws on folklore to convey the links between agriculture and popular wisdom, accounting for sustainability and development goals for Bangladesh.

FOLKLORE AND AGRICULTURAL PRACTICES

Not only are culture and agriculture from a similar linguistic root but cultivation also comes from the past participle *cultus* of the same Latin verb *colore* which means "to till, cultivate, dwell, inhabit, worship" (Brosius, 2001, p. 114). This also includes care, reverence and adoration (Brosius, 2001). With their soul stirring songs, the Bauls who are simple, natural, unembellished, rooted in the soil environmentalists in their beliefs and practice, take the folk listeners close to nature. A Baul song also links culture and agriculture to nature and sustainability: "Agriculture causes culture – please understand this; and culture upholds the sustainability of soil, water, air and biodiversity"[4].

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[1] Krishi sara kristy nai (in Bangla).

[2] Krishi nai jekhane, krishti nai shekhane (in Bangla).

[3] Je jatir Krishi nirvorata je rup, se jatir krishti se rup (in Bangla).

[4] "Krishite kristir sristi, jene rekho bhai; Kristi rokkhe mati, jol bayu ar jiva kuler thai" (in Bangla).

Bangladesh is a country highly dependent on agriculture. Agricultural produces are not only the main source of food, but also the inputs to many industrial and commercial activities for the country's rural people. Many trades people who make or repair the diverse agricultural gears are also directly and indirectly involved and dependent on farming. The farmers together all workers in the rural areas, including carpenters, blacksmiths, weavers, producers of edible oil, barbers and crafts people, are creators, practitioners and sustainers of folklore. As the entire process of crop production depends on favourable climatic variables associated with rainfall and sunshine, the condition of the soil and availability of water, many folksongs, folktales, proverbs and adages link the ecological environment to agricultural techniques, such as tilling, harvesting, storage of yields and consumption rules. For example, Khonar (referred to also as the Khona) is a mythical woman who advises the farmers about what should be done and what not.

The agricultural folklore of the Khona was composed a thousand year ago, but still guides the farmers in their practices (Table 1 includes examples from the Khona's folklore[5]). Contemporary agricultural techniques also acknowledge the Khona's adages (Bachon) as appropriate as well as the wisdom of Rabon[6]. The Khona and Rabon are mystical people and their adages are part of the traditional ecological knowledge of Bangladesh which the rural folks continue to sustain.

Folklore is dynamic and not only maintained but constantly being created and recreated in response to present day influences. This is particularly the case with agriculture where the pressures of the Green Revolution of the 1970s have triggered unsustainable use of resources and negatively impacted rural livelihoods (Shiva, 2016). As with many traditional communities around the globe, in order to survive rural folks in Bangladesh have "to adjust to the pressure of change, reinforce true and private environments, incorporate and modify foreign cultural elements to make them theirs" (Silva, 2001, p. 303). They need to maintain "the long-term productivity of the system in an environmentally conserving and safe manner coupled with economic viability, social justice, and equity for the grower" (Raman, 2006, p. xvii).

Table 1. Examples of the Khona's and Rabon'sagricultural folklore

English	Bangla
Do	
When planting mango and jackfruit seeds, the farmers can relax. They require fertilizer only twice a year in order to give high yields.	Am kathal rue, thakge chashi shue. Bosore duibar dibi shar, dekhbi tobe foler bahar.
Rabon calls people to plant bananas in the months of June and July. After planting 360 plants, the famer can sleep at home.	Dak die bole rabon, kola lagabi Ashar srabon. Tin soto shat kola rue, thako grihastha ghare shue.
Plant banana trees at 18 inches depth and every 4 meters. This is the best method.	At hath ontor ek hat khai, kola poth ge chashi bhai. Dhorle poka dibi chai, er cheye valo upai nai.

[5] All Khona sayings are quoted according to Faruq and Lucky (1995).

[6] A folk poetic philosopher in Bangladesh.

Deep tilling with a strong oxen fulfills the farmer's expectation.	Shobol gorur govir chash, tate pure chasha ash.
Build the house not too high, buy a small size cow, marry a dark-complexion woman, all these are good for the peasant.	Ghar badho khato, gai kino chhoto. Bou koro kalo, tai grihaster valo.
Do not do	
After planting a banana tree, never cut its leaves.	Kola rue na kato path, tatei kapor tatei bhat.
After planting bananas in the month of August, Rabon the farmer suffered a heavy loss.	Vadra mashe rue kola, Sobongse molo rabon shala.
Farmers who use cattle for tilling in a full moon and a dark moon, their cattle would suffer from rheumatism – Khona strongly warns about it.	Purnima Amaya je dhore hal, tar dukkha chiro kal. Tar boloder hoy bath, ghore tar thake na hath. Khona bole shuno bani, je choshe tar hobe hani.
Those who till the land with a she-cow, would suffer from lifelong poverty.	Gai die bohe ha, tar dukkha chiro kal.
Advice	
Rice production is double if planted in the first rain during – March–April. If potol (a vegetable) is planted in February, its production would be double.	Baishakher prothom jole, Aus dhan digun fole. Bunle potol falgune, phol bare digune.
Radish requires 16 times tilling of land, cotton requires half of this, rice requires half the tilling of cotton, and no tilling is required for betel leaves.	Sholo chase mula, tar ordhek tula, tar ordhek dhan, bina chashe pan.

Source: Faruq and Lucky (1995)

There are many present-day folklore teachings that relate to agriculture and culture. For example, Baul guru Aziz Fakir says that as mono-cropping destroys fertility, productivity and soil resilience, so does the mono society. A mono society does not practice diverse social activities, sociality and spirituality. By comparison, as multi-cropping systems can benefit the soil, productivity and the environment, a multicultural society can generate social harmony, cohesion, resilience and unity amidst diversity.

TRADITIONAL SUSTAINABILITY ACCOUNTING IN AGRICULTURE

As a contemporary academic discipline and practice, accounting reports mainly quantitatively on "a particular aspect of human activity, mainly from a financial, business or economic perspective" (Khan et al., in press). Accounting can also be understood as an information system which describes increases and decreases in resources represented as financial transactions (Doğan et al., 2013). Sustainability accounting as a more recent effort in reporting human activities relates not only to economic health but also to state of the environmental wellbeing and the wellbeing of society as a whole (Khan et al., in press). A previous analysis of the traditional knowledge and wisdom of the Bauls generated a new interpretation of sustainability reporting which is usually done along the lines of integrating economic, environmental and social aspects,

namely modesty in consumption, kindness towards the non-human world and resilience to cope and withstand changes, calamities and shocks (Khan et al., 2015). This paper explores further the role of folklore in maintaining sustainability accounting in agriculture – the most ubiquitous and important human activity (Raman, 2006, p. 1).

While in the developed West, folklore may be seen as remains from old pre-industrial culture that continue to exist in the less-educated lower sections of society (Noyes, 2012), from a sustainability perspective it represents the most enduring traditional knowledge that can inform past, present and future generations. This continuity of shared values and practices is particularly important in order to understand the importance of sustainability accounting in terms of reporting activities that support self-reliance and respect for nature and all its beings.

Agricultural sustainability accounting deals primarily with the issue of food security for the farmers and the remaining population of Bangladesh in relation to a range of conditions that could influence related activities of production, storage, processing, transportation and distribution. Countless folkloric proverbs, adages, wisdom, folktales, folksongs and chants, including Baul songs, are linked to the various aspects of agricultural management and accounting. The way they deal with these issues however is not through quantitative reporting but through guidance. Kahn et al. (2015 and in press) summarized these guidance into sustainability accounting value principles which can potentially create a different economy and agricultural production – "one that can restore ecosystems and protect the environment while bringing forth innovation, prosperity, meaningful work and true security" (Khan et al., 2016, in press). These value principles are: kindness – using without destruction, modesty – consuming less to save for others, and resilience – being self-reliant and strong to overcome adversities.

Kindness in agriculture

The kindness principle applied to agriculture refers to the way the resources of the planet– its soil, water, sun, flora and fauna, are used for food production to sustain human life. Technologies and knowledge play a major part in food production. For example, the technologies of the agricultural Green Revolution introduced by the industrialized countries in Bangladesh, including high-yielding varieties of rice and other grains, hybridized seeds, intensive use of irrigation, non-organic fertilizers and synthetic pesticides (Farmer, 1986), largely overshadowed the local agricultural accounting practices. They created major changes in the natural ecosystems and agrarian structures. In many ways, the Green Revolution not only disregarded the folkloric wisdom of rural Bangladesh but also broke down long-lasting traditions. According to Shiva (1993, p. 63):

> For 10,000 years, farmers and peasants had produced their own seeds, on their own land, the best seeds, storing them, replanting them, and letting nature take its course in the renewal and enrichment of life. GR plant breeding strategies of maintaining and enriching genetic diversity and self-renewability of crops were substituted by new breeding strategies of uniformity and non-renewability, aimed primarily at increasing transnational profits and First World control over the genetic resources of the Third World.

The Green Revolution replaced traditional sustainability accounting with modern agricultural practices that promised and showed a lot initially but were not able to sustain the higher yields without compromising the ecology (Siddiqui et al., in press). These technologies were not kind,

but violent to the environment and other species; they were not kind to rural Bangladeshi people either. The Green Revolution methods and technologies cannot compete with the quality of crops, such as rice, wheat pulse, maize or jute, in terms of resistance to diseases, paste, salinity and drought as well as in quality in taste and content of nutrients (Shiva, 2016). They enticed the farmers to abandon traditional practices replacing them with intensive application of mechanical cultivation, clearing of forest land, extraction of underground water for irrigation, application of chemical fertilizers and highly toxic insecticides, pesticides and herbicides as well as the use of water-intensive mono-cropping.

On the other hand, the Khona as the traditional agricultural science translated through folklore is meant to ensure the long-term sustainability of agriculture. New agricultural folklore, especially folksongs, is emerging composed by spiritual leaders, such as the Baul philosophers, encouraging rural people to return to traditional agricultural knowledge. An example is Harun Baul's song:

> Do not do modern farming,
> it is not sustainable,
> return to Khona's knowledge,
> it is incomparable[7].

The Bangladesh agricultural scientists are now re-adopting the folklore-based agricultural accounting wisdom. A most notable example of this is Integrated Pest Management (IPM), which is largely based on local knowledge and represents a scientific innovative approach to pest management. The value principle of kindness inspires traditional rural societies to recognize the importance of natural biosystems in providing an ecologically self-reliant lifestyle (Hossain and Marinova, 2009b).

This is also the pathway that can reverse the culture of destruction of nature and society (Hossain et al., 2014). Bangladesh, including the country's poorest people, are often exposed to high environmental risk, including climate related calamities. Their however possess rich environmental values, kindness and respect for nature. In fact, a comparative study shows that the environmental values of the Bangladesh population are higher than in other parts of the world (Ngwenya, 2015) and the country's rural people practice sustainability accounting guided by the value principle of kindness. As Lalon Fakir sings:

> Do not proceed through conjectural path. It has fatal pitfalls.
> Identifying a sustainable path, proceed diligently.
> Intention results in right or wrong.
> Sail on a boat of commitment, and go ahead to overcome adversities.
> Lalon says, you can then accomplish your goal[8]

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[7] Baignanik abad ar korona
A abad kokhono teksoi hoy na
Khonar bochone fire cholo
Khonar gnaner nai tolona (in Bangla).

[8] Jeo na andaji pathe, o mon rasana.
Kupanke kupanche pole, praan bachbe na.

Modesty in agriculture

Conventional agricultural accounting "primarily records financial and monetary transactions throughout agricultural activities" (Doğan et al., 2013, p. 108) and ultimately aims at assisting strategies that promote increased food production and avoid decline or loss of produce. Generally, accounting uses sophisticated information systems which combine financial data on all activities. Accounting information systems are considered essential for the operation of any business because of their role in informing decision making. In fact, they are also deemed to be the best within any organization (Sürmeli et al., 2006) requiring a lot of investment for their development and maintenance. By comparison, conventional accounting information systems in agriculture play an insignificant role (Doğan et al., 2013) as agriculture is dependent on and affects many factors which cannot be monetized. These user-oriented systems provide data and information only about economic impact (Salehi et al., 2010) while agricultural accounting should deal with the sustainability concerns of farmers related to the changing environmental, ecological, cultural and social conditions of food production.

Traditional sustainability accounting practices also need to provide insights for the present and future generations. In Bangladeshi rural communities, the accounting information needs to be communicated to people who are often formally uneducated. Traditional agricultural folklore provides the most needed information for sustainable accounting practices that take into consideration the present and future eco-agricultural sustainability of food production. Folklore gives a sound basis for accounting beyond self-interest and is encouraged by the country's Baul philosophers who also inspire sustainable lifestyle in harmony with nature and other living species.

Food is the most basic of all human needs. Modesty in agriculture refers to being moderate and fair in using the planet's resources for food production as well as in personal consumption. Agriculture is a way of life in rural Bangladesh where people people are guided by folkloric and religious influences, including the Khona's do's and do-not-do's (see Table 1). Furthermore, religion does not obstruct celebrating the Bengali New Year's Day or the Annual New Food Day, but it bans squander and wasteful din and bustle (Nabi, 2003).

The Baul songs also encourage modesty in consumption, a non-cash economy and finding joy and satisfaction in spiritual ways of living. They promote the ethics of sustainable consumption based on belief in an optimistic future counteracting the many western messages. This folkloric spiritual culture can complement the complex aim of achieving sustainable development. An example is Harun Baul's song:

> No insufficiency in the rural treasure of Bangladesh.

Pather parichoy kare,
Jao na maner sandeh mere,
Laav lokshan buddhir dare Jabe jana.
Anurag tarani choro
Dhar chine ujan dhoro
Lalon bole karte paro mul sadhana (in Bangla).

Belief is the means of material goods.[9]

Resilience and agriculture

The Green Revolution and its technologies caused a sharp decline in the self-reliance of many communities as well as detachment from nature. Subsistence agricultural practices were destroyed in countries, such as Bangladesh, which caused dependence on foreign aid and technologies (Schumacher, 1974; Willoughby, 1990) and diminishing sustainability prospects (Rogers et al., 2008). The industrial model of food production is currently employed in the West not only for crops and plant-based foodstuffs but also for animal rearing. This has resulted to excessive meat consumption in countries, such as USA and Australia triggering an epidemic of health and environmental problems (Raphaely and Marinova, 2016).

Bangladesh and its rural communities have so far avoided the burden of meat dependence (Hossain, 2016) and are currently restoring their self-reliant traditional agriculture. This builds resilience as the best way to adapt to social and environmental changes (Xu et al., 2015). A proverb says that rice in the granary and songs in people's throat are the main assets of a Bengali. Further resilience advice comes from the Khona in relation to the village homesteads:

Pond in the East, bamboo in the West, banana in the North, open space in the South[10]

and

Do not block sunshine and wind – do not die of sickness and suffering[11].

Within the villages of rural Bangladesh, all family members are engaged in various agricultural operations necessary for nutrition, including rice and cash crops, gardening activities, poultry and cattle raising. The predominant observed characteristic is that of social cohesion. It reinforces the culture of social resilience through sharing, caring, respect and responsibility within the family unit but also within the village community. People are closely linked to each other in meeting their material needs, in happiness and miseries. Diversity of skills and knowledge is essential for long-term survival and prospering. A popular proverb reveals:

The village which has people from 36 occupations,
the wind from heaven flows there[12].

In the context of rural Bangladesh, culture is agriculture-based and agriculture is integrally linked to folklore for agricultural education and practices. The overarching need for folklore-guided agricultural accounting practices is integral to people's sustainability. There are two interrelated aspects of understanding the role of folklore to agricultural sustainability accounting. The first is folklore as the source of developing knowledge, beliefs, values, attitudes and understanding; and the second is its role in guiding the way of life including consumption habits and technology use. Therefore, agricultural accounting is both the message and the medium of

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[9] Gram banglar gram vandare bhai, kono kisur ovab nai
Sethai biswase malai vastu, itihash proman dayi (in Bangla).

[10] Purbe hash, poschime bash, uttore kola, dakkhine mela (in Bangla).

[11] Alo Haoa bedho na, roge voge moro na (in Bengla).

[12] Je grame asse 36 jatir bash
sethai bohe sorger batash (in Bengla).

sustainability. It is part of rural culture and hence "contains inherent values, means and the results of social expression", enfolding every aspect of life (Hawkes, 2001, p. 3).

FOLKLORE AND DEVELOPMENT GOALS

In September 2015, the United Nations adopted a set of 17 global goals for achieving sustainable development. They aim to "to end poverty, protect the planet, and ensure prosperity for all as part of a new sustainable development agenda" for the next 15 years (UN, 2016, n.p.). They came into force as of 1 January 2016 and represent a continuation of the Millennium Development Goals agenda in which Bangladesh achieved outstanding and remarkable progress (GED, 2015).

In order for the country to perform in a similar way along the new Sustainable Development Goals (SDGs), it is important that this agenda links to the values systems of rural Bangladesh. Despite recent urbanization and higher rates of migration to the cities, the villages of Bangladesh still provide livelihood to 70% of the country's population (UNICEF, 2013). Bangladesh's overall literacy rate is 58% (UNICEF, 2013) and the majority of rural people are formally uneducated and rely on oral traditional knowledge. Traditional sustainability accounting shaped by folk culture and folklore is likely to continue to make strong contribution in the country's future development, including progress towards achieving the SDGs.

Figure 1 represents a diagram that links the 17 SDGs with the three value principles of traditional sustainability accounting. At the core of the value principles is SDG 11 which relates to human settlements and sustainable communities as sustainability in its essence is about how people live. This is the goal where folklore has the most impact by shaping culture and people's values, knowledge and actions. In other words, folklore is at the centre of the sustainability agenda for rural Bangladesh. Each of the three value principles (Khan et al., 2016) shapes predominantly five SDGs as follows:

- *Kindness* which largely represents environmental protection and improvement – SDG 6 Clean water and sanitation, SDG 7 Renewable energy, SDG 13 Climate action, SDG 14 Life under water and SDG 15 Life on land;
- *Modesty* which largely represents economic development – SDG 1 End poverty, SDG 2 End hunger, SDG 8 Good jobs and economic growth, SDG 9 Innovation and infrastructure and SDG 12 Sustainable consumption; and
- *Resilience* which largely represents social development – SDG 3 Good health, SDG 4 Quality education, SDG 5 Gender equality, SDG 10 Reduced inequalities and SDG 16 Peace and justice.

The overarching goal which brings together all areas and countries across the globe is SDG 17 Partnerships. According to the United Nations Development Programme (UNDP, 2016, n.p.), this goal "can only be realized with a strong commitment to global partnership and cooperation". Bangladesh is very well placed to establish such partnerships and in today's interconnected world this will allow for mutual enrichment and collaboration based on the shared values principles of sustainability accounting.

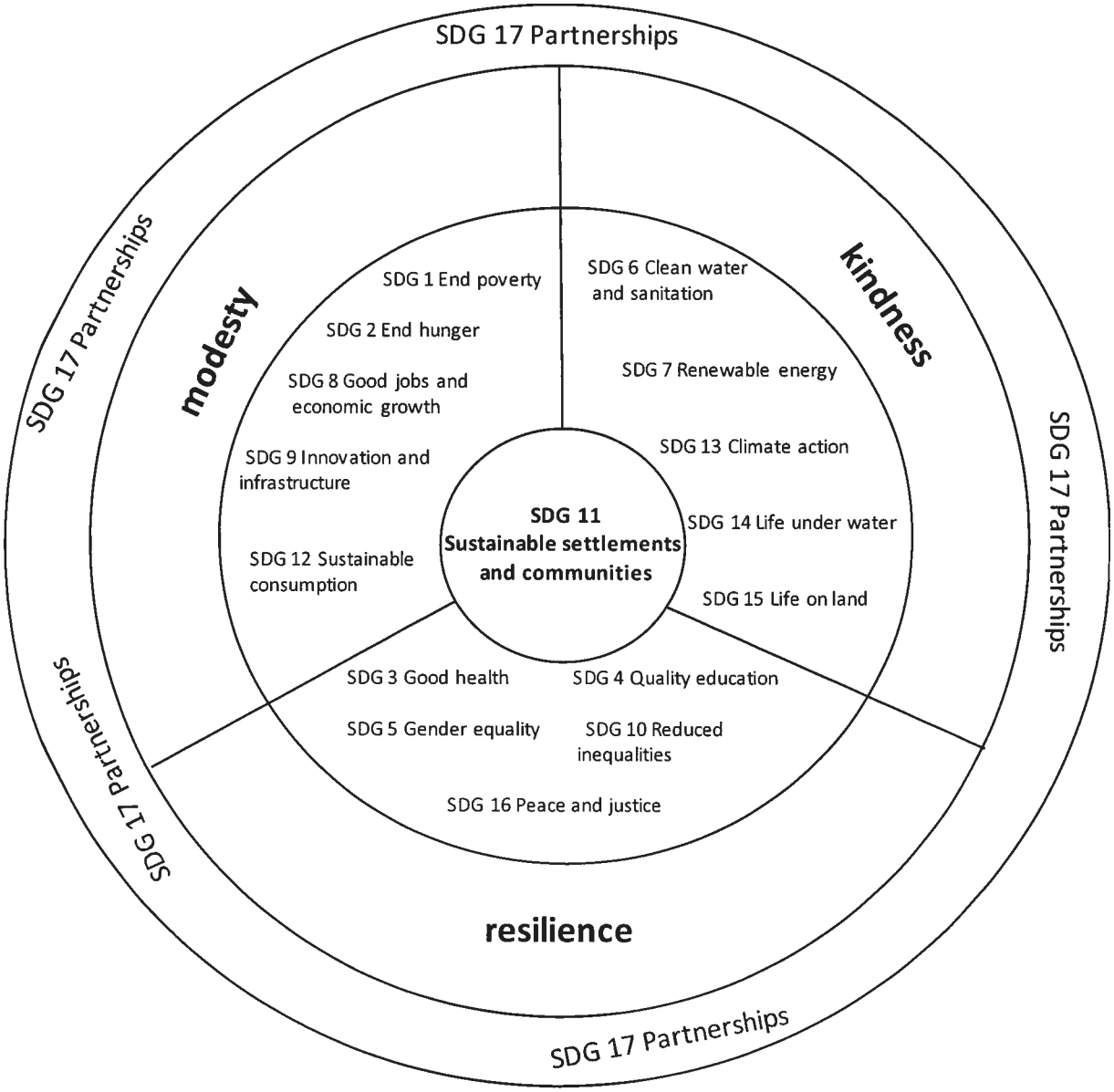

Figure 1. Sustainable Development Goals (SDGs) and traditional sustainability accounting value principles

CONCLUSION

The simple yet powerful proverbial wisdom of Bangladeshi folklore helps rural people understand food production, culture and sustainability through a spiritual window. In the domain of folklore, agriculture, culture and sustainability are all interlinked. Folklore being the carrier of the Bangladeshi culture is linked to every step of the agricultural accounting process through rural beliefs, customs, rituals, myths, legends, tales, rhymes, songs and riddles. Countless folkloric proverbs, adages, wisdom, folktales and folksongs, including Baul songs and the Khona Bochon, guide various aspects of agricultural accounting and management – from tilling to harvest and storage of yields to ethics of sustainable consumption.

Without formal quantification, these proverbs and songs guide agricultural practices in rural Bangladesh maintaining a socio-economic system that promotes sustainable activities and counteracts the damage caused by the Green Revolution in the 1970s. The three value principles of sustainability accounting, namely kindness, modesty and resilience, are highly informed by the country's folklore allowing traditional agro-ecological sustainability management. They help revitalize agricultural traditionalism as an important sustainability aspect of looking after the health of the land and its people.

Through the period of the Millennium Development Goals, Bangladesh achieved substantial progress in its economic and social developmental targets. The country is now on the pathway of the new Sustainable Development Goals. Folk culture is at the core of not only achieving the SDGs in rural Bangladesh, but also in re-shaping the way we view the world and the opportunities for living sustainably.

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Sustainability Accounting for Carbon Neutral Living in Bangladesh

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Abstract
As a new discipline, sustainability accounting attempts to reconcile the human impact on the environment with economic and social perspectives. This western concept is yet to achieve this objective. On the other hand, evidence from Bangladesh shows that people live with a very light carbon footprint guided by principles of modesty and simple living which is their way of accounting for sustainability.

The paper interprets beliefs and practices of the rural people of Bangladesh arguing that a cultural dimension is extremely important in sustainability accounting. In the 1970s, the Green Revolution introduced many changes in the fabrics of the Bangladeshi society which left social and environmental scares. The future of this predominantly rural country however now lies in its spiritual roots where the teachings of the Baul philosophers empower people to care and be responsible for others and nature. Traditional accounting precepts and practices for sustainability upkeep can be a solution to the emissions led sustainability problems, even globally.

Keywords: accounting, Baul philosophers, carbon, Green Revolution, spirituality, sustainability

Highlights *(max. 85 characters - this is required to be submitted as a separate file)*
• Bangladesh is naturally a carbon neutral country
• The carbon intensive Green Revolution weakened Bangladesh's sustainability
• The rural Bangladeshi people pursue sustainability accounting for carbon neutrality guided by the Baul philosophers
• Informal and traditional sustainability accounting can be a model for global paradigm shift

1. Introduction

Sustainability accounting emerged two decades ago with the attempt of the accounting discipline to reinvent itself outside the area of finances [1] and make an input for "improving social justice and contributing to social and environmental benefits on a global level" [2:11]. This resulted in the reporting framework, known as the triple-bottom line (economic, social and environmental) or triple Ps (planet, people and profits), adopted by the private sector as a commitment to corporate social responsibility as well as by the public sector with the guidance of the UN, International Council for Local Environmental Initiatives (ECLEI) and the Global Reporting Initiative (GRI).

Greenhouse gas emissions, including CO_2, are a major component of the environmental aspects of sustainability accounting as it is widely accepted that they cause deterioration in the environmental, social and economic conditions on earth [3]. As accountants have been balancing books for centuries now, the concept of balancing carbon[1], that is carbon-dioxide

[1] As scientists study the carbon cycle, they usually refer to carbon. However greenhouse gas emissions, including those of carbon dioxide or CO_2, are the ones associated with climate

equivalent gases, is not that different in its essence. However, what the science of climate change has shown is that the surplus of carbon as a result of human activities is generating debilitating living conditions and posing existential threats to life as we know it. Hence the need to achieve a zero carbon balance or carbon neutrality – in other words, conceive, measure and remove from the atmosphere as much carbon as generated by individuals, organisations, businesses and society as a whole in excess of the natural absorption capacity. This is also described as having a zero carbon footprint.

While there is still a lot of disagreement and debate as to how carbon can be counted [4] and how environmental costs can be factored into the financial results of operation (the latter being described as environmental, green or ecosystem accounting [5,6,7]), what is very clear is that countries are producing distinctively different carbon footprints. In this paper we look specifically at Bangladesh and make the argument that the country's current almost carbon neutral life needs to be understood and supported as an example of sustainability. Its roots are in the spirituality of the Bangladeshi people. Any sustainability accounting cannot properly represent the reality on the ground unless it takes into account the cultural specifics of the place.

The paper is structured as follows. We first explain the methodology of the analysis; this is followed by some recent scientific evidence around the theory of anthropogenic climate change. The results section analyses Bangladesh's contribution to the current global ecological scenario and the discussion explains as to why this populous country has such a light environmental footprint. Lessons from the analysis and some concluding remarks are presented in the last section.

2. Material and methods

The analysis presented here is predominantly qualitative and builds on previous research as well as on publically available data. According to Blackburn [8], science has claimed a lot of territory as its own generating large amounts of data, biophysical and statistical evidence and this is clearly the case with climate change. However, how these data are interpreted, what explanations are put forward is an area where policy studies (as well as philosophy) can make important contributions. In the case of sustainability accounting, the way we understand society and the role of carbon, can lead to significantly different ways of behaving towards each other in everyday life, business, within society as well as in international negotiations aimed at arresting global warming and improving quality of life.

The need for such spirit of interpretation, re-interpretation and reflection when examining existing evidence, is also incorporated in the OECD Frascati manual's technical definition of research and development (R&D) as the use of the existing stock of knowledge to devise new applications [9]. These new applications would vastly differ depending on the applied cultural lens. For example, it is inappropriate to assume that sustainability accounting in rural Bangladesh could take the same meaning and form as it is the case in the developed parts of the world. In fact, what western accountants are formally trying to capture, measure and represent is often common wisdom in people's thought and action in Bangladesh. "Look

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change. In everyday language, including the media and for policy purposes, the two terms – carbon and carbon dioxide, are used interchangeably with reference to climate change. Although scientifically it is more correct to use carbon dioxide, we also use the two terms as synonyms.

before you leap", "save a little before you use" and "the less you consume, the longer you live" are this country's fundamental guidelines for rural sustainability and accounting.

In addition to the scientific evidence, we use the oral traditions of Bangladesh, including the songs, discourses, story telling and religious summons of the Bauls (the country's singing philosophers proclaimed by UNESCO as masterpieces of oral and intangible heritage to humanity [10]), the wisdom of the elders, drama and cinema performing arts, local newspapers, debates on radio and television. This material has been collected through experience and observation during numerous field trips in rural Bangladesh [11,12,13].

3. Theory and evidence

The underlying theory for the need for carbon accounting is anthropogenic climate change, namely the human contribution to climate change through the excessive greenhouse gas emissions trapped in the Earth's atmosphere. This has many manifestations ranging from increasing temperatures, increasing frequencies and magnitude of extreme weather events, a rise in sea levels, changes in precipitation patterns, retreat of glaciers to species extinctions, ocean acidification and loss of habitat.

The science of global warming is unequivocal [3] and there is supporting evidence appearing on a regular basis that confirms and reassesses the changes at a global scale or at a regional level. In 2013, a large international study of the global carbon cycle [14] presented a thorough assessment of anthropogenic carbon dioxide (CO_2) emissions and their redistribution within the atmosphere, ocean and terrestrial biosphere. Its authors, representing 10 developed economies, concluded that globally for the decade 2002–2011, 89% of the total emissions were caused by fossil fuel combustion and cement production and 11% by land-use change (including afforestation, deforestation, logging, shifting cultivation – cutting forest and clearing for agriculture then abandoning, regrowth of forests following wood harvest or abandonment of agriculture, fire-based peat land emissions and other land management practices [14:170]). By the end of 2011, CO_2 in the atmosphere reached 391 parts per million (ppm) from approximately 278 ppm in the pre-industrial era [15]. In May 2013, at Mauna Loa, Hawaii it reached for the first time the 400 ppm cornerstone [15], making the aim of many environmentalists to arrest climate change a non-achievable mirage. The same "tipping point" or "red line" was achieved in the Southern hemisphere at Cape Grim in Tasmania in May 2016 [16].

Where does Bangladesh fit in this run-away climate change reality? Situated in the low-lying river deltas of the Ganges (Padma), Meghna and Jamuna (Brahmaputra) with a population of 157 million [17], the country is likely to be the one most severely affected by the consequences of global warming [18]. The British risks analysis company Maplecroft's evaluation of 170 countries identifies Bangladesh as facing the greatest climate change threat to its population, ecosystems and business environment. The country's extreme vulnerability includes exposure to natural disasters and sea-level rise, impacts on natural resources, agriculture, infrastructure as well as the high levels of poverty and the government's lowest adaptive capacity to combat climate change and potential conflicts [19]. Sustainability accounting however looks not at the consequences but at the contribution or responsibilities that Bangladesh has in relation to this.

4. Results

Bangladesh stands out among the other countries of the world with its low environmental impact and strong sense of community wellbeing. It is a country that holds optimism for the future as it succeeds to live very lightly on the planet.

4.1 Emissions from fossil fuel combustion and cement production

According to 2015 World Bank data on CO_2 emissions from the burning of fossil fuels and the manufacture of cement, Bangladesh's emissions are 0.4 tonnes per capita and more than 13 times less than the world average of 4.95 [20]. Compared with the top emitters (see Table 1), Bangladesh – a relatively populous country, has substantially smaller per capita emissions. Bangladesh has also maintained a similar level of emissions since 2006 despite making serious progress in development and achieving many of the Millennium Development Goals [21]. The country is not exactly carbon neutral as it is producing 51,037 kt of CO_2 per year – 0.14 percent of the global amount (despite representing 2.4 percent of the world's population [22]) – but is much closer to this than any of the developed economies.

Table 1. Per capita CO_2 emissions from burning fossil fuels and manufacturing of cement: top emitters, Bangladesh and the world, 2011–2015

Country name	**2011–2015**
Qatar	44.0
Trinidad and Tobago	37.1
Kuwait	28.1
Brunei Darussalam	24.4
Aruba	23.9
Luxembourg	20.9
United Arab Emirates	20.4
Oman	20.2
Saudi Arabia	18.1
Bahrain	17.9
United States	17.0
Australia	16.5
Kazakhstan	15.8
New Caledonia	15.2
Canada	14.1
Estonia	14.0
Russian Federation	12.6
Bangladesh	0.4
World	4.9

Source: [20]

Bangladesh also offers a lot of potential for renewable energy [13] – ranging from biomass [23] to industrial, agricultural and municipal waste [24] to solar [25] and wind technologies [26]. With only 41% of its population having access to electricity [20], the need for energy is fuelled by the demands of modern-day life, including mobile phones and satellite TV.

4.2 Land-use change

Changes in land use in Bangladesh have been closely linked to the agricultural development policy and the Green Revolution (GR) highly promoted and prioritised after the independence of Bangladesh from Pakistan in 1971 [27]. The period 1976–85 was the take-off stage of the diffusion of GR technologies which have been in stagnation since the 1980s [28]. Intensified agricultural land use facilitated by increased provision of irrigation infrastructure and the use of fertilisers, pesticides and high-yield variety (HYV) seeds of cereals, characterised the GR period [27] and its "seed-fertiliser-water" technologies. The Green Revolution inherently triggered emissions intensiveness directly and indirectly, and consumerism leading to resource depleting impacts, deterioration of water quality and opportunity for corruption. It impacted not only the land, but also the social and cultural fabrics of the Bangladeshi society affecting the natural, socio-economic, political and governance processes in the country. Although the GR technology increased food production, it also inflated the sustainability of the country with socio-ecological and spiritual debt. It created a wide range of problems, ranging from pollution of water bodies by farm chemicals, accelerated land degradation and increased pressure on water supplies, to loss of genetic variability and enhanced vulnerability in crops, spread of pests and diseases. The series of social and cultural problems include the widening of the economic gap between affluent and poor farmers as well as politico-cultural crises due to erosion in moral values [29,30]. Any sustainability accounting needs to also measure the social impacts of land-use changes and the social effects of new technologies.

Future land-use changes are expected to be relatively small in Bangladesh compared to other developing countries [22]. In fact, there is resurgence of traditional land cultivation practices that are more in harmony with the biophysical environment of the country. Furthermore, Bangladeshi people continue to maintain a low-meat consumption diet. This avoids the inefficient way of shifting plant-based calories from feeding people to animal feed (and consequent meat-based calorie intake) together with the associated conversion of large agricultural areas for this purpose [31]. Hence, this factor is unlikely to have any significant negative impact on the country's ability to achieve carbon neutrality.

5. Discussion

Sustainability accounting is a conceptual product within the western type development framework. Its aim is to make people aware of the natural and social limits of their activities and the need to conserve and protect the natural resources to meet people's basic needs now and into the future instead of over-exploiting them for profit [1]. However, it is yet to incorporate moral, ethical or cultural dimensions. According to May et al., "we do not have a theory of accountability that would support the overwhelming need for an accounting to the other rather than to self-interest" [1: 237].

By contrast, predominantly rural Bangladesh is guided by moral principles, including Ghandi's words "The more I have, the less I am" [32:130]. The concept of longevity (which is implied in sustainability) emphasises the increase of awareness about the country's limited natural resources. In other words, to rural people in agriculture intensive Bangladesh sustainability accounting is basically a spirituality-regulated measurement while pursuing livelihood activities. The prominent core-shared values between the country's living faiths (Hinduism, Islam, Buddhism, Christianity and animism) are pondering, modesty, saving, hospitality and tolerance to all in nature. Sustainability accounting is practiced through observing these values.

Since the 1990s and with globalisation, Western influences have been changing the socio-cultural landscape of Bangladesh encouraging higher consumption and larger environmental impact. Despite this the Bangladeshi society has managed to maintain a very modest carbon budget and its economy does not need decarbonisation in a way that the developed world does. In Bangladesh, Gandhi is followed in practice and people receive his teachings and other customary wisdom through the oral tradition and culturally provided practices.

The most popular approach to rural sustainability account keeping is the Baul philosophers' applied discourses on provisioning for 10% of yields as part of socio-ecological responsibility. It is also part of rural socio-religious and cultural values such as philanthropy, modesty, sacrifice and kindness. In Bangladesh culture 10% of any harvest is prescribed to be kept for others in need, such as fruit eating birds, animals and people without fruit trees [13]. The seeds of fruits are eventually spread over by the fruit eaters facilitating the growth of trees without formal plantation. However, in the case of crops, Islam as a code of life and sustainability [33], encourages people to distribute 5–10 percent to the needy persons. For example, the 2013 World Environment Day was observed in Bangladesh with the theme of "think, eat, save" [34] 'vebe chinte khai, opochoy komai (think, eat, save) suggesting that people should consider the implications from their consumption. This sustainability accounting can enhance environmental development and social equity in terms of food distribution, a major problem on a global scale [35].

There are three essential sustainability aspects in the Baul religion: naturalism, anti-consumerism and spiritualism. The Baul philosophers stress that due to the lack of socially and environmentally friendly energy technologies, the people of Bangladesh suffer in the midst of enough provisions of renewable energy [13]. According to Baul Fakir Lalon Shah: 'Lalon suffers from thirst while the river Meghna is at hand'. Harun Baul states that people now need to ask their own elders about what sustainable practices existed in the pre-1970 development era before the GR technologies. Baul Guru Aziz Shah (aged 104) tells his stories about 'golden Bengal' to his devotees and reveals that the practice of sustainable development is no different to practicing the Baul religion. The Baul way of naturalism is about caring and sharing – it teaches that humans should take care of nature's sustainability first and then share its produce with humans and others living beings. Anti-consumerism is about simple living and self-reliance [36]. Spiritualism is an inner human dimension by which people understand their role in society and the environment. It is ultimately about human responsibility. The Baul philosophers espouse the view that the rural people of Bangladesh have the capacity and ability to maintain a remarkably carbon neutral economy [37].

The culture of Bangladesh upholds a balance and a synergistic relationship between natural resources and human needs. Although Bangladesh is inherently a carbon neutral country, the wave of global carbon intensive development has created concerns deserving attention and it is not immune to the negative influences of globalisation. However, it is modesty that inspires people to live more sustainably; it gives them freedom from vanity and showiness. It encourages decency and moderation in production, consumption, speech, manner, dress, total attitude and behaviour towards life. The sphere of modesty in Bangladesh culture is so vast that it encompasses all aspects of human life and living. It also contributes to a modest carbon footprint. In fact, this country also has one of the lightest ecological footprints [38,39].

6. Conclusion

Despite serious concerns and efforts for "action for over two decades, the global rise in greenhouse gas emissions has yet to be arrested" [40:1]. As a way to address environmental and social consequences from human activities, sustainability accounting has a long way to go [41]. The hopes that it can guard against the social aspects associated with economic development may be difficult to justify [35]. In fact, it may remain a far-reaching endeavour unless people adopt a modest lifestyle guided by considerations outside their immediate self-interest. Globalisation on the other hand is "an uneven and unequal process" that can benefit some at the expense of others [42:204]. It has destroyed the age long cultural traditions in many countries, including the cultural heritage that encourages care and responsibility for others. Many question the validity of the development concept itself and the gap it creates between the poor and the rich [43].

It has been found that sustainability accounting can guard against ignoring of the social aspects emphasising that social aspects cannot be ignored, for sustainable development is the economic development that enhances ecological sustainability when social equity does prevail [18]. It also emphasizes on economic sustainability in order to ensure an improvement in the quality of life without causing an increase in the quantity of consumed resources [29].

The analysis of Bangladesh shows that if spiritual cultural practice prevails, the outcomes are very close to a carbon neutral world. Sustainability accounting does not need to be invented; it has always been part of the culture and tradition of the country. Natural resources satisfy people's biological needs (food, shelter, clothing and contentment) while cultural integrity is required to upkeep their spirituality (spiritual health) in order to uphold the country's natural resources. According to the Bauls, spirituality is an inner human dimension by which people understand their role in society and environment. The philosophy of carbon neutral living in rural Bangladesh is well-established. It is reflected in the manifestation of sustainability values such as pondering, modesty, saving, hospitality and tolerance to all in nature in people's day-to-day living.

While sustainability is originally an ecological concept in order to ensure an optimum sustained yield [1:188], modesty is an eco-spiritual capital in terms of sustainability accounting. Sustainability accounting in rural Bangladesh in terms of carbon neutral living has demonstrated that addressing CO_2 need not be as complex as in the West. The low annual carbon emissions of 0.4 tonnes per person (compared with 16.5 for Australia and 17.0 for the United States as in 2011 [20]) are the results of such living simply sustainability accounting. It is the rural people's practice of accounting for sustainability that helps upkeep the sustainability of Bangladesh. The country's spiritually enriched simple and self-reliant lifestyle can be an instance paradigm shift for decarbonisation.

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