

# Chapter 4

## Healthcare Governance and Climate Change

### Adaptation: A Pharmaceutical Industry Perspective

Md Khalid Hossain and Sharif N. As-Saber

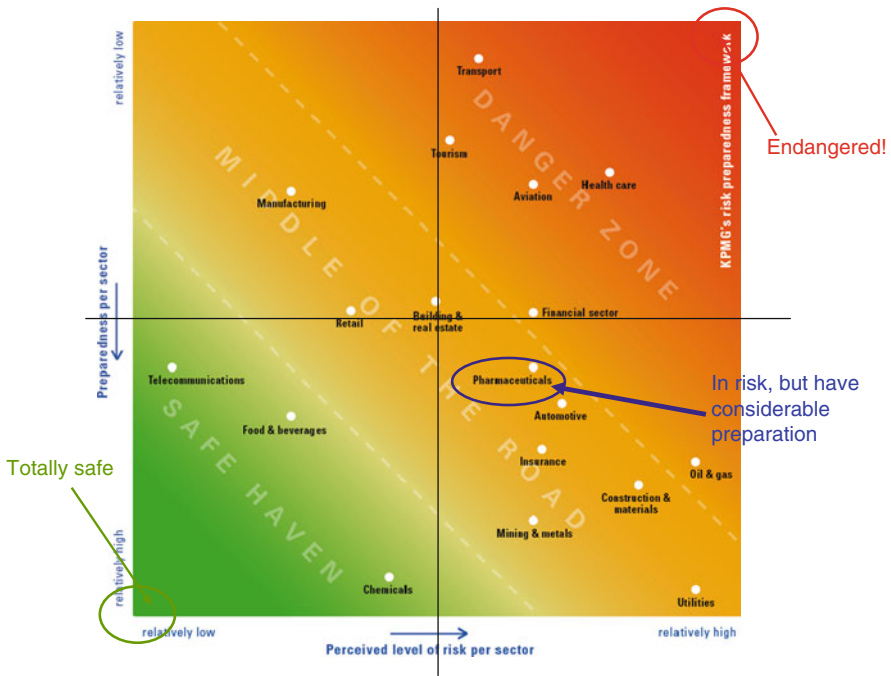
#### Introduction

In the human development report 2007/2008, climate change has been termed as the ‘defining human development issue’ of current generation. The report supports the scientific fact that climate change is happening undermining all development efforts and severely affecting the path of achieving Millennium Development Goals (MDGs). The poorest 40% of the world population, mostly living in the least developed countries (LDCs), would be the people hit hardest by climate change-related natural events (UNDP 2007). At the same time, these events are having profound impact on public and private sector establishments. While exposed to uncertainty and risks, they can also benefit from potential opportunities created by climate change. However, given the desperate nature of their business operations, such risks and opportunities are likely to vary across industries.

While climate change is directly impacting on people’s lives and livelihoods, in a broader context, it has an impact on organisations and operations of public and private sectors. However, the scale of impact may vary from sector to sector. While reviewing sectoral level business risks and economic impacts of climate change, in 2008, KPMG concluded that six business sectors, viz. oil and gas, aviation, healthcare, financial, transport and tourism, are more exposed to the impacts of adverse climatic events but relatively less prepared to respond to these impacts (falling within the ‘danger zone’). In the analysis, pharmaceutical sector along with eight other sectors are viewed neither in danger nor in safe zone, which, according to the report falls within the ‘middle of the road’ zone. Only food and beverage, telecommunication and chemical sectors fall within the safe zone (termed as the ‘safe haven’) (KPMG International 2008).

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M.K. Hossain (✉) • S.N. As-Saber  
School of Management, RMIT University, Melbourne, Australia  
e-mail: mdkhalid.hossain@rmit.edu.au; sharif.as-saber@rmit.edu.au



**Fig. 4.1** Sector-wise perceived risk versus preparedness map in KPMG's analysis (Source: KPMG International 2008, p. 48)

As pharmaceutical sector is very closely linked with healthcare sector (e.g. equipment and supplies, providers and services like hospitals, diagnostic laboratories), it is understandable that both sectors would share some common challenges and opportunities emanated from climate change. There is a chance of failing each other if they do not work collaboratively. Therefore, while healthcare sector is placed in the 'danger zone', pharmaceutical industry has an additional responsibility to support the healthcare sector in addition to its own challenges. Similar to the healthcare sector, it could be argued that pharmaceutical industry would exploit opportunities generated by climate change by increasing financial gain through selling medicines needed for deteriorated health condition of people affected by climate change. However, such kind of opportunity exploitation would not be taken positively if it is based on mere profit motivation. Therefore, while pharmaceutical industry would adapt itself to the impacts of climate change, it has to consider the needs and priorities of its consumers and the specific situation where the industry aims to exploit opportunities based on the nature of its business (Fig. 4.1).

Although a robust academic deliberation has been happening in linking climate change and health challenges (Epstein 2005; Costello et al. 2009; Fidler 2010; Salt 2003), it has not been concentrated on the climate change adaptation perspective

of the pharmaceutical industry on the basis of sector-specific realities. Therefore, this chapter primarily highlights the case of business strategy adaptation in pharmaceutical industry as affected by the impact of climate change on health and on the healthcare industry. While highlighting this case, this chapter argues that climate change adaptation for pharmaceutical industry needs to be driven by corporate social responsibility in order to contribute to health governance. In arguing so, this chapter observes an important role of government and global community to support pharmaceutical industry's adaptation so that both economic and social benefits could equally be achieved for the industry and people affected by climate change.

## Climate Change Adaptation for Business Sectors

So far, there has been a considerable amount of debate to provide a definition of 'climate change adaptation'. Although the central idea of the concept remains almost the same, major divisions lie in terms of scope, process and scale, such as whether it would be autonomous ('bottom-up') or imposed ('top-down'), whether it should entail migration or unlimited coping and whether it would be 'biological' or 'mechanical'. In IPCC fourth assessment report, it has been mentioned that 'Adaptation is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities' (IPCC 2007, p. 6). Burton (1992, 1997; cited in Ahmed 2006, p. 30) provided a closely matched definition by describing it as 'the process through which people reduce the adverse effects of climate on their health and well-being, and take advantage of the opportunities that their climatic environment provides'. From a human-centric perspective, (Leary 1999, p. 307) also reiterated similar idea by defining adaptation as 'human responses to the direct and indirect effects of climate change and variability for the purpose of lessening detrimental consequences or enhancing beneficial consequences'.

From an individual and economic point of view, Smit et al. (1996, cited in Ahmed 2006, p. 30) argue that 'adaptation to climate change includes all adjustments in behaviour or economic structure that reduce the vulnerability of society to changes in the climate system'. Smit et al. (2000, p. 225) also have identified the adjustment issue by mentioning that 'adaptation refers to adjustments in ecological-social-economic systems in response to actual or expected climatic stimuli, their effects or impacts'. From a governance perspective, it refers to 'policies promoting measures to mitigate' or reduce greenhouse gases and their role in facilitating and directing the adaptation process undertaken by businesses. The primary aim is to ensure that businesses undertake socially and environmentally responsible adaptation measures in an evolving 'political-economic environment associated with climate change' (Smit et al. 2000, p. 225).

Based on a study of nine companies in house-building and water utilities sectors in the United Kingdom, Berkhout et al. (2006) have made an attempt to define climate change adaptation from a business organisation's point of view. To some extent, they have challenged the traditional definition of adaptation by concluding that for business organisations, adaptation rarely happens autonomously as it is very much dependent on policy framework and market mechanism. Their proposed framework argues that a business strategy of 'wait and see' needs to be sure of the actual extent of climatic impacts and related opportunities before undertaking any adaptation measures. They further argue that 'risk assessment and options appraisal', 'bearing and managing risks' as well as 'sharing and shifting risks' fall within the framework of business strategy adaptation to climate change (Berkhout et al. 2006, p. 151). Their arguments of nonautonomous business strategy adaptation could also be supported by the arguments of Kolk and Pinkse (2008, p. 1360), who have mentioned that the entire process of risk aversion through companies' business strategy adaptation is very dynamic due to fast-changing 'public opinion, regulation, competition and scientific evidence on global sustainability issues'.

However, averting the risks of climate change through reactive organisational adaptation is not considered as sufficient in some literature considering the complexity, unpredictability and scale of climate change and its impacts. In this regard, Linnenluecke and Griffiths (2010) have suggested to develop 'organisational resilience' as a proactive business strategy for averting risks due to climate change. They also have acknowledged that without experiencing major climatic shock, organisations do not prefer to develop special capabilities to address climate change. This view has been shared by Berkhout et al. (2006). Linnenluecke and Griffiths (2010) have emphasised on 'resilience' as part of the business strategy adaptation as 'resilient' organisations are more capable of surviving even after experiencing major climatic shocks. These organisations can respond to the situation both suddenly and gradually.

It could be argued that Berkhout et al. (2006) have not focused adequately on the opportunity side for business which is also included in the widely accepted definitions of climate change adaptation. Although the majority of companies are unable to find a clear link between climate change impact and opportunity utilisation (Kolk and Pinkse 2004), based on information from 500 multinational companies (MNCs) regarding their carbon disclosure projects (CDPs), Kolk and Pinkse (2008) have argued that climate change is assisting MNCs to grab the opportunity of developing 'green' firm-specific advantages and those advantages could also help gaining more profit. The utilisation of these opportunities should not ignore the reduction of greenhouse gas emission or mitigating climate change through 'compensation' and 'innovation' (Kolk and Pinkse 2005, p. 8).

Through 'compensation', some companies try to reduce their carbon footprint internally within the company through 'internal transfer of emission reduction', vertically through supply chain measures and horizontally through acquiring emission credits in exchange for their inability to reduce their contribution to the carbon footprint. Arguably, 'innovation' as a method of utilising opportunity is one step ahead for companies than 'compensation', as through 'innovation' some companies not only

reduce their individual carbon footprint but also assist others to do the same. With regard to this strategic option, these companies try to improve a distinct business process innovatively within the company and aim at developing innovative products at their supply chain which can reduce emission. Beyond these measures, these companies try to innovate new products for the market to reduce economy-wide emission and to become more competitive in the market through different strategic partnerships (Kolk and Pinkse 2005, p. 8; Kolk and Pinkse 2004). However, the opportunity utilisation through ‘compensation’ and ‘innovation’ is not equally applicable to all business sectors due to the disparate nature of individual business operations. As the manufacturing sector requires to respond to climate change by reducing emission in its supply chain, pharmaceutical sector would not be equally able to take exact measures due to its reliance on the state of the public health sector (Kolk and Pinkse 2004).

Nonetheless, while ‘compensation’ and ‘innovation’ are discussed in the context of emission reduction, these could also be applicable in adaptation of business strategy in relation to climate change. By undertaking adaptive measures to address the climate change affected supply chain, companies could perhaps enhance competitiveness against their competitors who do not take similar measures. More innovative companies would come up with new products and processes through research and development that could facilitate adaptation to climate change. Some companies can utilise opportunities coming naturally while they address climate change as a part of their business strategy. These could be utilised through exploitation of consumer choice for green and innovative products and processes that are climate friendly (Porter and Reinhardt 2007).

However, this could even take the shape of exploitation of favourable climatic conditions resulted by climate change, e.g. the extended warmer period in some arctic countries is offering a prolonged cropping period (Linnenluecke and Griffiths 2010). Some sectors are also exploiting the risks posed on consumers facing physical risks and regulatory risks. Insurance sector and banking sector are exploiting opportunities by charging increased fees for covering risks and costs due to climate change and subscribing to emission trading schemes (Kolk and Pinkse 2004). However, as the idea of climate change adaptation emphasises on exploiting beneficial opportunities or enhancing beneficial consequences, company’s financial gain through opportunity exploitation without bringing benefits for the society could rather be argued as maladaptation to climate change. In this regard, an appropriate government policy framework needs to be in place to ensure the adherence to the relevant social and environmental responsibilities by organisations including MNCs (As-Saber 2009).

## **Climate Change and Its Impact on Health and the Pharmaceutical Industry**

Amongst the three working groups of Intergovernmental Panel on Climate Change (IPCC), working group II analyses the impacts of climate change on socio-economic and natural systems while highlighting the options for adaptation in the face of those

	Negative impact	Positive impact
<b>Very high confidence</b>		
Malaria: contraction and expansion, changes in transmission season	←	→
<b>High confidence</b>		
Increase in malnutrition	←	
Increase in the number of people suffering from deaths, disease and injuries from extreme weather events	←	
Increase in the frequency of cardio-respiratory diseases from changes in air quality	←	
Change in the range of infectious disease vectors	←	→
Reduction of cold-related deaths		→
<b>Medium confidence</b>		
Increase in the burden of diarrhoeal diseases	←	

Fig. 4.2 Impacts of climate change on health (Source: Confalonieri et al. 2007, p. 418)

impacts. In the IPCC fourth assessment report, working group II has dedicated Chapter 8 to highlight the climate change impacts on human health along with desired adaptation options. Based on the evidence, the report concludes that ‘Climate change currently contributes to the global burden of disease and premature deaths’ (Confalonieri et al. 2007, p. 393). In IPCC fourth assessment report (shown in Fig. 4.2) it is predicted that, in most of the cases, climate change is likely to have negative impacts on health mainly in the form of increased malnutrition, deaths, diseases and injuries from extreme weather events like floods and cyclones as well as increased malaria, diarrhoeal and cardiorespiratory diseases.

Predictions of IPCC are echoed in different academic literature where climate change has been seen as one of the greatest public health challenges faced by the world (Binns and Low 2011; Hanna and Spickett 2011; Hanna et al. 2011; Husain and Chaudhary 2008; ADB 2011; Salt 2003; Connor et al. 2010). To effectively adapt to the health-related impacts of climate change, Hanna and Spickett (2011) opine that both direct and indirect health exposures caused by climate change should be addressed. They mention that direct health exposures resulted from extreme climatic events like floods, cyclones and heat waves where health impacts are immediate and quick responses on the basis of prior preparedness are warranted. On the other hand, indirect health exposures are linked with gradually deteriorating air, water or food quality along with affected food production resulting in malnutrition and associated health-related problems (Hanna and Spickett 2011; Patz et al. 1996; Marques et al. 2010). It could be argued that pharmaceutical sector is exposed to both direct and indirect exposures as in both cases their responses would be necessary. While quick and adequate supply of medicines would be required from the pharmaceutical industry during direct exposures, the emphasis would be on research

and development for the industry when indirect exposures would be addressed within a climate change adaptation framework.

As mentioned earlier, the KPMG report outlines four different types of risks faced business sectors due to climate change. These include regulatory risk, physical risk, risk to reputation and risk of litigation (KPMG International 2008, p. 45). While the report places pharmaceutical sector in the 'middle of the road' (neither in danger nor in safe zone), it observes that the sector is exposed only to high level of physical risks and not to the other three types of risks (which are primarily linked to environmental performance) as the sector is not considered as emission intensive. This is quite similar to the arguments put forward by Hanna and Spickett (2011) that both direct and indirect exposures in relation to climate change impact on health are linked to physical impacts of climate change, both gradual and rapid. Although these physical impacts are not prominent on the establishments of pharmaceutical industry (e.g. destruction), their consumers are affected by those impacts that make the industry implicitly affected by physical risks (Llewellyn 2007).

However, Llewellyn (2007, p. 91) has identified some direct physical impacts on pharmaceutical industry itself in relation to the manufacturing of antibiotic drugs. He mentioned that 'cool weather temperatures and limited temperature fluctuations' are desirable for the manufacturing of antibiotic drugs. He predicted that changes in weather patterns resulted from climate change would negatively affect the production capacity of antibiotic drugs. Cogan et al. (2008) have also highlighted some direct physical risks in relation to climate change impacts on water availability and quality concerning the pharmaceutical industry. They have mentioned that different production processes like cleaning, cooling, emergency diluting and steam-feed stocking necessary for the manufacturing of drugs would be affected due to the impact of climate change on water availability and quality. Llewellyn (2007) has further pointed out some negative financial risks for pharmaceutical industry in countries where notable government subsidy is provided to the industry (along with other health services) would be reduced due to negative economic growth resulted from climate change impacts.

It should be noted that KPMG's placement of pharmaceutical industry in the 'middle of the road' is not based solely on the climate change-related risk perceptions for the industry. It also entails the fact that despite the risks, the industry has considerable (neither very high nor very low) preparedness to remain out of the danger zone. However, a report commissioned by Ceres and Calvert in 2007 to analyse climate risk disclosure practices of companies in different sectors has found that given the perceived risks of climate change, preparedness of pharmaceutical sector is not up to the mark. The report mentions

The drugs and pharmaceuticals industry still has a long way to go with regard to climate disclosure, especially given the potential impacts climate change may have on its business. Climate change may impose serious health effects on society, such as increased asthma rates and wider distribution of vector-borne disease, and the drugs and pharmaceuticals industry will need to be prepared to respond appropriately. The disclosure by this industry in the CDP4 (carbon disclosure project 4) illustrates that it may be unprepared to deal with this effect of climate change - an effect which, if strategies are adopted now, could be a significant business opportunity for the industry. (Gardiner et al. 2007)



At this point of discussion, it may be appropriate to highlight that the record of global pharmaceutical industry with respect to corporate social responsibility is not entirely positive. The production of cheap generic drugs for HIV by Indian pharmaceutical company, *Cipla*, in 2001 created a worldwide controversy. While it significantly dropped the price of the medicine and started saving lives in poor countries in Africa and elsewhere, it faced severe protest by the global pharmaceutical giants. Due to the strong lobby of multinational pharmaceutical companies, in 2005, India was forced to introduce patent protection for pharmaceutical companies as per the obligation under World Trade Organization's multilateral trading system. Although the multinational pharmaceutical companies argued that such patent protection was needed for industry growth as well as for encouraging research and innovation, its implication was higher price of patented drugs which were once not patented and were readily available at affordable price. That action of multinational pharmaceutical companies attracted intense global criticism as lives of AIDS patients in Africa and poor communities in India and other developing countries were put at risk due to the profit-driven motive of multinational pharmaceutical companies (Chaudhuri et al. and 2006; Satyanarayana and Srivastava 2007; Shukla and Sangal 2009; Malhotra 2008; Grover and Citro 2011; Babovic and Wasan 2011). From that experience, pharmaceutical industry must be mindful of the backlash that they could face if any exploitative and opportunistic decisions are taken ignoring the needs of vulnerable consumers. Otherwise, pharmaceutical industry would not only fail to positively adapt to climate change but it would also inhibit climate change adaptation process of those communities.

Therefore, it could be argued that within the framework of climate change adaptation, pharmaceutical industry needs to act decisively and positively to formulate business strategies to avert risks and utilise opportunities. However, the industry's actions require to incorporate a valid and sustained corporate social responsibility framework. Only then, the industry would be able to move itself out of the 'middle of the road' to the 'safe haven' within the KPMG framework.

## **Climate Change Adaptation for Pharmaceutical Industry from a Health Governance Perspective**

Based on the discussion regarding climate change adaptation as well as its impact on health and pharmaceutical industry, it is somewhat clear that there is a need as well as scope for the industry to adapt to climate change. It is also apparent that this adaptation requires to be both in the forms of risk aversion and beneficial opportunity utilisation induced by climate change. However, as this adaptation needs to happen with a goal to improve health governance at different levels (local, national, regional and global), it is also necessary to comprehend the perspectives of health governance which could be linked to the pharmaceutical industry's climate change adaptation process.

Within the academic literature, health governance is very much aligned with the broader concept of governance with a specific focus on improving the healthcare



system. As a country-specific concept, Kaufmann et al (2009) have explained governance through a number of dimensions, viz. voice and accountability, political stability and absence of violence, government effectiveness, regulatory quality, rule of law and control of corruption. Siddiqi et al. (2006) have highlighted the principles of health governance which by and large conform to the dimensions of governance mentioned by Kaufmann et al. (2009). The principles identified by Siddiqi et al. (2006) include strategic vision, participation and consensus orientation, rule of law, transparency, responsiveness, equity and inclusiveness, effectiveness and efficiency, accountability, information and intelligence and ethics.

In relation to assessing the governance of community health partnership, Mitchell and Shortell (2000, p. 265) have put emphasis on the enabling external environment comprising political, economic, legal and social systems along with a governance structure consisting of adequate resource allocation, ensuring accountability and coordination. While the focus of Pang et al. (2010) is at global scale health governance, they also emphasise on country commitment (including good governance at national level), collaboration and accountability. To ensure shared health governance, Wachira and Ruger (2011) also underline several factors like consensus amongst key actors and collective accountability which can be measured through aligned goals, allocated resources and inclusion of vulnerable groups along with some other measurement tools.

Therefore, it can be argued that while pharmaceutical industry adapts itself to climate change, it must have strategic vision and ensure efficiency, collaboration, accountability, ethical operation and vulnerable community engagement to positively contribute to health governance (Greve 2008; World Bank 2011; ADB 2011; IIED and Irish Aid 2011; Sturchio 2008). Although there are other dimensions of health governance at different levels, above-mentioned parameters are relatively more relevant to the pharmaceutical industry in averting risks and utilising opportunities within the context of climate change adaptation. The question remains with respect to the mechanism of such adaptation in the pharmaceutical industry context. While physical risks are prominent for pharmaceutical industry, the question could be to know how the industry would avert those risks being a sector not producing a lot of emissions. However, Cogan et al. (2008) as well as Kolk and Pinkse (2004) have indicated that pharmaceutical industry has ample options of reducing their emission level even further which could consequently contribute in reducing physical risks for the industry. It may be noted here that several pharmaceutical companies have already started to reduce emission at different phases of their production system including their supply chains (King et al. 2004). This includes using electricity and heating services from clean energy sources as well as controlling huge amount of emission from transports needed to distribute products. Moreover, some companies are phasing out the use of *chlorofluorocarbons* (CFCs) in inhalers for treating asthma and other respiratory disease as CFCs are more than thousand times stronger than other greenhouse gas like carbon dioxide (CO<sub>2</sub>) (Atkins 1999). While pharmaceutical industry addresses the physical risks of climate change on the industry through these actions, they are also utilising opportunities by participating in emission trading and gaining financially from government

incentives (Cogan et al. 2008; Kolk and Pinkse 2004). It could be argued that none of the above-mentioned actions would be in conflict with the actions taken by the health sector in adapting to climate change.

However, the greater challenge of risk aversion linked to physical risks for pharmaceutical industry could be a matter of concern for vulnerable communities affected by physical impacts of climate change (Salt 2003). Here, the plight of the vulnerable communities could be exacerbated by the industry's failure to meet the need of their medication. The failure may be resulted from inadequate production and supply, untimely supply, high price and poor product quality. While risk aversion is discussed in this regard within a climate change adaptation framework, it is quite difficult to elaborate on opportunity utilisation which is heavily dependent on the associated risks. While a higher demand of medicines could be resulted from physical risks of climate change, it could be argued that pharmaceutical industry would utilise the opportunity through increased production and supply as well as gaining more profit (McMichael et al. 2009). They can also avert the already mentioned associated risks through adequate production and supply, timely supply, affordable price and good product quality.

From a health governance perspective, pharmaceutical industry must be cautious regarding their techniques of risk aversion and scale of opportunity utilisation. Considering the fear of future losses, if risk aversion is aimed at mere profitability and increases the miseries of vulnerable communities, that would violate the spirit of health governance. If opportunity utilisation means charging higher price of medicines at the time of natural disasters or quickly supplying poor quality of medicine to meet the demand, that would also violate the spirit of health governance and would amount to unaccountable and unethical operation. Moreover, if opportunity utilisation fails to bring beneficial results for all, it would not also be considered as a positive climate change adaptation by the pharmaceutical industry. On the other hand, increased investment in research and development to achieve competitiveness in producing and supplying medicines needed for climate change-related health problems would be considered as a positive step which contributes to health governance within a climate change adaptation framework (Costello et al. 2009).

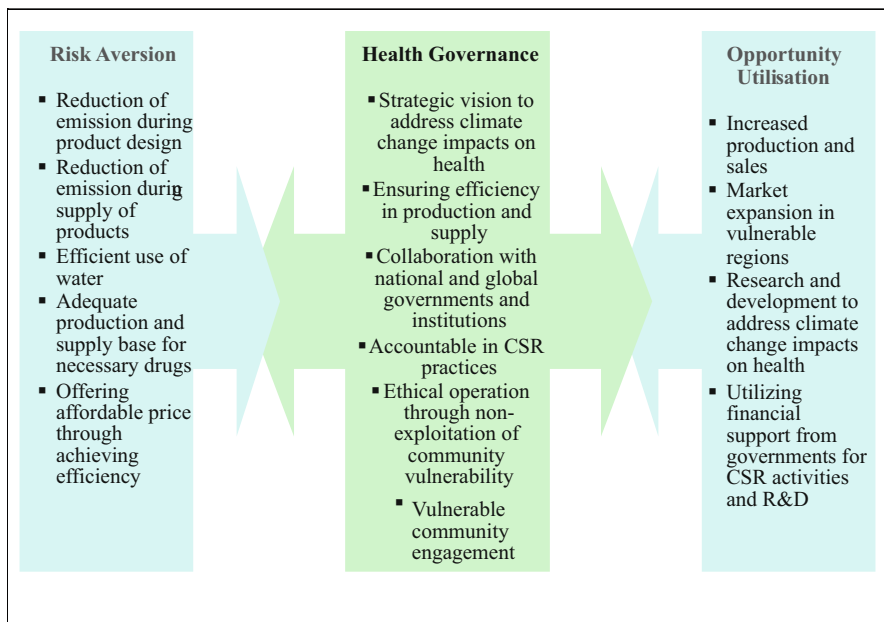
It could be argued that the above-mentioned observations fall largely within the paradigm of corporate social responsibility (Ruggie 2004; Greve 2008) and may not bring economic benefits to the pharmaceutical industry due to their focus on vulnerable communities with poor or no purchasing power. This would in turn affect the pharmaceutical industry's research and development-related measures, affecting the consumers and the industry in the long run. At this point, the 'collaboration' dimension of health governance comes into the picture. As countries responsible for historical emission and climate change are liable for financing the adaptation of vulnerable communities of developing nations as per international environmental law (e.g. Kyoto Protocol), pharmaceutical industry's corporate social responsibility-driven actions in relation to climate change adaptation (risk aversion and opportunity utilisation) should be supported by these countries (Lovell 2011). It falls within the global governance paradigm of sustainable development. The global pharmaceutical industry needs to collaborate with global

institutions in this regard and needs to influence the countries participating in global negotiations. Besides, pharmaceutical industry at national level should collaborate with the national government to access national climate change adaptation funds with a view to support both industry and vulnerable communities (Connor et al. 2010; ADB 2011; World Bank 2011; Accenture, GlaxoSmithKline and the Smith School of Enterprise and the Environment 2011). At the same time, governments need to have clear policy imperatives for the pharmaceutical industry with respect to the acceptable adaptation framework by the industry in the face of climate change.

## The Framework and Implications

Based on the discussion above, a tentative framework is presented in Fig. 4.3. It shows the relationship between health governance and climate change adaptation (in light of risk aversion and opportunity utilisation) for pharmaceutical industry.

Although this framework is focused on pharmaceutical industry, similar approach can be applied for any other industry which is in the ‘danger zone’ or the ‘middle of the road’ as shown in Fig. 4.1. However, this framework is largely a generic one and needs to be customised on the basis of health governance realities within a particular



**Fig. 4.3** Health governance and climate change adaptation for pharmaceutical industry

country or region along with microanalysis of country-specific climate change impacts on health and healthcare. We argue that pharmaceutical industry plays a pivotal role in health governance within an evolving albeit uncertain climate change scenario where industry action needs to be driven by corporate social responsibility as well as appropriate policy frameworks and necessary support mechanism devised by governments and concerned institutions.

Although conceptual in nature, this chapter has implications for governments, multilateral organisations such as the World Health Organization (WHO) and the global pharmaceutical industry. It also has implications for future research. For governments, this chapter provides justifications to support the industry for the greater benefit of their citizens prone to climate change impact. It also emphasises on the importance of ongoing dialogue between the industry and the government. For multilateral organisations, this chapter offers suggestions with respect to devising policies to help the poor and the vulnerable affected by the climate change. A balanced approach is needed with respect to helping these unfortunate victims of climate change while patronising as well as encouraging the industry to maintain a viable corporate social responsibility. It is important for companies within the pharmaceutical industry to endeavour in averting risks and exploiting opportunities without ignoring the social responsibility aspect while preparing and pursuing their action plans. This chapter highlights the possibilities of public backlash in the absence an industry-sponsored proactive social responsibility framework.

This chapter has implications for future research. As a conceptual chapter, it sets the scene for further studies including empirical investigations from a country, region or global perspective.

## Conclusions

In this chapter, we argue that climate change adaptation of pharmaceutical industry needs to be viewed not only from an industry perspective but also from the perspective of vulnerable communities being the primary consumers of pharmaceutical industry in the face of climate change-related impacts on health. This eventually requires a strong corporate social responsibility outlook by the pharmaceutical industry and necessary government policy framework. However, considering the industry growth and financial gains needed by the pharmaceutical industry, we also argue that it would be an undue expectation contradictory to the business competitiveness model of the industry. An unconditional adherence to corporate social responsibility practices in servicing vulnerable communities may, therefore, be an expectation beyond reality. If corporate philanthropy is expected from the pharmaceutical industry, governments in developed countries and global institutions have to create a framework of acceptable adaptation practices by the industry. At the same time, they should support the industry financially and technically while vulnerable developing countries need to devise their own policy guidelines with realistic expectations based on dialogues with the pharmaceutical industry, international institutions such

as the World Health Organization (WHO) and developed countries. In this way, the purposes of both health governance and climate change adaptation for pharmaceutical industry could be served.

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