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# Rethinking Vulnerability to Climate Change in Sri Lanka

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**Abstract**

Climate change has been heralded as a threat to the global society. It has become a subject of intense interest to public policy decision makers internationally. The Intergovernmental Panel on Climate Change (IPCC) has played a pivotal role in providing factual scientific information to policy makers. Its research findings have in fact created momentum for the foundation of the United Nations Framework for Climate Change (UNFCCC) and numerous reports identifying potential impacts from climate change and advising global actions against it.

Recently, a number of social scientists have pointed out the deficiencies in the way the climate change regime defines the problems and solutions, and transfers the same concepts uncritically onto different localities. Taking this critical approach, this paper will examine Sri Lanka as a case study. To the present, the Sri Lankan government has identified its vulnerability to climate change that agrees with the recommendation of the IPCC and the UNFCCC, and some numbers of countermeasures against vulnerability have been identified. By examining some of these measures, this paper will highlight the difficulties of formulating and implementing climate change policies. The proposed paper will discuss theoretical issues raised in my Ph.D. thesis related to the UNFCCC and IPCC's climate change discourse being interpreted and reproduced in the Sri Lankan government.

To date, there have been no significant studies conducted to understanding the issue especially in countries like Sri Lanka that fall under the IPCC category of 'vulnerable small island states'. This research therefore will make a significant contribution to 1) the ongoing debate on politics of environmental science and viability of global environmental institutions, and 2) reframing and rethinking the environmental issues in Sri Lanka.

## Introduction

Climate change has been heralded as a threat to the global society. It has become a subject of intense interest to public policy decision makers internationally. The Intergovernmental Panel on Climate Change (IPCC) has played a pivotal role in providing 'factual scientific information' to such policy makers (Bolin 1994). The IPCC's research findings generated the momentum for the foundation of the United Nations Framework Convention on Climate Change (UNFCCC) and later the Kyoto Protocol.

Sri Lanka ratified the UNFCCC in 1993 and the Kyoto Protocol in 2002 (UNFCCC 2003). In tandem with these ratification processes, studies were conducted to assess the potential climate change impacts on Sri Lanka. Subsequently, Sri Lanka developed policy recommendations on the basis of UNFCCC guidelines that addressed the need

for the nation to engage in climate change mitigation and adaptation measures (Sri Lanka 2000). Mitigation refers to the reduction of anthropogenic greenhouse gas (GHG) emissions, such as carbon dioxide ($CO_2$), that are considered to be the prime cause of climate change. $CO_2$ is emitted from various human activities, especially the burning of fossil fuels. In Sri Lanka, the national government proposed mitigating GHG emission by taking measures such as the application of new energy efficient technologies(MENR 2002), and plantation establishment to sequester $CO_2$ (Sri Lanka 2000). However, Sri Lanka's GHG emissions are negligible compared to those of other developed or larger developing countries, such as China and India (Sri Lanka 2000). This means that its potential for contributing to the mitigation of global GHG emission is minimal (Sri Lanka 2000).

In contrast, adapting to climate change may be more important for Sri Lanka. Being a small island nation, Sri Lanka falls into the UNFCCC and IPCC's category of 'vulnerable' small island nations under serious threat from various climate change impacts, such as sea level rise and severe floods and droughts (UNFCCC 1992; IPCC 2001). These threats are considered to have significant negative consequences on various sectors within Sri Lanka (Sri Lanka 2000).

This paper examines climate change related vulnerability, using Sri Lanka as a case study. First, it discusses the importance of the concept of vulnerability within the context of climate change. Then, it describes identified vulnerable sectors of Sri Lankan society and the proposed solutions. Finally, it assesses potential problems associated with the current approach to identifying and assessing 'vulnerability' in Sri Lanka. Thus, the paper is an attempt to make a contribution to: 1) the ongoing debate on politics of environmental science and viability of global environmental institutions, and 2) reframe and rethink the ways to address climate change issues in Sri Lanka.

## Climate Change Regime and Vulnerability

The concept of vulnerability has been highlighted in the various texts and reports of the IPCC (Watson 1996; IPCC 2001), the UNFCCC (1992), and the Kyoto Protocol (UNFCCC 1997). The IPCC is a scientific body that provides assessment of climate

change risks to policy makers (Miller and Edwards 2001). The UNFCCC is a broad framework in which the signatories to the convention officially recognize the existence of climate change, its associated problems, and the importance of engaging with the issue (UNFCCC 1994). In contrast, the Kyoto Protocol, which was introduced to the UNFCCC in 1997, is a legally binding set of rules whereby the signatory nations are required to meet their GHG emission reduction targets. These three bodies therefore have different aims and functions, but each plays an important role in shaping the discourse of global climate change. The relationship between these bodies and vulnerability is summarised below.

The IPCC produces scientific assessment reports on climate change impact every five years; the concept of vulnerability was first mentioned in its second climate assessment report (Watson 1996). This report stated that 'a highly vulnerable system would be one that is highly sensitive to modest changes in climate, where the sensitivity includes the potential for substantial harmful effects, and one for which the ability to adapt is severely constrained'(Watson 1996 : 6). Based on this conceptualisation, several regions and countries have been identified and categorised as being vulnerable to climate change. In particular, the small island nations in the Pacific were identified as being among the most vulnerable areas in the world (IPCC 2001).

The word 'vulnerability' carries a specific meaning within the UNFCCC and the Kyoto Protocol. Within the context of the UNFCCC, 'vulnerability' is used to describe parties that are in need of financial, technological and other forms of assistance (UNFCCC 1994). As with the Kyoto Protocol (UNFCCC 1997), Article 12, paragraph 8 states that vulnerable developing nations should receive financial assistance from developed nations, so they can better adapt to the serious threats from climate change. In other words, vulnerable nations become the most entitled to financial and technical assistance. The concept is therefore widely acknowledged as an important notion for the welfare of many developing countries ( see Smith, Huq et al. 1996; Yohe, Jacobsen et al. 1999; Kates 2000; World Bank 2002).

To date, numerous studies have been conducted to assess vulnerable regions, countries and sectors, so that plans can be prepared to ensure that their vulnerability is reduced and their potential to adapt to climate change is increased. The process by which Sri

Lanka identified its level of vulnerability and assessed methods to reduce that vulnerability are briefly outlined next.

**The identification of vulnerable areas in Sri Lanka**

The Sri Lankan government ratified the UNFCCC in 1993 and the Kyoto Protocol in 2002(MENR 2002). As a party ratifying the UNFCCC, Sri Lanka was obliged to prepare a national communication report (Sri Lanka 2000). Following the guideline provided by the UNFCCC, and partly funded by the Global Environmental Facility, the report was produced and submitted to the UNFCCC in October 2000. The report contains information ranging from its GHG emission inventory, climate change impacts and vulnerability, mitigation options to adaptation responses among others (Sri Lanka 2000). In other words, the most comprehensive information on Sri Lanka's engagement with climate change can be found in this report.
The report states:

"Global warming is expected to lead to a rise in sea level, higher temperatures, more frequent and prolonged droughts, high intensity rainfalls and increased thunder activity. These anticipated changes represent a significant threat to the coastal areas, the different sectors of the national economy and human health. " (Sri Lanka 2000: 64).

The report then outlines the major sectors under serious threats from climate change. A summary of these impacts is provided in Table 1.

**Table 1 Summary of Climate Change Impacts and Vulnerable Sectors**

| Impact Area | Sea level rise | Temperature rise | Droughts | Rainfall | Thunder Activity |
|---|---|---|---|---|---|
| Agriculture | Salt water intrusion on low lying agriculture (loss through degradation of arable land) | Depletion of soil moisture, premature desiccation of crops and extinction of economically important crop types. Affect the yields of all crops, increase of pests and diseases | Reduce the availability of water for irrigation which would lead to a drop in crop production. Dry Zone especially vulnerable. | Decrease yields of many crops with the increased cloud cover and precipitation | |
| Coastal Zone (include fishery) | Inundation and Coastal erosion, Loss or damage to boat landing sites, fisher folk settlements, shrimp fishing under coastal aquaculture. | Loss of coral reefs, substantial effect on the distribution growth and reproduction of fish stocks. | | | |
| Forestry | | | Fire hazard in forests | | |
| Health | | Dehydration and loss of salt from the body cause disorders such as heat cramps, rashes, and heat oedema. | Hygiene of the population will be affected due to the water scarcity, leading to various types of diseases | Hygiene of the population will be affected due to the water- ways and wells being polluted, leading to some diseases | Loss of life by lightning strikes |
| Human settlement | People who live in areas that are under threat to the natural hazards are likely to be aggravated by climate changes. They will be vulnerable from all the impacts | | | | |
| Power | | Higher rate of water evaporation may reduce available reserves for hydropower generation | Higher rate of water evaporation reduce available reserves for hydropower generation | Affect the reservoir structure designed for historical rainfall patterns. | Infra-structure damage |
| Transport | | Distortion of road markings, bleeding of bitumen surfaced roads, rail creep due to excessive temperature | Destruction and cracking of road pavements | Inundation of road, land slides, and rockslides erosion of road and railway track. | |
| Water resource | Flood and storm may be triggered by the higher water levels | | Depletion of groundwater resource which may cause salinity | Floods, landslides, soil erosion, | |

Source: Sri Lanka 2000

Although all the above areas are considered to be at high risk from climate change, the impact on coastal regions is emphasised in the report as well as in previous studies (Smith 1996). The reason for this emphasis on coastal regions may be due to the perception that sea-level rise is 'one of the more certain responses arising from global warming' (Sri Lanka 2000 : 78), compared to other less certain effects. There may be other issues involved; these will be discussed later in the section of climate change science as social practice in more detail.

After summarizing all the potential negative climate change impacts, the national communication report proposed a number of countermeasures. These recommendations are summarized below in Table 2.

**Table 2 Proposed countermeasures**

| Areas | Adaptation Measure |
|---|---|
| Agriculture | 1) Develop tree crop agriculture,<br>2) Develop drought resistant rice varieties,<br>3) Change land use patterns in landslide prone areas,<br>4) Make farmers aware of climate change<br>5) Change irrigation methods |
| Coastal Zone | 1) Monitor sea level rise in critical regions<br>2) identify most vulnerable areas and prepare management plans,<br>3) Evaluate engineering interventions to counter salt water intrusion,<br>4) Promote sustainable use of fishery resources |
| Forestry | 1) Identify critical regions<br>2) Promote use of alternative timber species<br>3) Ensure conservation of natural forests and ban the clearing of natural forests for commercial purposes |
| Health | 1) Prepare baseline maps of disaster risk areas and develop early warning systems for monitoring of natural disasters<br>2) Develop early warning systems<br>3) Develop institutional facilities and provide the financial inputs<br>4) Upgrade health facilities in vulnerable areas etc. |
| Human settlement | 1) Develop and establish RS/GIS early warning systems<br>2) Integrate suitable adaptation in urban development<br>3) Update national disaster management plan<br>4) Integrate C.C. concerns in national policies<br>5) Relocate people from vulnerable locations. |
| Power | NA |
| Transport | Improve road/railway infrastructure design standards to incorporate climate change |
| Water resource | 1) Encourage minor storage water reservoirs<br>2) Investigate feasibility of trans-basin diversion schemes<br>3) Conserve seasonal water<br>4) Rehabilitate irrigation water tanks networks<br>5) Promote micro-watershed management<br>6) Prepare groundwater extraction regulation policy<br>7) Introduce permit/monitoring systems for ground water extraction and water quality assessment in vulnerable areas |

Source: Sri Lanka 2000

The above two tables illustrate the clear linkage between the impacts, the socio-environmental consequences, and countermeasures. For instance, drought stimulated by climate change will reduce the availability of water for irrigation, which in turn would lead to a drop in crop production - the dry zone is considered especially vulnerable. The recommended countermeasures are to plant more weather resistant rice

varieties and to change irrigation methods. Similar scenarios can be found in other sectors as well.

Another salient pattern that can be detected from the proposed solution is the need for 'changes' and interventions to current practices in these vulnerable sectors. For instance, it is recommended that farmers change to drought resistant rice varieties and be made more aware of climate change. The fishing industry should promote the sustainable use of its fisheries, while there is a need to relocate people from vulnerable areas.

These recommendations seem to provide a clear and valuable guide to address Sri Lanka's vulnerability. However, a number of studies suggest that the exercise of identifying and assessing vulnerability to climate change is not always straightforward and simple ( ex, Adger and Kelly 1999; Kelly and Adger 2000; Forsyth 2003).

## Complexities of vulnerability: its definition, approach, science, and adaptation

There are many complexities and difficulties attributed to the concept of vulnerability. The following sections discuss the problems involved in defining and assessing vulnerability, the IPCC-led scientific approach, and the issue of adaptation. These problems are underpinned by theories of hazard studies and social constructionism.

### *Defining vulnerability: evolvement and difficulties*

The IPCC (1996; 2001) defines 'vulnerability' as 'the degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes.' A number of researchers criticise the vagueness and limited value of this definition. For instance, Forsyth (2000) points to the problem of using the word 'system'. It is unclear whether this 'system' refers only to an ecological system, or includes human society. In fact, Forsyth (2000) observes that the IPCC report uses 'system' to sometimes refer to an ecological system, and other times include human society. Others point out that the IPCC's understanding of vulnerability is

predominantly concerned with the extent of changes in biophysical conditions (Kelly and Adger 2000). For instance, despite substantial socio-economic disparities among Singapore, the Pacific island states, and Papua New Guinea, the IPCC cluster these countries together under one category of '*vulnerable* small island states' (IPCC2001). Another example is found in the second assessment report of the IPCC, which concluded that 'people who live on arid or semi-arid lands, in low-lying coastal areas, in water-limited or flood prone areas, or on small islands are particularly vulnerable to climate change' (Watson 1996, 24). This definition is reflected in the Sri Lankan national communication for the UNFCCC. As shown in Table 1, in the human settlement section, people are considered to be vulnerable if they lived in areas that are under threat from natural hazards, because these hazards are likely to be aggravated by expected climate change.

The problem with such a definition is that the underlying factors that determine vulnerability are not addressed (O'brien and Leichenko 2003). That is, there is no recognition of the different degrees of vulnerability experienced by different groups of people that are exposed to the same risk (Forsyth 2000). Several researchers explain that some groups maybe more vulnerable than the others, depending on for instance, their socio-economic conditions (Adger 1999), their access to social capital (Liverman 1990) or different cultural and historical perceptions of risk (Adger 2000). Such an approach to vulnerability is often referred to as the social dimension of vulnerability or 'social vulnerability' (Adger and Kelly 1999; Forsyth 2000; 2003; O'brien and Leichenko 2003), originating in the study of natural hazards (Chambers 1989; Blaikie, Cannon et al. 1994). Rather than focusing on the exposure to and/or the degree of biophysical change, researchers of social vulnerability are concerned with the underlying factors that define vulnerability to climate change. These factors refer to the deprivation of political or economic power that impinge flexibility and adaptive skills of the people (Batterbury 2002). In other words, any political, social, or economic condition ranging from the authoritative government regulations to ethnic tensions may increase people's vulnerability. Such factors were barely addressed in the earlier studies of the IPCC (O'brien and Leichenko 2003, Forsyth 2003).

Recently however, some changes within the IPCC have been detected. Although the IPCC's most recent report still uses the original definition from the second assessment

report, some parts of the report acknowledge the social dimension of vulnerability (Forsyth 2003; O'brien and Leichenko 2003). For instance, the report states how vulnerability varies with 'geographical location, time, and social, economic, and environmental conditions' (IPCC 2001: 224). More specifically, the IPCC (2001: 8) states 'the ability of human system to adapt to and cope with climate change depends on such factors as wealth, technology, education, information, skills, infrastructures, access to resource, and management capabilities.' This is a significant improvement on the previous biophysically oriented definition of vulnerability (O'brien and Leichenko 2003).

Nonetheless, the full integration of this new approach to climate change policies still faces some constraints and difficulties. For instance, determining the degree of vulnerability becomes essential when considering the financial compensation for damage caused by climate change. Currently, the UNFCCC only recognizes countries to be vulnerable if they are located in low-lying coastal areas, areas prone to natural disasters, and fragile ecosystems. Therefore, countries that do not fit with these physical characteristics are not eligible for compensation. In other words, the definition clearly excludes socially and politically vulnerable countries (O'brien and Leichenko 2003 : 99-100). Also, financial compensation will only be provided to a 'country' as a unit, so the differentiation between groups of people who experience different degrees of vulnerability within the same country will not be recognized However, in real terms, measuring the underlying social, political and economic factors that affect vulnerability quantitatively is difficult (O'brien and Leichenko 2003). There have been some attempts to quantify social vulnerability. However, these studies are still limited and they also state the difficulties and complexities involved (Adger and Kelly 2001).

***Assessment of Vulnerability***

The IPCC's approach to vulnerability assessment first estimates the biophysical impact of climate change. It then identifies the adaptive options on a regional or country scale. The remaining negative consequences determine the level of vulnerability (Kelly and Adger 2000). Kelly and Adger (2000) point out that this approach only provides 'a

convenient means of summarizing the net impact of climate problem, a major goal of the IPCC process' (Kelly and Adger 2000 :327).

This IPCC's approach is also called the 'picking winners' approach (Barnett 2001). According to Barnett (2001), this approach is a matter of "guessing which problems are likely to emerge and implementing presumably (but by no means certainly) effective responses." (Barnett 2001 : 983). As described earlier, the Sri Lankan government also takes this approach; certain areas and sectors are selected as 'vulnerable' and policies and measures are specifically proposed for those areas. The problem with this approach is the susceptibility to 'surprises' (Barnett 2001: 983). Regardless of whether or not the social dimension of vulnerability is considered, the areas that are not identified or recognized as 'vulnerable' may experience policy neglect and may be exposed to unexpected and unidentified risks from climate change. In particular, as often pointed out in the IPCC reports, there are still various uncertain factors involved that prevent accurate prediction of the potential impact of climate change (IPCC 1996; 2001).

Furthermore, in spite of attempts made by various organizations, such as the United Nation's Environment Programme and the Sri Lankan National Science Foundation, there is a chronic deficiency of reliable information on current trends and conditions regarding natural systems in Sri Lanka (IRG 2001). Therefore, to rely solely on an assessment of vulnerability using current uncertain scientific findings and unreliable data in Sri Lanka may not necessarily bring the best outcome to either 'vulnerable' sectors (because they may have to take expensive measures even though significant negative consequence may never occur) or 'un-vulnerable' sectors (because they may consider themselves to be 'safe' from climate change, when they may actually be vulnerable).

Barnett (2001) points out that the level of uncertainty may be lessened with the progress of scientific studies on climate change. The Sri Lankan government may also improve its collection of environmental data. If that is the case, then there will be more credible assessments and less expectation of 'surprises'. However, there are other schools of thought, such as 'social constructionism', that raise more fundamental questions as to whether one can ever find the 'truth' using scientific assessments.

***Climate Change Science as social practice***

The basis for determining vulnerability is deeply embedded within the underlying scientific assumptions that there will be problems of sea-level rise, temperature rise, and frequent floods and droughts. It is often perceived that these assumptions are based on 'objective' scientific findings that require no questioning. There have been, however, an increasing number of studies that question the 'objectivity' of science. These studies suggest science should be understood as one kind of historical and social practice that is deeply intertwined with 'politics' (Demeritt 2001; Miller and Edwards 2001). The nexus between science and politics is discussed next.

*The upstream level of science*

Miller and Edwards (2001) point out that the IPCC has conceptualised the notion of 'climate' differently from earlier understandings. They argue that prior to the emergence of the IPCC and the UNFCCC, the idea of 'climate' used to be understood as 'the weather patterns characteristic of a particular locale' (Miller and Edwards 2001 : 6-7 ). However, 'today's scientific conception of climate connotes less the weather of any particular place than something more closely akin to the global environment: a natural object to be understood, investigated, *and managed* on planetary scales.' (Miller and Edwards 2001 : 7 emphasis in original). In other words, the IPCC has created a new meaning for 'climate' that is not localized phenomena, but an issue of global concern. The shifting of meaning or the creation of new meanings for a concept can be considered as a social practice or the outcome of 'social construction' (Thompson and Rayner 1998; Demeritt 2001).

Similarly, it is argued that the process of scientific study is also deeply political (Demeritt 2001). What kind of questions need to be asked? Which methods should be used to analyse data? Whose interpretation is considered credible? These questions are all part of everyday scientific practice (Demerit 2001), which involve human decisions, thinking, and conflict of interests. However, Demerit (2001) also adds that to argue science is political does not necessarily connote it is not credible. Instead, he attempts to illustrate that IPCC-led science should be understood reflexively as a type of social practice that identifies one version of 'truth' and not necessarily a 'universal truth'. The

researchers who adhere to science as social practice therefore, are interested in determining how and why one scientific idea rather than the others have acquired credibility and authority (Miller and Edwards 2001 : 249).
Therefore, in relation to Sri Lanka's vulnerability to Climate Change, it can be said that even the unbiased and credible assessment of the IPCC should not be considered as the 'only truth'. There may be a multiple of theories and assessment methods that are not part of the Climate Change Regime, all of which can be equally important and valid. Therefore, Sri Lankan climate change scientists should also take note of some scientific approaches that may not agree with or be part of the IPCC-led approach, so that more versions of scientific truth may be presented. There may be concerns as to how such different versions of scientific assessment may be reflected into climate change policies. This issue will be discussed in the adaptation section.

*Downstream level of Science*

While scientific practice can be argued as being inherently political, politics is also involved in downstream, in the use of science. For instance, Cocklin (1999) points out that some recent scientific studies downplay the impact of sea-level rise, stating that it is not as serious as previously perceived. In spite of such findings, the claim of sea-level rise being a serious threat remains as one of the critical concerns for small island nations. There is a chance that some of these countries have not yet learnt of these studies, but there may also be some underlying political reason.

According to O'Brien and Leichenko (2003), although identifying oneself as 'vulnerable' contains a negative connotation of being a 'loser', the label also attributes political power. For instance, the Alliance of Small Island States (AOSIS), a conglomerate of the small island states in the Pacific, has been actively seeking compensation for the negative impacts of climate change by arguing their inevitable losses from sea-level rise (O'brien and Leichenko 2003). Also, as noted earlier, if a nation is classified as being 'vulnerable' by the UNFCCC and the Kyoto Protocol, they can expect some technological and financial assistance from other non-vulnerable parties. Cocklin (1999) further notes that the attempt by the AOSIS to highlight their 'vulnerability' was achieved through formal recognition under Article 4, paragraph 8 of the UNFCCC. This article places the 'small island states' at the top of the list of parties

that require technological and financial assistance because of expected severe adverse climate change impacts (UNFCCC 1992 : 15). Such formal recognition of their 'vulnerability' implies that other parties to the UNFCCC would have to consider the consequences of their actions on the small island states.
As Sri Lanka is not a member of the AOSIS, the nation's political intention remains unclear. Nevertheless, it falls into the IPCC and UNFCCC's category of vulnerable small island nation. Whatever the case may be, the power of scientific finding as political force is clearly evident.

***Vulnerability and Adaptation***

The final issue of concern with vulnerability is in relation to the measures proposed for reducing vulnerability. As seen in Table 2, a number of recommendations suggested in the Sri Lankan national communication indicate the need for changes in current practices and educating farmers and fishers on the need for more 'sustainable' practices that are resilient to climate change impacts. Especially, as stated earlier in table 1, there seems to be some emphasis on the vulnerability of dry zone farmers against droughts.

The question that emerges from such recommendations is: Do they really need to change their current practices? Are not existing behaviours sufficiently adaptive? These questions are beyond the scope of this paper to answer fully. However, many regions within Sri Lanka have historically experienced severe floods and droughts, and people directly affected are known to have successful measures to adapt to such extreme climatic events. For instance, villagers in the South East Dry Zone such as 'Tanamalwila and those "off-road," "off-grid" villages, too often displaced and misplaced from the memories of officials, aid workers and political parties' (Seneviratne 2001), claim they have long understood how to cope with droughts, and developed mechanisms to conserve and manage water (Seneviratne 2001). Similarly, Geiser (1995) considers that the indigenous irrigation methods are often more technologically flexible and tolerant to climate variations than some of the modern technologies introduced by aid projects. There are also some successful examples of community-led approaches to hazard management that involve re-introducing the

traditional rain water harvesting strategy to cope with droughts (Ariyabandu 1999). Thus, as Kelly (2000) argues, the often perceived 'vulnerable' states may have a great historically-developed capacity and situation specific strategies to cope and adapt to the impacts of extreme climate change. In other words, rather than to synthetically identify several regions and sectors as vulnerable, and propose 'new' ways to adopt to the climate change risk as recommended by the climate change regime, these studies suggest the importance of recognizing and enhancing the current adaptive capacities and strategies that are often neglected or overlooked (Kelly and Adger 2000).

This alternative approach to adaptation is advanced in the area of hazard studies (such as Blaikie, Cannon et al. 1994) which recognizes the importance of identifying the existing capacity to cope, resist, and adapt to the hazard (in this case climate change). This way, rather than relying solely on the future impacts that may or may not occur, it is more policy-relevant to first map out the current capacity of people to respond to climate change then consider specific interventions. In other words, more situation and context specific adaptive measures may be recognized and enhanced.

**The way forward or backward: Should Sri Lanka consider itself as vulnerable?**

This paper explores and analyses the concept of vulnerability to climate change through the ways in which the climate change regime defines and assesses vulnerability, the nexus between science and politics, and finally the countermeasures to vulnerability. As a result, this paper concludes that there are various deficiencies with the ways in which the climate change regime currently defines the problem and solutions to vulnerability.
It is, however, important to note that the intention of this paper is not to dismiss the IPCC's scientific findings or the UNFCCC's policy guidance, nor discourage Sri Lanka from considering itself as vulnerable. This paper aims to draw attention to three issues:

1. The difficulties and problems associated with the current definitions, approaches and practices involving 'vulnerability' to climate change.
2. The need to be more reflexive in understanding and integrating the findings and recommendations of the IPCC and the UNFCCC.

3. The importance of emphasising the existing capacities and strategies available for coping with climate variations.

In relation to the third point, existing strategies and capacities may not be sufficient to cope with future climate change. However, rather than ignoring and replacing them completely with 'new' technologies and practices, they should be re-valued and re-appreciated for their usefulness together with the 'new' strategies.

This paper should be seen as complementing the current approach to vulnerability. As Kelly and Adger (2000 : 329) point out, 'it would be foolish to suggest that any particular approach to the concept of vulnerability is more or less appropriate in the context of climate impact studies.' The author therefore wishes to encourage multiple approaches to addressing vulnerability and adaptation, so that countries like Sri Lanka can have more options in dealing with, and becoming more resilient to, climate change.

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