

**KALABAGH DAM AND ITS IMPACT ON
ENVIRONMENTAL SECURITY IN PAKISTAN**

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DECLARATION

I declare that the dissertation entitled "*Kalabagh Dam and Its Impact on Environmental Security in Pakistan*" submitted by me for the award of degree of Master of Philosophy of Jawaharlal Nehru University is my own work. This dissertation has not been submitted for any other degree of this University or any other University. I am solely responsible for all my mistakes and inaccuracies in this research work.

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ABBREVIATIONS

(ANP)	: Awami National Party
(CCA)	: Canal Command Area
(CCI)	: Council of Common Interests
(CHS)	: Commission on Human Security
(CSCE)	: Conference for Security and Cooperation in Europe
(DEPI)	: Disaster Management Branch of UNEP
(DEWA)	: Division of Early Warning and Assessment of UNEP
(ECNEC)	: Executive Committee of the National Economic Council
(ENVSEC)	: Environment Security Initiative of OSCE, UNEP, UNDP
(EU)	: European Union
(FAO)	: Food And Agriculture Organization
(GEC)	: Global Environmental Change
(GECHS)	: Global Environmental Change and Human Security
(HESP)	: Human and Environmental Security and Peace
(HSF)	: Hans Seidel Foundation
(IBRD)	: World Bank International Bank for Reconstruction and Development
(IHDP)	: International Human Dimensions Program on Global Environmental Change
(IPCC)	: Intergovernmental Panel on Climate Change
(IRS)	: Indus River System
(IRSA)	: Indus River System Authority
(LBOD)	: Left Bank Outfall Drainage
(MMA)	: Mutahida Majlis Amal

- (MQM) : Muttahida Quami Movement
- (NFC) : National Finance Commission
- (OECD) : Organisation for Economic Co-operation and Development
- (OECD/DAC) : Development Assistance Committee of OECD
- (OSCE) : Organisation for Security and Cooperation in Europe
- (PkMAP) : Pakhtunkhwa Milli Awami Party
- (PNDA) : Pashtunkhwa National Democratic Alliance
- (PONM) : Pakistan Oppressed Nations Movement
- (TCWR) : Technical Committee on Water Resources
- (UN) : United Nations
- (UNDP) : United Nations Development Programme
- (UNEP) : United Nations Environment Programme
- (UNESCO) : United Nations Educational, Scientific and Cultural Organisation
- (WAA) : Water Apportionment Accord
- (WCDR) : World Conference on Disaster Reduction
- (WCRP) : World Climate Research Programme
- (WEU) : Western European Union
- (WWF) : World Wildlife Fund

PREFACE

Security and development are interlinked and interrelated. But security and development are for whom? The answer is for the individual and the nation. In the classical security analysis, national security was given importance over individual security. National security was understood as protection of fundamental values i.e. territorial integrity and sovereignty of a country. Security through armament, rather development, was the crux of the national security.

However, when and how the traditional concept of national security shifted to individual or human security including environmental security? The intensity and severity of the Non-traditional security threats like environmental threats, terrorism, migration, drug trafficking etc. became more pervasive and it forced the international community to reexamine and redefine the traditional security in a newer form. The Non-traditional security got a paradigmatic shift after the cave in of the Soviet Union and the end of Cold War. These threats are common and universal in nature.

Nevertheless, Non-traditional security threats are linked with the ongoing development processes which are undertaken both at the national and international levels. The building of dam and its impact on environmental security is one among different issues need to be contemplated. But, as far as the research work is concerned, the impact of Kalabagh Dam on environmental security in Pakistan is worthwhile to elaborate. There are various kinds of non-traditional security threats, but we have to take environmental security in Pakistan in general and how Kalabagh Dam project has the potential to breed ecological shambles in the Indus River in particular. For this purpose, following categorization has been made.

The first chapter is **“Theoretical Understanding on Environmental Security from Non-Traditional Security Perspective”**. It deals with the brief idea on the development of the Nontraditional security in the international field and how Non-

traditional security is different from traditional security. It highlights the concept of environmental security and its importance in the twenty first century. It emphasized on the factors that led to the increasing awareness about the increasing threats of environmental insecurity.

The second chapter, "**Kalabagh Dam and Its impact on Environment**", gives a lucid picture on environmental insecurity caused by building of dam and it renders potentiality of the Kalalabgh Dam to aggravate the already deteriorating environmental condition in Pakistan, particularly at the downstream provinces i.e. Sindh and Baluchistan. It portrays the possibility of increasing salinity, augmentation of waterlogging, plummeting of mangrove forest, loss of wild species, submergence of fertile land and fear of flood caused by the Kalabagh Dam.

The third chapter, "**Kalabagh Dam and Provincial Conflicts in Pakistan**", postulates the inter-provincial water wrangling among the provinces of Pakistan and the predominance of Punjab in the decision-making process. It gives a historical analysis that germinated the sense of alienation among the down stream provinces against Punjab and the federal government. Kalabagh Dam is the culmination of this historical exploitation of Punjab as far as legitimate water sharing is concerned.

The fourth chapter, "**Kalabagh Dam: A Question Mark Over National Security**", is the nub of this discussion because it is linked with national security. The building of Kalabagh Dam has the potentiality of environmental degradation and environmental degradation leads to loss of livelihood. Loss of livelihood can be caused by increasing salinity, waterlogging, flooding, climate change etc. Its repercussions reflect in the form of loss of productivity, migration, unemployment etc. which ultimately affect individual, social and national insecurity. It also covers the measures need to be considered as far as building of the Kalabagh Dam is considered.

The final chapter, "**Conclusion**", is nothing but renders a brief picture of this research work. It has proved the two hypothesis of this work by giving the instances of Iraq war and Darfur conflicts in Africa. It has accentuated rational water policy and linkages of environmental and national security.

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Chapter-I

Theoretical Understanding on Environmental Security from Non-Traditional Security Perspective

*“Environmental security is part of the solution, not part of the problem.
It is an imperative, not an option.”*

The term security was introduced by Cicero and Lukrez referring to a philosophical and psychological state of mind (Brauch 2003). It was used as a political concept in the context of ‘Pax Romana’ (Brauch 2003: 52). ‘Security’ as a political value has no independent meaning and is related to individual or societal value systems (ibid). However, security has been understood in a traditional manner and it has been a continuous phenomenon since the Treaty of Westphalia in 1648 which established the modern nation-state system. It accentuated the security of the state where territorial integrity and sovereignty has been the nucleus of state system. Thus, in the literature on international relations, the term ‘security’ has traditionally been defined to mean immunity (to varying degrees) of a state or nation to threats emanating from outside its boundaries (Ayoob 1983-84). In the words of Walter Lippmann, ‘a nation is secure to the extent to which it is not in danger of having to sacrifice core values, if it wishes to avoid war, and is able, if challenged, to maintain them by such victory in such a war’. Stephen Walt defined security studies as “the study of the threat, use and control of military force . . . [that is] the conditions that make the use of force more likely, the way that the use of force affects individuals, states and societies and the specific policies that the states adopt in order to prepare, prevent or engage in war”. The traditionalists, thus, tend to equate security with military issues and the use of force and many insist on military conflict as the defining key to security.

Why traditional security dominated in the international landscape? The freezing relations between the two super powers (the United States and the Soviet Union) during the Cold War period beefed up this security complex in the

international political discourse. The traditional security became more pervasive and fervent due to the phenomenal work rendered by Hans J. Morgenthau. To him, "International politics, like all politics, is a struggle for power. Whatever the ultimate aims of international politics, power is always the immediate aim" (Morgenthau 2001: 31). This is largely the anarchic nature of international environment and the process of institutionalization of state security and territorial integrity. Due to the anarchic nature of international relations, a concern for survival breeds a preoccupation for security (Brauch 2003: 53). For a state to feel secure requires "either that it can dissuade others from attacking it or that it can successfully defend itself if attacked" (ibid). Thus, security demands sufficient military power but also many "non-military elements ... to generate effective military power" (ibid). The emphasis the United Nations has put on sovereignty and the inviolability of territorial boundaries can be viewed as an indication of the institutionalization of this approach (Bilgin 2003: 203).

Nevertheless, during the receding period of Cold war in general and the demise of it in particular, the concept of security was redefined, refashioned and redesigned. The paradigmatic shift in international politics caused by the cave in of the Soviet Union forced the international scholars to render a new security agenda. The traditional lexicon on sovereignty and statehood is inadequate when it comes to security in the twenty first century (Tadjbakhsh and Chenoy 2007). These changes have prompted policy makers and scholars to think about more than military defence of state interest and territory, to include 'welfare beyond warfare' (ibid). Harold Muller argued that the traditional understanding of security "as the absence of existential threats to the state emerging from another state" has been challenged both with regard to the key subject (the state) and carrier of security needs and its exclusive focus on the "physical- or political-

dimension of security of territorial entities" that are behind the suggestions for horizontal and vertical widening of the security concept (Brauch 2003: 53).

Mehbub ul Haq has rightly said that, "We need to fashion a new concept of human security that is reflected in the lives of our people, not in the weapons of our country." He argued that the world is "entering a new era of human security" in which "the entire concept of security will change- and change dramatically". In this new conception, security will be equated with the "security of individuals, not just security of their nations" or, to put it differently, "security of people, not just security of territory" (Haq 1995). Mahbub-ul-Haq identified five, rather radical and necessary steps, to give life to the new conception of security: a human development conception with emphasis on equity, sustainability, and grassroots participation; a peace dividend to underwrite the broader agenda of human security; a new partnership between North and South based on "justice, not charity" which emphasizes "equitable access to global market opportunities" and economic restructuring; a new framework of global governance built on reform of international institutions such as the IMF, World Bank, and United Nations; and finally, a growing role for global civil society.

From this analysis it is pertinent to say that traditional security should be considered as per dynamism of threats to national security. The character of threats does not remain constant over time, but changes in response to both new developments in the means of threats, and to evolutions in states, which alter the nature of their vulnerabilities (Buzan 1982). Raymond Aron refers to this phenomenon as the 'law of change', which he defines as being that 'the military, economic and demographic value of a territory varies with the techniques of combat and production, with human relations and institutions' (Buzan 1982: 86).

Thus, the Human Development Report urged that the concept of security must change in two ways:

- From an exclusive stress on territorial security to a much greater stress on peoples security; and
- From security through armaments to security through sustainable development.

Contrasting state security with human security, the UNDP Development Report in 1994 said:

“For too long the concept of security has been shaped by the potential for conflict between states. For too long security has been equated with threats to a country’s border. For too long, nations have sought arms to protect their security. For most people today, a feeling of insecurity arises more from worries about daily life than from the dead of a cataclysmic world event. Job security, income security, health security, environment security, security from crime, these are the emerging concerns of human security all over the world” (UNDP May 1995).”

These are the new or non-traditional securities need to be taken in to account along with traditional security. If a country eschews these issues then it can challenge the very survivability of the state in the long run, which is more perilous than the traditional security threats. Thus, the concept of security needs to be broadened and deepened in the twenty first century because of the changing nature of threats.

Broadening means the “consideration of non-military security threats, such as environmental scarcity and degradation, the spread of disease, overpopulation, mass refugee movements, nationalism, terrorism, and nuclear catastrophe” (Ullmann 1983, Mathews 1989, Paris 2001: 97). By deepening means the “field is now more willing to consider the security of individuals and groups, rather than focusing narrowly on external threats to states” (Rothstein 1999, Walter 1999, Kumar 1997, Paris 2001: 97). Using the notions of broadening and

deepening, Roland Paris has constructed a matrix of the security studies field, as illustrated in the Figure.

Table No. 1

A Matrix of Security Studies

		What is the Source of the Security Threat?	
		Military	Military, Non-military, or Both
Security for Whom?	States	<p><u>Cell 1</u></p> <p>National security (Conventional realist approach to security studies)</p>	<p><u>Cell 2</u></p> <p>Redefined security (e.g. environmental and economic security)</p>
	Societies, Groups, and Individuals	<p><u>Cell 3</u></p> <p>Intrastate security (e.g., civil war, ethnic conflict etc.)</p>	<p><u>Cell 4</u></p> <p>Human security (e.g., environmental and economic threats to the survival of societies, groups, and individuals)</p>

Source: Roland Paris, "Human Security: Paradigm Shift or Hot Air?", *International Security*, Vol. 26 (2), (Fall 2001), p. 98.

The matrix contains four cells, each representing a different cluster of literature in the field. Here "security threat" connotes some type of menace to survival. The top half of the map includes works that focus on security threats to states; the bottom half comprises works that consider security threats to societies, groups, and individuals. The left side of the matrix shows literature that focuses on military threats, and the right side on military or nonmilitary threats, or both.

The broadest definition of human security is "freedom from fear" and "freedom from want" (UNDP 1994). It encompasses economic security, food security, health security, environmental security, personal security, community security, and political security (UNDP 1994). Buzan suggested that there were three main reasons to broaden the concept of security. Broadening was needed in order

- To capture the changing realities of the world.
- To make government to prioritize and securitize particular issues and to transfer them from 'low politics' to 'high politics'.
- Security had potential as an integrative concept for international relations as a field of inquiry that had notoriously fluid boundaries

After 1990s, security has been comprehended by using various nomenclatures like "common security", "human emancipation" etc. but the objective of all is same- the security of the people. Security is common when it ensures that poor have access to resources, freedom from environmental degradation and the pollution of others' economic activities, and the assurances of these things in to the foreseeable future (Dalby 1992: 116). Security needs to encompass the interests of people, rather than just states, in gaining access to food, shelter, basic human rights, health care, and the environmental conditions that allow these things to be provided in to the long- term future (During 1989, Dalby 1992: 116).

Olaf Palme, in his introduction to the report of the Independent Commission on Disarmament and Security Issues titled *Common Security: A Programme for Disarmament* wrote:

“Our alternative is common security. There can be no hope of victory in nuclear war, the two sides (the United States and the Soviet Union) would be united in suffering and destruction. They can survive only together. They must achieve security not against the adversary but with him. International security must rest on a commitment to joint survival rather than on a threat of mutual destruction”.

Likewise, Booth gave priority to human beings and said security implies human emancipation or absence of threats. Emancipation is the freeing of people (as individuals and groups) from those physical and human constraints which stop them carrying out what they would freely choose to do. War and the threat of war is one of those constraints together with poverty, poor education, political oppression, and so on (Booth 1991: 319).

Theoretical Discourse on Security

During the Cold War John Herz coined the Hobbesian term of a security dilemma with which he referred to the propensity of countries “to acquire more and more power to escape the impact of power of others”, a tendency that has resulted in a vicious circle of mutual arms build-up (Brauch 2003: 53). Russett (1993: 822, Brauch 2003: 53) has argued: “Neither threats nor concessions are likely to ease the security dilemma. Threats will enhance the adversary’s sense of insecurity; concessions will probably enhance one’s own” (Brauch 2003: 53). From a realist Hobbesian worldview, environmental and human security challenges are not perceived as threats, and often non-existing. From a pragmatic Grotian perspective, environmental security challenges expose the societal vulnerability; this may lead to a “survival dilemma” (Brauch 2002a, 2004) for those with a high degree of societal vulnerability which may be most seriously affected by natural (or man-made) environmental hazards. Realism focuses on

states as rational maximizers of power in an anarchic system; state behaviour is mainly a function of the structure of power relations in the system (Waltz 1979, Dixon 1991: 84). But this emphasis on states means that theorists tend to see the world as divided into territorially distinct, mutually exclusive countries, not broader environmental regions or systems (Dixon 1991: 84). Realism, thus, encourages scholars to deemphasize trans-boundary environmental problems, because such problems often can not be linked to a particular country, and do not have any easily conceptualised impact on the structure of economic and military power relations between states (ibid: 85). Realism induces scholars to squeeze environmental issues into a structure of concepts including "state," "sovereignty," "territory," "national interest," and "balance of power". The fit is bad, which may lead theorists to ignore, distort, and misunderstand important aspects of global environmental problems (ibid).

However, the security dilemma approach was challenged by the Grotian survival approach (Brauch 1996b, 2000) that may necessitate additional multilateral cooperation in international security (arms control, terrorism) and environmental regimes (climate, desertification and water), in international and supranational organisations (Brauch 2003: 54). Thus, the zero-sum games of many realist approaches in the Hobbesian tradition of the 19th and 20th century must be replaced- from a Grotian or Kantian perspective- by non-zero-sum games where all major players should aim at the creation of conditions for the survival of humankind (Axelrod 1984, Dixon 2003: 54). From a Kantian, liberal or constructivist perspective international environmental treaties and regimes pose obligations for governments and peoples.

Development of Non-traditional Security

Though the non-traditional security threats were existed prior to the onset of Cold War, it was highlighted in the Club of Rome in 1970s (Bajpai 2003). In the mid 1970s, in international relations, the Multinational World Order Models Projects (WOMP) launched an ambitious effort to envision and construct a more stable and just world order, and as a part of this endeavour drew attention to the problem of individual well-being and safety (Mendowirz 1975, Kothari 1974, Bajpai 2003: 196).

Beginning in the 1970s, the Club of Rome group produced a series of volumes on the "world problematique", which were premised on the idea that there is a complex of problems troubling men of all nations: "poverty ... degradation of the environment; loss of faith in institution; uncontrolled urban spread; insecurity of employment; alienation youth; rejection of traditional values; and inflation and other monetary and economic disruptions" (Meadows et al. 1972, Bajpai 2003: 197). The report noted that:

"Every person in the world faces a series of pressures and problems that require his attention and action. These problems affect him at many different levels. He may spend many of his time trying to find tomorrow's food....He may be concerned about personal power or the power of the nation in which he lives. He may worry about a world war...or a war next week with arrival clan in his neighbourhood" (ibid).

In the 1980s two other independent commissions contributed the changing thinking on development and security. The first was the Independent Commission on International Development Issues chaired by Willy Brandt, which in 1980s issued the North-South report (Bajpai 2003). In his introduction to the report, Brandt wrote: "Our report is based on what appears to be the simplest common interest: that mankind wants to survive, and one might even add has the moral obligation to survive. This not only raises traditional questions of

peace and war, but also how to overcome world hunger, mass misery and alarming disparities between the living conditions of rich and poor” (Brandt report 1980: 13, Bajpai 2003). The second commission of the 1980s, the Independent Commission on Disarmament and Security Issues (chaired by Olof Palme), authored the famous Common Security Report, which also drew attention to alternative ways of thinking about peace and security. While it focused on military issues and the staples of national security, it acknowledged that in the Third World security was also threatened by “poverty and deprivation, by economic inequality”. The Report also noted: “Common security requires that people live in dignity and peace, that they have enough to eat and are able to find work and live in a world without poverty and destitution”. The Brundtland Commission (1987: 19) also put forth that the security concept “must be expanded to include the growing impacts of environmental stress – locally, nationally, regionally, and globally”. It also referred to two great threats facing humankind: “The first is that of nuclear exchange. ... The second is that of environmental ruin worldwide” (Myers 1996: 6, Brauch 2003: 75).

With the end of the Cold War, calls for new thinking in security matters grew rapidly. In 1991 the Stockholm Initiative on Global Security and Governance issued a call for “Common Responsibilities in the 1990s”, which referred to “challenges to security other than political rivalry and armaments” and to a “wider concept of security, which deals also with threats that stems from failures in development, environmental degradation, excessive population growth and movement, and lack of progress towards democracy” (Bajpai 2003). Four years later the Commission on Global Governance’s report, *Our Global Neighbourhood*, echoed the sentiments of the Stockholm Initiative: “The concept of global security must be broadened from the traditional focus on the security of

states to include the security of people and the security of the planet” (Bajpai 2003: 197).

However, the non-traditional security in the form of human security got prominence in the 1994 Human Development Report. The 1994 UNDP Human Development Report defined human security as ‘freedom from fear and freedom from want’ and characterized by ‘safety from chronic threats such as hunger, disease and repression as well as protection from sudden and harmful disruptions in the patterns of daily life- whether in homes, in jobs or in communities’. It included in its definition of human security such issues as unchecked population growth, disparities in economic opportunities, migration pressures, environmental degradation, drug trafficking and international terrorism.

The Commission on Global Governance (1995) called for a broader concept of global security for states, people, and the planet. It claimed a linkage between environmental deterioration, poverty, and underdevelopment as causes of conflict. In the 1999 Millennium Declaration, Kofi Annan said peace is “much more than the absence of war” and it should encompass economic development, social justice, environmental protection, democratization, disarmament and respect for human rights and the rule of law (Annan 2001). In 2003, the Commission on Human Security co-chaired by Sadako Ogata and Amartya Sen described human security as the necessity to protect vital freedoms by building on people’s strengths and aspirations and protecting them from critical and pervasive threats and situations.

The downstream effects of non-traditional perils also manifested by the end of 2005 when two documents came in to being- one was the report from the UN High-level panel on Threats, Challenges and Change entitled ‘*A More Secure World: Our Shared Responsibility*’, and the other was the reform agenda proposed

by Koffi Annan in *"Towards All Freedom"*. These documents highlighted the threats like poverty, denial of human rights, terrorism radiological and biological weapons etc. *A More Secure World: Our Shared Responsibility*, released in December 2004, said:

"No State, no matter how powerful, can by its own efforts alone make itself invulnerable to today's threats. And it can not be assumed that every State will always be able, or willing, to meet its responsibility to protect its own peoples and not to harm its neighbours. ... Differences of power, wealth and geography do determine what we perceive as the gravest threats to our survival and well-being. ... Without mutual recognition of threats there can be no collective security. ... What is needed is nothing less than a new consensus. ... The essence of that consensus is simple: we all share responsibility for each other's security".

The High-level Panel distinguished among six clusters of threats, ranging from economic and social threats (including poverty, infectious disease, and environmental degradation, inter-state and internal conflict, weapons of mass destruction, terrorism and trans-national organised crime). Thus, for the first time "environmental degradation" is listed among the threats confronting the UN that require preventive action "which addresses all these threats." Development "helps combat the poverty, infectious disease, and environmental degradation that kill millions and threaten human security". The report entitled 'In Larger Freedoms' says, "While poverty and denial of human rights may not be said to cause civil war, terrorism or organized crime, they all increase the risk of instability and violence".

Security in Developed and Developing Countries

There is a debate on the security of developed and developing countries. For many people in the world the real security dilemma is clearly how to survive until tomorrow. The Ethiopian, Somali and Sudanese food crises are among the most visible in this regard (Pettiford 1996: 293). Many Third World countries find

themselves burdened by debt, environmental problems, ineffective administrative structures, ethnic divisions and weak economies. Can, and should, security for such states be understood in the same way as the security of the developed world (Freedman, 1990: 86). In developed states, the state was seen as the major source of security and threat: the military strength of the state protected its people against outside threats; its police force protected them internally; and its social security programmes protected them against ill-health, unemployment and extreme hardship (Mills 1997). Developing or underdeveloped states did not have the means or capacity to provide this comprehensive protection; and worse still, the state was itself often seen as a source of insecurity- for its citizens at least- through corruption, oppression, and other forms of bad government (ibid). To enlarge the concept of security in the context of third world countries implies that national security is no longer a cry of self- help in an anarchic universe; it is now linked to other domestic concerns: regime stability (Ayoob 1989), human rights development on appositive index, overcoming environmental threats, provisioning equity and justice, and removing ethnic conflict (Pasha 1996: 287). It is the internal aspect of security that must now take precedence over the usual threat from without (ibid).

In this regard Ayoob seeks to explain the security predicament of states, especially in the Third World, by focusing attention on the question of the evolution of modern nation-state. The building of states in Western Europe, as Tilly observed, "cost tremendously in death, suffering, loss of rights and unwilling surrender of land, goods and labour . . . building differentiated, autonomous, centralized organizations with effective control of territories . . . entailed eliminating or subordinating thousands of semi-autonomous authorities" (Ayoob 1983-84). It took European states anywhere between four to seven centuries to emerge as full-fledged national states. Likewise, developing

countries are facing lot of internal problems due to dearth of socio-economic development and political immaturity. One can not deny that some of these schisms exist in developed societies as well, for example, in racial tensions in the United States, denominational antagonisms in Northern Ireland, uneven economic development as between northern and southern Italy and ethno-linguistic differences in Canada (ibid). However, the scale and intensity of these fissures when measured against the overall identification of a state's population with the concept of that particular state and its unconditional acceptance of the legitimacy of the particular government in power are minimal and certainly manageable (ibid).

Third World countries, Ayoob argues, are expected to complete this process in just a few decades and that too, by simultaneously undertaking all the stages of nation-state building i.e. standardization, penetration, participation and distribution with all its inherently contradictory pulls and pressures. As a result, many Third World states with highly plural and diverse societies are not yet politically and socially cohesive units. While the consolidation of the modern state in the West had meant that the internal dimension of its security was effectively resolved, in the Third World, it must be accorded equal, if not greater weight.

However, of late, this dichotomy has been whittled down due to the globalised nature of security where the threat to security can be elevated "beyond local and national levels to global prominence" (Mills 1997). Security of developed countries should not be compartmentalised from the security of developing countries, though there is variation to some extent. For example, the impact of climate change has as much potential to affect the developed countries as the developing countries, and, thus, it has universal values. Thus, both developed and developing countries should be concerned about the impact of

security threats and to develop a “new partnership between the North and the South based on justice not on charity; on the equitable sharing of global market opportunities, not on aid; on two way compacts, not one way transfers; on mutual co-operation, not on unilateral conditionally or confrontation” (Huq 1998: 5). In arguing for the necessity of a North-South engagement for development, *The North-South Report* by an Independent North-South Commission chaired by Willy Brandt emphasized the “will to overcome dangerous tensions and to produce significant and useful results for nations and regions- but, first and foremost, for human beings- in parts of the world”. People are more threatened by so called ‘soft’ threats in their every day lives than ‘hard’ threats such as being attacked by terrorists or with weapons of mass destruction.

Traditional Security and Non-traditional Security

From the foregoing discussion, it is germane to pin down the basic difference between traditional and non-traditional security.

1. Traditional security is based on the security dilemma. Johan Herz introduced the concept of security dilemma in the early 1950s, a structural notion in which the self-help attempts of states to look after their security needs tend automatically (i.e. regardless of intention) to lead to rising insecurity for others as each interprets its own measures as defensively, and the measures of others as potentially threatening (Buzan, 1982: 3).

There is no longer such security dilemma in Non-traditional security. It is based on common security where security must be sought and maintained not against one’s adversaries but with them and mitigate the security dilemma by organising policies concerning security in coordination with others to maximise mutual as opposed to unilateral security (Bilgin 2003: 204).

2. The traditional concept of security or territorial security was advocated by realist or neo-realist thinkers and they consider the state as the provider of security. But in NTS, "states can not be assumed to act as providers of security at all times because some are willing to make significant portions of their population insecure in an attempt to secure themselves" and "others fail to respond to the needs of their citizens", what Booth (1991) argues.
3. When state is the sole provider of security than the security of the state is vital. If the state is secure, then those who live within it are also secure. It means security of the territorial integrity and sovereignty of a state. It perceives that the principal threat to its national interest is violence and coercion by other states and justifies the retaliatory use of force- or threats of its use- to bring about what is largely considered to be a military balance.

Non-traditional security means security of the people or individual sovereignty. People represent, in one sense, the irreducible basic unit to which the concept of security can be applied (Buzan, 1982: 18). Indeed, state-based approaches to security do not allow us to examine the insecurities of individuals and communities within state borders, thereby glossing over a range of suffering in security analysis (Bilgin 2003: 208).

4. Traditional or classical security seeks security through armaments and balance of power. Because of anarchic nature of international politics, states need to protect themselves through military means and by developing alliances.

Non-traditional approach seeks security through sustainable development where human development gets prominence in consonance with state development. This approach regards people as the real source of wealth

and emphasizes the development of human capabilities (Haq 1995). It envisages their expansion and extensive use, while advocating the widening of choices available to people (ibid). It emphasizes the two aspects of human capabilities- the formation and the use of these capabilities (ibid). The former covers improvements in health and promotion of knowledge while the latter includes leisure, political economic and social activities (ibid).

5. The scope of traditional security is limited. In the traditional military security realm, a particular country may be seen as the “enemy” and its aggression may be directed specifically against one’s own country (Sheehan 2006).
6. Traditional security looks only on external security and there is no compartmentalization of internal and external security. Non-traditional security puts emphasis both on internal and external security.
7. Traditional security is based on coercion and force but Non-traditional security is based in persuasion. NTS relies on soft power approach which uses the method of persuasion rather than forces to disseminate information and idea on regional co-operation or human security. It means “the art of disseminating information in such a way that desirable outcomes are achieved through persuasion rather than coercion” (Axworthy 1997, Bajpai 2003).

Unlike traditional threats emanating from an adversary, Non-traditional threats are better understood as shared risks and mutual vulnerabilities¹ because Non-

¹ The concept of ‘mutual vulnerability’, coined by Jeorge Nef, relates to interconnectedness of systematically related security threats: dys-functionality in one sphere is structurally and sequentially expressed in other sub-systems and leads to a vicious circle of causes and effects. (S. Tadjbakhah and A. M. Chenoy, *Human Security: Concepts and Implications*, London-New York, Routledge, 2007).

traditional threats are inter-linked and interconnected. They are interconnected in two ways: First, they are mutually linked in a domino effect. For example responses to insecurities stemming from environmental degradation could contribute to population movement into other fragile ecological settings, a deteriorating health situation, hunger, loss of livelihoods and so on (Tadjbakhsh and Chenoy 2007). Second, the various threats can spread within a given country (with impoverished areas, for example threatening the stability of more progressive ones), bleed into other regions (through massive unemployment, migration, export of arms, environmental degradation, health epidemics, etc.), and negatively impact global security (through breeding discontented armed groups, drug exports etc.) (ibid). As the Non-traditional threats are inter-linked and interconnected, the concept of security transferred from national to universal values (ibid).

However, non-traditional security can be accomplished only in commensurate with the security of the state. It is security through state, not security from state. They are complementary rather paradoxical in their nature.

Security Complex in South Asia

The security situation in South Asia is quite perplexed in nature. It comprises of eight developing countries with India, the largest, sharing borders with five of them. All, except the island nations of Sri Lanka and Maldives, share land borders with India. Nepal and Bhutan are landlocked (Sinha 2006). The region has several major interstate rivers plus a common sea coastline extending from Pakistan in the west to Bangladesh in the east. This geographic contiguity is fractured by geopolitical rivalries and security concerns between the different political units, whose political systems run from a well established and deeply

rooted democracy in India to a fledgling one in Bangladesh and uncertainty in Nepal through monarchy in Bhutan to authoritarianism in Pakistan (ibid).

The South Asian region has been replete with inter-state rivalry largely due to the underdeveloped political culture and feeble political institutions. The political problems in South Asia are basically a reflection of the absence of regional consensus on the role of pivotal power- India- on security issues (Ayooob 1989-1990: 128). This lack of consensus, in turn, results from the disparity between India's objectively determined presence in the region and its inability to translate this prominence into a managerial role in the subcontinent in such a way that its legitimacy is not challenged either within or outside South Asia (ibid).

It offers an approach to security which requires attention to both the macro-level of great power impact on the system, and the micro-level of local state relations. In forcing attention to both levels, security complexes emphasize the mutuality of impact between them, with external influences tending to amplify local problems, and local problem shaping and constraining external entanglements and influences (Buzan 1982: 112). The continuous institutionalisation of hostility has made the environment more ignominious where military security is the nub of inter-state relations at the cost of environmental security, food security, economic security and ultimately the security of the people. The "structural political threat"² prevents them to live with harmonious co-existence. Their political systems, thus, play a zero-sum game with each other whether they will it or not (Buzan 1982). The political threats posed to each other by India and Pakistan clearly defines a central

² Structural political threats arise when the organising principle of two states contradict each other in a context where the states can not simply ignore each other's existence (Barry Buzan, *People, States and Fear: The National Security Problem in International Relations*, New Delhi: Trasasia Publishers).

element in the national security problem of each of them (ibid). The traditional “security complex”³ has dominated over the mindset of political leaders. The heart of this complex is the rivalry between India and Pakistan, two large states, whose insecurities are so deeply intertwined that their national securities, particularly in terms of political and military security, can not be separated (ibid).

Environmental Security

Non-traditional security threats are trans-national, universal and non-military in nature, though the degree of repercussions varies from developed to developing countries or region to region. Norman Myers argues ‘that nobody can feel finally secure as long as others are persistently insecure’ and presents a case for pursuing ‘ultimate security’ (environmental security). Thus, environmental security is the essence of Non-traditional security.

In theory there are two possible kinds of environmental security threats. The first are those that emanate from the natural environment, such as volcanic eruptions and earthquakes (Sheehan 2006: 101). The second are those that are the result of human agency impacting on the natural environment, such as greenhouse gas emissions and damage to the planetary ozone layer (ibid). There is a consensus that it is the latter category that is the proper concern of environmental security (ibid). These are the threats resulting from the way that the process of civilization has come to involve a manipulation of nature that has reached self-defeating proportions as a result of massive population increase and the enormous growth of economic activity in the twentieth century (ibid). For Barnett, it is the persistence of these insecurities that induces interest in

³ A security complex is defined as a group of states whose primary security concerns link together sufficiently closely that their national securities can not realistically be considered apart from one another (ibid).

environmental security and he defines environmental security as "the process of peacefully reducing human vulnerability to human-induced environmental degradation by addressing the root causes of environmental degradation and human insecurity", which are "the impoverishment of people and the degradation of nature largely through political-economic processes".

Why environmental security came into prominence? Dixon (1991: 79) has pinned down that because of the following reasons environmental security came in to prominence in the international security discourse:

- First, the waning of the ideological and military confrontation between the superpowers, a space for other issues has opened in public discourse in Western societies.
- Second, public and media awareness of global environmental change was catalyzed in North America by the particularly hot and dry summer of 1988 (Stephen Schneider in *Global Warming: Are We Entering the Greenhouse Century?* (San Francisco: Sierra Club 1989).
- Third, during the last decade there has been a genuine shift in the scientific community's perception of global environmental problems.

Allenby (1999) has said that environmental issue can no longer be thought of as an ancillary rather than integral component of industrial, social and economic systems. This dynamic- the movement of environment from "overhead" to "strategic"- occurs at different scales within firms, industrial sectors and society itself, and while differing in detail, has many fundamental similarities in each case (Allenby, 1999). Thus, the integration of environmental considerations into the national security apparatus of any nation can be seen as

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one example of a broader transition of environmental issues from “overhead”⁴ to “strategic”⁵ for consumers, producers, and society itself (Allenby and Richards 1994, Socolow *et al.* 1994, Graedel and Allenby 1995).

Definitions of Environmental Security

Environmental security has been defined by various scholars to reduce environmental degradation, particularly caused by human-induced threats. In its report, United Nations Developmental Programme says environmental security means where the threats are pollution, environmental degradation and resource depletion, requires a healthy physical environment, security from the degradation of the local eco-systems, air and water pollution, deforestation, desertification, salinization, natural hazards (e.g. cyclones, earthquakes, floods, droughts and landslides) and man-made disasters (e.g. due to road or nuclear accidents or poorly built slum buildings) (UNDP 1994).

According to Mathew (Mathew 1997: 78, Brauch 2003: 67), environmental security should be limited to four areas of concern:

1. greening the military;
2. using security assets to support environmental policy without compromising traditional roles;
3. developing strategies for tracking and responding to those areas where environmental factors are likely to trigger or intensify conflict or pose a threat to national interests; and
4. incorporating environmental expertise in to conflict-resolution capabilities.

⁴ Overhead issues are those that are ancillary to primary functions, much as environmental issues are treated by firms under traditional command-and-control, end-of-pipe regulatory structures (Allenby 2000: 7).

⁵ “Strategic” issues are those that are viewed as integral to the primary activity (*ibid.*).

For Barnett, "environmental security is the process of minimising environmental insecurity", having humans as the major referent of security. With this definition he "seeks to treat the underlying causes that create environmental degradation" (Brauch 2003: 73). In his view environmental security require nation-states to "act domestically and in concert to curb global, regional and local processes that generate environment degradation and human insecurity" (ibid). Thus, environmental security is nothing but to protect and preserve the environment from the existing and potential risks and vulnerabilities⁶ caused by natural as well as human induced insecurity.

Why environmental security is important?

The argument for an environmental security perspective arose from the following key observations:

1. Ecological threats are much more diffuse than clearly identified military threats, or even more focused economic threats that can be linked to questions of debt, financial structures, or the fluctuations of international commodity prices (Dalby 1992: 113). The ecological disruption of the planet threatens numerous facets of existence. Indeed the all- pervasiveness of ecological threats makes ecological security perhaps even more difficult to formulate than other forms of security (ibid).
2. Existing militarised models of security are obviously inappropriate for a long term ecologically sustainable future; although for the foreseeable future military concerns will obviously remain important to most state's security considerations (Dalby 1992: 111). Temporary

⁶ Vulnerability as "a set of conditions and processes resulting from physical, social, economical, and environmental factors, which increase the susceptibility of a community to the impact of hazards" (ISDR 2002, Brauch 2003).

military supremacy has never been a guarantee for permanent safety (ibid). As per Paul Kennedy, the cost of military supremacy may undermine the long- term security of the state that temporarily asserts its dominance (Kennedy 1987, Dalby 1992).

3. Separating Security from state security opens up space for constructive interactions between peoples across boundaries, eroding the possibilities of constructing security in terms of exclusionist identity (Dalby 1992: 115).
4. Environmental threats can have catastrophic outcomes (Maltais *et al.* 2003).
5. Traditional security thinking does not prepare society to deal with these threats (ibid), and,
6. Unlike traditional security issues, environmental threats are not confined by national boundaries (ibid).

Traditional Security and Environmental Security

Pettiford (1996: 296) has differentiated between traditional and environmental security in the following way:

- Traditional security is based on national interests, while the resolution of environmental problems may require a global outlook.
- Threats of violence dealt with by the traditional concept are usually deliberate in contrast to the unintentional or side-effect nature of environmental degradation.
- Traditional security deals with us 'against them' zero- sum situations in which effort over a limited time period is likely to lead to victory or defeat. By contrast, in the context of environmental threat the human race is its own enemy; victory, possibly crucial to our very existence, will depend upon sustained effort for a possibly unlimited period.

Environment and Security: A Debate

To “securitize” an issue not previously deemed to be a security issue was to challenge society to promote its higher in its scale of values and commit greater resources to solving the related problems (Sheehan 2006: 52). According to Buzan (1982), in today’s world the national security problem needed to be seen in terms of general systemic security problem in which individuals, states, and the system all play a part, and in which economic, social and environmental factors can be as important as political and military ones. Then the question arises “Are the potential impacts of the environmental perturbation in question substantial enough to be considered a national security threat?”

It is argued that environmental problems should not be seen as security problems because they are not generally national in character, are not caused intentionally as military threats are, and are more reliably and effectively solved through the development of cooperation than through defensive or offensive military build-up (Maltais *et al.* 2003). Daniel Deudney (1991) in his essay “Environment and security: Muddled thinking” argues that environmental problems should not be viewed as security problems because “Traditionally, the concept of national security, as opposed to national interest or well-being, has centred upon organized violence”. Deudney (1991) also points out that “when an earthquake or hurricane causes extensive damage, it is customary to speak of natural disasters, but not to speak about such events as threatening national security”. While he acknowledged three linkages between security and environment: a. the resources consumed by the military, b. the destructive impact of war on the environment, and c. the impact of preparing for war (resource use and pollution), he doubted the linkages between environmental causes and conflictual outcomes (Brauch 2003: 73-74).

Deudney argued that environmental degradation and threats to military security were fundamentally different issues, for four main reasons:

1. They were different kinds of threats. Many kinds of things kill human beings, such as accidents, aging, and illness, but these are not seen as “security” threats. If everything that could cause death or decline in human being were to be labelled a “security threat,” the term would lose any analytical usefulness it possessed (Sheehan 2006: 105)
2. The scope and the source of threats to environmental and military security are very different. Few environmental threats are purely “national” in character, in terms of their causes, their consequences, or their solutions. In the traditional military security realm, a particular country may be seen as the “enemy” and its aggression may be directed specifically against one’s own country. In the environmental realm, threats generally emerge over a large area and threaten more country simultaneously (ibid: 106).
3. Military threats are intentional and they are “planned, organized, deliberate acts by human collectivities” (ibid: 106). But environmental threats are inadvertent in nature and caused by “unfortunate result of human development and progress”.
4. The organizations that provide protection from violence differ greatly from those engaged in environmental protection. National security is delivered by organizations very different from those of civil society, characterised by hierarchy and centralization and willing to use high level of violence, death and destruction to achieve their goals. Environmental issues, in contrast, tend to involve a wider spectrum of society, and a quite different ethos motivates the individuals and groups concerned (ibid: 106). The emphasis is on ideas like stewardship, respect, and protection (Deudney 1991).

This may be true from an American perspective where natural disasters of this type result in largely economic costs, but in a country like Bangladesh where a hurricane can kill thousands upon thousands of people and undermine the proper functioning of economic and social infrastructure the perception may be different, especially for those groups most affected by such events (Maltais *et al.* 2003). Ian Rowlands (1991: 103), in his essay, "*The Security Challenges of Global Environmental Change*", presents the counter argument stating: any force that had the power to inflict such harm upon a state- kill some of its citizens and displace others, reduce its agricultural output, threaten its water supply, and destabilize its ecological balance— would be received with considerable attention...just because these particular challenges are not being issued and controlled by a national leader does not mean that they should be ignored. Indeed, the fact that they are beyond such control makes them all the more threatening and ominous. Many developing countries are more immediately threatened by issues such as deforestation or desertification than they are by the threat of external military forces. A good example is Tunisia. Desertification clearly threatens the core values and existence of those who farm on the land that the Sahara threatens to envelop (Nester 1995: 441). Tunisia has reflected this reality in its national security doctrine by defining the struggle against desertification as a key part of its national defence efforts, and by allocating specific military units to a continuing effort to contain and reverse the advance of the Sahara (Sheehan 1999). Robert Kaplan also vehemently backed the linkages between environment and security and popularizes the notion that 'the environment' should be treated as the 'national security interest of the early twenty-first century' and that such factors as 'surging populations, spreading disease, deforestation and soil erosion, water depletion and air pollution' will prompt mass migrations and, in turn,

incite group conflict' from which not even the richest states will be immune (Kaplan 1994b: 45, Dannreuther 2007: 69).

Threats to national security might also come in ecological forms, in the sense that environmental events, like military and economic ones, can damage the physical base of the state, perhaps to a sufficient extent to threaten its ideas and institutions (Buzan 1983: 82). Traditionally ecological threats have been seen as natural, and therefore, not part of a national security concerns (ibid). Earthquakes, storms, plagues, floods, droughts, and such-like might inflict war scale damage on a state, as in Bangladesh in 1970, but these were seen as part of the struggle of man against nature, not in terms of competition among men (ibid: 82-83). With increase in the scale, diversity and pace of human activity, however, ecological threats to one state might well stem identifiably from activities within another. Trans-frontier pollution is an obvious example (ibid: 83). Myers also favoured the linkages of environment and security. He warned that if the environmental foundations are depleted:

"the nation's economy will eventually decline, its social fabric will deteriorate, and its political structure will become destabilized. The outcome is all too likely to be conflict, whether in the form of disorder and insurrection within a nation or tensions or hostilities with other nations. ... National security is no longer about fighting forces or weaponry alone. It relates to water-sheds, croplands, forests, genetic resources, climate, and other factors rarely considered by military experts and political leaders, but that taken together deserve to be viewed as equally crucial to a nation's security as military prowess" (Myers 1996: 20- 21, Brauch 2003: 66).

Myers asserts that the environmental aspect should be included in every security strategy and he has designated environmental security as the 'ultimate security' (Myers 1989: 41).

Adil Najam identifies four arguments that are commonly put forth by those who envision a strong link between environment and security:

1. The conceptual argument that “security implies freedom or protection from serious threats to human well-being... (therefore) whatever poses such a threat, be it military, economic, resource, food, or environmental realms, becomes a security problem”.
2. The theoretical argument focuses principally on “empirical cause and effect relationship, in particular the potential of major environmental changes to generate and intensify (violent) conflict between and within states”.
3. The political argument seeks to advance the environmental cause by taking advantage of the potency of the term security... (and) bestow the (environmental) problematique with a greater sense of urgency that elevates it to the realm of “high politics”.
4. Finally, the normative case “presumes the primacy of environmental values and the threat the modern civilization poses to them” and seeks to place “societal values in a more appropriate hierarchy” (Najam, in Thakur et al. (eds) 2004: 150).

Even if the environmental threat is substantial, certain and proximate, is the national security apparatus institutionally and culturally the most capable of mounting an effective response? And, if so, to all or only to selected dimensions of the threat? (Allenby 2000: 13-14). Maintaining a narrow definition of security preserves the military as an institution whose purpose is to contend with the military threats that invariably arise in the international arena (Wilner 2006-2007). Samuel Huntington’s work on civil-military relations, for instance, assumes that the military is primarily a war fighting institution, used for coercion, warfare, and to defend the state, its citizens, and its core interests

(Huntington 1957, Wilner 2006-2007). Accordingly, the military as an institution declines in effectiveness and function when non-military roles (humanitarian intervention, policing, or environmental protection) are bestowed upon it. Geoffrey D. Dabelko and David D. Dabelko (1993: 173-174) have summarized that "the conflictual basis of national security makes the instruments designed to safeguard the state inappropriate for addressing the many environmental problems that ignore national borders and ...require cooperative approaches".

Why there is disagreement to link between environment and security? Insofar as security is premised on maintaining the status quo, it runs counter to the changes needed to alleviate many environmental and economic problems because it is precisely the status quo that has produced problems (Lipschutz 1991: 189- 198). To a large extent they are those who currently benefit from the existing modes of development and political order are those least likely to take environmental arguments seriously or to wish to initiate dramatic changes (Riordan 1989). In the case of the Sudan, clearly the state has been used by the rich and powerful to suppress the poor, whose plight is aggravated by the industrial agriculture "development" model that has dispossessed many people of the means of their livelihood (Dalby 1992). Here, as Matthias Finger argues, military action puts the preservation of the state above any concerns for environmental stability and even the survival of large numbers of the state's population (Dalby 1992: 114). Caroline Thomas has rightly argued that the security approach that adopted by those states in the developed world were "relatively satisfied with the status quo and saw security mainly in terms of its maintenance". They privileged the stability of the existing system as foremost security concern. And the more holistic approach, as per Thomas, was as opted by those states in the Third World that included economic, political and environmental issues in their security agenda. The search for security in the

Third World was mostly about maintaining domestic security through state-building and establishing secure systems for dealing with food, health, money, and trade as much as it was about building up the military (Bilgin 2003). Accordingly, many (but not all) Third World states saw a change in the status quo not necessarily as a threat but rather as conducive to security- provided, of course, that the change was toward the creation of an international economic structure sensitive to the needs of developing states (Bilgin 2003: 206). The West Phalian notion of security that emerged in the seventeenth century has taken paradigmatic shift. The nature of security is no longer glue to security of the state, rather security of the people (Buzan 1982: 86).

Evolution of Environment and Security Linkages

During the Cold War, environmental concerns have rarely been perceived as security problems. The environmental debate has gradually evolved since the 1950s, and since the 1970s global environmental change has focused on "human-induced perturbations in the environment" that encompass "a full range of globally significant issues relating to both natural and human-induced changes in the Earth's environment, as well as their socio-economic drivers" (Brauch 2003). According to Munn (2002), "changes greater than humankind has experienced in its history are in progress and are likely to accelerate". Dealing with future environmental challenges requires more than a prediction of a single future path. It requires to "map a broad range of future environmental trajectories" that may confirm "that the changes of the 21st century could be far greater than experienced in the last several millennia" (Munn 2000: xii, Brauch 2003).

Brauch (2003: 92-120) has distinguished four phases of research on environmental security:

- Phase I: In the 1970s and 1980s research focused on the environmental impact of wars (Westing 1976, 1980, 1984, 1988, 2003), with conceptual contributions of Osborn (1953), Brown (1954), Galtung (1982) and Brock (1991, 1992) and proposals by Ullman (1983), Mathews (1989), and Myers (1989).
- Phase II: During the 1990s, two empirical environmental security research projects were pursued by the Toronto Group (Homer-Dixon 1991, 1994, 1996, 1999, 2000; Homer-Dixon/Blitt 1998), and by the Bern-Zürich Group (Bächler 1990, 1995; Bächler/Spillmann 1996a, 1996b; Bächler et al. 1996).
- Phase III: Since the mid-1990s comparative studies and conceptual deepening were launched by many research teams, partly relying on modelling, on management efforts and focusing on the conflict potential of resource use, on state failures, and on syndromes of global change.
- Phase IV of environmental security research has been identified by Dalby (2002) and Brauch (2003: 124-134; 2003a: 919-953) that combines natural structural factors (climate change, water, soil) with human dimensions (population, urban and rural systems) of Global Environmental Change (GEC), based on the expertise of both sciences with regard to outcomes and conflicts.

During the first phase “there was a need to redefine security and to include a new range of threats”, and “there was an acceptance that the object of security was no longer simply the state, but ranges to levels above and below the level of the state” (Lonergan 2002 V: 270-271). During the second phase in the 1990s the research teams led by Homer-Dixon and Bächler and Spillmann focused on the interaction between factors of global change, environmental degradation,

scarcity, and stress and how these factors resulted either in environmentally triggered conflicts or environmental cooperation. During the third phase environmental security studies diversified in many directions (Brauch 2003: 92-120). In October 2004 a report on cooperation over environmental risks in the South Caucasus was released that focused on:

- a) environmental degradation and access to natural resources in areas of conflict;
- b) cross-border water resources, natural hazards and industrial and military legacies, degradation due to military activities and bases; and
- c) population growth and rapid development of major cities.

The Organisation for Economic Co-operation and Development (OECD) has addressed the linkages between development, environment and conflicts in several policy statements, such as "Development Assistance, Peace and Development Co-operation of the 21st Century" (OECD/DAC 1997, Brauch 2003), and in a scoping paper on the economic dimension of environmental security which are reflected in the "Guidelines on Conflict, Peace and Development Co-operation" (OECD/DAC 2001: 89, Brauch 2003).

Dams and Environment

Dams have played a key role in development since at least the third millennium B.C., when the first great civilizations evolved on major rivers, such as the Nile, Tigris-Euphrates and Indus (Dorcey 1997). From these early times, dams were built to supply water, control floods, irrigate agriculture and provide for navigation. More recently, since the onset of the industrial revolution in the 18th century, they have also been built to produce motive power and electricity (ibid). In the 20th century, new technologies have made possible the construction of increasingly large dams to meet various mixes of these purposes; the 221 meter-high Hoover Dam, inaugurated in the United States in 1935, ushered in a new era of big dams. In the last half of this century, construction around the world

accelerated, with some 35,000 large dams being built between 1950 and the late 1980s (International Commission on Large Dams 1988, Dorsey 1997).

However, there has been mounting controversy, particularly over the last two decades, about the role of large dams in development (Goldsmith and Hildyard 1984; McCully 1996). As development priorities changed and experience accumulated with the construction and operation of large dams around the world, various groups argued that expected economic benefits were not being produced and that major environmental, economic and social costs were not being taken into account (Goldsmith and Hildyard 1984). In the 1980s proposals for large dams began to be fundamentally questioned by locally affected interests and global coalitions of environmental and human rights groups. Sardar Sarovar project in India, Arun Dam in Nepal, Pangu Dam, BioBio River, Chile, Gacikovo Dam, Danube River, Slovakia, James Bay Diversion in Canada, Three Gorges Dam in China, Nam Choan Dam in Thailand etc. are the controversial dam projects across the world.

The report of the World Commission on Dams says, in Pakistan, the Tarbela Case Study reveals that only 21 per cent of the historical dry season flow of the Indus reaches the delta; the rest is diverted for irrigation and water supply by 22 dams and barrages. Since the Kotri barrage was commissioned in 1960s, the average number of days with no river flow downstream in the dry season increased from zero to 85 (The average from 1962-1997) (WCD 2000: 88). The study of Kalabagh Dam is an interesting one which is located in 210 km downstream of Tarbela Dam and 26 km upstream of Jinnah Barrage on the Indus River. There is an intensive and a prolonged protest in Pakistan against the construction of this dam, though president Musharraf has vowed to build it by 2016. The main reason for this is environmental insecurity caused by imminent inequality in water sharing management among the provinces. "Dams

fundamentally alter rivers and the use of natural resources, frequently entailing a reallocation of benefits from local riparian users to new groups of beneficiaries at a regional or national level" (WCD 2000). Bio-physical effects of dams that are of particular concern include loss of land and habitat, alteration of hydrological regime and aquatic ecology, disruption of riverine fisheries and reservoir sedimentation with consequent backwater effects (Dorcey, 1997). Environmental insecurity in Pakistan can lead to insecurity in the livelihood of the people. If there is question of livelihood⁷, it has the potential to germinate social shambles and, finally, insecurity both at the individual and national levels. IUCN and International Institute for Sustainable Development (IISD) created a Task Force on Environment and Security and the Task Force published its findings as "*Conserving the Peace: Resources, Livelihoods and Security*" (Matthew *et al.* 2002) and has identified that "loss of livelihood security leads to or aggravates conflict" and linked it with "inequitable access to natural resources". Conflict over timber royalties in the 1970s which culminated in the aerial bombing of the valley by the Pakistan Air Force in 1976 is an instance of livelihood and resource right insecurity in Pakistan. According to the 1997 U.N. Comprehensive Freshwater Assessment, global water use has been growing at more than twice the rate of the population increase during this century. The number of regions experiencing chronic water shortages is growing. Currently, more than 430 million people live in countries considered to be "water stressed". This number is expected to increase substantially in the next 50 years, possibly to some 40 percent of the world population by 2050.

⁷ The term 'livelihood' is interpreted broadly to include the capabilities, material, and social resources and activities required to earn a living that is able both to withstand and recover from stresses and shocks, and maintain or enhance these capabilities and resources (Chambers and Conway 1992).

The Asian development bank undertook an internal review of four projects and identified the following concerns with the EIA process that led to less than satisfactory outcomes

- Adequacy of baseline data led to the misidentification of impacts as new field studies were not done and only existing databases were used.
- In most cases the Environmental Impact Assessments⁸ (EIA) were done by project proponents and some preparatory documents understated or overlooked project impacts
- Some aspects of detailed studies were lost in the "summary EIA" that was a key to decision-making.
- Poor developing member country capacity to organize adequate peer review of EIA studies (ADB 1999).

And there is also a social side to the comprehensive conception of environment: the people, their land and settlements, their economy and traditions. The impact of dams and reservoirs on this environment is inevitable and undeniable; land is flooded, people are resettled, the continuity of aquatic life along a river is interrupted, and its runoff modified and often reduced by diversions (<http://genepi.louis-jean.com/cigb/chartean.html>: 2). we must cooperate conscientiously with nature's inherent fragility as well as its dynamism without ever overtaxing its powers of regeneration, its ability to adapt to a new but ecologically equivalent equilibrium (ibid: 3). The larger the project, the greater the effects on the natural and social environment to be expected.

⁸ EIA is the process of identifying, predicting, evaluating and managing the biophysical, social, health and other relevant effects of development proposals before major decisions are taken and commitments are made. EIA is used primarily to minimize the adverse effects that large scale development schemes have on natural resources and ecosystems. Increasingly, the scope of EIA includes consideration of all potentially significant effects -- direct, indirect and cumulative (Sadler 1996).

Thus, it is worthwhile to study the developmental programmes relating to construction of large dams that affect environmental stability and security. For International Commission on Large Dam (ICOLD), the links between dam building and development are obvious. Two prerequisites for the development of a nation are energy and water, says one ICOLD paper. According to Peter Coles, since these resources are most scarce precisely where demand is rising most rapidly, dams have become almost synonymous with development. Large dams are beneficial in certain extent but it has negative impact on ecology to a large extent. The Report of World Commission on Large Dams (WCD) has made an in-depth study in this regard and beefed up the vulnerability of large dams on environment. The ecosystem impacts are more negative than positive and they have led, in many cases, to irreversible loss of species and ecosystems. In the Cross- Check Survey, 67 per cent of the ecosystem impacts recorded was negative (WCD 2000: 92-93). The problems may be more magnified as more large dams are built on a single river. They affect both the physical variables, such as flow regime and water quality, and the productivity and species composition of different rivers. The problems may be more magnified as more large dams are added to a river system, resulting in an increased and cumulative loss of natural resources, habitat quality, environmental sustainability and ecosystem integrity. The WCD Knowledge Base documents a number of cumulative impacts that include water quality and species impacts. Flood regimes are clearly affected as increasing the total storage volume by adding additional dams reduces the flood flows of downstream.

From the WCD Knowledge Base it is clear that large dams have led to:

- the loss of forests and wildlife habitat, the loss of species population and the degradation of upstream catchment areas due to inundation of the reservoir area;
- emission of green house gases from reservoirs due to rotting of vegetation and carbon inflows from the basin;
- the loss of aquatic biodiversity, upstream and downstream fisheries and services of downstream floodplains, wetlands and riverine estuarine and adjacent marine ecosystems;
- the creation of productive fringing wet land ecosystems with fish and water fowl habitat opportunities in some reservoirs; and
- cumulative impact on water quality, natural flooding, and species composition where a number of dams are sited on the same river (WCD 2000: 92-93).

A Report of the United Nations Environmental Programme puts primacy on sustainable development of large dams and it inexcusably involves dealing with social and environmental impacts of dams and said sustainability of dams involves consideration of the engineering, environmental, social, economic and financial aspects of each option, within an informed and participatory decision-making process and within the project itself once the decision about the building the dam has been made. Development is considered to be sustainable, when it harmonizes the improvement of economic and social living conditions while aligning it with the long term protection of the natural living basis (UN-WCED 1987). Under the Universal Declaration of Human Rights-1948, human rights are recognized without any discrimination. As such, policies that deny the rights of some to serve special interests of others can not be tenable. Thus, any policy or law adopted must be based on respect for the rights and entitlements of all.

In 1986, the United Nations' General Assembly adopted the declaration on the Right to Development. It implies that:

- Development is a comprehensive process aiming at the constant improvement of the entire population; it affects economics, civic, social, cultural and political rights.
- National development policies aiming at the constant improvement of the well-being of the entire population should be formulated on the basis of their active, free and meaningful benefits resulting therefrom;
- The right of peoples to exercise full and complete sovereignty over all their natural wealth and resources.

In 1992, the UN conference on Environment and Development adopted Rio Declaration on Environment and Development which implied that:

- Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.
- The right to development must be met in an equitable way that considers future generations as well present participants in development.

Also in water management sustainability has become one of the main objectives of all planning and management activities (Loucks and Gladwell 1999). Thus, before taking any decision to build a dam, a deep look should be developed by considering the environmental problems and its repercussions.

* * * *

Chapter-II

Kalabagh Dam and Its Impact on Environment

Humans are not alone in yearning for liberty. The whole ecosystem cries out for it. The revolution is also for the lakes, rivers, trees and animals.¹

Father Ernesto Cardenal, culture minister in Sandinista Nicaragua

Of late, the buzz of 'water war', 'water security' or 'alliance for global water security'² has germinated the sense of 'neo-security dilemma'³ at the national and international levels. It has become much more 'worrying issue than food or energy'.⁴ According to the Report of the World Commission on Dams, Pakistan is the most water stressed country in the world. Already the lowest in South Asia, over the next two decades Pakistan's per capita availability of water is expected to drop by more than 37 percent– from 1100 to 700 cubic meters per person per year.⁵ The country's current water-storage capacity is barely 12 million acre-feet (an acre-foot refers to the amount of water necessary to cover an acre of land to a

¹ Mohamed Larbi Bouguerra, *Water under Threat*, Alliance of Independent publishers, Zed Books London, 2006, p. 87.

² Former United States Secretary of States Madeleine Albright proposed an alliance for 'global water security' at the Earth Day in April 2000. To him "I have in mind not an alliance such as NATO that is limited to certain countries and comprised of governments alone, but rather a less formal alliance open to all who comprehend the urgency of working together to conserve transboundary water, manage it wisely and use it well". (Bouguerra, Mohamed Larbi Bouguerra, *Water Under Threat*, London: Alliance of Independent publishers, 2006, p.58).

³ The neo-security dilemma, proposed here, is regarded as a derivative of the security dilemma that afflicts nations pursuing their military security. The key issue in the security dilemma is the idea of a nation's security being threatened by another country. In the neo-security dilemma, a state's security is affected by its own actions. Security is, also, given a broader definition than just the military security of the country. It encompasses issues of resource access, availability and quality. More importantly, the neo-security dilemma involves a timescale. In other words, what a state does in the short term to secure its resources, may jeopardise its long term resource security. But the dilemma comes in trying to balance short term needs with safeguarding the resource in the long term. Alam I., "To build or Not to Build Kalabagh Dam", *News Seminar*, 19 July 1998, p.168.

⁴ Bouguerra 2006, p. 51.

⁵ Arshad H Abbasi, "Catching lost water", *Himalayan Journal*, September, 2007.

depth of a foot, a bit more than 1230 cubic metres).⁶ By foreseeing the water stress different countries have taken different methods and Pakistan is not an exception.

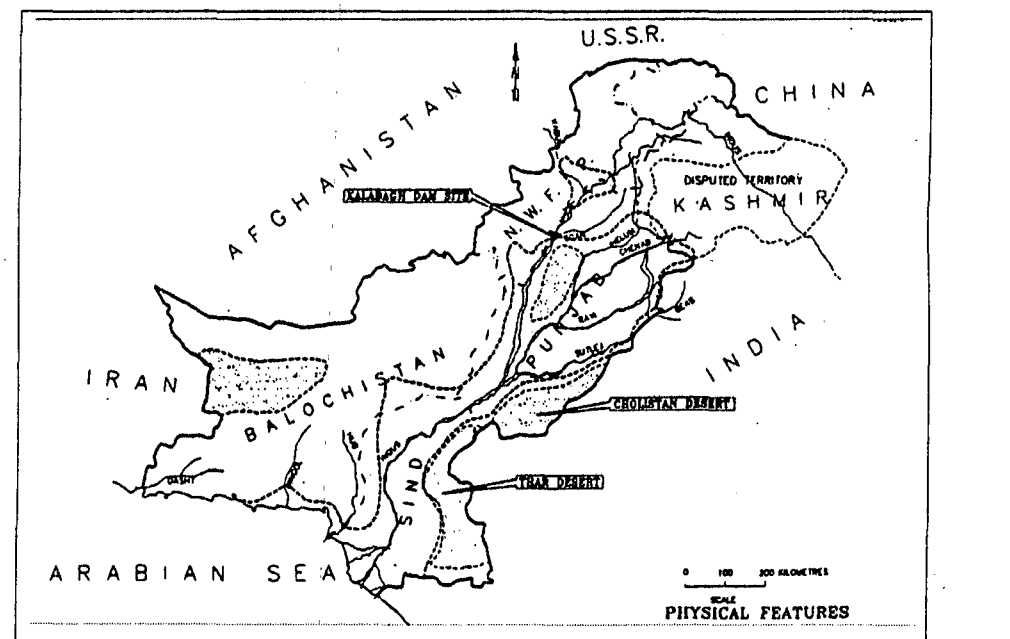
From this account, the government of Pakistan is planning to build dams including Kalabagh Dam to conserve water. Why Kalabagh Dam came into the forefront? Some experts in Pakistan like Anwarul Haque have justified the dam on the ground that it can provide adequate resources to lower riparian areas, particularly Sindh, supply required water for irrigation, generate cheap electricity, reduce power tariff, prevent flood and to preserve the water which is out-flowing to the Arabian Sea. The federal government, the Water and Power Development Authority (WAPDA) and the government Punjab have vehemently supported the Kalabagh Dam project. It also got official finalisation in 1984 during General Zia-ul- Haq. However, the three provinces (Baluchistan, North West Frontier Province and Sindh) have reservations of this controversial project due to imminent colossal consequences on environment and its subsequent impact on livelihood. However, before delineating the repercussions of Kalabagh Dam on environment we should give in brief the location and importance of the project and its link with Indus River.

The Indus River originates some 5000 metres above sea level in the glaciers of the northern slopes of Kailash Parbat in Tibet collecting melting snow and rainwater from a wide catchment area (Ray 2006). Flowing north-west through Ladakh-Baltistan into Gilgit just south of the Karakoram Range (ibid). It gradually turns south into Jammu-Kashmir, coming out of the hills between Peshawar and Rawalpindi in Pakistan (ibid). On its 2900 km journey to the Arabian Sea, the Indus is augmented by 10 major rivers and passes through the

⁶ Ibid

Punjab and Sindh provinces of Pakistan. Since most of Pakistan is arid or semi-arid, the Indus River System serves a vital national role. The watershed irrigates 80 per cent of Pakistan's 21.5 million hectares of farmland, through a well-knitted network of canals (Habib January- March 2006).⁷ Kalabagh Dam Project site is located at 210 KM downstream of Tarbela Dam and 26 KM upstream of Jinnah Barrage on the river Indus. The project envisages construction of 260 ft. high rock-fill dam.⁸ Total storage and usable storage of the dam is 7.9 MAF and 6.1 MAF respectively; and its catchment area is 110,500 sq. miles and the present estimated cost is US \$ 8-10 billion (Ahmad 2007).

Kalabagh Dam Site: **FIGURE - 1**



Source: Anwarul Haque, "Kalabagh Dam: A Project of Highest Priority for Pakistan", *Institution of Engineers Pakistan, Saudi Arabian Center (IEP-SAC) Journal*, 1999-2000.

⁷ Dr. Zaigham Habib, "Water Management and Reservoirs in Pakistan", *South Asia Journal*, January- March 2006.

⁸ Shaukat Mahmood Alvi and Al-Khobar, "Kalabagh Dam: A Multi-purpose Project of National Water Resources Development Programme", accessed on 14 September 2007, URL: <http://www.contactpakistan.com/downloads/KALABAGH%20DAM.pdf>

Kalabagh Dam has wide-ranging impact on environment. It is environmentally more damaging than a recipe for development. In the Indus River there is already two large dams- Mangla Dam and Tarbela Dam, constructed in 1968 and 1974 respectively- have been built and many small barrages and canals are there. But the government of Pakistan and more particularly the province of Punjab has evinced interest in the Kalabagh Dam project to store the water during flood time and the water which are out flowing to the Arabian Sea. The construction of Kalabagh Dam will further reduce the flow of Indus River which can cause serious environmental degradation.

Mohammad Ayub Khan (2005) posits that due to the reduced water flow in Indus, its natural assimilative capacity diminishes and leads to following consequences.

- It receives raw sewage from various sources mainly big cities in the form of untreated industrial wastewater, and irrigation returns from the communities spread along the riverbanks.
- Levels of oxygen deplete organic contaminants from sewage, toxic compounds from industrial discharges, and pesticides from irrigation returns are increasing in the Indus.
- Water borne diseases are on the rise and many fish and other aquatic species have declined in number and diversity. If the situation is not immediately checked further water degradation will not be controllable and its impacts on the aquatic life, public health, and other uses of water will be very significant.

- The decreased flow has meant an increase in the concentration of industrial (including heavy metals), domestic and agricultural (including pesticides) pollutants in the river (Ray 2006).

One of the more dramatic examples in this regard is the Aral Sea and its impact on environment. During the communist era in the Soviet Union, almost the entire flow of two rivers, the Amu Dar'ya and the Syr Dar'ya, that fed the Aral Sea were diverted for irrigation.⁹ The inflow into the Aral Sea has dropped dramatically from 55.5 bcm (45 MAF) in 1960 to just 5 bcm (4 MAF) in 1989 (Kirmani and Rangeley, 1994: 10, Alam 1998). Since 1926 the Aral Sea has shrunk by approximately 40% in surface area, and 65% in volume (Gleick, 1993a: 5, Alam 1998). This has led to the "desiccation of the Aral Sea, the destruction of the fisheries there, local health problems, and the economic collapse of the region"; the salinity of the water has tripled, and all 24 species of fish native to the Sea have died.¹⁰

Halepoto (2007) has said that the federal government, Punjab and Water and Power Development Authority are of the opinion that a huge quantity of about 35 million acre feet (MAF) is flowing into sea on an average which can be utilized by building new dams, canals and storages, like the Greater Thal Canal, Kalabagh, Bhasha and Scardu dams. On an average, about 39.4 MAF water flows to the sea annually (Gill July 2005: 19). Most of this flow occurs during Kharif season when 36.94 MAF or 93.8 per cent goes to the sea.¹¹ In the Rabi season, on

⁹ Undala Z. Alam, *WATER RATIONALITY: Mediating the Indus Waters Treaty*, Thesis submitted for the degree of Doctor of Philosophy Geography Department, University of Durham, September 1998.

¹⁰ Ibid.

¹¹ Sadiq A. Gill, "Indus River and the Irrigation System in Pakistan", *South Asian Studies*, vol. 20, no. 2, July 2005.

average about 2.44 MAF flows in the sea, and most of that is in the first few weeks of session.¹²

However, the important thing to be noted in this context, as noticed by Halepto (2007), is that the water going into the sea also includes:

- Unutilised part of the existing allocations/ commitments under the Water Accord (12 MAF);
- flow from eastern rivers allocated to India for its exclusive use (8.7 MAF);
- unutilised portion of India's entitlement on western river (4.8 MAF);
- 10 million acre feet provisionally earmarked in the Water Accord, 1991, for outflow to sea;
- 20.42 being an average flow of the Kabul River share for the period from 1979-80 up to 2002-2003, with minimum 11.17 MAF and maximum 34.24 MAF. (The President has indicated that this figure as 8 MAF as possibly used by Kabul);
- 3 million acre feet for Mangla raising;
- 2.24 allocation sanctioned by Executive Committee of the National Economic Council (ECNEC) for Left Bank Outfall Drainage (LBOD) project.

After accounting for all these factors, Halepto (2007) says, there remains no surplus water for construction of any large, conventional or carry-over dam on Indus. On the contrary, there is a severe deficit of water which is around 14 MAF. He postulates that the quantity of outflow to sea has been progressively reduced, particularly after construction of barrages, dams and link canals following the signing of Indus Water Treaty, 1960. The actual outflow to sea at

¹² Ibid

the time of independence was about 100 MAF, which has been reduced to 36 MAF. For the last four years it has been less than two MAF.¹³ The flow of the Indus, which receives nearly 90 percent of its water from upper mountain catchments, could decline by as much as 70 percent by 2080.¹⁴ “An official report says that fresh water flow of Indus River has been reduced from 150 million acre feet to 0.72 MAF last year. Experts say that there has been virtually no sweet water flow in the sea last year, which signals acceleration in the pace of the devastating phenomenon in the coastal areas of the province. Under the provisions of the Water Accord, 1991, 10 million acre feet have been provisionally earmarked for outflow to sea pending further studies to be undertaken to establish the needs of minimum escapages down stream Kotri” (Halepoto 2007). Though, no study has been initiated even after 13 years of signing the accord due to objections raised by Punjab, but the IUCN, an international organization based in Pakistan, has worked out the annual requirements for the outflow to sea for environmental sustenance to be 27 MAF.¹⁵

The truth about much trumpeted 35 MAF water going into sea as waste is that the data of Indus River flow shows that out of 27 years, the down stream Kotri escapages were recorded for only 11 years.¹⁶ The Indus River System Authority (IRSA) during last summer floods (2006) had categorically held that “20 MAF flows downstream Kotri during the season should not be treated as waste” (ibid). According to Channa (2007), Independent experts suggest that environmentally and otherwise these were essential on two counts:

- First, Water Accord of 1991 provides 10 MAF water flows down Kotri Barrage, but unfortunately 150 km long river course down Kotri, covering

¹³ Zulfiqar Halepoto, “Down stream Kotri: constitutional position”, *The Dawn*, 22 March 2004

¹⁴ Human Development Report ,2007-2008.

¹⁵ Zulfiqar Halepoto, “Down stream Kotri: constitutional position”, *The Dawn*, March 22, 2004

¹⁶ Rasheed Channa, “Cost of building water reservoirs”, *The Dawn*, February 12, 2007.

four districts of Hyderabad, Jamshoro, Badin and Thatta did not receive a single drop for the 2/3rd period affecting the agriculture, fisheries even drinking water needs etc, of that vast area.

- Second, the long awaited technical study by international expert mandated under Water Accord 1991 has established the requirements of 6.8 MAF flows down stream Kotri with flows of four MAF all the time.¹⁷

The Hai, Huai and Huang (Yellow) River Basins (the 3-H river basins) supply just under half of China's population with water. With the growing demands of industry, urban centres and agriculture, water is being withdrawn from the basins at twice the rate of replenishment (Human Development Report 2007/2008: 97). The result: rivers that no longer reach the sea and sinking groundwater tables. Any reduction in water flows through the 3-H basins could rapidly turn an ecological crisis into an outright social and economic disaster.¹⁸ So, the importance of out-flowing of water should not be considered as wastage. It has environmental vintage.

Importance of out flowing water to the sea on mangrove forest

The coastline of Pakistan spans a total area of 990, of which 241 km covers the province of Sindh on the south eastern side and 660km within the province of Balochistan (western side).¹⁹ In the coastal villages of Sindh mangroves have traditionally served three main functions: they have been a source of wood for construction; source of fodder for livestock; and lastly (and most importantly) a source of fuel (Poverty and Environment Nexus Study: Rehri Mian, Korangi Creek Area, IUCN Pakistan 2005: 18).

¹⁷ Ibid

¹⁸ Human Development Report 2007-2008, p. 97.

¹⁹ IUCN Pakistan, *Mangroves of Pakistan: Status and Management*, 2005, p. 3.

The out flowing of water has been a great vantage to maintain ecological balance in the Indus delta and its adjoining areas, particularly the mangrove forest, the sixth largest in the world. Due to the construction of Mangal and Tarbela Dams, the flow of the Indus River has been reduced and it has unprecedented repercussions on the mangrove forest because "the health of the forest is directly dependent on fresh water outflows and the rich silt deposits carried by it" (Ray 2006). The World Conservation Union also in its study says, "Reduced river flood also affects suspended transport of sediments by capturing the material and preventing its uniform dispersal once mangrove areas during the flood seasons. Thus, the mangroves were deprived of the annual silting (and input of inorganic nutrients) and the depositional character of the mangrove environment is severely altered".²⁰

According to Ray, the Sindh forestry department estimates that an outflow of around 33.3 billion cubic metres of water into the Arabian Sea is necessary to sustain the remaining forest and this is roughly 8.6 billion cubic metres more than is currently flowing into the sea. From 1977 to 1990 this mangrove forest diminished in size by 38% (Ray 2006). S. R.-Khan (2005) has analysed the consequent ravages to the ecosystem, in particular to the mangroves which are its mainstay because they sustain its fisheries, act as natural barriers against sea and storm surges, keep bank erosion in check and are a source of fuel wood, timber, fodder and forest products, a refuge for wildlife and a potential source of tourism.²¹ To him, "without mangroves and the nutrients they recycle and the protection they provide, other components of the ecosystem would not survive". Tahir Qureishi studies the repercussions of

²⁰ IUCN Pakistan, *Mangroves of Pakistan: Status and Management*, 2005, p. 29.

²¹ Shaheen Rafi Khan, "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, vol. 12, no. 5, Sep— Oct 2005.

reduced water flow on the mangrove ecosystem in the Indus delta. Based on his research, Qureishi says that extensive irrigation has had adverse effects on the mangrove ecosystem– the deltaic mangrove forests originally covered 1850 million square metres but have now been reduced to 1000 million square metres because of the reduced flow of the Indus.²²

Dr. C. Snedakar, who visited the Indus second time - once in 1977 (as a representative of UNESCO's Division of Marine Sciences) and again in 1982 (during the US -Pakistan Workshop on Marine Sciences) made some important observations. Comparing the existing conditions with the historical record, he wrote:

*“Mangrove Forests in the mangrove thrived where freshwater provided ideal growing conditions along the coast, east and west of the Indus Delta end in the delta itself. They provided an important source of wood along with the environment for crustaceans and fish. The coastal mangroves have now been greatly reduced and represent a fraction of their earlier luxuriance. If the Indus waters are further harnessed and the dry period at the mouth of the Indus is lengthened from the present two to three months, if present heavy development pressure on the coastal areas continues and if domestic and industrial pollution continues unchecked, it is possible that the mangrove forests will largely disappear in the next fifteen to twenty years” (IUCN Pakistan 2005: 23).*²³

According to an International Union for Conservation of Nature and Natural Resources (IUCN) paper of 1991

“The mangroves are the principle components of the delta ecosystem. Without them and the nutrients they recycle, and the protection they provide, the other components of ecosystem will not survive. Mangrove estuaries provide ideal nursery grounds for many commercial fish species, especially pawns”.

²² Hasan Mansoor, “Sindh's struggle for control of the Indus”, *Himalayan Journal*, July 2002.

²³ IUCN Pakistan, *Mangroves of Pakistan: Status and Management*, 2005.

To preserve mangroves it is important to have constant fresh water outflows, this has already been on the decline because of previous dam building projects and a new dam would threaten the very existence of these mangroves (Momina, 2007).

Waterlogging and Salinity

Waterlogging and salinity is another cause of large dam project. Due to this salinity both Mangla and Tarbela Dams have lost their storage capacity and its impact on the adjoining areas. According to S. R. Khan (2005), Kalabagh is bound to add to the problem, not only in its immediate environment but also where new irrigation infrastructure is to be situated. Furthermore, the incremental land degradation is likely to be most pronounced in Sindh, reflecting the north-south land gradient. To him, while this may appear somewhat fanciful, the secular evidence supports this contention, as evident from below.

Table No. 2

Land with Water-Table Depth of under 0 - 5 Feet (Million hectares)
(By Province over Time)

Province	Punjab	Sind	NWFP	Baluchistan	Pakistan
1988					
June	0.54	0.86	0.06	0.04	1.50
October	1.72	3.44	0.06	0.09	5.31
1990					
June	0.71	2.34	0.05	0.09	3.20
October	-	-	-	-	-
1992					
June	0.64	2.23	0.05	0.14	3.05
October	1.25	4.08	0.06	0.14	5.53

Source: Compendium of Environmental Statistics of Pakistan, 1994-95 in Dr. Shaheen Rafi Khan "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, vol. 12, no. 5, Sep— Oct 2005.

Note that waterlogging is higher in Sindh in comparative terms and that it has been increasing over time, against a declining trend for the Punjab. The numbers for salinity also indicate its highest incidence in Sindh (Khan 2005).

Table – 3: Extent of Salt Affected Land

(1000 hectares)

	NWFP	Punjab	Sindh	Total Indus Basin
Total CCA	320	7,891	5,351	13,562
Within CCA	14	1,614	1,532	3,160
Salt Affected Area (percent)	4.3	20.4	28.6	23.3
Outside CCA	502	1,129	1,019	2,650
Salt Affected				
Total	516	2,743	2,551	5,810

Note: CCA = Canal Command Area

Source: Soil Survey of Pakistan (1977-78) cited in Dr. Shaheen Rafi Khan "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, Vol. 12, No. 5, Sep- Oct 2005.

The information is dated and recent comparable data is not available to be able to discern trends. But the old numbers do show that almost 30% of the area within the canal commands in Sindh is afflicted by salinity, as compared to 20% for Punjab.²⁴ Compared to other provinces, salinity is highest in Sindh, due to the north-south land gradient, land degradation would increase in Sindh which in turn actually reduces the crop production in the region (Momina 2007).

The increase in crop yield proposed by the building of Kalabagh Dam is offset by the aggravated water-logging and salinity that would result directly from the building of the dam (Momina 2007). Furthermore, high yields in short run would be unsustainable in the long run because of water pollution and loss

²⁴ Shaheen Rafi Khan "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, vol. 12, no. 5 Sep- Oct 2005.

of fertility associated with it (ibid). Soil scientists believe that, when the contents of salt deposits increase to about 2.5%, the productivity of the land is visibly impaired and when it reaches a level of 7.0%, no biological life is then possible in the soil (Ahmad 2007).

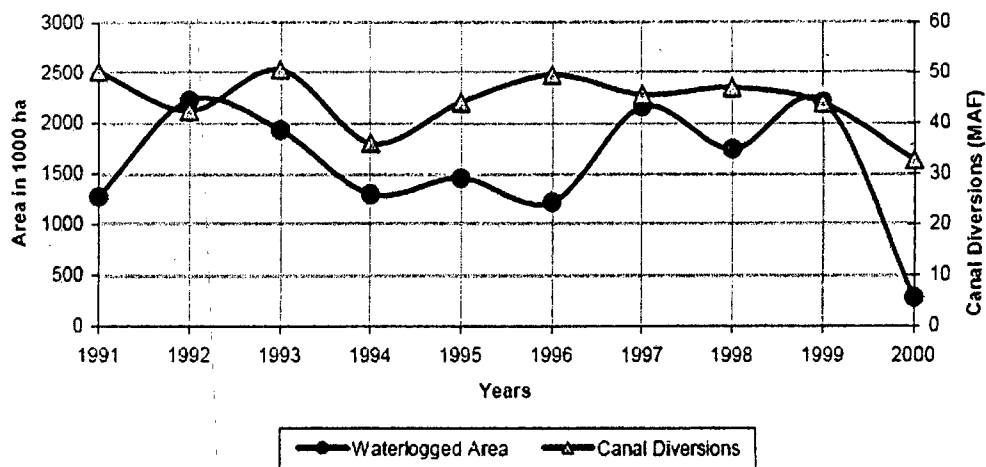
Gazdar argues that building the Kalabagh Dam to provide yet more water will “promise a rose garden but deliver dust”. It is, he says, “reminiscent of the Indus Valley Civilization downfall 3500 years ago”; archeologists are now uncovering strong evidence that this is one of the world’s earliest civilizations, was brought down largely by accumulation of salt in its irrigated fields (Pearce 1990).

“If completed, the (Kalabagh) dam would trap an estimated two-thirds of the sediments of the Indus River, which has the fifth highest sediment load in the world. Critics of the project claim that by increasing salinity and water-logging, the project will further degrade agricultural productivity of the Indus Basin as well as destroy mangrove and riverine forests, fisheries, and the Indus Delta” (World Rivers Review 1989).

According to Azad (2003), Sindh has a serious problem of waterlogging and salinity due to the nominal gradient, accretion of riverbeds, inadequate salt exit and traditional watering of crops. The problems of waterlogging and salinity pose a major threat to sustainability of irrigated agriculture on about 30 per cent of irrigated lands in Sindh and this situation is aggravated by the low efficiency of the irrigation system (Azad 2003). Extraction of deep groundwater further aggravates the issue. In 1999, the waterlogged area, with water table depth 0 to 1.6 meters, was 2.2 million ha, which however drastically reduced to 285,000 ha due to drought conditions in 1999-2000, but would be likely to increase again

once the canal supplies return to normal as is indicated by the past trend shown below.²⁵

FIGURE -2



Source: A. Azad, *Sindh Water Resources Management– Issues And Options*, Food And Agriculture Organization Of The United Nations – Rome, FAO Investment Centre, Occasional Paper Series December 2003, p. 11.

As per Azad’s analysis is concerned, soil salinity in Sindh has been increasing with the expansion of irrigated area. He has given in detail the extent of saline area in Sindh in the subsequent table. As seen from the following data, nearly 16% of the cultivated land is affected by salinity, whereas the entire uncultivated land is saline. Out of the total Canal Command Areas (CCA) of 5.1 million hectare, 1.62 million hectare (about 32%) is saline and nearly 43% is waterlogged. Control of waterlogging and reclamation of saline lands will substantially increase the crop yields and crop production and as such should continue to receive priority in investment in the water sector (Azad 2003).

²⁵ A. Azad, *Sindh Water Resources Management– Issues And Options*, Food And Agriculture Organization Of The United Nations– Rome, FAO Investment Centre, Occasional Paper Series December 2003.

According to official sources over 16 per cent of the country's irrigated lands are presently degraded by severe waterlogging and over 14 per cent are affected by severe salinity (Bhatti 2007). The government of Pakistan initiated the Salinity Control and Reclamation Projects (SCARPs) in the 1960s through the use of tube well technology for drainage (ibid). However, it failed miserably. An official document titled 'The Framework for Action for Achieving the Pakistan Water Vision 2025' states: "The heavy operational and repair costs and pumping saline water from ground brackish water zone tilted the balance in favour of shallow tube-wells and even pipe drainage system" (Bhatti 2007).

Table No.4

Irrigated Areas Affected by Salinisation in Sindh

	Area (million ha)
Cultivated Land	
Non-saline land	3.67
Slightly saline land	0.33
Saline sodic and saline Gypsiferous land	0.12
Saline sodic land	0.10
Sub-total:	4.12
Uncultivated Land	
Saline with sparse vegetation	0.86
Saline – barrend	0.11
Sub-total:	0.97
Total Command Area:	5.1

Source: A. Azad, *Sindh Water Resources Management– Issues And Options*, Food And Agriculture Organization Of The United Nations– Rome, FAO Investment Centre, Occasional Paper Series December 2003, p. 12.

A major impact of the sedimentation process is Aggradation²⁶, which causes the bed level, and correspondingly flood levels, to rise to unforeseeable heights, causing heavy losses (Ahmad 2007). In the case of Kalabagh Dam, the hydraulic drop will be far greater than that of Tarbela, or even Mangla, which will consequently accelerate the sedimentation process (Ahmad 2007). According to the Chairman of the Indus River System Authority (IRSA), Mohammad Khan Menon, "the sedimentation in the dams also contributed to water shortage".²⁷ The siltation process at the reservoir of KBD is feared to be further accelerated due to the diminished velocity from water diversion into the Ghazi Barotha channel, and the reduction in hundred Monsoon days in River Indus to fifty days (Ahmad 2007).

Idress Rajput, former secretary irrigation, was quoted saying that the estimated freshwater flow in Indus Delta was about 150 million acre feet (MAF) in the past (Bhatti 2007). Indus had also been carrying with it some 400 million tons of silt. However, over the last 60 years freshwater flow has reduced to less than 10 MAF. "While according to recent studies 27 to 35 MAF water is required downstream Kotri Barrage to ensure the sustainability of ecology and livelihood resources in the Indus deltaic region," emphasised Mohammad Ali Shah of Pakistan Fisherfolk (ibid).

Degradation of the Indus delta ecosystem as a result of reduced water outflows is already a highly visible phenomenon. The present level of silt discharge, estimated at 100 million tons per year, is a four-fold reduction from

²⁶ "Where the sediment load in a River is in excess of the sediment transporting capacity, the excess sediment gets deposited in the river bed and the sediment load entering a given reach is greater than the sediment load leaving the reach during the same time. This causes a rise in the bed level (and hence the flood level) and decrease the bed slope with time. This phenomenon is known as Aggradation" (Assawa 1993, Ahmad 2007).

²⁷ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 253, 31 October 2006, p. 45.

the original level before the rivers were dammed.²⁸ The combination of salt-water intrusion (some reports show this as 30 km inland), and reduced silt and nutrient flows has changed the geomorphology of the delta considerably.²⁹ The area of active growth of the delta has reduced from an original estimate of 2600 sq. km (growing at 34metres per year) to about 260 sq. km. Freshwater reaches only a few of the creeks and others have become blocked.³⁰ The delta is being transformed by strong wave erosion, an increasing dominance of sand at the delta front and an increase in wind-blown sand deposits as a result of losses in vegetation.³¹

Threat to wildlife species

The reduction of water flows also impact on the wild life species. The World Commission on Dams in its report has pinned down the reduction of flows caused by the construction of a storage dam and the subsequent inundation of the reservoir area which effectively kill terrestrial plants and forests and displaces animals. As many species prefer valley bottoms, large scale impoundment may eliminate unique wild life habitats and affect populations of endangered species (WCD 2000).³² The WCD Cross-Check Survey found that impeding the passage of migratory fish species was the most significant ecosystem impact, recorded at over 60% of the projects for which responses on environmental issues were given. In 36% of these cases, the impact of the large dam on migratory fish was not anticipated during project planning. Migratory fish require different environments for the main phases of their cycle:

²⁸ Shaheen Rafi Khan "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, v.ol. 12, no. 5, Sep- Oct 2005.

²⁹ *ibid*

³⁰ *ibid*

³¹ *ibid*

³² World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000.

reproduction, production of juveniles, growth, and sexual maturation. The best documented examples of disrupted fish migrations are from the Columbia River in the United States, where many stocks of salmon have been lost (WCD 2000: 82). S.R. Khan has put forth that the ecosystem has been severely fragmented over time by its extensive network of canals, dams and barrages, resulting in threats to a variety of species and organisms.³³ For instance, two species facing extinction in the lower reaches of the Indus River are the Indus dolphin and the 'palla' fish, as he argued.³⁴ The Kalabagh Dam would further aggravate the situation for the wild life species.

Flow regimes are the key driving variable for downstream aquatic ecosystems. Flood timing, duration and frequency are all critical for the survival of communities of plants and animals living downstream (WCD 2000: 78). Small flood events may act as bio-logical triggers for fish and invertebrate migration: major events create and maintain habitats by scouring and transporting sediments (ibid). The natural variability of most river systems sustains complex biological communities that may be very different from those adapted to the stable flows and conditions of a regulated river (ibid). Construction of Glen Canyon Dam on the Colorado River in the United States dramatically altered the riverine environment. The modified habitats resulting from large dams often create environments that are more conducive to non-native and exotic plant, fish, snail, insect, and animal species (ibid: 80). These resulting non-native species often out-compete the natives and end up modifying ecosystems that may

³³ Shaheen Rafi Khan "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, vol. 12, no. 5, Sep-Oct 2005

³⁴ Ibid

become unstable, nurture disease vectors, or are no longer able to support the historical environmental and social components.³⁵

A 1991 World Conservation Union paper stated that “wildlife species supported by the mangroves are porpoises, jackals, wild bears, reptiles, migratory fowl birds and three species of dolphins. If the mangrove habitat is destroyed, the continued existence in the Indus delta of all these species will be threatened” (Ahmad 2007).

Mohammad Ayub Khan has described that in mangrove forest some of the unique fish are found particularly Indus Blind Dolphin and Pala fish. Some of these fish find the roots of the mangrove trees below the water surface safe hatching pockets and also defend themselves against big fish (Khan 2005). To him, birds of some distinguish species are also found in the mangrove forest and season birds arrive here from the Central Asia and other cold region and live here for few weeks (ibid).

Recently government of Sindh formed a team of experts to determine the damage level the local horticultural species faced due to various reasons. The study findings were alarming in the seven districts from Gotkci to Hyderabad where a total of 20,937 trees very badly damaged (Khan 2005). Majority of these damages were occurred due to the low water flow in Indus, which resulted first in the drying of these trees and finally totally dying (ibid). The loss of Shisham trees was 64%, Mango trees 25%, and Babul and other trees 11% (ibid). According to the study, water shortage was the major cause for the loss of natural habitat. The deforestation followed by soil degradation, salinity, and erosion will then lead to desertification rendering once fertile lands to barren

³⁵ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000, p. 80.

deserts (ibid). Thus, the construction of Kalabagh Dam will further reduce the flow and the availability of sufficient water for the survival of mangrove forest and species.

Emission of Greenhouse Gases

Building of large reservoir has the potential to emit green house gases and Kalabagh Dam is not an exception. According to the Report of the World Commission on Dams, the emission of greenhouse gases (GHG) from reservoirs due to rotting of vegetation and carbon inflows from the catchment is a recently identified ecosystem impact (on climate) of storage dam. A first estimate suggests that the gross emissions from reservoirs may account for between 1% and 28% of the global warming potential of GHG emissions (WCD 2000). Current understanding of emissions suggests that shallow, warm tropical dams are more likely to be major GHG emitters than deep cold boreal dams (ibid: 77). In many water-scarce regions like Pakistan, "climate change is expected to further reduce water availability through increased frequency of droughts, increased evaporation and changes in patterns of rainfall and runoff" (HDR 2007/8: 90).

Land use change induced by displacement of people, resource extraction and other economic activities may also form part of the net contribution to GHG emissions associated with the construction of the dam (WCD 2000: 76). In the 2001-2002 WAPDA report, it is written on page 39 that the Kalabagh Dam would affect 109,783 people in the NWFP and 64,884 in the Punjab (Khan 2005). Usman Qazi of the United nations Development Programme says that around two million people from 22 of the 29 districts of Baluchistan and six of the 25 districts of Sindh were badly affected due to flood in July 2007 (POT Pakistan November 15 2007: 39). This catastrophic situation in Baluchistan was partly the outcome of

one of the junta's mega development projects, in this case "Mirani dam".³⁶ This internal displacement caused by large dam projects like Kalabagh Dam has the possibility to fuel green house gases. The flow of the Indus, which receives nearly 90 percent of its water from upper mountain catchments, could decline by as much as 70 percent by 2080 due to this climate change (HDR 2007/8: 96).

Global warming is projected to increase temperatures by 2–3°C by 2050, with a decline in rainfall and reduced water availability.³⁷ The combination of higher temperatures and less rain will translate into a marked reduction in soil moisture, affecting the 90 percent of smallholder farmers who depend on rain-fed production (Human Development Report 2007/2008: 93)

There is also demand that Kalabagh Dam will generate sufficient power to reduce its future power scarcity. But, according to the Human Development Report of 2007/8, power generation is the main source of CO₂ emissions. It accounts for four in every ten tones of CO₂ dispatched to the Earth's atmosphere.³⁸

Submergence of land

Submergence of land due to the Kalabagh Dam project is an important concern for the provinces. It is believed that KBD will submerge fertile lands in North West Frontier Province, turn Sindh in to a desert, and destroy the Pat Feeder system in Baluchistan.³⁹ It can affect the demographic proportion of the affected area and on subsequent areas, fertile land of the region and productivity of the region. Kalabagh reservoir will extend 92 miles up the Indus River from the dam site and 36 miles up the Soan River, and about 10 miles up the Kabul River from

³⁶ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXV, no. 268, 15 November 2007, p. 39

³⁷ Human Development Report 2007-2008, p. 93.

³⁸ Human Development Report 2007-2008, p. 133

³⁹ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 261, 9 November 2006, p. 34.

the Kabul-Indus confluence.⁴⁰ At its maximum level of 915 ft., the reservoir area would be 164 square miles.⁴¹ Total cultivable affected land under the reservoir is only 35,000 acres. Cultivable land to be submerged under the reservoir elevation of 915 and acquired permanently, would be 27,500 acres (24,500 acres in Punjab 3,000 acres in NWFP).⁴² Of this irrigated land would be only 3,000 acres (2,900 acres in Punjab and 100 acres in NWFP).⁴³ The balance 7,500 acres are the land that will be temporarily submerged by floods with recurrence interval of 1 in 5 years.⁴⁴ The thousands of acres of rich cultivable land in Mardan, Charasadda and Nowshera Districts are feared to turn in to swampy marshlands in the long run.⁴⁵

Pakistan's Water and Power Development Authority (WAPDA) puts the total cultivable land to be permanently submerged as a result of the dam at around 14,000 hectares (Ray 2006). However, independent assessments have put the figure as high as 74,000 hectares (ibid). Neither figure includes lands that will be inundated during a river flood event. Nor do these figures take account of the effect of the rise in river levels above the dam (ibid).

The two provinces NWFP and Sindh have shown their reservations to the construction of the dam. The Pukhtoos are quite vociferous and outrageous. They have valid reservations and most important one is the submerging of their homes in the valley and fertile fields, and, to live on the barren hills.⁴⁶ The direct loss of annual silt and nutrient replenishment as a consequence of upstream

⁴⁰ "Kalabagh Dam Project", accessed on 25 October 2007, URL: [http:// www.wapda.gov.pk /pdf/KBDAM.pdf](http://www.wapda.gov.pk/pdf/KBDAM.pdf) .

⁴¹ ibid

⁴² ibid

⁴³ ibid

⁴⁴ ibid

⁴⁵ ibid

⁴⁶ A.M.H Kango, "The Kalabagh Dam Orchestration", accessed on 25th Sep. 2007 URL: <http://www.geocities.com/rainforest/vines/4813/env10.html>

impoundment is thought to have contributed to the gradual loss of fertility of formerly productive floodplain soils as used in agriculture and flood-recession agriculture.⁴⁷

This land shall be taken under easement. Full compensation will be paid to the owners, leaving title with them so that they can cultivate the land as before (6,000 acres of such land is in Punjab and 1, 500 acres in NWFP).⁴⁸ In addition, the draw down of the reservoir level every year would provide one season cropping in about 14,000 acres lying about elevation 890 ft.⁴⁹ It may be noted that about 1,000 acres of irrigated land were acquired for Mardan Salinity Control and Reclamation Project (SCARP) alone, and compared to this, Kalabagh asks for a much smaller sacrifice.⁵⁰

Reduced Water Flow and its Impact on Katcho

Ahamad (2007) has highlighted that Kalabagh Dam has the impact on "Katcho" which contains 600, 000 acres of thick riverine forests and about 1.3 million acres of rich grazing land. The life of "Katcho" depends entirely upon the inundation of River Indus. To him, during the voyage through Sindh, the River Indus inundates about 1.9 million acres of rich and fertile land, known as "Katcho", which averages about 5 miles in width for the whole 600 miles length (Ahmad 2007). And whenever, the flow reduces to an insufficient level, so as not been able to submerge this land, the crops, food and fodder are all affected and even wells for drinking water run low in all this area (Ahamad 2007). This was experienced in the 1985-96 drought year, when the "Katcho" was inundated, forcing many families to migrate to other areas for want of food and living (ibid).

⁴⁷ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000, p. 83.

⁴⁸ "Kalabagh Dam Project", accessed on 25th Oct. 2007. URL: <http://www.wapda.gov.pk/pdf/KBDAM.pdf>

⁴⁹ ibid

⁵⁰ ibid

It is feared that, with an unnatural storage on River Indus, the surface moisture in "Katcho" will be lost, resulting in soil degradation, salinity and wind erosion. The soil erosion causes decline in succession of plants, and it is feared that in "Katcho", the whole forest belt will become extinct in about 50 years time (ibid).

Kalabagh Dam and its impact on Flood

There is opinion that the project of Kalabagh Dam can prevent the threat of flood by reserving the water during flood time. But the development in Pakistan caused by the construction of Tarbela and Mangla Dams reveals different picture. The evidence of Pakistan shows otherwise; that its large dams not withstanding, there has been no reduction in the incidence and intensity of floods or in the associated losses in lives, crops, livestock, and infrastructure.⁵¹ The construction of Kalabagh Dam threatens the Nowshera valley in the NWFP with inundation during a flood. Also threatened with flooding will be Nowshera City which straddles the Kabul River and has a population of 200,000 (Ray 2006). It is feared that historic flooding of Peshawar Valley including Nowshera town would be aggravated in the event of recurrence of 1929 record flood. The table below is illustrative.

⁵¹ Shaheen Rafi Khan "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, vol. 12, no. 5, Sep- Oct 2005.

Table No. 5 Flood Damages in Pakistan

Year	Monetary Losses (Billion Rs. In 1955 prices)	Lives Lost (No.)	Villages Affected (Nos.)	Area Flooded (Sq. miles)
1950	9.08	2,910	10,000	7,000
1955	7.04	679	6,945	8,000
1956	5.92	160	11,609	29,065
1973	5.52	474	9,719	16,200
1975	12.72	126	8,628	13,645
1976	64.84	425	18,390	32,000
1978	41.44	393	9,199	11,952
1981	N/A	82	2,071	N/A
1982	N/A	350	7,545	N/A
1988	15.96	508	100	4,400
1992	56.00	1,008	13,208	15,140
1995	7.00	591	6,852	6,518

Source: Water Sector Report, Climate Change impact Assessment and Adaptation Strategies, July 1997 cited in Shaheen Rafi Khan "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, Vol. 12, No. 5, Sep- Oct 2005.

In actual fact, the severity of flood impacts appears more prevalent after the two major dams; Mangla and Tarbela which were constructed in 1968 and 1974 respectively. In 2003, the largest rainstorm on record struck southern Sindh, causing widespread flooding and loss of life across the area as far west as Karachi.⁵² In July 2006, the disaster floods in Baluchistan marooned 2.5 million

⁵² *Public Opinion Trends (POT)*, Pakistan Series, 4 November 2006

people, affected more than 6, 500 villages and destroying 80, 000 houses.⁵³ Baluchistan had not yet recovered from the Ethiopia- like drought which ravaged the province from 1999 to 2003 (POT Pakistan November 15, 2007: 38). Although dams have historically been extensively used as a defence against floods, recent approaches see flood protection as more than building defences against rising waters (WCD 2000: 15). There are also cases where dams have created or worsened floods due to dam breaks, poor reservoir operation and changed downstream sedimentation patterns that reduce river channel capacity (WCD 2000: 15). Thus, "Kalabagh is considered as a 'death warrant' for the economy and the environment of Sindh".⁵⁴

If the Kalabagh Dam has the potential to prevent the intensity of flood, then it can create ecological instability because flooding also vital for the increase of productivity of the flood plain area and it maintain an ecological balance of the flooding area. It has been long known that river systems have a natural capacity for dealing with the threat of floods and the natural processes embodied in them provide many benefits.⁵⁵ Flood plains, wetlands, backwaters are commonly referred to as nature's sponges; they absorb excess water, purify it and can be tapped during lean periods.⁵⁶ They act as spawning grounds for fish and wildfowl. The floods themselves replenish agricultural soils.⁵⁷ Communities living around these areas adapt to this natural rhythm and use its bounty to ensure reliable and sustainable livelihoods. As Bayley (Abramovitz 1996: 11) has so aptly put it; the 'flood pulse' is not a disturbance, flood prevention is. And that is exactly what large dams like Tarbela and Mangla have contributed to;

⁵³ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXV, no. 268, 15 November 2007, p. 3.9

⁵⁴ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 283, December 5, 2006.

⁵⁵ "Kalabagh Dam Project", accessed on 25th Oct. 2007. URL: <http://www.wapda.gov.pk/pdf/KBDAM.pdf>.

⁵⁶ *Ibid.*

⁵⁷ *Ibid*

disturbances on a large scale, which also supports the view that dams do not prevent floods, they merely create 'flood threat transfer mechanisms'. The solution is to work with communities, rely on their knowledge and to supplement their flood mitigation and coping strategies.⁵⁸ Thus, the focus on controlling floodwaters, dominant in the 1950s–1960s, has lost ground to more environmentally based and integrated approaches.⁵⁹ The reasons include frustration at floods occurring despite structures being in place, the high cost of engineering solutions, and a better understanding of how natural systems work (WCD 2000: 15).

Desertification

In post Tarbela years, an annual average of about 35 MAF has escaped below Kotri to Sea.⁶⁰ During July to September period, flood surplus is always available. Kalabagh reservoir will be filled up by only 6.1 MAF and nearly 29 MAF would still be going downstream of Kotri Barrage.⁶¹ On the direction of Senate Standing Committee on Water & Power, Indus River System Authority (IRSA) has studied and confirmed that sufficient water is available for further storage.⁶²

However, Ray (2006) has said that the fertile plains of Sindh have been contracting for decades and the farming population that once inhabited what are now sand dunes have moved to the cities seeking a livelihood. The construction of the Kalabagh Dam includes construction of a new canal on the left bank on the river that will take irrigation water to the Rasul-Qadirabad sector of Punjab to open up new agricultural potential (Ray 2006). "The total cultivated area of the

⁵⁸ Ibid.

⁵⁹ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication 2000.

⁶⁰ Shaukat Mahmood Alvi and Al-Khobar, "Kalabagh Dam: A Multi-Purpose Project Of National Water Resources Development Programme", accessed on 14 September 2007, URL: <http://www.contactpakistan.com/downloads/KALABAGH%20DAM.pdf>

⁶¹ Ibid.

⁶² Ibid.

Sindh province had shrunk to 3.15 million hectares from 4.2 million hectares whereas the Punjab's had increased to 16 million from 13 million hectares".⁶³ The government of Sindh believe that it will then be presented with a *fait accompli* of more water diverted away from Sindh (Ray 2006). The lessened natural flow of the Indus caused by the dam combined with the existing political restriction of water flow will accelerate Sindh's desertification (ibid). Thus, "sensitivity on the environmental issues is exceptionally high. The province as the lower riparian has always brought in the issue of Indus delta, lakes and riverine water uses in dialogue. The actual management of environmental hazards is not commendable in any part of the basin. However, the sensitivity of the Lower Indus or Sindh can be justified".⁶⁴ Taking it as a serious concern, Sindh's insistence on water needs down Kotri has led to three environmental studies. Though the reports are not available, the government has made public recommendations of a panel of experts. Such are

- 5000 cusecs constant discharge is recommended downstream Kotri barrage in the river Indus to meet all water needs of downstream delta.
- Below Kotri, releases will equitably share shortages of the system; these releases will be dealt like diversions to an irrigation canal.
- 5 million acre feet average flood flows should go over 5 years, i.e. 25 million acre feet water should go down during the flood months of five years.⁶⁵

Salt water intrusion

Alvi and Al-Khobar have argued that the fear of present extent of the sea water in the Indus Delta and sea water intrusion would cause serious quality

⁶³ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 253, 31 October 2006, p. 45.

⁶⁴ Dr. Zaigham Habib, "Water Management and Reservoirs in Pakistan", *South Asia Journal*, January- March 2006.

⁶⁵ *Ibid*, p. 195.

deterioration into existing aquifer system would be further aggravated by Kalabagh is not substantiated by factual data. To them, studies indicate that presently the total effect of Indus estuary is only limited to the lower parts of Delta and gets dissipated below Aghimani gauge and sea water intrusion, seems to be at its maximum even now and it is unlikely to be aggravated further by Kalabagh Dam. However, salt water intrusion into the Indus is contaminating water supplies and adding to the salinity of agricultural land (Ray 2006). Salt water intrusion has occurred up to 100 km inland from the sea. People in some areas of Sindh are suffering from various diseases as a result of having only brackish water to drink (ibid). A symposium conducted by Pakistan National Institute of Oceanography and National Science Foundation in October 1982 at Karachi established that salt-water intrusion into the plains of lower Sindh is directly related to the decrease of flow in the River Indus (Ahmad 2007).

These are the imminent threats which can hamper the already deteriorating situation in the Indus delta. The construction of Tarbela and Mangla Dams have made the flow of Indus River water quite slow and its repercussions are visible with whittling down of mangrove forest, wild life species and the increasing impact of salinity on the fertile land. Kalabagh Dam would further make the environment more alarming. Because of these environmental problems the upstream provinces- particularly Sindh- has seriously lashed out this project. The Kalabagh Dam would not be possible through mere rhetoric unless a consensus is evolved, where with mutual understanding a strategy is devised to ensure minimal environmental impact.⁶⁶ By considering the severity of the environmental damages, environmental impact assessment was made mandatory for all big projects by Executive

⁶⁶ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 248, 25 October 2006.

Committee of the National Economic Council (ECNEC) in 2004 (POT Pakistan December 1, 2006: 36) and subsequently the central development working party (CDWP) has formed an assessment committee to submit a comprehensive report on five key aspects, including environment.⁶⁷ A proper environmental impact assessment and the attenuation of the concerns of downstream provinces are the prime steps of the federal government to move ahead before taking any developmental water projects like the controversial Kalabagh Dam. This can only promote 'sustainability'⁶⁸ with sustainable peace and prosperity.

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⁶⁷ *Public Opinion Trends (POT)*, Pakistan Series, vol.XXXIV, no. 280, 1 December 2006,p. 35.

⁶⁸ Sustainability means preventing negative impacts on the downstream uses by people (e.g., irrigation, soil fertility restoration, recession agriculture, washing, cattle watering) and to downstream ecosystems (e.g., mangroves, deltaic fish, wetlands, flood plains). There are substantial benefits to be realized for water regulation downstream, whether it is flood control, urban and industrial water supply, and/or multiple uses cited in Robert Goodland, *Environmental Sustainability In The Hydro Industry: Disaggregating the Debate* in Tony Dorsey et al. *Learning From The Past Looking At The Future*, Workshop Proceedings Gland, Switzerland April 11-12, 1997.

Chapter-III

Kalabagh Dam and Provincial Conflicts in Pakistan

*Whiskey is for drinking.
Water is for fighting over.¹*

Mark Twain

Conflicts and tensions caused by the effects of dams, whether actual or proposed, exist between states in many of the almost 300 international basins in the world, between provinces, and between affected communities and the government or other entity responsible for the authorization, financing and operation of a dam (Curtin 2000). Conflicts relating to dams can develop at the level of the smallest (individuals) and the largest (states) concerned groups and can take on a multitude of different shapes, from outright violent clashes to lingering tensions and a lack of cooperation which renders effective water management in the basin impossible (ibid). In Pakistan, Kalabagh Dam is the most controversial project which has germinated the sense of prolonged strife and shambles among the four provinces- Punjab, North West Frontier Province (NWFP), Sindh and Baluchistan. The inter-provincial wrangling has been a national issue due to its intensity and severity of the conflict.

The Planning Commission on November 28, 2007 stated that the Central Development Working Party (CDWP) had "conceptually cleared" eight projects including the Kalabagh Dam (POT Pakistan November 30, 2007: 26). Punjab and the Central government are hell-bent on building this dam. But the Legislative Assemblies of the three provinces- North West Frontier Province, Sindh and Baluchistan- have already passed the resolution against the dam. Why the three provinces opposing the dam? The government of North West Frontier Province sees it a threat to the fertile land and would inflict damage to the irrigated regions like the districts of Mianwali, Bakkar etc. It would lead to huge

¹ Mohamed Larbi Bouguerra, *Water Under Threat*, Alliance of Independent publishers, Zed Books London, 2006, p. 64.

displacement of the people and demographic imbalance. "Kalabagh Dam is a matter of life and death for the people of NWFP. We will stop its construction at any cost", said an angry Zahid Khan, the information secretary of the Pushtoon nationalist Awami National Party (ANP).

However, the province of Sindh and Baluchistan are the real loser of this project. The regulation of water by at the upstream area will reduce the flow of water and it will ultimately affect the agriculture of the two provinces, particularly Sindh. It would have the greater possibility to increase sedimentation, waterlogging, loss of mangrove forest etc. As a result, there has been a mass national and provincial protest demonstration against this project because Punjab as an upstream province wants to hog the Indus River at the cost of downstream provinces. "The Sindh Assembly, all political, religious and nationalist parties- irrespective of ideology- have given the thumbs-down to the controversial water projects," says Qureshi.² Qadir Magsi, chief of the Sindh Taraqi Passand Party, says "World powers exaggerate the issue of weapons of mass destruction. But the Kalabagh Dam will kill 40 million people of Sindh, 30 million of the NWFP and 15 million of Balochistan."³

The inter-provincial conflict is not the tussle between Punjab and the three (NWFP, Baluchistan, and Sindh) provinces of Pakistan. Mansoor has argued that Baluchistan has also grudge against Sindh for not distributing proper share of water and Punjab and NWFP have joined in criticising Sindh for what they call its refusal to release Balochistan's due share of water. Balochistan's irrigation secretary, Abdus Salam, who says that the government of Sindh has released 2000 cusecs less than its IRSA-allotted share of 6100 cusecs a day, a 40 percent

² "Pakistani Provinces Clash Over Kalabagh Dam", *One World South Asia*, accessed on 13 October 2007, URL: <http://uk.oneworld.net/article/view/85749/1/5238#top>

³ Ibid.

reduction in supply.⁴ Monsoor adds, the counter-argument of Sindh is the shortage of water has forced Sindh to reduce the release of water.

Nevertheless, as Punjab is at the upstream and is stubborn to build the Kalabagh Dam, the rest three provinces putting all the blame on Punjab. Conflicts over dams can be accompanied by highly visible protests from people and other basin states, or fester below the surface among disempowered project affected peoples unable to make their objections heard (Curtin 2000). "The issue is not of a dam, but of the deep-rooted distrust that underlines the nature of relationship among the four federating units and the state. Smaller provinces do not trust the state as well as Punjab due to host of historical and political reasons. In fact, it is even hard at times to differentiate between the interests of Punjab and the (Pakistan) state", said Sarwar Bari, who heads a non-governmental organisation (NGO) working in the area of good governance (Rizvi 2007). One of the reasons for creating controversy and differences of opinion on the project is attributed to Water and Power Development Authority's (WAPDA) failure to adequately consult the provinces at the project planning and design stage, since the provinces were kept in complete darkness about the design parameters of the dam, till the completion of its detailed design in 1984-85 (Ahmad 2007).

However, before underscoring the conflicts we should look into the importance of geography that gives Punjab a bigger hand vis-à-vis other provinces in Pakistan.

- Punjab has five rivers flowing through it, where as, Sindh only has one- the River Indus, on which the proposed dam is planning to be built

⁴ Hasan Mansoor, "Sindh's struggle for control of the Indus", *Himalayan Journal*, July 2002.

(Momina 2007). Disruption to the water supply from the sole river to the region will disproportionately affect agriculture in this province (ibid).

- Furthermore, the productivity of land is determined by soil quality and rainfall. Sindh has substantially less rainfall than Punjab, making the River Indus even more important (Momina 2007). In the perception of many people of Sindh, there is a real danger of virtual physical extinction of the people of Sindh in the not too distant future, if the artificially water-famine conditions are perpetuated and/or any more dams like the Greater Thal Canal or Kala Bagh Dam take away even the present meager supply of water to Sindh, as every drop of water taken away from the down ward flow of water of the Indus river system, under any pretext whatsoever (e.g. prevention of wastage of water discharging into the sea), will lessen Sindh's already vastly plundered water supply and will accentuate the acute water famine condition in Sindh and accelerate its economic and social ruin (Palijo 2003).

“Political predominance is a question not just for having power in the sense of human or material resources, but also of the geographical context within which that power is exercised” (Sloan and Gray 1999: 2, Sheehan 2006: 21).⁵ Thus, due to this geographical vintage Punjab has persistently been playing the zero-sum-game of geo-politics⁶ with other provinces, particularly Sindh. The waters of the Indus River basin are allocated to the provinces through the Water Accord, which is implemented by the Indus River Systems Authority (IRSA) (Azad 2003).

⁵ Michael, Sheehan, *International Security: An Analytical Survey*, Boulder: Lynne Rienner, 2005. Also see in G. Sloan, and C. S. Gray *Why Geopolitics?* in C. S. Gray and G. Sloan, eds., *Geopolitics*, London: Frank Cass, 1999.

⁶ Geopolitics as an approach is inextricably linked to Halford Mackinder, who outlined it in *The Geographical Pivot of History*, published in 1904 (Sheehan 2006).

A National Drainage Master Plan, which is likely to form the basis of a Drainage Accord, is under preparation. There are frequent disputes over water allocation, especially in sharing water during dry periods. It would be pertinent to note that the cropping intensity for Sindh and the Punjab has increased from the earlier 48 per cent (on the average) to as much 139 per cent now (POT Pakistan October 28, 2006: 12). This requires at least 189 MAF of water against the presently available of only 104 MAF for the whole of Pakistan.⁷ This has led to controversy among the provinces which has contributed to the slow growth in water resources management in the past decades.⁸ Thus, Sindh and NWFP have raised strong objections against this development scheme which they perceive as 'water robbery' by the powerful province of Punjab, under the guise of national interest (Momina 2007). Though there is scarcity of water but sharing of water resources, rather than scarcity of water, is the fundamental issue among the provinces of Pakistan.

Historical antecedents of the conflict

In order to understand the true picture, we should comprehensively look in to the historical backdrop of this problem which has become a great impasse to promote co-operation among the provinces of Pakistan. The dispute over the Indus water goes back before the creation of Pakistan to the 1870s when conflict erupted between Sindh and Punjab over the latter's construction of irrigation infrastructure on the Indus (Fulcher 2006). The one and a half century old dispute between Sindh, the lower riparian, and Punjab, the upper riparian, over the sharing of the waters of the Indus and its main tributaries, the five rivers

⁷ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 251, 28 October 2006, p. 12.

⁸ A. Azad, *Sindh Water Resources Management— Issues And Options*, Food And Agriculture Organization Of The United Nations— Rome, FAO Investment Centre, Occasional Paper Series December 2003.

Jhelum, Chenab, Ravi, Bias and Sutlaj, is probably the longest surviving unresolved water dispute of recent history (Palijo 2003). The government of India Act 1935 Section 130 and Section 131(6), inter alia laid down the principle that no province can be given an entirely free hand in respect of a common source of water such as an inter-provincial river (ibid). Examining the riparian rights, and the claims of the authorities of the (undivided) Punjab, that an upper riparian province in India may take as much water as it needs from rivers flowing through it, the Rao Commission headed by Sir B .W. Rao opined in "the Report of Indus Commission" (Para 49, Page 33), "pushed to its logical conclusion, this means that a province in which the head- waters of a great river are situated, can abstract any quantity of water and make a desert of the provinces or states lower down (Palijo 2003). We have already pointed out that this view is against the trend of international law and that in any event, so far as India is concerned, it would conflict with the manifest intention of section 130 and the succeeding sections of the government of India Act 1935" (Palijo 2003). By 1945 the British colonial rulers had imposed a solution on the two provinces whereby the right of Sindh to receive the waters of the Indus was held supreme (Ray 2006).

Indo-Pakistan talks for resolving the "water dispute" started in March 1952 under the auspices of the World Bank. Initially engineers from Sindh, N.W.F.P and Bahawalpur and Khairpur States besides Punjab were included in the Pakistani team (Palijo 2003). The engineers from Punjab reportedly behaved as if they owned all the waters of Pakistan. Their objectives appeared to be (1) To keep the Indian side happy. (2) To stick to their secret deal with Indian Punjab, and get its terms approved by hook or crook. (3) To get a dam and link canals on Indus for plundering its water on the pretext of replacing the "losses suffered by Punjab" due to having deliberately, unauthorized and illegally sold out the common rivers Ravi, Bias and Sutlaj to India under the secret deal (4) To enlist

Bahawalpur state engineers against Sindh by offering the bribe of Indus water for Bahawalpur State. (5) To deprive Sindh of its previous allocations of water. (6) To brow-beat Sindhi engineers into acquiring to their above high-handed anti-Sindh, unpatriotic projects. (7) To misrepresent, to their advantage, the facts and figures regarding the waters and water-supply of Pakistan (Palijo 2003).

According to Palijo (2003), in 10th June 1959, the military government of Ayub Khan constituted a body named Indus Basin Advisory Board (IBAB) to evolve the best plan for meeting the water shortage caused by the sale to India of Ravi, Bias and Sutlaj and no representative from Sindh or any other region/province other than Punjab was taken on this Board. Thus, the IBAB plans, decisions and the International negotiations based on the above plans and decisions were purely a Punjab affair (Palijo 2003).

From 1960s to 1970s or post-Indus Basin Treaty era Punjab's agricultural sector saw a reasonably higher productivity (Khan 2005). To maintain this plenteous agricultural output the agriculturists in that province went crazy in search of grabbing more water resources in order to bring in more and more land under irrigation, resultantly harming the interests of other stakeholders, particularly Sindh as a lower riparian of Indus River System (IRS) (ibid). Despite the availability of underground water in Punjab, which their agriculturists exploited to the optimum, the Sindh lacked this very natural bonanza (ibid).

The latest Water Accord (commonly known as Water Apportionment Accord) was signed by Chief Ministers of all four provinces of Pakistan on 16th March 1991 and ratified by the Council of Common Interests (CCI) on 21st March, 1991 (Khan 2005). This accord is based on both, the existing and future water needs of the four provinces. With the allocation of 2.24 MAF approved by the

Executive Committee of the National Economic Council (ECNEC) of Pakistan for Left Bank Outfall Drainage (LBOD) and 0.87 MAF allowed by the President of Pakistan for Karachi city consumption.

The present sanctioned annual allocation of provinces as per 1991 Accord is as follows:

Table No. 6

Province	Kharif	Rabi	Total	%
Punjab	37.07	18.87	55.94	37
Sindh	33.94	14.82	48.76	37
NWFP(a)	3.48	2.30	5.78	14
(b)CIVIL CANALS	1.80	1.20	3.00	(a, b)
Baluchistan	2.85	1.02	3.87	12

Source: "Apportionment of the Indus Waters (Promise and Prospects): A Historical Accord", March 21 1991, [Online: web] Accessed on 27 November 2007, URL: <http://www.presidentofpakistan.gov.pk/media/Water/Apportionment.pdf>

The Section 7 of the 1991 accord says,

"The need for certain minimum escapages to sea, below Kotri, to check sea intrusion was recognized. Distrust of the federal government stems from precedents such as violations of the Indus Water Accord. This agreement was signed by all provinces, and it outlined the basis for sharing the shortages and surpluses of river water. However, during water shortages in 2000, the accord was violated and agricultural output in Sindh and NWFP was adversely affected due to mismanagement and mal-distribution of river water by the federal government" (Momina 2007).

Mohammad Ayub Khan has argued that this new distribution gives proportionally more water to NWFP and Balochistan but the fact that NWFP can not utilize more than 3% of its agreed share because of its geographic elevation compare to the Indus flow all the way from Tarbela to Taunsa. Similar is the

situation with Balochistan which get water through one small size canal namely Pat Feeder. To him, Water apportionment of 1991 certainly gives more water to these two province of NWFP and Balochistan but due its inability to utilize the extended share because of geographic bottlenecks, Punjab is the ultimate beneficiary to draw this unused portion of total 26% water. Sindh can not raise voice as they would be given its due share of 37% under the agreed formula; the rest is none of their business (Khan 2005). Now the question arises, if NWFP and Baluchistan are unable to exploit their legitimate water sharing, then why not the water to be equally shared between Sindh and Punjab? According to Homer-Dixon "A fall in the quality and quantity of renewable resources can combine with population growth to encourage powerful groups within a society to shift resource distribution in their favour". It is the "resource capture" (Dixon 1994) of Punjab to gain benefit without sharing water with Sindh. Peter H. Gleick has identified the control of water resources as a source of conflict where water supplies or access to water is at the root of tensions.⁹

However, in May 1994 the Punjab government proposed a different formula for water distribution. Known as the "historical uses formula", this used as its baseline for calculating "historical uses" of water the 13 year period from 1977-90, the period during which the federal government's ad-hoc distribution in favour of Punjab was in force (Ray 2006). The advisory committee of Irsa in October 2007 had forecasted 22 per cent water shortage for the season and decided, despite Sindh's opposition, to distribute provincial water shares on the basis of historical use.¹⁰

⁹ Sadiq A. Gill, "Water politics in South Asia", *South Asian Studies*, vol. 20, no. 1, January 2005, p. 3.

¹⁰ *Public Opinion Trends (POT)*, Pakistan Series, 20 November 2007, p. 76.

The cardinal principle of the river-water law that has emerged out of centuries of intra-national as well as international litigation on the issue, is that the party at the upper side of a river (legally known as upper riparian) has no right to withdraw or divert water from the common river if it causes loss or injury to a party at the lower side (legally known as the lower riparian) (Palijo 2003). That is why "Punjab's proposal was found by the courts to be a breach not only of the accord but of the country's constitution" (Fulcher 2006).

Likewise, the Technical Committee on Water Resources (TCWR) that was announced in August 2003 did not become functional until March 2004 on account of unexplained red-tapism and bureaucratic delays (Mustafa 2007). According to Zubeida Mustafa, "Comprising eight members and a chairman, this body failed to produce a consensus report. One member from Sindh, Dr Iqbal Ali, who had earlier pleaded for alternatives to conserve the Indus water, changed his stance once he became a member of the TCWR. The other member from the province, Sardar Ahmad Mughal, was forceful in marshalling arguments against Kalabagh and was broadly supported by the chairman". The most important issue to emerge from the report is that enough water is not available in the River Indus to fill a dam of KBD's size optimally and to allow sufficient flow of water below Kotri as is needed to prevent sea water intrusion.¹¹ Thus, according to WAPDA's upstream approach method of calculation, the net water availability in the Indus is 6.4 million acre feet (MAF), the seven members of the TCWR put it as 31.6 MAF while Mr Sardar Mughal puts it as- 17.7 MAF.¹²

The Report of Technical Committee on Water Resources (TCWR) states that there is no surplus water available for storage on an annual basis, though there are flood years when the situation is not so bad. Studying the pattern of

¹¹ Zubeida Mustafa, "Truth About the Abbasi Report", *Commentary*, 16 November 2007.

¹² *ibid*

river flow in the post- Tarbela dam period, the TCWR found that on an average storable surplus water was available in only 10 out of 28 years and a dam of 6.0 MAF will be able to trap only 22 per cent of the surplus flood flow (Mustafa 2007). Three dams will trap 84 per cent of the flood water but each will be filled for 10, seven and three years out of 28 respectively (Mustafa 2007). Similarly, in giving the data for the outflow of the water to the sea downstream of Kotri, the figures vary widely (ibid). The international consultants asked to study the case have suggested 2.6 MAF of water every year and 25 MAF every five years should be available to check seawater intrusion. This works out to less than the 10 MAF per annum provided by the 1991 water apportionment accord (ibid).

On 18 December 2005 the Central Co-ordination Committee (Rabita Committee) of Muttahida Quami Movement (MQM) has unanimously decided not to support the construction of the Kalabagh Dam in its long and emergency meeting held at its Head Office in Karachi and at the International Secretariat in London simultaneously.¹³

General Pervez Musharraf has announced to form a committee reevaluate the cost of Kalabagh and Bhasha dams and the Thal canal. Similarly National Assembly also announced to constitute another committee to analyse all the apprehensions and political controversies regarding these dams to reach at a final decision (Shahzad 2005).¹⁴ In this connection, there is another problem in the 1973 constitution that the Council of Common Interest (a constitutional body formed to resolve inter-province conflicts) has not been successful to derive a

¹³ "Muttahida Quami Movement Will Not Support The Construction Of The Kalabagh Dam – Rabita Committee", Accessed On 23 August, 2007 URL: http://www.mqm.org/english-news/dec-2005/news_051218.htm

¹⁴ Aisha Shahzad, "The Issue of Kalabagh Dam", *Pakistan Vision*, vol. 6, no. 2, December 2005

mechanism for the solution of these conflicting issues. (*The Dawn*, 15th January 2005).

The deadlock on Kalabagh dam has been caused due to multifarious factors and it is germane to discuss these problems in detail.

Politics of Kalabagh Dam (KBD)

Large dam projects are more apt to be subverted during implementation due to political and broader ideological considerations (Alam 1998). Sri Lanka's Accelerated Mahaweli Project has already been mentioned as an example.¹⁵ It is this political component that John Waterbury has labeled "hydropolitics".¹⁶ To make matters worse, governments usually insist that the construction of dams be compressed into the shortest period possible- the main reason being that the politicians involved want to ensure that it is they rather than their successors who obtain the credit.¹⁷ Such 'empire-building' (Goldsmith and Hildyard 1984) approach was initiated during General Zia-ul- Haq in 1984. Though the Kalabagh Dam project was initiated by him but it has not yet materialized after more than two decades. The inter-provincial conflict relating to Kalabagh Dam has taken a political dimension and has become national issue for the vote bank politics at the cost of national interest. It was during Zia regime General Fazal Haq from Mardan looking after NWFP as Provincial Governor, who made a lot of noise against this project (Khan 2005). Till then there was no rejection from the political forces of the Province with little effective opposition from Pushtoon bureaucrats working in the Water and Power Ministry belong to NWFP (ibid).

¹⁵ Tony Dorsey, Achim Steiner, Michael Acreman and Brett Orlando, *Learning From The Past Looking At The Future*, Workshop Proceedings Gland, Switzerland, April 11-12, 1997, p. 63.

¹⁶ Ibid

¹⁷ Edward Goldsmith and Nicholas Hildyard, "The Social and Environmental Effects of Large Dams"; A Report to The European ecological Action Group (ECOROPA), *Overview*, UK:Wadebridge Ecological Centre, vol.1,1984.

The Kalabagh Dam also came in the calculus of power struggle between Benazir Bhutto and Nawaz Sharif. Bhutto belongs to Sindh and Sharif from Punjab. These two provinces are the base for their political future. Neither of them wants to go against the wishes of their respective provinces. Claiming to be having roots amongst the Pakistani masses from Karachi to Khyber (Peshawar) Pakistan People's Party (PPP) headed by Benazir Bhutto did not want to lose the Punjabi vote bank and never came out clearly pro or against this project (Khan 2005). In Sindh, PPP always sided with Sindhi nationalist feelings but in Punjab advocated for creating a consensus amongst the federating units before going to build the Kalabagh Dam. Later, during the second stint of Benazir Bhutto government, the issue of Kalabagh Dam came into the parliament for debate and the water and power ministry under Ghulam Mustafa Khar wanted to create a consensus at least amongst the cabinet members of Benazir Bhutto (Khan 2005). The interior minister Nasirullah Khan Babar himself a Pushtoon from Peshawar valley discouraged him from doing so (ibid). In his second term in power, Sharif put the construction of Kalabagh Dam on top of the national agenda (Momina 2007) which invited a strong protest for the first time from Pushtoon political parties. In June 1998, the beleaguered Prime Minister of Pakistan, Nawaz Sharif, stated that the controversial Kalabagh Dam would be built (The Economist, 1998c: 48, Alam 1998: 170). Frederiksen explains such decisions are, usually, due to political pressures with the result that "governments often proceed with projects that in total far exceed supply, wasting huge investments, both public and private" (1997: 544-545).¹⁸

¹⁸ Undala Z. Alam, *Water Rationality: Mediating the Indus Waters Treaty*, Thesis submitted for the degree of Doctor of Philosophy Geography Department, University of Durham, September 1998, p. 170.

A long march under the veteran politician Khan Abdul Wali Khan was taken out from Peshawar and reached Attock to register its protest and he gave an emotional speech declaring they would bomb the Kalabagh Dam once it is started (Khan 2005). The government has accused Ms Bhutto of hypocrisy for starting a nationwide campaign against the project.¹⁹ Pakistani Minister of Information, Mushahid Hussain, said that Ms Bhutto- who with her husband, Asif Zardari, is facing corruption charges related to her time as prime minister- was previously in favour of the project.²⁰ He accused her of changing sides to deflect attention from her legal problems. "When she was prime minister she supported the dam and allocated money for the dam. Now she is in opposition she wants to divert attention away from her accountability, and focus on this issue and play the provincial card," he said.²¹

Mutahida Majlis Amal (MMA) entered the political arena as political alliance of religious political parties, winning one full provincial government of NWFP with partial provincial government share of Balochistan in the 2002 elections (Khan 2005). Jamaat Ulma Islam under Maulana Fazal Rehman approach is closer to the left political parties who have sided with Sindhi Nationalist against the dam whenever a demonstration was held, but in Punjab and NWFP have adopted conciliatory position (ibid). Jamaat Islami initially totally in favour of the dam but after getting into the power corridor have balanced its approach as the Jamaat in no mode to lose the Pushtoon vote in its traditional strong pockets of NWFP (ibid). Balochistan has no immediate concern with this issue, but to keep the pressure mounting on what the called Punjabi

¹⁹ "Thousands protest against dam" *World South Asia*, Monday, August 10, 1998 Published at, 21:57 GMT 22:57 UK, accessed on 15 September 2007, URL: http://news.bbc.co.uk/2/hi/south_asia/148419.stm

²⁰ Ibid.

²¹ Ibid.

politicians they have joined forces with Sindhis and Pushtoon along with the token presence of Seraiki politician under the political alliance of Pakistan Oppressed Nations Movement (PONM) (ibid). The said alliance is the amalgamation of more than two dozens political parties from mainly the three provinces of NWFP, Balochistan, Sindh and representation of disgruntled elements of Seraiki belt of Punjab (ibid).

According to Mohammad Ayub Khan (2005), it is possible to redraw some of the provincial boundaries of NWFP and Punjab, prevailed before the commencement of one Unit during the 1960s. To him, Kalabagh is a predominantly Pushtoon (Khattak and Niazi tribes) areas, western parts of Mianwali used to be Bannu Tehsil before the One unit arrangements 5). After the One Unit (i.e the whole of western Parts of Pakistan) dismantlement Mianwali was detached from Bannu (NWFP) and made part of Punjab (Khan 2005). It can be used an option now before the Pushtoon leaderships if they take this area back provided they agree to the construction of KBD (ibid). Once they agree to this new arrangement of taking back the land once part of NWFP along with their willingness to end their opposition to KBD, half of the job would be completed, what Khan says. Thus, Kalabagh Dam is politically sensitive issue to play power politics in Pakistan. Responding to the question as to how ongoing water disputes would influence future political discourse in the country, Asim Sajjad Akhtar commented: "Control of water as a commodity and corporatisation of water would bring new changes to Pakistani politics" (Bhatti 2007). Richard Asbeck, Hans Seidel Foundation (HSF) resident representative at Islamabad, said that Pakistan has world's finest irrigation system, but water issue has been highly politicized in Pakistan.²² However, the real thing is that "None of the

²² *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 261,9 November 2006.

governments ever has come up with an untainted good public policy, which could be followed in the long term and that all policies had been and are being prepared on the basis of one vested interest or the other".²³

Legal perspective

According to Mohammad Ayub Khan, fortunately, the 1973 Constitution did provide for the creation of such federal cooperative institutions, such as Indus River System Authority (IRSA), Council of Common Interests (CCI), National Finance Commission (NFC) and National Economic Council. Ironically, these institutions are never allowed to take roots, play its full role and create an atmosphere of trust amongst the federating units and there is already a deep mistrust created between Sindh and Punjab on the two irrigation links (Khan 2005). Chashma-Jhelum link (21,000 cusecs) and Taunsa- Panjnad link (12000 cusecs) have been kept open for the last several years without prior consent and permission of the Sindh provincial government in flagrant violation of the inter-provincial agreement.²⁴ Punjab has been violating 1991 accord openly and any voice from Sindh is suppressed ruthlessly and one of the reason Sindh's Governor Daudpoto and Irrigation Minister ANG Abbassi had to quit was their open disapproval of Punjab's attitude and Center's silence toward this issue.²⁵

Unanimously opposing the construction of this dam provincial assemblies of Sindh, Balochistan and NWFP shown their decision (first in 1985 Arbab Jehangir, 2nd in Aftab Sherpao and 3rd during Mir Afzal Khan Chief Ministership) that they are opposed to this project irrespective of their political affiliations (Khan 2005). Sindh, as lower riparian of Indus River System, is

²³ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 251, 28 October 2006

²⁴ Mohammad Ayub Khan, "Talking to a Wall", 22 December 2005, [Online: web] Accessed on September 15 2007, URL: <http://www.khyber.org/articles/2005/TalkingtoaWall.shtml>

²⁵ *ibid*

always threatened by Punjab whenever there is a shortfall of irrigation water in the dams (ibid). Particularly for Kharif season these figure of water release and storage are always disputed. Despite all the available constitutional forums such as Council of Common Interests, Indus River System Authority etc no legal course is ever followed to remove the grievances of Sindh and neither they were ensured about their due water share (Khan 2005).

Economic Perspective

Khan has rendered a comparative assessment of the following three projects to justify that Basha and Katraza projects are better than Kalabagh dam project. From the investment and power generation point of view Basha and Katraza are more effective than Kalabagh. In the following table, which he gives, we can judge the effectiveness of the three projects.

Table No. 7

Description	Basha	Katraza	Kalabagh
Storage Capacity (MAF)	7.34	35.00	6.1
Hyde Power production	4,500mw	15,000mw	2,400mw
Time for completion	2014	2019	2012
Total Cost in US\$	7.00 billion	No known	9.00 billion
Displacement of population	nominal	Nominal	Around 300,000
Environmental affects	nominal	Nominal	Water logging etc
Political acceptance	Yes	Yes	Controversial
seismic fault-line	Near fault line	Near Fault Line	Near Fault Line
Stop silting flow to Turbela	Yes	Yes	No

Source: Mohammad Ayub Khan, Talking to a Wall, 22 December 2005, [Online: web] Accessed on 15 September 2007, URL: <http://www.khyber.org/articles/2005/TalkingtoaWall.shtml>

From the foregoing calculative analysis, we can say that the storage capacity, quantity of power generation and population displacement, and environmental effects Kalabagh Dam is more harmful than the other two dams.

Kalabagh Dam is planned to take out a left Bank canal (which Punjab denies) to irrigate new areas in the districts of Mianwali, Bakkar and Khwashab, but on the other hand it would destroy (districts of Charsadda, Nowshera, Peshawar, Swabi and Mardan, the food basket of NWFP) more than what it would irrigate in Punjab (Khan 2005).

In this respect, two important pointers appear in the topographic view of the proposed site of KBD i.e., the salt range (Bahadur Khel in Karak) and the location of the five oil fields (Kohat and Karak) near the proposed dam site which also be threaten by the rising underground water level (Khan 2005). Shaheen Rafi Khan has said that the title of a recent study "Tarbela Dam Sedimentation Management", carried out by TAMS-Wallingford (March 1998) shows that a de-silted Tarbela would yield the same irrigation benefits as Kalabagh, but at one-seventh the cost in net present value terms.²⁶ Additionally, even if a thermal power plant of equivalent capacity to Kalabagh were constructed, the cost would still be lower by one-third.²⁷ "It was just a race for the water, with no expert planning," said Sikander Brohi, a development expert at the Center for Information and Research of the Bhutto Institute in Karachi.²⁸

Technical Perspective

There is also the fear of failure of dam if it is not constructed without considering its viability and effectiveness which can seriously damage to the downstream provinces of Pakistan. The Johnstown dam in Pennsylvania led to the death of somewhere between 2,000 and 10,000 people (Goldsmith and

²⁶ Shaheen Rafi Khan, "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, vol. 12, no. 5, Sep- Oct 2005.

²⁷ Ibid

²⁸ Erik Eckholm, "A River Diverted, the Sea Rushes", *The New York Times*, 22 April, 2003.

Hildyard 1984)²⁹ is the instance in this regard. From the technical point of view, Mohammad Ayub Khan argues, the Skardu-Katzarah dam is the best option for the country and Basha dam is much better than Kalabagh, says the report of an expert committee constituted by the Ministry of Water & Power, Government of Pakistan on construction of new water reservoirs headed by A.N.G Abbasi. To Khan, location of the KBD is technically not sound because the saline water in this area would affect the marine lives of various species and agriculture would be the primary victim as the saline water would destroy the soil under the irrigation system of this new dame. During the last few years a number of oil and gas wells in operation in these two districts, particularly the Gorgora Gas Field in Karak district would be a big disaster for this region once the water level reaches to a certain level which the soil starts dissolving and exploration of oil and gas become impossible further (Khan 2005). Most of these areas lack the portable water resources and the local inhabitants particularly the womenfolk use to get the water from far flung areas (ibid).

Thus, the fear of Sindh and Baluchistan has natural concern for this imminent peril. Goldsmith and Hildyard in their study have said that 'Overtopping' during floods may cause the failure of dam. Such 'over-topping' occurred with the Machau II dam in India in 1979 and caused the death of 1, 500 people downstream.³⁰ In that case the malfunctioning of equipment contributed to the failure, as the spillway gates could not be opened in time (Goldsmith and Hildyard 1984: 104). The failure of spillways to function properly also led to the

²⁹ Edward Goldsmith and Nicholas Hildyard, "The Social and Environmental Effects of Large Dams", A Report to The European ecological Action Group (ECOROPA), *Overview*, UK:Wadebridge Ecological Centre, , vol.1,1984.

³⁰ Edward Goldsmith and Nicholas Hildyard, "*The Social and Environmental Effects of Large Dams*", A Report to The European ecological Action Group (ECOROPA),*Overview*, UK:Wadebridge Ecological Centre, vol.1,1984,P. 104.

near- failure of the Tarbela dam in Pakistan in 1975-6.³¹ In this case design errors and possible poor construction materials were also involved. The incidence of dam failure is, for a number of reasons, likely to increase in the years to come. To begin with, as Ferdinand Budweg, a noted Brazilian engineer, points out, “The number of new dams in countries with little or no experience in the design, construction and operation of dams, increases from year to year, and lack of experience may lead to repetition of errors and serious mistakes (Goldsmith and Hildyard 1984: 103). The lack of internal accountability, farsightedness and prolonged ignorance of the concern of Sindh, Baluchistan and NWFP by WAPDA members also have also a factor to crusade against this Kalabagh Dam project. The important example in this regard is September 9, 1992. Faced with rising reservoir levels, engineers at Mangla Dam clearly panicked and suddenly released some 900,000 cusecs without the warning.³² A wall of water rushed in to the villages and army garrisons situated below the dam, killing over 500 people and washing away entire settlement.³³

In spite of these loopholes, Kalabagh Dam has the potential to damage the Peshawar valley because with the construction the dam the valley would be surrounded by the world’s largest dams in the area. Demographically this is a big threat to the city of Peshawar having the population of more than four million and with 5 million of inhabitants all around to have one water reservoir in the East (Munda Dam), one in the South Turbela, one in the South Warsak and another planned Kalabagh in the West (Khan 2005).

³¹ Ibid

³² *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 231, 2 November 2006, p. 31.

³³ Ibid

Environmental Perspective

Kalabagh Dam has been a causative factor for the loss of wetland and mangrove forest in Sindh and Baluchistan. According to the Human development Report, during the 20th Century, the world lost half its wetlands through drainage, conversion to agriculture and pollution.³⁴ In Bangladesh, the steady erosion of the mangrove areas in the Sundarbans and other regions has undermined livelihoods while increasing exposure to rising sea levels.³⁵ Loss of wetland would affect the bio-diversity and ecological balance of the regions of Sindh and Baluchistan.

The Kalabagh Dam project would lead to deforestation of mangrove forest which can increase the severity of flood because when the catchment area of a river is heavily forested, the elaborate root system of the trees act as a vast sponge which soaks up rainfall, releasing it only very slowly to the river below. Once a catchment area has been deforested, however, the run-off (as a proportion of rainfall) is vastly increased (Goldsmith and Hildyard 1984: 125). The UNESCO study also found that, when forested, the watershed of one selected river only released between 1 and 3 per cent of the total rainfall: by contrast, once the area was deforested, between 97 and 99 per cent was released to the river (ibid). In a heavily forested area, the soil is held together by the elaborate network of roots which underlies the forest floor and is, thus, subject to minimum erosion. A study shows that a natural rain forest lost only one ton of soil per hectare to soil erosion; but soil erosion losses increased to between 20 to 30 tons once the trees had been removed and the land put to cultivation.³⁶ These are other than those small dams such as Tanda in Kohat, Malakand Water Project in Mardan, Pehur

³⁴ Human Development Report 2007-2008, p. 102.

³⁵ Ibid

³⁶ Edward Goldsmith and Nicholas Hildyard, "The Social and Environmental Effects of Large Dams", A Report to The European ecological Action Group (ECOROPA), *Overview*, UK: Wadebridge Ecological Centre, vol.1, 1984.

high Level Canal in Sawabi and other small size waster projects the provincial government has planned in the adjoining 7 tribal agencies ((Khan 2005).

The largest single project on the Indus is the Tarbela Dam, in northern Pakistan, which was completed in 1976. As a report in 2000 by the World Commission on Dams put it, in damning understatement, "the ecological impacts of the dam were not considered at the inception stage as the international agencies involved in water resources development had not realized this need at that time".³⁷ The building of Kalabagh Dam would aggravate the productivity of the irrigated areas of Sindh and Baluchistan by increasing the possibility of sedimentation and salinity. The Food and Agricultural Organisation (FAO) estimates 21% of the irrigated land in Pakistan suffers from salinity (Abdel-Dayem 1997: 99, Alam 1998). This figure is the third highest in the world after China (23%) and the USA (28%).³⁸ Large-scale water resource development projects also unnecessarily have lowered the living standards of millions of local people.³⁹ According to Munir, water shortage and drought have hit the province of Baluchistan and its people badly, creating food insecurity. He adds, approximately 60 per cent of total cultivated area is dry land agriculture, with wheat being a major crop. Off-season vegetables are also grown in some parts, and fruit and dry fruit production plays an important role in the economic activity of the province.⁴⁰ Shaheen Rafi Khan has said that the title of a recent study "Tarbela Dam Sedimentation Management", carried out by TAMS-Wallingford (March 1998) is self-explanatory and the study states that, "replacement of [irrigation and energy] benefits by constructing a new dam and

³⁷ Erik Eckholm, "A River Diverted, the Sea Rushes", *The New York Times*, 22 April 2003.

³⁸ Undala Z. Alam, *Water Rationality: Mediating the Indus Waters Treaty*, Thesis submitted for the degree of Doctor of Philosophy Geography Department, University of Durham, September 1998, p. 170.

³⁹ Tony Dorsey, Achim Steiner, Michael Acreman and Brett Orlando, *Learning From The Past Looking At The Future*, Workshop Proceedings Gland, 11-12 Switzerland April 1997, p. 42.

⁴⁰ Shafqat Munir, "The provinces Profile of agriculture and industry", *Himalayan Journal*, July 2000.

reservoir downstream is feasible, but will be expensive, environmentally damaging and socially harmful.⁴¹ Thus, the inefficiency in environmental impact assessment, the imminent environmental degradation and its harmful impact on the living standard of the compelled the provinces of downstream to crusade against the large water projects like Kalabagh Dam.

Natural resource- water- a source of conflict in Pakistan

Natural resources can be a source of development rather than a source of conflict. Focussing on how and under what conditions natural resources can help local populations and strengthen state institutions may make it possible to more effectively guarantee peace and human security in future decades (David and Gagne 2006-2007: 17).⁴² But in Pakistan, natural resources, particularly water, has been a contentious issue since the independence of the country and it has become quite fervent to cave in any regime that take up the cudgels on behalf of Kalabagh Dam. With every passing day, the controversy over the construction of the new reservoirs on Indus is gaining momentum and despite the claims of President of Pakistan to have settled the dispute of the Greater Thal Canal (GTC) and the Kalabagh Dam (KBD), the opposition in Sindh and other small provinces has decided to turn the anti-GTC and KBD movement in to a “regime-change movement” (Halepoto 2004).⁴³ Qadir Magsi, a nationalist leader from Sindh and chairman of the Jeay Sindh Party, argued: “We will not allow the Musharraf regime to construct the Kalabagh Dam. There is no water available in the Indus

⁴¹ Shaheen Rafi Khan, “Environmental and other Contested Aspects of the Kalabagh Dam Project”, *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, vol. 12, no. 5, Sep- Oct 2005.

⁴² Charles Philippe David and Jean- Francois Gagne “Natural Resources: A source of conflict?” *International Journal*, vol.XII, no. 1, Winter 2006-2007.

⁴³ Zulfiqar Halepoto, “Down stream Kotri: constitutional position”, *The Dawn*, 22 March 2004

for storage. Already around eighty thousand hectares of our land has been turned barren due to the shortage of water" (Hussain 2007). "Upstream, they are demanding more water for canals, but we are demanding water to save our coastal area," said Mr. Sikander Brohi, a development expert at the Center for Information and Research of the Bhutto Institute in Karachi. "The dams are not giving proper benefit to Sindh," he added, expressing a view that is universally held in Sindh and rejected by officials in Punjab. "When our crops need water, they are filling the dams to meet needs in Punjab" (Eckholm April 22, 2003).

Turton (2000) has put forth three types of configurations which are essential to comprehend the tussles of provinces on water sharing and water management.

Zero-Sum Configuration: This exists when a hegemonic riparian state, or in the context of a sub-national analysis, a hegemonic province, exerts its dominance over the water resources in such a manner as to advantage themselves while disadvantaging others. Some literature refers to this as the "Rambo Style" of hydro-political interaction. The essence of this form is the existence of an asymmetrical power configuration, with one of the role-players (either country or province) being powerful enough to get their own way at the direct expense of the other role-players. This configuration has a high conflict potential and the continued existence of this form, in the face of increasing levels of water scarcity, is likely to result in a rapid, non-linear escalation of conflict potential. No consensus on what constitutes the human right to water is likely to be found, and the insistence that such a notion should exist will only serve to further alienate role-players.

Minus-Sum Configuration: This exists when the actions of all role-players result ultimately in a lose type of outcome. By its very nature, this form of conflict is bitter, drawn out, difficult to mitigate, and normally involves a spillover of political hostilities into the water sector, thereby politicizing water-sharing arrangements. Some literature refers to this as being a "Default Condition" whereby failure of the role-players to reach an agreement leaves all parties to the conflict in a worse off position over time. Under such conditions, no consensus will exist on the notion of water as a human right- on the contrary, water may even be used as a weapon in a way that can be called a human rights violation. Often this configuration sees water taking on an ideological dimension such as being "the lifeblood of the nation", or needing to be mobilized in order to "make the desert bloom". This is referred to by some commentators as the "hydraulic mission of society", and the existence of such a mission is usually manifest as a massive dam building tendency.

Plus-Sum Configuration: This exists when the actions of all role-players result ultimately in a win-win type of situation. Some literature refers to this as being a "Dilemma Situation", which allows for the balancing of hydro-political asymmetry through the linkage of the problem to other broader issues. By its nature, this form is consequently based on more symmetrical power configurations. As such it has low levels of conflict, characterized by the institutionalization of potential conflict in the form of regimes involving rules, bureaucratic procedures and other consensus building mechanisms. Under these conditions, consensus is likely to be reached on water as a human right because rational dialogue prevails.

From the above postulation we can say that Pakistani provinces are more prone to zero- sum and minus- sum configurations rather than plus-sum configuration. The controversy relating to Kalabagh Dam is nothing but the

upstream-downstream tussle, particularly Punjab and Sindh. Even within a State, a large project creates conflicts of interests between the people of the upper catchment and those downstream; between those who bear the social costs of the project and those who enjoy the benefits such as irrigation or hydro-power; between the head-reach farmers and those at the tail end of the canal system as also between the rich farmers and the poorer ones in the command area; between human beings and wildlife; and so on (Iyer June 2000). This frustration and aggression can be caused by relative deprivation, when people perceive a widening gap between the level of satisfaction they have achieved (often defined in economic terms) and the level they believe to deserve (Dollard *et al.* 1939, Dixon 1991: 84-85).⁴⁴ For example, Sindh will get 12 million acre feet (MAF) in Rabi season, which is 2.82 MAF or about 5 per cent less than its original water share fixed under 1991 water apportionment accord.⁴⁵ Punjab maximizes its vintage due to its geography, location and deterministic role in the formation of federal government. Though numerous committees and institutions have been formed to solve the inter-provincial water sharing management, it has become futile because of the political unwillingness and dearth of institutional capability.

Thus, the challenge for the WCD is therefore centered on seeking ways of transforming "Rambo Type" or "Default Condition" hydro-political configurations into "Dilemma Type" of hydro-political configurations. In other words, asymmetrical power configurations need to be transformed into symmetrical power configurations. This in turn implies that the emphasis has to be more on the carrot than the stick (Turton 2000).

⁴⁴ Thomas F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict", *International Security*, vol.16, 1991, p.2.

⁴⁵ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXIV, no. 231, 4 October 2006.

According to Ramaswamy R. Iyer (2000), it would appear that large projects tend to become the foci of conflicts and they arise from one or more of the following causes:

1. wrong principles (Harmon Doctrine, prior appropriation, prescriptive rights, etc., asserted in an absolute manner);
2. limited vision (myopic nationalism, blind assertion of local perceptions);
3. lack of sensitivity on the part of the stronger party, excessive touchiness on the part of the weaker;
4. wrong approach to natural resource planning (the notion of 'conquest of nature' or 'harnessing' natural resources through the application of science and technology, arising from the legacy of Prometheanism and implying an exploitative or adversarial relationship to nature; and a strong inclination towards gigantism);
5. politicization, i.e., the tendency for differences over water or environmental concerns to become elements in domestic electoral politics.⁴⁶

The argument of Iyer is germane when we put it in the case of Kalabagh Dam. From the technical point of view there is irregularity, devoid of proper planning and management, and politicization of the project at the coast of national interest.⁴⁷ Upstream-downstream conflicts occur whenever the costs and benefits of management are geographically unevenly distributed (Mostert 2000). Usually the benefits are upstream and the costs downstream, as in the case of

⁴⁶ Ramaswamy R. Iyer, *Large Dams, Trans-Boundary Waters, Conflicts*, in Erik Mostert, *Dams on Transboundary Rivers*, Prepared for Thematic Review V.3: River basins-institutional frameworks and management options, River Basin Authority Center, Delft University of Technology, Netherlands, 2000.

⁴⁷ Ibid

irrigation schemes upstream that reduce water availability downstream.⁴⁸ In the case of Kalabagh Dam, Punjab enjoys the upstream status vis-à-vis Sindh and Baluchistan. Sometimes, however, the benefits are downstream and the costs upstream, as in the case of hydropower dams that benefit primarily downstream areas.⁴⁹ To handle upstream-downstream conflicts well, international (or inter-provincial) co-operation is necessary. There is also a reservation from Baluchistan, which does not touch Indus River and is not a riparian in the strictest sense. According to Iftikhar Ahmad the Pat Feeder canal from Guddu Barrage, with 3400 cusecs of water, irrigates about 300, 000 acres in the province. And with a recent request of Baluchistan Government to remodel the Pat Feeder canal, the flow is further expected to be increased to 6000 cusecs, irrigating a further 200, 000 acres (Ahmad 2007). Baluchistan opposition to KBD is, therefore, based on its apprehension that future requests for more water from River Indus will meet little success if KBD over stretches the demand of water in the Indus River (ibid).

Before taking any decision on this project provincial co-operation, institutional capability, federal government's co-operation, viable technical scrutiny, and public participation are necessary in making headway. Thus, "the perceived legitimacy of the regime", "the role of politics in shaping a society's response to social stress", and "the nature and rate of change of power relations among states" as crucial intervening variables that mediate the relationship between environmental degradation and conflict within and among states.⁵⁰ It appears that politicians, having taken water for granted in their development programmes, have gone to the opposite extreme in designating water a strategic

⁴⁸ Erik Mostert, *Dams on Transboundary Rivers*, in Erik Mostert, *Dams on Transboundary Rivers*, Prepared for Thematic Review V.3: River basins-institutional frameworks and management options, Netherland: River Basin Authority Center, Delft University of Technology, 2000.

⁴⁹ Ibid

⁵⁰ Thomas F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict", *International Security*, vol. 16, 1991, p. 2.

resource. This appears to confer upon water the status of a secondary resource rather than a primary resource.⁵¹

Alam has analysed the water conflict among the countries in the international context. To him, there is an expectation in hydropolitics that water scarcity can lead to international conflict between the riparians of a shared watercourse. This is especially true if the supply is finite, demand is high due to the arid nature of the environment, and relations between these countries are already tense due to an existing conflict unrelated to water.⁵² However, the conflict relating to water can not be avoided within a country as we see in India and Pakistan. The provinces of Pakistan are fighting each other because of scarce of water resource and increasing demand for agriculture. If its intensity is not realized by the political leaders then soon the resource would be a divisive force tilting to 'water war'.⁵³ "The Kalabagh dam is a project of national interest and does not compromise the interest of any unit of Pakistan. All provinces would be taken into confidence prior to its initiation", assured Federal Minister for Information Shiekh Rashid Ahmad (Hussain 2007). Federal Minister for Inter-Provincial Co-ordination Salim Saifullah on November 8 said "We will have to go for dams with consensus among the provinces by creating provincial harmony.⁵⁴ Thus, the 'empire-building'⁵⁵ approach of "the government must not make the dams an issue of prestige, especially the Kalabagh Dam that has

⁵¹ Undala Z. Alam, *Water Rationality: Mediating the Indus Waters Treaty*, Thesis submitted for the degree of Doctor of Philosophy Geography Department, University of Durham, September 1998, p. 166.

⁵² Ibid

⁵³ Water war more importantly suggests conflict as the logical result of competition for scarce fresh water resources (Alam 1998, p. 162).

⁵⁴ *Public Opinion Trends (POT)*, Pakistan Series, vol. XXXV, no. 264, 10 November 2007

⁵⁵ Edward goldsmith and Nicholas Hildyard, "The Social and Environmental Effects of Large Dams", A Report to The European ecological Action Group (ECOROPA), *Overview*, UK:Wadebridge Ecological Centre, vol.1,1984.

become a bone of contention between Punjab and Sindh at a time when the country is also passing through water crisis".⁵⁶

The Kalabagh Dam needs to be handled with care. It has far-reaching repercussions for the downstream and upstream provinces of Pakistan. Punjab is in favour of this project, but in the long run it would act as a boomerang for the Punjab as far as environmental degradation and livelihood is concerned. It requires political farsightedness of both the provincial governments and federal government to solve the longstanding bottleneck amicably. It should not be looked into in the form of zero-sum game. Thus, it is the sine qua non for any water resources management to consider issues of water level and flow volume, water quality, areas under irrigation, aquifers etc.⁵⁷ It demands 'water rationality'⁵⁸, rather 'water irrationality'.⁵⁹

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⁵⁶ Public Opinion Trends (POT), Pakistan Series, vol. XXXIV, no. 280, 1 December 2006, p. 36.

⁵⁷ Asma Yaqoob, "International River Waters In South Asia: Source of Conflict or Cooperation", *Regional Studies*, vol. XXII, no. 4, Autumn 2004, p. 113.

⁵⁸ Actions that promote water security are considered to be water rational and also include the relationship a state maintains with its co-riparians, specifically upon the subject of shared water. "In the case of riparian dispute, the factor that will almost invariably lead states to seek technical collaboration is that of acute need for water resources and/or dependence upon a specific, shared body of water. The failure to establish a water-sharing regime would be considered threatening to the state's continued survival" (Lowi 1993,p.198, Alam 1998: 167).

⁵⁹ Water irrational policies jeopardise the long-term welfare of a source for short-term benefit and supply. Thus, the parties that engage in such policies are sacrificing their own water supply in the long-term, and this forms a neo-security dilemma (Alam 1998: 167).

Chapter-IV

Kalabagh Dam: A Question Mark over National Security

Since independence Pakistan has been replete with internal turmoil and deep-rooted social unrest. The glaring instance in this regard is the carving out of Bangladesh as a separate independent sovereign state in 1971. The threat of balkanization still looms large due to the intensification of prolonged conflicts across the country and Kalabagh Dam is one among the longstanding pandemonium. Federal Minister for Inter-provincial Coordination Salim Saifullah on November 8, 2006 said, there was dire need of 30 to 40 large dams in the country but Kalabagh reservoir could not be built at the cost of national integrity.¹ "Kalabagh Dam will destroy the federation of Pakistan and trigger the world's first war over water", warned Said Alam Mehsud, a spokesman for the ethnic Pushtoon, Pukhtoonkhwa Milli Awami Party (PMAP), in the North West Frontier Province (NWFP) (Rizvi 2006). "It is a disastrous project and its construction would mark the beginning of the disintegration of the federation", says Asfandyar Wali Khan, president of the Awami National Party and a staunch opponent of the project.² Then the question crops up why the issue of water war, national disintegration or national insecurity comes up? Kalabagh Dam has been identified with the very sanctity and sovereignty of Pakistan. Its far reaching repercussions on environment have ultimate impact on livelihood because environmental degradation and livelihood are interlinked.

National security minus environmental security leads to insecurity both at the individual and national levels. According to Buzan (1982: 82), the threats to national security might also come in ecological forms, in the sense that environmental events, like military and economic ones, can damage the physical base of the state, perhaps to a sufficient extent to threaten its ideas and

¹ *Public Opinion Trends (POT)*, Pakistan Series, 10 November 2006

² Iftikhar Hussain, "Emotions Run High Over Kalabagh Dam", [Online: web] Accessed on 25 October 2007 URL: <http://www.asiawaterwire.net/node/516>

institutions.³ “Traditionally, ecological threats have been seen as natural, and therefore not part of national security concerns” but “with increase in the scale, diversity and pace of human activity, however, ecological threats to one state might well stem identifiably from activities within another” (Buzan 1982: 82-83).

Environmental Degradation and Livelihood

Kalabagh Dam is directly linked with livelihood security of the people who are dependent on water for their sustenance. The fresh water ecosystems that provide the livelihoods of the world’s riverine communities and many other goods and services to our societies depend on water (WCD 2000: 6). Arresting, and where possible reversing, the accelerating trend to increasing degradation of many of the world’s watersheds caused by human activity have emerged as an urgent priority.⁴ It is not simply the matter of power generation or ‘empire building approach’ of the rulers but the matter of environmental security. More environmental security means less livelihood insecurity and more environmental insecurity leads less livelihood security. Thus, environmental security with security of livelihood is imperative, not an option. The building of Kalabagh Dam will severely damage the already deteriorating environmental condition in the Indus Delta and the downstream provinces, particularly Sindh and Baluchistan. However, before going to delineate the linkages of Kalabagh Dam and livelihood insecurity, it is worthwhile to render some theoretical outline.

A livelihood comprises the capabilities, assets (stores, resources, claims, and access) and activities required for a means of living (Chambers and Conway 1992, Maltais *et al.* January 2003: 17). Ian Scoones (1998) in “Sustainable Rural Livelihoods: a Framework for Analysis” describes five broad types of capital

³ Barry Buzan, *People, States and Fear: The National Security Problem in International Relations*, New Delhi: Trasasia Publishers, 1982.

⁴ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000, p. 6.

(‘natural capital’⁵, ‘economic capital’⁶, ‘human capital’⁷, ‘social capital’⁸ and ‘physical capital’⁹) entailed in a livelihood. It is access to, control of, and combinations of these forms of capital that ensures livelihoods, and when these forms of capital are not available people’s livelihoods are progressively threatened (Maltais *et al.* January 2003: 17). Livelihood analysis looks directly at the multiple stresses threatening security (ibid).

Environmental and social systems are linked systems, and that livelihoods are dependant on “ecosystem goods such as food, timber, genetic resources, and medicines, and services such as water purification, flood control, carbon sequestration, pollination, seed dispersal, soil formation, disease regulation, nutrient assimilation” (Folke *et al.* 2002: 9, Maltais *et al.* January 2003: 18). Folke *et al.* argue that it is the erosion of resilience, such as diversity, that creates vulnerability and the potential for abrupt changes in linked ecological and social systems. The erosion of resilience, thus, causes vulnerability in livelihoods, and in the worst cases groups faced with new shocks and stresses will be unable to “replenish coping resources” thus pushing “a region and its people to increasing criticality” (Folke *et al.* 2002: 15, Maltais *et al.* January 2003: 18).

Leif Ohlsson (2000) in his paper “Livelihood conflicts: Linking poverty and environment as causes of conflict” singles out the agricultural sector as the most significant area where environmental degradation can send poor groups

⁵ Natural capital– the natural resource stocks and environmental services (hydrological cycle, pollution sinks, etc.) from which resource flows and services useful for livelihoods are derived (Scoones 1998, Maltais *et al.*, January 2003,p.17).

⁶ Economic or financial capital– the capital bases that are essential for the pursuit of any livelihood strategy (ibid).

⁷ Human capital– the skills, knowledge, ability to labour, good health, and physical capability important for the successful pursuit of different livelihood strategies (ibid).

⁸ Social capital– the social resources (networks, social relations, affiliations, etc) upon which people draw when pursuing different livelihood strategies requiring coordinated actions (ibid).

⁹ Physical capital– the store of human-made material resources (ibid).

into rapid loss of livelihoods (Maltais *et al.* January 2003: 19). He focuses on scarcities of arable land and water in explaining how environmental conditions can lead to the rapid loss of livelihoods (*ibid*). As the agriculture sector is the “single largest source of livelihoods” in developing countries, when this sector is unable to expand its labour demands to meet a growing population because of resource (land and water) scarcity and/or declines due to environmental degradation, the risk of rapid livelihood loss for poor groups is high (*ibid*). When land and water are increasingly scarce livelihoods become insecure and young men can be co-opted into militias and eventually into wars (Maltais *et al.* January 2003: 19). From the foregoing elaboration, it is clear that there is a linkage between environmental degradation and its effect on livelihood.

According to the World Commission on Dam, four countries– China, India, United States and Pakistan account for more than 50% of the world’s total irrigated area (WCD 2000: 13) and the Indus basin hosts the biggest contagious irrigation network of the world (WAPDA 91, Habib 2004: 133).¹⁰ The basin provides key water and land resources of the country and has a level of maturity in the exploitation of these resources for agriculture with the help of an impressive river water conveyance and distribution network.¹¹ The waters of the Indus basin sustain scores of millions of people in northwest India and literally underwrite the nation of Pakistan, population 145 million and growing.¹² Both the upstream and the downstream provinces are gaining benefit from this river. Agriculture and allied resources make up over 30 per cent of Pakistan’s Gross Domestic Product (GDP) and growth therein primarily depends upon the

¹⁰ Zaigham Habib, “Pakistan: Indus Basin and Water Issues”, *South Asia Journal*, vol. 6, October-December 2004, p. 133.

¹¹ *Ibid*

¹² Erik Eckholm, “A River Diverted, the Sea Rushes”, *The New York Times*, 22 April 2003.

availability of water and the positive effect it has on the growth of this sector.¹³

The following table gives a brief picture on the vitality of the Indus River.

Table No. 8

Land and Water Resources			
Pakistan 2000		Indus Basin Average	
Total Area	79.6 mha	River Inflow	184 bcm; range 135 bcm to 230 bcm
Population	141 million	Eastern Inflows after 1978 declining	2 to 20 bcm; Average 8 bcm
Irrigated Land	18 million ha	Rainfall	Range 23 to 140 bcm, Average = 72 bcm
Crop land	23 million ha	Diversions after 1978	103 to 137 bcm; Average 132 bcm
Share of Agriculture in GDP	26%	Groundwater after 1996	65 bcm
Agriculture Labour Force	40% - 45%	Outflow 1978-2000	65 bcm
Food grains production	22 mtons		

Source: Zaigham Habib "Pakistan: Indus Basin and Water Issues", *South Asia Journal*, No. 6, October- December 2004.

Nevertheless, large-scale hydropower projects have frequently become well-documented cases of a human induced environmental change that can impact on the livelihoods of vulnerable groups (Maltais *et al.* January 2003: 20) and the imminent Kalabagh dam at the Indus River is the most litigious issue among the provinces of Pakistan because it is unswervingly linked with the livelihood of the people, particularly the downstream provinces. How is it linked with livelihood?

¹³ *Public Opinion Trends (POT)*, Pakistan Series, vol.XXXIV,no.251, 28 October 2006.

1. Waterlogging-Salinity and Loss of Livelihood

The WCD has identified Pakistan is one of the most waterlogging and saline affected countries in the world. Kalabagh Dam has the potential to increase the salinity and waterlogging in the area due to regulation of water flow. There is already Mangla and Tarbela Dams at the Indus River and the imminent Kalabagh Dam project would create precipitous impact as far as waterlogging and salinity is concerned. The case study of Tarbela Dam by the World Commission on Dam has proved that building of large dam leads to waterlogging and salinity. In the Indus Basin, 38% of the irrigation system is classified as waterlogged and production is estimated to be 25% lower than potential as a result of salinity (WCD 2000: 67) and Sindh is the most affected one.

The intensity of waterlogging and salinity in Sindh and its effect on productivity has been given by Azad in the following analysis. According to Azad (2003), depending on the degree of waterlogging and soil salinity, crop yields are reduced from 25% to 60% of the potential yields in the affected areas of in Sindh. He adds, the water table is less than 8 feet below the surface over 37% of the area and ground water is moderately saline over 56% of the area and highly saline over 32% of the area. As a result, soil salinity and waterlogging either make agriculture impossible, or limit yields and the types of crop that can be grown (WCD 2000: 13). In justifying a major drainage project in Pakistan, the World Bank ascribed a production decline of approximately 25% to salinity and waterlogging, with specific cases reaching 40–60% (WCD 2000: 67).¹⁴ Existing drainage infrastructure (both surface and sub-surface) is inadequate for

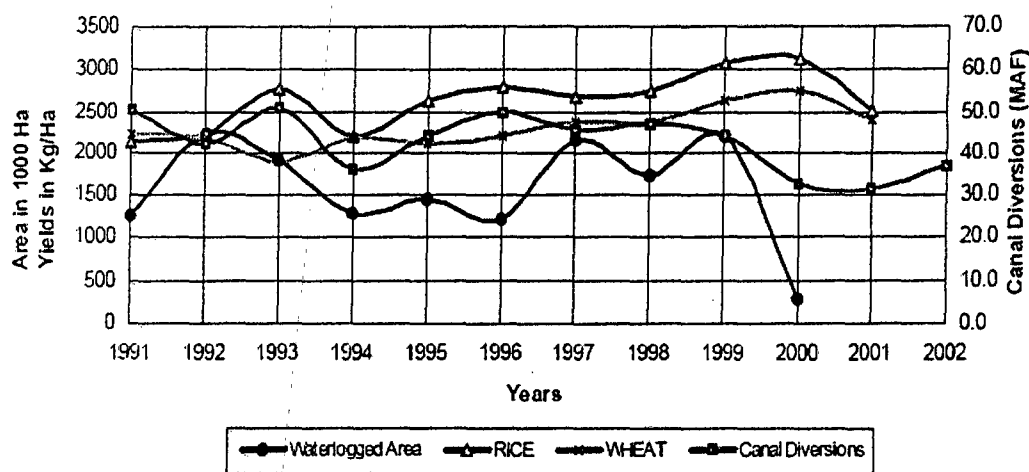
¹⁴ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000.

addressing the drainage problems satisfactorily.¹⁵ Unsustainable irrigation practices have affected more than a fifth of the world's irrigated area in arid and semi-arid regions (WCD 2000: 13).

As per Azad's study, the figure underlined shows the variation in yield of wheat and rice with time as affected by waterlogging. The canal diversions for corresponding years are also shown so as to see the combined effect of extent of waterlogging and water availability on yields. The yield of wheat has gradually increased from a low of 1.9 Kg/ha in 1993 to a high of 2.7 Kg/ha in 2000 and reduced to 2.4 Kg/ha in 2001, but was still higher than the yields obtained before 1998 with much higher application of water (Azad 2003: 25).

FIGURE - 3

Waterlogging and Its Effect on Productivity in Sindh



Source: A. Azad, "Sindh Water Resources Management- Issues and Options", Food and Agriculture Organization of the United Nations- Rome, Investment Centre Division, Occasional Paper Series NO. 15, December 2003, p. 25.

¹⁵ A. Azad, *Sindh Water Resources Management- Issues And Options*, Food And Agriculture Organization Of The United Nations - Rome, FAO Investment Centre, Occasional Paper Series December 2003.

Similarly, the yield of rice has increased from 2.2 Kg/ha in 1994 to 3 Kg/ha in 2000 but declined to 2.5 Kg/ha in 2001 (ibid). The figure shows the positive effect of reduced waterlogging on the yields of wheat and rice. Higher yields of both crops were obtained with lesser amount of water, when the waterlogged area was less (ibid). This point out the need for control of waterlogging and at the same time for rationalization of water allowances so as to get optimum production.¹⁶

As such these effects will particularly afflict the poorest and most vulnerable groups and directly threaten access to needed freshwater supplies and food-security systems while indirectly placing livelihoods at risk (Maltais *et al.* January 2003: 17). Thus, the plummeting of production leads to migration of the people who are dependent on the river for their livelihood and subsequent social repercussions. The disruption of downstream economies that results from the insertion of a dam and the subsequent reduction in natural floods can create uncertainty in livelihoods and render existing skills unproductive— leading to migration, dependence on informal wage labour in urban areas and impoverishment (WCD 2000: 112). And for millions of smaller-scale landowners, tenant farmers and river fishermen, the losses of land and the water shortages caused by water diversions upstream have been even more devastating (Eckholm 2003). Many have moved to the slums of nearby Karachi; others remain in desolate villages, stunned by the sight of empty canals.¹⁷ It has been documented in studies by World Bank officials that forced displacement causes unraveling of social organization and the onset of impoverishment (Cernea 1991:

¹⁶ A. Azad, *Sindh Water Resources Management— Issues And Options*, Food And Agriculture Organization Of The United Nations – Rome, FAO Investment Centre, Occasional Paper Series December 2003, p. 25.

¹⁷ Erik Eckholm, "A River Diverted, the Sea Rushes", *The New York Times*, 22 April 2003.

15, Rothman 2001: 318).¹⁸ Principal social effect of environmental change in developing countries is likely to be the disruption of institutions and of regular and legitimized social relations (Dixon 1991: 109).¹⁹

2. Loss of Mangrove Forest means Loss of Livelihood and Life

Kalabagh Dam can be a cause for the elimination of existing deteriorating mangrove forest. The livelihood of 100,000 people directly dependent on the mangroves will also be in jeopardy (Ray 2006). Those indirectly dependent on the mangrove for their livelihoods may run into the millions, including those who fish along the Sindh coast as many of the fish species caught there have breeding grounds among the mangroves (ibid). About half the fish exported from Pakistan are netted along the coast of Sindh (ibid). As a result, Sindh will bear the long term and irreparable cost in the coming days. Punjab and the Federal government are looking the problems of downstream provinces unsparingly to take as much benefit as they can. The WCD concludes that "the poor, other vulnerable groups, and future generations are likely to bear a disproportionate share of the social and environmental costs of large dam projects without gaining a commensurate share of the economic benefits" (WCD 2000: 130). The differential effects are most severely felt by indigenous groups and minorities dependant on natural resources for livelihoods, poor people who are physically displaced or whose livelihoods have been threatened, and women within vulnerable groups.²⁰ One of the world's most threatened habitats, mangrove swamps provide double protection from cyclones and large waves.

¹⁸ Franklin D. Rothman 'A Comparative Study of Dam-Resistance Campaigns and Environmental Policy in Brazil', *Journal of Environment & Development*, December 2001, vol.10 no. 4, pp. 317-344.

¹⁹ Thomas F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict", *International Security*, vol.16,1991,p. 2.

²⁰ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000, p. 130.

Their first layer of flexible branches and tangled roots absorbs the initial shock, while the second layer of tall mangroves serves as a wall capable of fighting with huge waves (Ali 2005). A local World Wildlife Fund (WWF) official in Pakistan said, 'Indonesia, the hardest-hit country with 173, 981 confirmed deaths, had been planning to initiate a project of mangrove plantation spanned over a period of five to ten years with an idea to combat huge killer waves in future' (Ali 2005).

3. Climate Change and Change of Livelihood

A passage from Albert Hourani's seminal work, *A History of the Arab Peoples*, describes the early years of the Islamic empire, roughly our eight and ninth century A. D. and reads: "The symbiosis between cultivators and pastoralists was a fragile one. When that symbiosis was strongly disturbed it was not because of a perpetual state of warfare between the two kinds of society but for other reasons: change in climate and water supply".²¹

Former Chief Economist of the World Bank, Sir Nicholas Stern published the report on climate change in 2006. The report which the Nobel Prize winner Joseph Stiglitz described as, 'the most thorough and rigorous analysis to date of the costs and risks of climate change', estimated that the cost of unabated climate change- based on the science available in 2001 and on a narrow range of effects- would be at least 5 per cent of global GDP (Beckett June 2007: 56). According to the World Commission on Dam (WCD) report, "land use change induced by displacement of people, resource extraction and other economic activities may also form part of the net contribution to Green House Gas (GHG) emissions associated with the construction of the dam."²² The WCD Knowledge Base

²¹ Margaret Beckett, "The Case for Climate Security", *The Royal United Services Institute (RUSI)*, vol.152,no.3, June 2007.

²² World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000, p. 76.

provides that from 40-80 million people have been physically displaced by dams, and that “many of the displaced were not recognized...when compensation was provided it often proved inadequate...those who were resettled have rarely had their livelihoods restored” (WCD 2000: 129). In Pakistan, climate models simulate agricultural yield losses of 6–9 per cent for wheat with a 1°C increase in temperature (Human Development Report 2007/2008: 94).

Kalabagh is not an exception in this regard. In the 2001- 2002 Water and Power Development Authority (WAPDA) report, it is written on page 39 that the Kalabagh Dam would affect 109,783 people in the NWFP and 64,884 in the Punjab (Khan 2005). Jared Diamond in his book ‘*Collapse: How Societies Choose to Fail or Survive*’ (London, Penguin Books, 2005) has identified that environmental damage and climate change contribute to the disintegration of any society (Das March 2007: 403).²³ Overall, climate change will lower the incomes and reduce the opportunities of vulnerable populations. By 2080, the number of additional people at risk of hunger could reach 600 million- twice the number of people living in poverty in sub-Saharan Africa today.²⁴

4. Flood Control: A Figment of Imagination and Loss of Livelihood- a Veracity

Floods have many beneficial uses in different river basins and that the elimination or reduction of natural flooding has led to the loss of important downstream ecosystem functions, as well as loss of livelihood for flood-dependent communities (WCD 2000: 61). Some analysts say that Kalabagh Dam needs to be built as a means of flood prevention in Pakistan. But study shows something different. Between 1960 and 1985, the United States Federal

²³ Pushpita Das, “Environmental Degradation: Unearthing the Past for Future Longevity”, *Strategic Analysis*, vol.31, no.2, March 2007.

²⁴ Human Development Report (HDR) 2007, p. 90.

government spent \$38 billion on flood control, mostly on structural responses such as large dams (Schildgen 1999, WCD 2000: 61). Yet average annual flood damage, adjusted for inflation, continued to increase— more than doubling (ibid). Thus, the myth of Kalabagh Dam as a means of flood prevention is nothing but its impact on the very survivability of the downstream provinces and their livelihood, both 'physical displacement' and 'livelihood' displacement (or deprivation). Large dams have significantly altered many of the world's river basins, with disruptive, lasting and usually involuntary impacts on the livelihoods and socio-cultural foundations of tens of millions of people living in these regions (WCD 2000: 102). The impacts of dam-building on people and livelihoods— both above and below dams— have been particularly devastating in Asia, Africa and Latin America (ibid).

Nevertheless, the inundation of land and alteration of riverine ecosystems – whether upstream or downstream— also affects the resources available for land- and riverine-based productive activities (WCD 2000: 103). In the case of communities dependent on land and the natural resources base, this often results in the loss of access to traditional means of livelihood, including agricultural production, fishing, livestock grazing, fuel-wood gathering and collection of forest products, to name a few.²⁵ Not only does this disrupt local economies, it effectively displaces people— in a wider sense— from access to a series of natural resource and environmental inputs into their livelihoods.²⁶ This form of livelihood displacement deprives people of their means of production and dislocates them from their existing socio-cultural milieu.²⁷ In 1991, when construction started on the Pak Mun dam in Thailand, 241 families were counted

²⁵ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000, p. 103.

²⁶ Ibid

²⁷ Ibid

as displaced (WCD 2000: 104). By the time construction was completed it was clear that another 1,459 households had to be relocated (ibid). The WCD report says, the true extent of the social impact only became evident when the impact of the dam on fisheries livelihoods was admitted in response to prolonged agitation by the affected people. The WCD Case Studies reveal that the cumulative impact of Tarbela dam and Kotri barrage has affected the grazing activities of pastoral communities in Pakistan (WCD 2000: 112). Due to Pak Mun dam project (1991-94) more than 6, 000 families of subsistence farmers and fisherfolk suffered loss of livelihood from fisheries reduction. Rural families dependent on rice farming and fisheries income; cash compensation failed to provide livelihood regeneration and 1, 700 families were displaced (WCD 2000: 124).

The North West Frontier Province is equally incensed over the Kalabagh Dam issue as large parts of its fertile Peshawar Valley are likely to be submerged by this dam (Paliyo 2003). Judging by the past history, the locking up of Indus at Kalabagh will turn Sindh into a desert and destroy the lives of crores of people in Sindh and many more in NWFP (ibid). Sindhis and Pushtoons will have no where to go, except to fight for their existence (ibid).

The livelihood predicament is not only restricted to among the provinces but also within the Punjab. According to Bhatti (2007), looking deep we will find there are two different perspectives on water issues in Punjab as well. He adds, the Seraiki region, which is taken as southern Punjab, does not share much of the central Punjabi version on water issues like Kalabagh Dam, Kacchi Canal, Greater Thal Canal and Chashma Canal. Since most of the Seraiki districts fall along the Indus River and a large number of communities bank upon the Indus water for their subsistence (Bhatti 2007). The depletion of water resources and ecosystems along Indus would directly affect the fishing and farming communities of this region. Majority groups of Seraiki origin are not eager to

support Kalabagh Dam contrary to the popular support for dam in the districts of central Punjab (Bhatti 2007). Wasim Wahga, who hails from Daman area, said traditional Rod Kohi- a system of irrigation through hill torrents of Suleman range- was disrupted by the Chashma canal in their area (ibid). He also pointed that natural drainage system and local water regimes were interrupted by the canal for which a sizeable acre of land has become barren (ibid).

Environmental Degradation and Violent Conflict

“Water Wars²⁸ are, unfortunately, likely to be of more and more common occurrence in the future” (Young *et al.* 1994: 20, Alam 1998). As the quote demonstrates, disputes over water use do exist at an international level but they are more common at the national or local level (Dixon 1994: 20).²⁹ According to Maltais *et al.* (January 2003: 12), in the Swiss Environment and Conflicts Project it was concluded that environmentally-induced conflicts result in violence only if and when some of the following five key situations coincide. Such are

- Inevitable environmental conditions. Group survival is dependent on degraded resources for which no substitutes are apparent and eventually the group faces an inevitable and therefore desperate environmental situation.
- Scarcity of regulatory mechanisms and poor state performance. When a political system is incapable of producing certain social and political

²⁸ The water war concept expects conflict to occur over water, and appears to suggest that violence is a viable means of securing national water supplies (Alam I., “To Build or Not to Build Kalabagh Dam”, *News Seminar*, 19 July 1998).

²⁹ Thomas F. Homer-Dixon, “Environmental Scarcities and Violent Conflict: Evidence From Cases”, *International Security*, vol.19,no.1, 1994, pp. 5- 40.

conditions, goals, such as sustainable resource use, become unattainable. The scarcity is either due to a lack of state outputs regarding resource management and livelihood security or due to a disruption of social institutions designed to regulate access to resources.

- Institutionalising the environment. The environment is instrumentalised or manipulated by dominating actors to pursue specific group interests so that environmental discrimination becomes an (ideological) issue of group identity.
- Opportunities to build organizations and find allies. Actors organize themselves in political settings– often behind a strong leader– and gain allies either from groups affected by similar problems, from certain (fraternizing) factions of the elite, or from foreign groups.
- Spill-over from a historic conflict. Environmental discrimination occurs within the context of an existing (historic) conflict structure and, as a result, the conflict receives new impetus (Baechler 1999: 32-33, Maltais *et al.* January 2003: 12).

These abovementioned five factors are quite prevalent in Pakistan which are pinned down in the following appraisal.

Pakistan- an 'Imperial State'

Though the Kalabagh Dam project has posed a question mark against national security and integrity due to its environmental and livelihood insecurity, but the prolonged step motherly approach of the federal government towards Baluchistan, Sindh and North West Frontier Province needs to be underlined to comprehend the inter-provincial wrangling on this project. These three provinces are subject to the 'structural violence' as dubbed by Galtung by the federal government. Punjab can be said to be the only province that is relatively at peace in Pakistan (Kapila 2006). This is because it receives "The Most Favored

Province" treatment from General Musharraf, conscious of the fact that the Pakistan Army which props his military rule is predominantly Punjabi (ibid). It is a different matter that all the other three provinces of Pakistan resent what they term as "Punjabi Colonialism" and "Punjabi Imperialism" (ibid). Pakistani General Pervez Musharraf's government plans to commence construction of a massive dam in 2016 on the Indus River at Kalabagh, near the border between the Punjab and North West Frontier Province. Opponents of the World Bank-funded dam project see it as another grab for water by the Punjabi ruling elite, which dominates federal politics in Pakistan (Ray 2006). Musharraf has said that the dam project will proceed against any opposition and that the federal and Punjabi governments will topple any provincial government that opposes the project (ibid). The Sindhis allege that this is one more example of General Musharraf promoting Punjabi colonialism and also to please Pakistan Army military hierarchy whose extensive land holdings in the dam's vicinity would stand to benefit (Kapila 2006). The statement president that opposing the KBD means losing the power and government as without the support of Punjab it is not possible to rule even for a day (*The NEWS*, December 20 2005, Khan 2005). Kalabagh Dam is another dimension of this Pandora box. This is going to have consequences for the whole of Pakistan which could go far beyond the longest possible rule of the present rulers and may prove to be worse than those of the East Pakistan debacle (Palijo 2003). This cancer situation has to be stopped from developing at all costs (ibid). Momina (2007) has argued that in Pakistan, the domination of one region, Punjab, on the central government, has harmed the union of the federation and how real the resentment against the Punjabi domination is evident by

1. The succession of Bangladesh in 1971. One of the most significant grievances that the Bengalis had was regarding resource allocation. There was a widespread perception that the export earnings of Jute exports produced in East Pakistan (now Bangladesh) were used to fund investments in Punjab. Indeed two of the key demands by Mujib-ur-Rahman were that each of the federating units would have separate accounts to maintain foreign exchange earnings and the federal government should be responsible only for foreign affairs and defence; and
2. there have also been failed secession movements in other provinces, most notably in Baluchistan which were brutally crushed by Zulfiqar Ali Bhutto. Recently, Baluchi nationalists have become more militant in opposing Punjabi exploitation of gas resources in Sui region of Balochistan.

“The current Musharraf government is planning to rename the Kalabagh dam, ‘the Pakistan dam’. But changing the cover of the book doesn’t change the content” (Momina 2007). If the lessons leading to the separation of East Pakistan are remembered, then the key to maintaining the unity of a federation is to address and accommodate the grievances of less powerful provinces at the national level (ibid).

From the abovementioned observation, it can be rightly said that Pakistan is an ‘imperial state’³⁰ as dubbed by Barry Buzan. The dominance of Punjabi’s in Pakistan is a case in this regard. The dominant nation may seek to

³⁰ Imperial states are those in which one of the nations within the state dominates the state structures to its advantage (Barry Buzan, et al., *Security. A New Framework for Analysis*, Boulder-London: Lynne Rienner 1998: 42).

suppress the other nationalities by means ranging from massacre to cultural and racial absorption, with a view to transforming itself into something like a nation state (Buzan 1982: 42).

Pakistan society also subject to 'social divergence'³¹ which may be measured by such variables as religious and ethnic diversity and wealth inequality, which reflect broad social divisions and potential barriers to the exchange of ideas across social groups (Grafton and Knowles 2004: 340).³² The dominance of Punjab and subdued voice of other provinces reveals dearth of social solidarity and harmony. However, as held by Buzan, the stability of the imperial state depends on the ability of the dominant nation to retain its control. If its ability is weakened either by internal developments or external intervention, the state structure stands at risk of complete collapse (Buzan 1982: 49). Political threats are thus a key element in the national security problem of imperial states.³³ Ethnic and regional demands are closely intertwined in Pakistan as each province has a different ethnic group forming the majority of the province (Momina 2007). The federal government is perceived to work in the interests of the most populous and most fertile province, Punjab, and continues to insist that the building of Kalabagh Dam is in Pakistan's best national interests as it would store water which could be used to increase agricultural and electrical supply (ibid).

³¹ Social divergence represents the social barriers to communication between individuals and groups (Grafton, Knowles & Owen 2002: 340).

³² Grafton R. Quentin and Knowles Stephen, "Social Capital and National Environmental Performance: A Cross-Sectional Analysis", *Journal of Environment & Development*, vol.13,no.4, December 2004: 336-370.

³³ Barry Buzan, *People, States and Fear: The National Security Problem in International Relations*, New Delhi: Trasasia Publishers, 1982.

Opposition lawmakers in the National Assembly on Tuesday (20 December 2005) severely criticized President Pervez Musharraf statement that resolutions adopted by three provincial assemblies were no hurdle to construction of the Kalabagh Dam, while treasury members from Punjab supported the project and accused the opposition of politicizing the issue unnecessarily (Khan 2005). The opposition (Ms Naheed Khan of the Pakistan Peoples Party) also hit out at the president's remark that any government opposing the project would be toppled by Punjab and that his government would remain in power till completion of the KBD (ibid). Most of the Law Makers in both the Houses of Parliament term these announcements similar to those during 1953 where Bengali was not accepted as the only National Language, thus sowing the seed of secession which materialized just 18 years later in 1971 (ibid).

The internal turmoil caused by divisive approaches of federal government has made situation more precarious. The simmering inter-provincial contretemps owing to inability of the government to resolve the socio-economic, political and cultural issues in addition with Kalabagh Dam will be exploded one day, if these shambles are not handled judiciously. Federal government lacks the "security software", defined by Azar and Moon as "legitimacy, integration and policy capacity" (Ayoob 1983- 84). Jared Diamond in his study says that the demise of societies in fragile habitat is most imminent if they do not change their attitude towards environmental problems and undertake corrective measures to conserve and preserve it.³⁴

³⁴ Pushpita Das, "Environmental Degradation: Unearthing the Past for Future Longevity", *Strategic Analysis*, vol. 31, no, 2, March 2007, p.405.

Alternative Approaches to Kalabagh Dam

The study of World Commission on Dams says, if a large dam is the best way to achieve this goal, it deserves support but where other options offer better solutions, they should be favoured over large dams. Thus, the debate around dams challenges views of how societies develop and manage water resources in the broader context of development choices (WCD 2000: 7). True there is a water and power shortage in Pakistan; there are other strategies available to meet the water and power needs.

- Dr Iqbal Ali spelt out comprehensive strategies to save water losses through lining the canals and preventing seepage which according to him causes a loss of 18.3 MAF per annum (equal to the capacity of two KBDs). According to him, the farmers over-irrigate their fields on account of wrong practices. Thus, they lose 12 MAF of water that can be saved by adopting the drip irrigation system (Mustafa 2007). "Most of the time we have had a big noise of water theft charges against each other" but the fact is "the losses of water to the tune of 35 MAF, which is almost 6 times more than what the KBD can store for us" (Khan 2005). This loss is real one and it is not because of alleged theft but due to the faulty distribution system of irrigation, outdated canals, sub canals, evaporation, and above all the seepage in this system take the toll of what is supposed to reach the far ends of our irrigation system (ibid). In order to have sufficient water for irrigation use we need to improve the quality of our irrigation system, upgrade the clay made water courses to those of concrete one, line up the small distributaries and make it a regular feature of de-silting the canals on permanent basis (ibid).

- The power generation- 2,400 MW from KBD and 4,000 MW from Bhasha- can be obtained by using coal-based plants, building small hydel projects and generating solar and wind energy.³⁵
- Wind power: As there is virtually no difference in the installation cost of windmills and conventional thermal plants, the unit price of wind electricity should be at least three times cheaper since the running of windmills costs no fossil oil, according to a research paper 'Analysis of Economics of Investment in a Wind Farm System' drafted by the Sustainable Development Policy Institute (SDPI). According to the research paper, recently the cost of instalment has decreased from 2 to 3 dollars a watt to below one dollar. This brings the installation cost of a 100 MW windmill to \$100 million dollar.³⁶ "This reduction in cost has made wind energy competitive with conventional electricity, bringing down the generation cost to 4 to 5 per cent per unit", said Dr. A. H. Nayyar, consultant SDPI (POT Pakistan October 3, 2006: 42).
- Small dams and reservoirs- It would be economically feasible and politically desirable for the authorities to opt for small dams and reservoirs that may meet the country's requirements for water and electricity without damaging the environment and displacing thousand of people (POT Pakistan December 1, 2006: 36). Run of river hydro-electric projects that do not divert water from the river will not hurt the lower riparians and allow them to receive their full share of water.³⁷

Recently, the Technical committee under A.G.N Qazi has clearly recommended that Basha is much better side than Kalabagh in many ways (Khan

³⁵ Zubeida Mustafa, "Truth about the Abbasi Report", *Commentary*, 16 November 2007

³⁶ *Public Opinion Trends (POT)*, Pakistan Series, vol.XXXIV,no.230, 3 October 2006,p.42.

³⁷ *Public Opinion Trends (POT)*, Pakistan Series,vol. XXXIV,no .280, 1 December 2006.

2005). Similarly, in long run the best solution for water resources development is to build the 35 MAF Katzarah Dam near Partab bridge about 18 km downstream of Skardu on the Indus (Khan 2005). It will produce 15,000 MW of power and will have a life of more than 1000 years. Katzarah will also not submerge the Karakoram highway and its most important aspect is that it will serve as a Watershed Management project by stopping the sediment erosion in Skardu valley; the reduced silt flow in the Indus will prolong the life of all storage facilities downstream, particularly Tarbela and later Basha (Khan 2005). According to Fataullah Gandapur, an irrigation and dam expert, Katzara dam is six times bigger in terms of water storage and power generation compared to the Kalabagh and Bhasha dams (POT Pakistan December 7, 2006: 25).

To Khan (2005), another better option would be to build Basha Dam. In the presence of Basha site, it would be unwise to opt for any other location for such a huge investment in terms of time and resources. As seen above, Basha has excelled KBD in many ways, such as water storage capacity, comparatively lesser negative affects i.e. displacement of populace, non existence of public resistance against its construction and above all environmentally sustainable and economically viable project (Khan 2005).

The Way Out of the Kalabagh Dam Problem

The WCD report has identified Pakistan as one of the most water stressed countries in the world. Symptoms of water stress include the collapse of river systems in northern China, rapidly falling groundwater levels in South Asia and the Middle East, and mounting conflicts over access to water (HDR 2007/8: 95). After more than two years of intense study, dialogue with those for and against

large dams, and reflection, the World Commission on Dam believes there can no longer be any justifiable doubt about five key points. Such are

1. Dams have made an important and significant contribution to human development, and the benefits derived from them have been considerable
2. In too many cases an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers and by the natural environment.
3. Lack of equity in the distribution of benefits has called into question the value of many dams in meeting water and energy development needs when compared with the alternatives
4. By bringing to the table all those whose rights are involved and who bear the risks associated with different options for water and energy resources development, the conditions for a positive resolution of competing interests and conflicts are created.
5. Negotiating outcomes will greatly improve the development effectiveness of water and energy projects by eliminating unfavourable projects at an early stage and by offering as a choice only those options that key stakeholders agree represent the best ones to meet the needs in question (WCD 2000: 7).³⁸

By taking into account the above factors, a balanced and consensus approach should be adopted as far as the Kalabagh Dam project is concerned. There is no balance between water supply and demand as the Indus Basin Irrigation System is supply based and does not have the capacity to supply water on demand. The

³⁸ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000.

same situation is likely to continue in future.³⁹ The Council of Common Interests, which is a constitutional body for resolving issues between the Centre and the provinces as well as among the provinces, has not been successful to mitigate the problem. Thus, the water scarcity and water management has been become a lingering pandemonium needs to be handled carefully both by the provincial and federal governments of Pakistan to ward off the potential peril to national security.

To Azad, in September 2001, the Government approved a national Ten Year Perspective Development Plan (TYPDP) for the period 2001 to 2011. He adds that the TYPDP lays emphasis on overcoming scarcity of water through augmentation and conservation and restoring productivity of agricultural land through control of waterlogging, salinity and floods (Azad 2003). The TYPDP envisages a reduction in incidence of poverty from the current 30% to 15% (ibid). The TYPDP puts special emphasis on water resources development.⁴⁰ The objectives of water sector development include:

- overcoming scarcity of water through augmentation and conservation;
- restoring productivity of agricultural land through control of waterlogging, salinity and floods;
- managing quantity and quality of drainage effluent in an environmentally safe manner;
- groundwater management through transfer of tube well to farmers, aquifer monitoring and management;
- implementing an integrated flood control and management program;
- promoting beneficiary participation in development initiatives; and

³⁹ A. Azad, *Sindh Water Resources Management– Issues And Options*, Food And Agriculture Organization Of The United Nations – Rome, FAO Investment Centre, Occasional Paper Series December 2003.

⁴⁰ Ibid

- enhancing performance of water sector institutions and implementing an effective operation and management (O&M) mechanism through institutional reforms, private sector participation and capacity building.⁴¹

There are other measures need to be pinned down in this regard.

- National political process: Whether environmental stress results in extreme and potentially violent outcomes depends on the national political process (interaction between state, society, and economy but also how knowledge is used for adaptation and mitigation purposes), and on the structures of governance (Brauch 2003).⁴² Gleditsch and Sverdrup (1996) found that the effects of democracy are primarily positive when it comes to types of environmental degradation such as deforestation and loss of bio-diversity, but negative when it comes to the emission of climate changes, CO₂ in particular.⁴³ On the basis of data from around 1990, they argue that political counteraction to the emerging greenhouse effect has not yet taken hold. Midlarsky, on the other hand, finds a significant negative relation between democracy and environmental performance, using indicators like deforestation and soil erosion, where as protected land areas show a positive relationship.⁴⁴ But Ellingsen (1998) argues “there does seem to be some kind of positive linkage between democracy and environmental preservation”. Democratic countries, and in particular stable one, are less likely to experience domestic armed conflict than are

⁴¹ Ibid

⁴² Hans Günter Brauch (*et al*), *Security and Environment in the Mediterranean: Conceptualising Security and Environmental Conflicts*, Springer: Berlin-Heidelberg, 2003.

⁴³ Tanja Ellingsen, “Beyond Environmental Security: Causal Pathways to Conflict”, *Journal of Peace Research*, vol. 35, no.3, 1998, pp. 299-317.

⁴⁴ Manus I. Midlarsky, “Democracy and the Environment: An Empirical Assessment”, *Journal of Peace Research*, vol.35,no.3, 1998, pp. 341-361.

countries with other types of political regimes.⁴⁵ Pakistan case is the most interesting one. It has been ruled by military rulers with sporadic presence of democratic rulers. The decision on various dam and environmental issues including Kalabagh Dam is centralized and unilateral. Regrettably, when the need is for broad-based stakeholder consultations, as a basis for informed and democratic decision making, the existing trend points towards even greater centralization.⁴⁶ For instance, the rotating chairmanship of the Indus River System Authority (IRSA) has recently been converted into a permanent appointment, provincial resolutions against Kalabagh have been given short shrift, the Council of Common Interest (CCI) has consistently ignored the matter and community concerns continue to be met with blatant disregard.⁴⁷ Thus, dissemination of democratic culture and norms should be developed to take unanimous decisions on environmental problems.

- Political consensus: Irrigation expert and political leader Mubashir Hasan fears a political disaster if Pakistan presses ahead with the Kalabagh Dam and Greater Thal Canal. "The project should not be launched, no matter how useful or beneficial it is for the proponents, as other provinces do not like it at all," he argues. In his opinion, the technical case for building a dam is not weak. "But it would be virtual suicide if it is not backed by political consensus. Let the provinces have political and administrative

⁴⁵ Tanja Ellingsen, "Beyond Environmental Security: Causal Pathways to Conflict", *Journal of Peace Research*, vol.35,no.3, 1998, p. 305.

⁴⁶ Shaheen Rafi Khan, "Environmental and other Contested Aspects of the Kalabagh Dam Project", *Sustainable Development Policy Institute (SDPI) Research and News Bulletin*, no.12, 2005,p.15.

⁴⁷ Ibid

autonomy and they will approve not one but many dams," he says.⁴⁸ Political consensus of all the provinces of Pakistan is the urgent need to break the stalemate on Kalabagh Dam.

- Flood Risk Mapping: There should be certain precautionary measures need to be undertaken to meet the urgency of flood. Flood risk mapping is one of the key factors to flood risk management and should be readily available to the public as well as to emergency response agencies. Mapping defines the area at risk (POT Pakistan November 15, 2007: 40). Maps become the common element in terms of identification of flood-prone areas, identifying the risk to individuals and lending institutions, preparation of emergency response plans and designs of flood protections and flood proofing measures.⁴⁹
- People's participation: Public opinion has recently become an effective tool in the fight against questionable dam projects, for example in France, Malaysia and Nepal where schemes have been cancelled as a result, and when correctly channelled is capable of crossing state boundaries and influencing decisions.⁵⁰ This is a reflection of the fact that the only genuine sovereignty over a timeless and crucial resource such as water rests in the hands of the people themselves.⁵¹ People's response to environmental damages is also responsible for the persistence of any society despite

⁴⁸ "Pakistani provinces clash over Kalabagh dam", *One World South Asia*, [Online: web] Accessed on 13 October 2007, URL: <http://uk.oneworld.net/article/view/85749/1/5238#top>.

⁴⁹ *Public Opinion Trends (POT)*, Pakistan Series, vol.XXXV,no.26, 15 November 2007,p.40.

⁵⁰ Anthony R. Turton, "Possible Approach to the Management of Dams on International and Inter-Provincial Rivers", in Erik Mostert, *Dams on Transboundary Rivers*, Prepared for Thematic Review V. 3: River basins-institutional frameworks and management options, Netherland: River Basin Authority Center, Delft University of Technology, 2000.

⁵¹ Ibid

being threatened by ecological disasters (Das March 2007: 403).⁵² Many people are not adequately represented in the state system. Such marginalised groups include peoples lacking statehood. Involvement of people in the decision-making process and diffusion of information gives legitimacy to big projects like Kalabagh Dam.

- Civil Society: When conflicts do arise or seem likely to arise, the processes of avoidance and resolution can not be left entirely to governments; civil society on both sides, represented by respected persons of goodwill and/or by reputable NGOs, has an important role to play (Iyer 2000). Academic and research institutions too can help. It is being increasingly recognized that such 'Track II' efforts, as they have come to be known, can make valuable contributions to the processes of conflict-resolution: they can help to break logjams at the inter-governmental level, gently persuade the governments to go to the negotiating table, facilitate the talks through behind-the-scene 'good offices', provide ideas and proposals ('menus') to serve as the basis or starting point for purposeful negotiations, and assist in the finding of answers to the difficulties that arise in the course of such negotiations.⁵³ Thus, civil society's involvement in the Kalabagh Dam project is the need of the hour.
- Impartial Environmental, Economic and Social Impact Assessment: The assessment should take place prior to decision-making and should be impartial. The assessment could be done either by a third party or by the proponent of the project (state agency or private developer) (Mostert

⁵² Pushpita Das, "Environmental Degradation: Unearthing the Past for Future Longevity", *Strategic Analysis*, vol.31, no.2, March 2007.

⁵³ Ramaswamy R. Iyer, "Large Dams, Trans-Boundary Waters Conflicts", in Erik Mostert, *Dams on Transboundary Rivers*, Prepared for Thematic Review V.3: River basins-institutional frameworks and management options, Netherland:River Basin Authority Center, Delft University of Technology, 2000.

2000). In the latter case the terms of reference (which alternatives to study, study area etc.) and quality control are essential (Mostert 1996, Mostert 2000). All affected states and all stakeholders in these states should be involved in the assessment and counter-expertise should be possible.⁵⁴ In the case of Kalabagh Dam, regional, national and international stakeholders should be the part of it to render a transparent and unbiased blueprint.

- A proper institutional and legal framework: Good decision-making also requires a proper institutional, legal and policy framework, both at the national and the international levels. Nationally, it is essential that the regulator in charge of protecting the basin and the developer of the dam are independent from each other.⁵⁵ But in Pakistan institutional mechanisms like Water and Power Development Authority and Indus River Authority System have institutionally failed to minimise the longstanding impasse on water distribution among the provinces of Pakistan. Institutional effectiveness and efficiency needs to be beefed up in Pakistan.
- Participation of Stakeholders: According to the World Water Council, “the real revolution in water resource management will come when stakeholders have the power to manage their own resources” (Cosgrover & Rijsberman 2000: 3, Gerlak December 2004: 416).⁵⁶ Involvement of all the stakeholders in the Kalabagh Dam project can promote more

⁵⁴ Erik Mostert, *“Dams on Transboundary Rivers”*, Prepared for Thematic Review V.3: River basins-institutional frameworks and management options, Netherland:River Basin Authority Center, Delft University of Technology, 2000.

⁵⁵ Ibid

⁵⁶ Andrea K Gerlak, “The Global Environment Facility and Transboundary Water Resource Management: New Institutional Arrangements in the Danube River and Black Sea Region”, *Journal of Environment & Development*, vol.13, no.4, 2004, pp. 400-424.

transparency, permeation of information, and there will be less risk of turmoil.

The Vision Statement of the National Water Policy (NWP) which says: "By 2025, Pakistan should have adequate water available, through proper conservation and development (Azad 2003). Water supplies should be of good quality, equitably distributed and meet the needs of all users through an efficient management, institutional and legal system that would ensure the sustainable utilization of the water resources and support economic and social development with due consideration to the environment, quality of life, economic value of resources, ability to pay and participation of all stakeholders".⁵⁷ The Devolution Plan of August 2001 decentralises most public sector activities from the federal and provincial levels to the district level, including public sector water supply and sanitation and on farm works.⁵⁸ However, to what extent it is being implemented and availing equitable benefit to the people should be looked into.

The heart of the Kalabagh controversy lies the confrontation between two divergent approaches to water-resource policy, planning and management- 'techno-centric approach' *vis-a-vis* the 'socio-centric approach' as argued by Bengali (2003) (Iyer April- June 2005).⁵⁹ The former relies wholly on technical expertise and engineering solutions, where as the latter recognises that 'development, management and conservation can not be achieved in vacuum, and social systems and structures and peoples cultures and lifestyles also need to be addressed' (Iyer April- June 2005: 8). There is water scarcity and inefficient water management in Pakistan. By taking into account the supply-induced

⁵⁷ A. Azad, *Sindh Water Resources Management- Issues And Options*, Food And Agriculture Organization Of The United Nations - Rome, FAO Investment Centre, Occasional Paper Series December 2003.

⁵⁸ Ibid

⁵⁹ Ramaswamy R. Iyer, "South Asia Water Concerns", *South Asia Journal*, April- June 2005.

scarcity model of Dixon, Wenche Hauge and Tanja Ellingsen argue that countries with a low freshwater availability per capita more likely to experience domestic conflict than countries with high fresh water availability per capita (Ellingsen 1998).⁶⁰ Environmental change may shift the balance of power between states either regionally or globally, producing instabilities that could lead to war.⁶¹ The Sindhis freely proclaim that building KBD will undermine the integrity of Pakistan (Naqvi 2005). This is an implied threat of secession, creating a crisis of the Federation.⁶² But the severity of the crisis over KBD is far greater than those of other matters like the absence of democracy or inequitable distribution of money by the Centre.⁶³ Awami National Party (ANP) president Asfandyar Wali Khan told the rally: "Pakistan and Kalabagh dam can not co-exist" (Ray 2006). He said that proceeding with the dam against the wishes of three provinces could lead to a "1971-like situation", referring to the civil war that saw East Pakistan split off to form Bangladesh (ibid). To eschew the impasse there should be permeation of "social capital"⁶⁴ and "human-centered environmental security".⁶⁵

"Water is crucial for sustainable development, including the preservation of our natural environment and the alleviation of poverty and hunger. Water is

⁶⁰ Tanja Ellingsen, "Beyond Environmental Security: Causal Pathways to Conflict", *Journal of Peace Research*, vol. 35, no.3, 1998, pp. 299-317.

⁶¹ David Wirth, "Climate Chaos", *Foreign Policy*, no.74, Spring 1989, p.10.

⁶² M B Naqvi, "The controversy goes on", *Deccan Herald*, 8 December 2005

⁶³ Ibid

⁶⁴ Putnam (1993: 35-36) broadly defined social capital as "the features of social organization . . . that facilitate coordination and cooperation for mutual benefit" (Grafton and Knowles 2004,p.339).

⁶⁵ Barnett (2001,p.28, Brauch 2003) argued that a human-centred environmental security concept should stress the "need for cooperation and inclusion to manage the environment for the equal benefit of all people and future generations". "Because addressing the welfare of the most disadvantaged means addressing many of the future sources of environmental degradation" by protecting the rights of the most vulnerable members of society (Sachs 1996, Brauch 2003), and by enhancing "welfare, peace and justice" on which legitimate institutions should be built which are required "for human and environmental security" (Conca 1994, 1994, Brauch 2003).

indispensable for human health and well-being" (un.org/waterforlifedecade/, Cléménçon 2005: 407).⁶⁶ The WCD concluded that the 'end' that any project achieves must be the sustainable improvement of human welfare. This means a significant advance of human development on a basis that is economically viable, socially equitable and environmentally sustainable (WCD 2000: 7).

Environmental stress and the conflict induced by a group might overwhelm the management capacity of institutions in developing countries, inducing praetorianism.⁶⁷ Jared Diamond states that the ancient societies collapsed because of the four-fold failure of decision makers: (i) failure to anticipate an impending problem, (ii) failure to perceive the problem when it came, (iii) the lack of efforts to solve the problem and (iv) the incapability to solve the problem (Das March 2007).⁶⁸ If the rulers of Pakistan do not look into the Kalabagh Dam issue from the foregoing four aspects, there may be another nightmare as it cropped up in 1971. The environmental insecurity caused by the Kalabagh Dam need to be taken into contemplation in a holistic perspective because "environmental factors are densely intertwined with political, economic, social, and cultural factors, so that there are very few if any conflicts that could be strictly defined as environmental conflicts" (Brock 1999: 22, Maltais *et al.*

⁶⁶ Raymond Cléménçon, "Water Is Essential for Life", *The Journal of Environment & Development*, vol.14, no.4, December 2005, pp. 407-408.

⁶⁷ "Praetorian" is a label used by Samuel Huntington for societies in which the level of political participation exceeds the capacity of political institutions to channel, moderate, and reconcile competing claims to economic and political resources (Dixon 1991,p.113). "In a praetorian system, social forces confront each other nakedly; no political institutions, no corps of professional political leaders are recognized or accepted as the legitimate intermediaries to moderate group conflict" (Huntington 1968,p.196, Dixon 1991,p. 113).

⁶⁸ Pushpita Das, "Environmental Degradation: Unearthing the Past for Future Longevity", *Strategic Analysis*,vol. 31,no.2, March 2007.

January 2003: 15) and this can only promote national integrity and 'security community'.⁶⁹

* * * *

⁶⁹ A security community was defined as a group of people who had become integrated- that is, a group who had achieved a sense of community, and of institutions and practices strong enough and sufficiently widespread to convince people that necessary social, economic and political changes could be brought about peacefully (Sheehan 2006: 27). A security community is therefore one in which "there is real reassurance that the members of the community will not fight each other physically, but will settle their disputes in some other way" (Deutsch *et al.* 1957,p. 5, Sheehan 2006,p. 27).

Chapter-V

Conclusion

*Water is like a skin
That no one can wound¹*

Paul Eluard

Does security need a different connotation in the twenty first century? Would it be the blend of state security and environmental security? The answer is definitely yes. The dynamism of security can be comprehended when we look into the matter as per its intensity and to what extent it affects the survivability of human community. This study has shown that the classical thinking on state security as understood by Realist thinkers, where military and territorial security was considered as fundamental values, has been broadened and deepened due to the increasing perils of non-military or non-traditional threats. It has subdued what Ken Booth has termed as the “intellectual hegemony” of Realism (Booth 1991: 318), particularly after the cave in of the Soviet Union and the demise of the Cold War.

Non-traditional security became more fervent with the coming of 1994 Human Development Report, which unequivocally accentuated human security including environmental security. Environmental security is the hub of today’s non-military security threats. In the case of environment, the securitisation process can be traced back to the 1960s, when books such as Carsen’s *Silent Spring* fight began to make people seriously aware that the growing impact of humankind was transforming the natural environment from being a background constant into a foreground variable (Buzan 1997: 7). Starting from a concern about pesticides, this grew steadily into a wide range of interconnected issues, including climate change, biodiversity, resource depletion, pollution and the

¹ Mohamed Larbi Bouguerra, *Water Under Threat*, Alliance of Independent publishers, Zed Books London, 2006, p. 49.

threat from meteorites.² Thus, the linkage of environmental threats with security is veracity, not figment of imagination.

However, is building of dam linked with environmental security? Or does construction of large dams like Kalabagh Dam have the potential to damage the very sanctity of environmental security and stability?

Jawaharlal Nehru once said dams as “the temples of modern India”.³ Dams were considered as the emblem of development. It became more prevalent in developing countries, particularly in India and China. Dams were for development, not for destruction was the approach of developed and developing countries in twentieth century. But, it reversed in the twenty first century and dams are dubbed as destruction, not development. In reality, dams are the bane for ecological and livelihood security of the people who are dependent on water for their sustenance. The Report of the World Commission on Dams says “While many have benefited from the services large dams provide, their construction and operation have led to many significant, negative social and human impacts” (WCD 2000: 16). We have already highlighted that the building of dam has the potential to increase environmental degradation which includes augmentation of salinity, sedimentation, loss of mangrove forest, high possibility of climate change, severity of flood, submergence of fertile land, salt water intrusion, loss of wildlife species etc. The Kalabagh Dam is not an exception in this regard. One instance in this observation is germane to justify the argument. Reporting on the 1998 flood, Chinese authorities acknowledged that its severity was partly due to long-term environmental degradation and heavy logging throughout the affected watersheds (WCD 2000: 15). Another example is the Tarbela Dam. Of the WCD

² Barry Buzan, “Rethinking Security after the Cold War”, *Cooperation and Conflict*; vol. 32, no. 5, 1997.

³ Ken Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building*, the MIT Press, Cambridge, London 2006, p. 170.

Case Study, only Tarbela Dam faces a sedimentation problem. In this case, the reservoir has lost 18% of live storage after 25 years. Although this is less than predicted, the loss of storage capacity reduces the dam's capacity to store water for irrigation (WCD 2000: 66).⁴ The regulation of flow of water caused by Kalabagh Dam would also affect the mangrove forest in Pakistan.

The study of the World Conservation Union (IUCN) of Pakistan in its report in 2005 also states the negative repercussions of dam building on environment, particularly the threat to the mangrove forest in Pakistan, caused by the regulation of flow of the Indus water. The Report says: "The mangroves of the Indus delta are almost wholly dependent upon the freshwater discharges from the River Indus. The average rainfall is very low (221 mm), and in some years, there is virtually no rain at all. Historically, the abundant freshwater discharges and nutrients-rich sediment load was conducive to a highly productive coastal ecosystem, including mangrove stands and fish which form the livelihood basis of local communities around the Indus delta. Human activities however, have progressively altered the discharge pattern of the Indus and therefore the transport of sediments" (IUCN Pakistan 2005: 25).⁵

Nevertheless, "environmental security is as important as national security because military security minus environmental security is insecurity both in the individual and national levels". Environmental security and national security are not exclusive rather interdependent and complementary to each other. National security can not be compromised for the sake of environmental security and vice-versa. How is national or military security important? A country should develop sufficient military mechanisms to deter foreign attack and to defend the

⁴ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000.

⁵ The World Conservation Union (IUCN) Pakistan, *Mangroves of Pakistan: Status and Management*, 2005.

territorial integrity and sovereignty. Otherwise, the country will be reduced to both national and human insecurity including environmental insecurity. The glaring instance in this context is Iraq. If Iraq had nuclear weapon then there was greater possibility that the US could not dare to wage the war. The Iraq war shattered the very core values of its national security and it ultimately led to human insecurity, including environmental degradation.

How is environmental security important? The case of Darfur is worthwhile to pin down. The immediate cause of conflict in Darfur that broke out in 2003 was a regional rebellion, but the U.N. Environmental Programme (UNEP) suggests that the true genesis of the conflict predates 2003 and is to be found in failing rains and creeping desertification (Burger June 25, 2007). The conflict in Darfur has been driven by climate change and environmental degradation, which threaten to trigger a succession of wars across Africa unless more is done to contain the damage, the report said (ibid). The UNEP investigation into links between climate change and conflicts in Sudan predicts that the impact of climate change on stability is likely to go far beyond its borders (Burger June 25, 2007).⁶ The view of the environment as a global common should not obscure the fact that the scale of environmental degradation, its consequences in fostering intra- and inter-state conflict and the problems of addressing these issues within the framework of the nation-state, are more acute in the Third World than in the developed states (Acharya March 1998: 14).⁷ Thus, environmental security can not be eschewed since it is an imperative for individual, social and national security.

⁶ Julian Burger, "Darfur conflict heralds era of wars", *The Hindu*, 25 June 2007.

⁷ Amitav Acharya, *The Periphery As The Core': The Third World And Security Studies*, Centre for International and Strategic Studies York University, YCISS Occasional Paper Number 28 March 1995. Prepared for presentation at the conference *Strategies in Conflict: Critical Approaches to Security Studies*, convened by the Centre for International and Strategic Studies, York University, Toronto, 12-14 May 1994 with the support of the Cooperative Security Competitions Program.

Pakistan, being a developing country, is more prone to the environmental degradation. However, the skewed water distribution is the crux of the entire predicament and the building of Kalabagh Dam is another pandemonium. Though three provinces (Baluchistan, North West Frontier Province and Sindh) have passed resolution against the Kalabagh Dam, but Punjab with the full backing from the federal government is hell-bent on this project by paying no heed to the concerns of other provinces.

For the Sind, the last province downstream from the Indus basin, is convinced that it is the victim of hegemonic ambitions on the part of powerful Punjabis, and it accuses them of keeping water supplies for themselves (Bouguerra 2006: 69). One Pakistani agricultural official stated: 'It's a tragedy, and in the end the country will fall apart, because everyone in the Sind is affected and everyone knows that the Sind is not getting its share of water'.⁸ A former senator added that 'this crisis has been the last straw in the long-simmering dispute between the three provinces (Sindh, Baluchistan, North West Frontier Province) and the Punjab', and that 'it may have consequences unless it is rationally explained to the population'.⁹ Some experts also propose that environmental change may shift the balance of power between states either regionally or globally, producing instabilities that could lead to war (Wirth 1989: 9, Dixon 1991: 77) and this possibility can not be sidelined in the case of Pakistan.

Why Kalabagh Dam is the most contentious issue among the provinces of Pakistan? In the chapters, I have shown that it is linked with environmental security and livelihood of the people of the downstream provinces and in the long run it can affect the upstream provinces. "A major emerging concern has

⁸ Mohamed Larbi Bouguerra, *Water Under Threat*, Alliance of Independent Publishers, Zed Books London, 2006, p .69.

⁹ Ibid

been the livelihood and ecological impacts in the areas downstream of these large dams— loss of fisheries, changes in *beel* (wetland) ecology in the flood plains, agricultural losses, massive boulder extraction and sudden water releases from reservoirs in the monsoons increasing flood vulnerability. However, downstream impact studies continue to be poor” (Vaghlikar, *The Hindu*, 23 December 2007). The skewed distribution in water has ultimate impact on the agriculture of downstream provinces of Pakistan, particularly in Sindh and Baluchistan. These provinces are already water stressed areas due to dearth of surface and ground water availability and the Indus River is the last hope for them.

The regulation of flow of water at the Indus River by building of Kalabagh Dam would aggravate the already deteriorating environment. For example, using farm-level data, experts have estimated that crop yields are reduced by about one-third for crops grown on slightly saline areas and that yields on moderately affected areas are reduced by about two-thirds (Faruqee, 13-15 December 1996). Crop production of any kind is difficult on highly saline soils (Faruqee, 13-15 December 1996) and Sindh is the most affected provinces as far as salinity is concerned. The World Commission on Dams also says “Salinisation reduces yields of crops that do not tolerate high salinity levels to the point of eventually rendering the land unproductive”. In the Cross-Check Survey approximately one-fifth of the large dam projects with irrigation component reported impacts from waterlogging (WCD 2000: 66). Another study reports that “the reduced water supplies lead to a variety of stress conditions causing damages in dominant species, reduced structural complexity and lowered productivity” (IUCN Pakistan 2005: 28-29).¹⁰

¹⁰ The World Conservation Union (IUCN) Pakistan, *Mangroves of Pakistan: Status And Management*, 2005.

In a study by Bryant *et al.* (1998), four human-threat factors— coastal development, marine pollution, over-exploitation and destructive fishing, and sediment and nutrients from inland— provide a composite indicator of the potential risk to coral reefs associated with human activity for 800 reef sites.¹¹ This degradation of agricultural land might produce large-scale migration, which could create ethnic conflicts as migratory groups clash with indigenous population (Dixon 1991: 85-86) and Pakistan which is already reeling under ethnic strife has the every possibility to fall into the civil war.

According to the Report of the World Commission on Dams, dams have the impact on climate change and climate change affects the productivity of a region. The Stern Report in November 2006, the Report of the Intergovernmental Panel on Climate Change (IPCC) in 2007 and the Human Development Report of 2007 put forth the sweeping impact of climate change in productivity caused by human activities. The MacKay in his study in the kingdom of Castile (much of modern-day Spain) found that during the fifteenth century, there were numerous well-documented episodes of popular unrest and civil war caused by climate-induced food shortage (Dixon 1991: 81).¹²

The adversely affected populations include directly displaced families, host communities where families are resettled, and riverine communities, especially those downstream of dams, whose livelihood and access to resources are affected in varying degrees by altered river flows and ecosystem fragmentation (WCD 2000: 16). More broadly, whole societies have lost access to natural resources and cultural heritage that were submerged by reservoirs or

¹¹ Parry, M.L., O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, eds., "2007: Cross-chapter case study", in *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, UK:Cambridge University Press,pp. 843-868.

¹² Thomas F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict", *International Security*, vol.16,1991,p.2

rivers transformed by dams.¹³ The World Bank also states that water related problems are likely to hamper severely the country's economic development and jeopardize its food security, as well as degrading public health and inflicting irreversible damage on the aquatic environment (Bouguerra 2006: 64). In June 1988, International Rivers Network (IRN) hosted the first international conference of anti-dam activists and produced the San Francisco Declaration, which called for impact assessment, notification and consultation of affected peoples, environmental protection efforts, and linkages to concerns for local food security (Conca 2006: 176).¹⁴ Wally N'dow, director of the UN's centre for Human Establishments said in March 1996, "I believe that if by 2010 great improvements are not undertaken to provide and save water, we'll have to face a monumental crisis....Where as the grounds for the last century's wars were oil, I am firmly convinced that many political and social conflicts of the twenty-first century will focus on water" (Bouguerra 2006: 64).¹⁵

Thus, from the foregoing discussion we can say that the Kalabagh Dam is linked with environmental security, environmental security with the livelihood of the people, insecurity of livelihood leads to social unrest and finally it puts question mark over the fundamental values of national security i.e. sovereignty and territorial integrity of the country. However, if Kalabagh Dam has been a prolonged national security issue, then what is the way out?

¹³ World Commission on Dams (WCD), *Dams and Development: A New Framework for Decision Making*, Earthscan Publication, 2000, p. 16.

¹⁴ Ken Conca, *Governing Water: Contentious Transnational Politics and Global Institution Building*, London: The MIT Press, 2006.

¹⁵ Mohamed Larbi Bouguerra, *Water under Threat*, London: Alliance of Independent publishers, Zed Books, 2006.

According to Buzan (1982: 19-20), "the aspect of individual security we need to pursue here relates to what might be called 'social threats'¹⁶: those arising from the fact that people find themselves embedded in a human environment with unavoidable social, economic and political consequences". It is in this area that we find the important link between security at the levels 1 (Individual security) and 2 (National security).¹⁷ From this analysis we can say that individual security is linked with the security of livelihood which can only be secured when there is environmental security; and the building of Kalabagh Dam is the potential threat to livelihood and environmental insecurity.

Jeffrey Leonard writes: "millions of previously very poor families that have experienced less than one generation of increasing wealth due to rising agricultural productivity could see that trend reversed if environmental degradation is not checked" (Dixon 1991: 95). Of the three categories of conflict identified by Homer-Dixon as being related to environmental degradation, two: "simple scarcity conflicts" (conflict over natural resources such as river, water, fish, and agriculturally-productive land), and "relative deprivation conflicts" (the impact of environmental degradation in limiting growth and thereby causing popular discontent and conflict), are most acute in the Third World (Acharya March 1998: 14). This is what happening in Pakistan. Punjab is trying to hog the water resources by playing the zero-sum game and the three provinces (Baluchistan, North West Frontier Province and Sindh) are deprived from their legitimate share of water.

¹⁶ Social threats come in a wide variety of forms, but there are four obvious basic types: physical threats from (pain, injury, death), economic threats (seizure and destruction of property, denial of property, denial of access to work or resources), threats to rights (imprisonment, denial of normal civil liberties), and threats to position or status (demotion, public humiliation) (Buzan 1982: 19-20).

¹⁷ Barry Buzan, *People, States and Fear: The National Security Problem in International Relations*, New Delhi:Trasasia Publishers, 1982.

It is pertinent to relate it with the development in India relating to the environment and livelihood. On November 17 2007, the Affected Citizens of Teesta (ACT) completed 150 days of an ongoing *satyagraha* against a juggernaut of large hydroelectric projects planned in Sikkim (Vagholikar, *The Hindu*, 23 December 2007) and the focal point of this protest is impending livelihood insecurity. Neeraj Vagholikar has noted that: "Shifting agriculture (*jhum*) is a dominant traditional land use in the hills of Northeast India and plays a critical role in the livelihoods of people, maintaining agricultural biodiversity and providing food security. Increasing pressures on land have resulted in the shortening of *jhum* cycles (the length of the fallow period between two cropping phases), thus impacting its ecological viability. The submergence of land by hydel projects will further shorten the cycle and enhance the pressure on the surrounding areas, thus affecting the environment and livelihoods over a much larger landscape".¹⁸

Nevertheless, "Whether environmental stress results in extreme and potentially violent outcomes depends on the national political process (interaction between state, society, and economy but also how knowledge is used for adaptation and mitigation purposes), and on the structures of governance" (Brauch 2005). But in Pakistan, the national political process is highly volatile and fluid; and structure of governance are fragile due to devoid of social coherence, embedded ethnic conflicts, militarism and political opportunism of political leaders. In the eyes of some politicians, achievements in relation to water are much less glorious and worthy of publicity than a metro or dam (Bouguerra 2006: 93). In India, the Delhi bi-monthly, *India Today* coined the indignant formula: 'Promise a dam, win an election' (Bouguerra 2006: 162). This is the

¹⁸ Neeraj Vagholikar, "Dammed In", *The Hindu*, 23 December 2007.

reason political leaders in Pakistan are more oriented in building dams rather than the management and conservation of existing water resources, and improved agricultural practices. This “empire building approach” of the political leaders has intensified the provincial tiff with the cost of environment and livelihood. However, “A politics of denial of negative impacts in the decision-making phase will only lead to ugly conflicts in the future” (Vagholikar, *The Hindu*, 23 December, 2007).

In this context it is germane to put forth an important distinction between the despotic and infrastructural power of the state as Mann has rendered (Mann 1988, Mabee 2003: 139). The former refers to the ability of the state to act freely, without any regard to society, while the latter refers to the ability of the state to penetrate society and organise social relations (Mabee 2003: 139). “Despotic power”¹⁹, thus, concerns the state elite, and its ability to take action without regard to civil society (Mabee 2003: 139). “Infrastructural power”²⁰ is a crucial part of state power, as it concerns the ability to structure and organize civil society through the institutions of the state (Mabee 2003: 139). As Mann describes it, infrastructural power, however, should not be seen just as power in the sense of ‘power over’ – referring to the state’s domination of civil society.²¹ It is a form of what Mann describes as ‘collective power’, which is a type of ‘enabling’ power that is not a zero-sum game (ibid). The rise of infrastructural power is one of the key features of the contemporary state, and helps to develop a security relationship between state and society (Mabee 2003: 139). From this point of view we can say that Pakistan is devoid of infrastructural power and a

¹⁹ Mann puts it, despotic power refers to ‘the range of actions the elite is empowered to undertake without routine, institutionalised negotiation with civil society groups’ (Mann 1988, Mabee 2003: 139).

²⁰ Infrastructural power refers to ‘the capacity of the state to penetrate civil society, and to implement logistically political decisions throughout the realm’ (Mann 1988, Mabee 2003: 139).

²¹ Bryan Mabee, “Security Studies and the ‘Security State’: Security Provision in Historical Context”, *International Relations*, vol. 17, 2003, pp.135–151.

'security state'²² and more leaning towards 'imperial state' as dubbed by Barry Buzan.

The history of Pakistan shows that it is institutionally feeble and social incoherent. The all-encompassing and entrenched military has completely paralysed the civilian institutions. Despite the formation of different committees and institutions like the Water and Power Development Authority (WAPDA), Indus River System Authority (IRSA), Council of Common Interests (CCI), Inter-provincial Council etc. to solve the longstanding water wrangling among the provinces, they are bungled and working at the behest of political leaders. The International River's Network, an independent organisation, has suggested some viable alternatives. It says that brick-and-mortar investments in the centrally managed dams were not the only way to address Pakistan's water related needs, but, the conservation and plugging the leaks in the system, including, end to bureaucratic manipulations and corruption (Channa 2007). In Vayrynen's view, "Because of the fragility of social system, the marginal costs of economic vulnerability, ecological degradation and ethnic fragmentation are greater problems in developing countries than in industrialized countries (where the absolute damage may be greater, however)" (Acharya March 1998). Therefore, "in developing countries, the notion of national security cannot be separated from the non-military threats to security".²³

²² During the period of total war at the beginning of the 20th century, a particular configuration of state-society security relationships developed in western states where the state increased its power over society, but also in return gave a bundle of social goods to its citizens as a means of providing security. This model is here referred to as the 'security state' (Mabee 2003: 136-137). The 'security state' represents a situation where the increased penetration of the state into civil society has provided the basis for not only more co-ordination of society by the state, but the reciprocal effect of increased rights and expectations of the citizens of states (Mabee 2003: 143).

²³ Amitav Acharya, *The Periphery As The Core: The Third World And Security Studies*, Centre for International and Strategic Studies York University, YCISS Occasional Paper Number 28 March 1995. Prepared for presentation at the conference *Strategies in Conflict: Critical Approaches to*

Thus, we should aim at adopting solution-augmentation approaches and one important way of looking at things, which is being globally adopted, is institutional approach. It looks at deprivation from the point of institutions and the key to understanding the link between environment and security is not variables like scarcity or war, but more distantly related issues of institutions, institutional failure, and governance (SDPI Report 2003-04). The country studies also corroborate the findings of the 2003 review of environment, development and human security in South Asia that the drivers for insecurity and conflict are failures of institutions and governance (SDPI Report 2003-04). Equally important from a policy perspective is the conclusion that the ultimate effect of human insecurity and environmental degradation tends to be political instability, which in turn sows the seeds for insecurity at the nation state level (ibid).

Environmental security and livelihood which is linked with Kalabagh Dam should be placed in the category of 'high politics' that can only bring the notice of the nation to take the matter from national security perspective. In other words, "issues become securitized when leaders (whether political, societal, or intellectual) begin to talk about them- and to gain the ear of the public and the state- in terms of existential threats against some valued referent objects" (Buzan1997: 13- 14). In South Asia, environment and security need to be conceptualised in the context of sustainable development. In all the study areas, deep-rooted constraints to livelihood security in addition to resource rights issues remain to be addressed (SDPI Report 2003-04).

Politicians should be visionary in the management of resources. Though the Report of the World Commission on Dams has identified Pakistan is a water

Security Studies, convened by the Centre for International and Strategic Studies, York University, Toronto, 12-14 May 1994 with the support of the Cooperative Security Competitions Program.

stressed country, but the problem lies with the fair and legitimate distribution, management and conservation of the water resources among the provinces. Anil Agarwal claimed in the Hague, in March 2000, that 'there is no scarcity of water', and that the solution lies in an end to the mismanagement of resources (Bouguerra 2006: 51). To manage the distribution of water locally, nationally and even internationally, and to avoid the outbreak of conflicts over water, it is necessary to promote a water ethics that goes far beyond empty rhetoric and fosters contractual and managerial transparency (Bouguerra 2006: 176). To substantiate further World Bank evaluation found in 1996 suggests that water conservation measures save more water than largest new dams in Pakistan's investment programme could have stored, and at 1/5th of the cost (Channa 2007). Similarly, Asian Development Bank estimates that an additional 4.7 MAF water could be provided either by conservation measures at a cost of \$1.7 billion or by new dam with a price tag of \$4.5 billion (Channa 2007).

The Report of the World commission Dams says, "Dams are a means to an end, not an end in themselves". It considers that the end of any dam project must be the sustainable improvement of human welfare. This means a significant advance of human development on a basis that is economically viable, socially equitable, and environmentally sustainable (WCD 2000: 2). As Pakistan is "on the verge of bankruptcy", politically volatile and "the disastrous affects of inefficient water use, constructing the dam would appear to be a water irrational policy" (Alam 1998: 170).²⁴ If Kalabagh Dam has long term impact on the environmental degradation, livelihood insecurity, provincial fuss and imminent threat to national security, we should find out viable alternatives to meet multipurpose

²⁴ Undala Z. Alam, *WATER RATIONALITY: Mediating the Indus Waters Treaty*, Thesis submitted for the degree of Doctor of Philosophy Geography Department, University of Durham September 1998.

objectives. "A sensible and environment-conscious approach will throw up many other alternatives".²⁵

Kalabagh Dam project should be zeroed in on in a holistic way where individual security (environmental security plus livelihood security) can go in commensurate with and national security without depriving the legitimate share of water resources of the provinces. The holistic approach should cover political, economic, cultural and environmental dimensions with the end of imperial state and 'shadows of the past'²⁶. It needs political consensus, people's mandate, transparency, independent environmental impact assessment of the project, participation of stake holders, 'water rationality'²⁷ and 'integrated water management'²⁸ and institutional efficiency. Thus, the first and foremost thing is

²⁵ Akber Ayub, "Stubborn assault", *The Hindu*, 23 December, 2007

²⁶ The term 'shadows of the past' implies the continuation of past grievances in the relation. This term was used by Prof. Sumit Ganguly in a seminar organised by South Asia Division of the School of International Studies, Jawaharlal Nehru University, New Delhi, 2007.

²⁷ Three broad modes of securing water have been identified under water rationality: national water management, international co-riparian relations, third party perceptions of a water dispute. All three are interlinked because if the national management scheme is inefficient and supply cannot meet demand it could lead to a conflict of interests with co-riparians sharing a river or aquifer. In turn, this could lead to the involvement of a third party to resolve the dispute (Alam 1998: 166).

²⁸ Asma Yaqoob, "International River Waters In South Asia: Source of Conflict or Cooperation?" *Regional Studies*, vol. XXII, no. 4, Autumn, 2004. The concept of fully integrated water resource management (IWRM) emerged from the Dublin and Rio Conferences of 1992 (Yaqoob 2004). The four guiding principles (known as Dublin Principles) recognize fresh water as an "economic good," a "finite and vulnerable resource essential to sustain life, development and the environment," "participatory approach for water development and management" and the "role of women in the management of water" (Yaqoob 2004: 139). Also see in Undala Z. Alam *WATER RATIONALITY: Mediating the Indus Waters Treaty*, Thesis submitted for the degree of Doctor of Philosophy Geography Department, University of Durham September 1998. According to Undala Z. Alam, integrated management should take into consideration the geographic features of the basin, as a whole, are taken into account when deciding where to locate storage facilities or irrigate land for example. This would mean, for example, using highland areas for dams even though it may mean that the downstream riparian is dependent upon the upstream riparian to release water for its uses. The decision not to cooperate in whatever capacity and thereby jeopardise the long term security of the water would be deemed, here, to be water irrational (Alam 1998: 169).

to attenuate the 'neo-security dilemma'²⁹ among the provinces and to end the approach of 'water irrationality'³⁰ which can only generate win-win situation for Pakistan as far as better water resource management as well as water and environmental security are concerned. This can only make headway for "security community"³¹ and "security state" by breaking the Rubicon of political leaders on Kalabagh Dam; otherwise it will be plunged into a vortex of state collapse.

²⁹ The neo-security dilemma, proposed here, is regarded as a derivative of the security dilemma that afflicts nations pursuing their military security. The key issue in the security dilemma is the idea of a nation's security being threatened by another country. In the neo-security dilemma, a state's security is affected by its own actions. Security is, also, given a broader definition than just the military security of the country. It encompasses issues of resource access, availability and quality. More importantly, the neo-security dilemma involves a timescale. In other words, what a state does in the short term to secure its resources, may jeopardise its long term resource security. But the dilemma comes in trying to balance short term needs with safeguarding the resource in the long term (Alam 1998: 168).

³⁰ Water irrationality (Wirr) is behaviour by a state and its governing body that jeopardises the long term quality and security of its water supply. This situation generally arises from the short term policies a government uses to guide its water management either nationally or internationally vis-à-vis its co-riparians. Such policies can include, nationally, the inadvertent polluting of a water source or, internationally, the refusal to cooperate over shared waters. It is suggested here, that such water insecurity arises from the neo-security dilemma that encompasses water management (Alam 1998: 168).

³¹ A security community was defined as a group of people who had become integrated- that is, a group who had achieved a sense of community, and of institutions and practices strong enough and sufficiently widespread to convince people that necessary social, economic and political changes could be brought about peacefully (Sheehan 2006: 27). A security community is therefore one in which "there is real reassurance that the members of the community will not fight each other physically, but will settle their disputes in some other way" (Deutsch *et al.* 1957: 5, Sheehan 2006: 27).

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