Chapter 7

Conclusion and Suggestions

On the last leg of this study, the researcher has to conclude his findings and, in the light of these findings the researcher may make some suggestions which may prove fruitful in the removal of bottlenecks in the better conservation and management of water resources.

The prevalence of the situation of rainfall in the country is highly uneven with 100 mm in Western Rajasthan to over 11,000 mm at Cherrapunji in Meghalaya. Further, variability of rainfall from season to season is very high. The compounding effect of such factors is the uneven water availability from basin to basin. India has been divided into 20 river basins and the availability varies from 18,417 cubic metres in the Brahmaputra valley to as low as 180 cubic metres in the Sabarmati basin, Rajasthan for instance, with 8 percent of country's population has only 1 percent of the country's water resources while Bihar with 10 percent of population has just 5 percent of the water resources. Thus, while India is considered rich in terms of annual rainfall and total water resources but, its uneven geographical distribution causes severe regional and temporal shortages. India will be on the list of water-stressed countries by the year 2025 when nearly half the world's population will experience water shortage. The stress on water resources is the result of a multitude of factors such as rapidly rising population and changing lifestyles that have increased the need for freshwater and intense competition among agriculture, industry and the domestic sector that is pushing the ground water table deeper. It has been mentioned that availability of water varies very widely from one region to another. While eastern and north-eastern regions have, by and large, adequate availability of water both for domestic and agricultural uses, the states in western and southern regions suffer from acute scarcity of water, particularly during the summer months. Though India has 14 major rivers and receives about 4,000 Billion Cubic Metres of Water annually from precipitation, water shortage has become an incessant problem across various states, in the country. Traditionally, water management
has been the Government's responsibility, private sector participation in water project now recognized as a growing imperative. The revised National Water Policy adopted in April 2002 has focused on the area needing attention in the water sector and has given a roadmap for further development of this sector to make it viable and self-sustaining. State Governments have prepared State Water Policies. The philosophy of development of the water sector needs a sea-change to move away from government owned and operated systems to participation of beneficiaries in construction, operation and maintenance. Some states have already made change in existing Irrigation Acts or introduced new Acts to facilitate and motivate such participation. State governments also need to be persuaded to enact other suggested legislation for ground water regulation, dam safety and flood plain zoning. The Central government should also take the initiative for drawing up guidelines and initiating policy changes for private sector participation in the irrigation sector. The National Water Policy 2002 further states that, Non-conventional methods for such as through inter-basin transfer, artificial recharge of groundwater and desalinization of brackish or sea water, as well as traditional water conservation practices like rain water harvesting, need to be practiced to further increase the utilizable resources.

First the researcher will present brief of his findings and later he makes suggestions.

Chapter 1 of this research work as usual is Introduction, which details out the aims and objectives and the statement of the work at hand.

Chapter 2 of the research work pertaining to "Historical Development of Water Resources Law and Policy" has at length narrates the details relating to the evolution of ways of water resources management/conservation laws, from pre-historic to present times. Water law is made up of a number of elements comprising a human right dimension as well as economic, environmental or agricultural aspects. Historically one of the central concerns of water law has been the development of principles concerning access to and control over water. Water has always played the central role in sustaining life, human lives and human economies, the development of formal water law has been relatively slow
and often patchy. At the domestic level, colonial legislation first focused on the regulation of water for economic reasons, for instance through the development of legislation concerning irrigation and navigation. In our country water law is made of different components. It includes international treaties, central and state acts. It also includes a number of less formal arrangements, including water and water related policies as well as customary rules and regulations. Existing Water law is made up of a number of different instruments that do not necessarily make up a comprehensive framework. It remains difficult to identify a coherent body of comprehensive law concerning water. This is related to the fact that distinct concern have been addressed in different enactments. This is also due to the division of powers between the centre and the states and the fact that water regulation is mostly in the hands of the states. The existing water law framework in India is characterised by the co-existence of a number of different principles, rules and acts adopted over many decades. These include common law principles and irrigation acts from the colonial period, as well as more recent regulation of water quality and the judicial recognition of human right to water.

In terms of statutory development, irrigation laws constitute, historically, the most developed part of water law. This is in large part due to the fact that the colonial government saw the promotion of large irrigation works as central to its mission. This also included the need to introduce a regulatory framework in this sector. As a result some of the basic principles of water law applicable today in India derive from irrigation acts. The early Northern India Canal and Drainage Act, 1873 sought, for instance, to regulate irrigation, navigation and drainage in northern India. One of the long-term implication of this Act was the introduction of the right of the Government to 'use and control for public purposes the water of all rivers and streams flowing in natural channels, and of all lakes.' The 1873 Act refrained from asserting state ownership over surface waters. Nevertheless, this act is a milestone since it asserted the right of the Government to control water use for the benefit of the broader public. This was progressively strengthened. At around the same time the natural riparian right also found a statutory footing under the Indian Easements Act 1882. The act also legitimised customary rights of the people, and provided rules for their recognition. But again under the 1882
Act all these rights are subject to the Overriding provision of "any right of the
government to regulate the collection, retention and distribution of the water of
rivers and streams flowing in natural channels, and of natural lakes and ponds, or
of the water flowing, collected, retained or distributed in or by any channel." Thus
the Madhya Pradesh Irrigation Act, 1931 went much further and asserted direct
state control over water: 'All rights in the water of any river, natural stream or
natural drainage channel, natural lake or other natural collection of water shall
vest in the Government.'

Colonial law in this sector remains relevant to date because acts like the
Madhya Pradesh Irrigation Act, 1931 are still in force. Further in Madhya Pradesh
again, the Regulation of Waters Act, 1949 reasserted that 'all rights in water of
any natural source of supply shall vest in Government.' The much more recent
Bihar Irrigation Act 1997 still provides that all rights in surface water vest in the
Government. Statutory water law also includes a number of pre and post
independence enactments in various sectors. These include laws on
embankments, drinking water supply irrigation, flood, water conservation, river
water pollution, rehabilitation of oustees and displaced persons, fisheries and
ferries. Generally, water law is largely state based. This is due to the
constitutional scheme, which since the Government of India Act, 1935 has, in
principle, given power to the states to legislate in this sector. Thus states have
the exclusive power to regulate water supplies, irrigation and Canal, drainage
and embankments, water storage, hydropower and fisheries. There are
nevertheless, restrictions with regard to the use of inter-state rivers. Further, the
Union is entitled to legislate on certain issues. These include shipping and
navigation on national waterways as well as powers to regulate the use of tidal
and territorial waters. The constitution also provides that the Union can legislate
with regard to the adjudication of inter-state water disputes. While no substantive
clauses could be adopted at the time of the adoption of the constitution, a
specific act, the Inter-State Water Disputes Act was adopted in 1956. This
introduces a procedure for addressing disputes among states concerning
inter-state rivers that have not been solved through negotiations. It provides for
the establishment of specific tribunals to adjudicate such conflicts and has been
used in several cases. Parliament also enacted the River Board Act, which provides a framework for the setting up of river boards by the Central Government to advise state governments concerning the regulation or development of an inter-state river or river valley. River boards can advise state governments on a number of issues including conservation, control and optimum utilization of water resources, the promotion and operation of schemes for irrigation, water supply or drainage or the promotion and operation of schemes for flood control. Besides statutory framework, a number of common law principles linking access to water and rights over land are still prevailing in India. These include separate rules for surface and ground water. With regard to surface water, existing rules still derive from the early common rule of riparian rights. Thus the basic rule was that riparian owners had a right to use the water of a stream flowing past their land equally with other riparian owners, to have the water come to them undiminished in flow, quantity or quality. In recent times, the riparian right theory has increasingly been rejected as the appropriate basis for adjudicating water claims. Further, common law rights must today be read in the context of the recognition that water is a public trust. Common law standards concerning ground water have subsisted longer. The basic principle was that access to and use of ground water is a right of the land owner. In other words, it is one of the right that landowners enjoy over their possessions. The inappropriateness of this legal principle has been rapidly challenged during the second half of the twentieth century with new technological options permitting individual owners to appropriate not only water under their land but also the ground water found under neighbour’s lands. Further, the rapid lowering of water table in most regions of the country has called in question legal principles giving unrestricted rights to landowners over ground water. Similarly, the growth of concerns over the availability of drinking water in more regions has led to the introduction of social concerns in ground water regulation. As a result of the rapid expansion of ground water use, the Central Government has tried to persuade states to adopt ground water legislation. It is only over the past decade that some states have adopted ground water bills, acts and policies. The legal framework concerning ground water is still in rapid evolution. Further, ground water is increasingly likely to be linked to surface water in the context of the setting up of
water regulatory authorities that are celled upon the manage surface and ground water over the past decades, the water situation has become increasingly dire in many parts of the country. This is due to increased use of water by all categories of users, to increased demand due to economic and rapid population growth. One of the specific problems that have arisen is the huge increase in ground water use, which has led to depletion in many areas. Water sector reforms have been proposed as a way to address diminishing per capita availability, increasing problem in water quality and increasing competition for control, access and use of available fresh water. Present reforms seek, in particular, to reduce the role played by the public sector and to emphasise the direct contribution of individuals to their water needs and the participation of the private sector. Another important change brought about by the notion that water is an economic good is that all water services must be based on the principle of cost recovery. In a situation where the provision of drinking and domestic water as well as irrigation water is substantially subsidised, this implies a significant policy reversal. At the national level, the policy is now to make water users pay at least for the operation and maintenance charges linked to the provision of water. This strategy is already being implemented in the context of irrigation water where farmers are made to pay for operation and maintenance cost. This has also been introduced under the Swajaldrha guidelines, which suggest that water users have to take partial responsibility for the capital cost of new drinking water infrastructure and full responsibility for operation and maintenance.

Chapter 3 of the present research work is devoted to "Legal Regime". Under this chapter the researcher has discussed the legal provisions pertaining to management and conservation of water resources. Water law is supposed to give effect to the course of action indicated in existing water policies, or in any case provide for regulations that responds to existing water challenges and opportunities. The constitution of India provides for the separation of powers between Central Government and States pertaining to water. The right to legislate over 'Water' particularly water supplies, irrigation and canals, drainage and embankments, water storage and water power is included with states through the seventh schedule of the constitution, State List Entry 17. With Entry
56 of the Union List of Seventh Schedule of the Constitution, the Central Government is notably conferred with powers to regulate and develop inter-state rivers, to the extent that parliament declares it by law to be expedient in the public interest. Powers of the Central Parliament in the matter of inter-state watercourses are further specified through Article 262, which rules that the parliament may by law provide for the constitution of a tribunal for the adjudication of any dispute or complaint with respect to the use, distribution or control of inter-state river waters. Under Article 262, the Parliament further enacted the Inter-State Water Disputes Act, 1956 and the River Boards Act, 1956. A three tier arrangement in the constitutional scheme has been established by the enactments of the 73rd and 74th constitutional amendments, that is local bodies of governance at the village and city level, the village panchayats (Art–243 G) and the city nagarpalikas (Art. 243 W). The Eleventh and Twelfth Schedules of the Constitution lay down the lists of subjects to be devoted to the panchayats and nagarpalikas. The panchayats list includes water conservation, minor projects, drinking water supply, water management, watershed development and sanitation.

British colonial legislation in India recognised the customary water rights of individuals and groups. But a change occurred with the enactment of Easement Act 1882, which is still today a determinant national statute defining powers over surface and groundwater. The Government of India took the initiative of promoting legislation on ground water by providing draft model groundwater bill in 1970, 1972, 1992, 1996 and lastly in 2005. In pursuance of this initiative, several State Government have enacted groundwater legislation over the years. The Central Model Bill as well as the State Acts deal with 'groundwater users' without referring to ownership rights. The statutes proceeds to empower state agencies or the Ground Water Authorities to issue 'permits' or 'licences' to well 'users' on a presumption of the state's superior powers to control groundwater. The Maharashtra Ground Water Regulation for Drinking Water Purposes Act, 1993 implicitly recognises private rights by providing for the payment of compensation for loss due to permanent or temporary sealing of closure of wells. The Maharashtra Water Resources Regulatory Authority Act of 2005 envisages
‘sub-surface entitlement’. Entitlements means an individual or bulk water entitlement to a volumetric quantity of water to be extracted in the command area of the irrigation project from tube-well, bore-well or any other well or by any other means of extraction of sub-surface water, or a group or fields or wells duly and legally permitted. The Maharashtra Act states that no person shall use any water from any water source without obtaining the entitlement from the respective River Basin Agency. The Tamil Nadu Act also makes provisions for the transportation of ground water to areas outside, after acquiring a permit to do so. All the laws are aimed at regulation of the use of well through licensing. The various State laws have never been properly implemented. The State of Kerala enacted a comprehensive law to better regulate water, the Kerala Ground Water (Control and Regulation) Act, 2002. Most of States in India have been drafted State Water Policies for better management and conservation of water resources. The Andhra Pradesh Water Resources Development Corporation 1997 seeks to consolidate efforts to manage all water resources through coordination and cooperation between the conflicting sectors like domestic, industrial and irrigation.

Section 31 of Uttar Pradesh Water Management and Regulatory Commission Act, 2008 bars any appeal to Civil Court, thus assuming that new institutions is better suited than government and the courts to deliver socially equitable, environmentally sustainable, and economically efficient. Recently government of Uttar Pradesh drafted a bill to control over exploitation of ground water, and for conservation of water resources, the UP Ground Water Conservation, Protection & Development (Management, Control and Regulation) Bill, 2010. There are some treaties between India-Pakistan, India-Nepal and India-Bangladesh for the sharing of water. While water law reforms are more than welcome given existing shortcomings of water regulation and changing conditions in the water sector, it is unlikely that law reforms based on the principles put forward in the water sector reforms constitute an appropriate response but they are conceptually incapable of addressing the human right, social, environmental and health aspects of water. This is regrettable because any water law, which is not based on the constitutional right to water and the principle of public trust, is bound to fail as a legal tool.
At the international level, some treaties are leading the way towards conceiving water law more broadly. Thus, the UN Economic Commission of Europe has adopted a convention, which is broader than the 1997 UN Convention in scope insofar as it applies to transboundary waters in general. The UN Convention is a framework convention, which aims at ensuring the optimal and sustainable utilization and conservation of water resources for present and future generations. Chapter 4 of this research pertaining to 'Role of Adjudicative Machinery' which provides resolution mechanism in the area of water conflicts such as inter-state water disputes and trans-boundary water-disputes. Water Jurisprudence has been developed through court's interventions. One of the first case in this era was *Fischer V Secretary of State*, which discussed the right of the government over natural sources of waters against those of the riparian owners. The court ruled that the government had the power to regulate, in the public interest, the collection, retention and distribution of water or rivers and streams flowing in natural channels or in manually constructed works, provided that they do not thereby inflict injury on any other riparian owners and diminish the supply that they have traditionally utilised. Clearly the power of government for water management was conditioned upon the fact that the traditional supplies of water should not be diminished.

The point here is that state had 'control' over water resources and to say that there was 'ownership' over these resources might be a case of legal overthought. On the other hand 'control' would mean "power or authority to manage, direct, superintend, restrict, regulate, govern, administer or oversee," which gives the person in control "the ability to exercise a restraining or directing influence over something. All that the state was given this ability to exercise influence over the resources and it may be just mentioned here that the grant of this ability was largely a result of factors outside law and jurisprudence. However, as pointed out above `control' over resources nevertheless vests the state with power and authority to do a gamut of things and this was exercised by the state to the fullest. That explains why the various Irrigation, Canal and Drainage Acts passed prior to independence and continued thereafter vested large power to the department failed to ensure their accountability to water users and kept these
users, farmers and local populace outside the decision making process. This was accentuated by a total lack of transparency surrounding the decisions. Things however have begun to change. The state being not an owner which could do as it pleases, could control these resources only while ensuring that it does not thereby inflict injuries or disrupt traditional supplies. This obligation of the state has since acquired the shape of a categorical fundamental right enforceable against it. This has been made possible by a very activist interpretation of the Constitution of India by the Supreme Court and the high courts in the last three decades. The right to enjoyment of fresh water is now a fundamental right under the constitution. If anything endangers or impairs this right, a citizen can directly approach the Supreme Court under Article 32 of the Constitution. To illustrate the farmer's need for a fixed quantum of water for survival needs can find a sure legal footing in the form of a fundamental right to water. On the other hand, the assertion of this right could also help him make the concerned departments of the government accountable, for supply of a minimum amount of water to him but it should be made mandatory to collect the charges of operation and management cost. The right to water can be read as being implied in the recognition of the right to a clean environment. In Subhash Kumar V State of Bihar, the Supreme Court recognised that the right to life includes the right of enjoyment of pollution free water and air for full enjoyment of life. The Supreme Court went further and directly derived the right to water from Article 21 and stated water is the basic need for the survival of the human beings and is part of right to life and human rights. While the recognition of a fundamental right to water by the courts is unequivocal, its implementation through policies and acts is not as advanced."

The need for proper management of groundwater resources was recognised earlier by the Kerala High Court in a public interest litigation filed by local Islanders against the government scheme of pumping out ground water on the Island. Recognising the importance of fresh water to the Islanders and holding that the right to fresh water was an aspect of the fundamental right to life. Further in Hinch Lal Tiwari V Kamla Devi & Others, the Supreme Court has held that the material resources of community like forests, ponds, lakes, hillock, mountains etc are nature's bounty. These need to be protected for a proper and
healthy environment, which enables people to enjoy a quality of life which is the essence of the guaranteed rights under Art. 21 of the constitution of India.

For sharing of waters of Inter-State Rivers, the Constitution of India provides a scheme under Article 262. Article 262 (1) empowers parliament to provide by law for adjudication of any dispute or complaint with respect to the use, distribution or control of the waters of any Inter-State River or River Valley. The Inter-State Water Disputes Act, 1956, which has been enacted under Art. 262, provides for adjudication of disputes for sharing of waters of Inter-State Rivers or River Valleys. When such a dispute arises, a State Government may request the Central Government to refer it to a tribunal for adjudication. The tribunal submits its report to the Central Government which on publication becomes binding on the parties concern. The Water Resources Ministry is planning to set up an Integrated Water Disputes Tribunal that will be the one-stop forum for all inter-state water wars. Presently there are five running tribunals in our country. Recently, the Krishna Water Disputes Tribunal-II on 30 December 2010 announced its verdict for the surplus Krishna Water. The tribunal has said, a Krishna Water Decision Implementation Board should be set up to see the implementation of the decision. The Board is to be set up within three months from the date of the decision.

In Mullaperiyar Environmental Protection Forum V Union of India and others, the main question to be determined is about the safety of dam if the water level is raised beyond its present level of 136 ft. According to the petitioner, there was leakage in the gallery of the dam which affected its security and, therefore, the water level was stopped at 136 ft. In view of apprehension expressed in the light of leakage, in the year 1979 the water level was allowed upto 136 ft, instead of 152 ft. The case is important from the constitutional point of view because the jurisdiction of the Supreme Court was in question subject to the provision of Inter State Water Disputes Act. It was decided by the Supreme Court in this case that the matter before the court in the impugned matter is whether the dam would be safe if the water level is increased beyond the present level. Thus this matter is not covered under the Inter-State Water Disputes Act and thus is a fit case of Jurisdiction for the Supreme Court. Further In State of Orissa V Govt. of India,
Chief Ministers of two states agreed to share available water on 50:50 basis annually and undertaking was given by State of Andhra Pradesh that no work would be taken up on the Flood Flow Canal. Despite undertaking State of Andhra Pradesh continued with its construction works. Thus State of Orissa filed a complaint before the Government of India. Neither action taken nor Water Disputes Tribunal was constituted by the Government of India. Now the question before the Supreme Court was that whether the dispute between the State of Orissa and the State of Andhra Pradesh regarding the diversion of the Vansadhara River waters by the construction of side channel weir and the Flood flow canal constitutes a water dispute within the meaning of sec 2 (c) of the 1956 Act?

It was held, that water disputes refer to any dispute between two or more State Governments with regard to the use, distribution or control of the waters or/in any inter-state river or river valley. Central Government was directed to Constitute Water Disputes Tribunal within a period of six months.

Arbitration is a resolution mechanism for adjudicating international water disputes. International arbitration has for its object the settlement of disputes between States by Judges of their own choice and on the basis of respect for law. Recourse to arbitration implies an engagement to submit in good faith to the award. While arbitration and Judicial settlement share a number of key features, the main difference between them is that the former provides the parties with a large degree of freedom and flexibility.

International law provides a variety of procedures available for States to clarify facts, to improve their relations, and to avoid or settle disputes. These procedures may also be employed to settle inter-state controversies over shared water resources. Co-riparian States may resort to them either on the basis of the treaties to which they are party or on the basis of customary international law. The law governing international watercourses contains few rules and provides great flexibility to states to jointly apportion and manage shared resources via mutual agreement. In cases where a dispute arises, the States concerned should attempt to resolve it amicably. A survey of State practice reveals a preference for
political means over adjudication. But when face-to-face negotiations, namely
good offices, mediation, fact-finding or conciliation, do not differ much from
negotiations in so far as they require consent to be set in motion and to be
effective. The impartial third party would attempt to accommodate states
positions so they can find a solution acceptable to both disputants. If the
disputing States lack the political will to resolve their differences they can reject
the solution proposed and the dispute may remain unresolved. From this point of
view, it is advisable to envisage the possibility of unilateral compulsory recourse
to adjudication. Its main advantage is that it facilitates a binding settlement which
the parties must fulfil in good faith. However, in spite of its binding character,
adjudication contains major shortcomings which do not make it particularly
appropriate for dealing with all disputes over shared water resources. The
flexibility present in the law of international watercourses, the scarcity of rules,
and the specificities involved mean that adjudication cannot replace a negotiated
settlement. The main function of adjudication is to interpret and apply legal rules
in cases where the disputants can not overcome their differences by negotiation,
due to irreconcilable appreciations of the content and scope of such rules. It
should be noted that the role of the arbitral tribunal or the international court is
confined to resolution of the case on legal grounds. The adjudicative body does
not take into account the political or economic background of the differences
which prevent them from reaching an agreement. Given this, it is perhaps not
surprising then that an agreement has yet to be achieved in the
Gavcikovo-Nagymaros case and that a definitive comprehensive treaty on the
River Meuse was not concluded until some 60 years after the award.

Furthermore, adjudication permits evaluation of the legality of facts in
relation to the applicable legal rules, where there is no disagreement about the
factual issues. So adjudication essentially requires a minimal level of agreement
over facts and is not practicable when one of the parties denies the existence of
a dispute or when one of the parties denies the existence of a dispute or when
the versions of fact given differ broadly. In such cases, resolution at the technical
level, within the context of mixed commissions or through the establishment of an
ad-hoc fact finding commission, is probably the most suitable technique. It is of
the utmost importance that states agree to co-operate to avoid disputes by setting in motion joint commission with monitoring, investigation, implementation and advisory powers. But in some cases a dispute can not be settled at the technical level. Water course convention embody a large number of legal duties. To recall an example, the 1997 UN Convention refers to the principle of equitable and reasonable utilization is undoubtedly the best avenue between the two modes included under the heading of adjudication, arbitration seems preferable to judicial settlement for handling those disputes which raise highly technical issues. This is because the parties can, voluntarily and on the basis of mutual agreement, select the arbitrators that they deem to have the most appropriate technical expertise and determine for themselves and material substantive law as well as the procedure to be followed. We do not consider the establishment of a new court necessary since the current judicial or quasi-judicial bodies with jurisdiction on all or some areas of international law provide a wide enough range of avenues to settle inter-state disputes over water resources. Indeed some of them are under-utilized. In order to improve their performance of Judicial functions, they should make better use of expert technical advise.

If States want to resolve their controversies involving water courses, it is necessary to complement the advantage of each category of techniques. Adjudication should be resorted to only when attempts to settle a dispute at the technical level have failed. Hence adjudicative and non-adjudicative means are to be regarded as complementary. A wide range of possibilities should be made available to the parties, including unilateral recourse to adjudication. One major failure of the UN Convention is that it does not leave the door open to adjudication. But we must recal that this is a framework convention which does not preclude the adoption of bilateral or regional instruments. States should attempt to provide unilateral recourse to adjudication in every basin focused instrument they may adopt in the future in order to facilitate the settling of disputes. Chapter 5 of this research work "Enforcement Mechanism with Accountability and Liability" enlists the efforts of regulatory bodies in the enforcement of law with their accountability and liability of state to proper management and conservation of water resources. Freshwater increasingly is a
scarce good and can therefore be regarded as economic good in need of efficient use. Pricing of water can be used as an economic incentive through which people's behaviour is influenced and can therefore be suitable as an instrument of management and conservation of water resources. Water is a common and shared resource. It does not belong to any individual or a nation but both together. Therefore, there should be a joint effort on the part of the people, government as well as the judiciary of a nation is accountable to protect this common resource. The legislature should draw up rules which would take into account the precise nature of problem in its various dimensions. The concept of liability should be expanded keeping in mind the economic loss suffered by the injured party. Once a general duty not to harm other is developed there will no longer be any need to draw attention to it.

The scope of applicability of the principle of strict liability to water related disputes involving the government and a private individual inter se should be widened. Since the government's power to regulate the control and the distribution of water is sovereign it can continue its policy of constructing large dams, reservoirs and canals irrespective of the loss suffered by the people on the ground that its action is in public interest. For last for decades Indian judiciary has emerged as a accountability mechanism through Public Interest Litigations. Media is nowadays also proved itself a tool of accountability. The Parliamentary Committees are also a mechanism to ensure accountability. Such Committees not only make the task easy for the legislature but also act as a check on misuse of powers conferred on them mainly due to the lack of expertise on technical issues.

The Supreme Court of India has invoked the Doctrine of "Public Trust" number of times, under the doctrine, natural resources such as air, water, forest, lakes, rivers and wild life are public properties. The doctrine enjoins upon the government to protect the resources for the enjoyment of the general public rather than to permit their use for private ownership or commercial purposes. Absolute liability for the harm caused by industry engaged in hazardous and inherently dangerous activities is a newly formulated doctrine free from the exceptions to the strict liability rule in England. The Indian Supreme Court has developed the doctrine of absolute liability as an indigenous Jurisprudence free
from the influence of English law. The Chapter 6 of the present research work "Public Participation and Role of NGOs", covers the findings of the investigator relating to the law which ensure public participation in the sector of conservation of water resources. Panchayat Raj Institutions have proved a key instrument in the sector of conservation of water resources. There are many National and Internation NGOs working in this burning area. The Andhra Pradesh Farmers' Management of Irrigation System rules, 2003 and the Chhatisgarh Sinchai Prabandhan Me Krishkon Ki Bhagidari Niyam, 2006 both make clear that the Water Users' Association has (a) Right to obtain information in time about water availability, opening/closing of main canal, periods of supply, closer of canals, etc. (b) Right to receive water in bulk from the irrigation department for distribution among the water users on agreed terms of equity and social justice; and also (c) Right to receive water according to an approved time schedule. Besides, merely saying that these rights exists will not be enough if the irrigation systems are not properly rehabilitated to be in such a condition where minimum water flow could be maintained. Many of the Water User Association today are paper entities because this minimum condition necessary for their existence is just not present. In light of the fact that in most of the WUA there is a scarcity of water, and especially so with the tail-end members, one can't visualise a scenario where the water is allocated by the WUA to non-members. Likewise both the willingness and the ability to charge additional fees/water charges are questionable and this points to a larger problem. Even the existing water charges, which are not paid in many circumstances, are far less than the expenditure needed for proper operation and maintenance of the system. All across the country the irrigation fees are a small fraction of the operation and maintenances costs of the systems and an even smaller fraction of the actual costs of private lift irrigation with diesel pumps. The highly subsidised irrigation fee structure has helped establish a low-level equilibrium. Farmers are unwilling to demand improved maintenance and service from the irrigation department lest it might result in higher irrigation fees. In turn, the department staff justifies lack of maintenance and poor operation and maintenance by citing low irrigation fees. In such a Scenario, an active search by the WUA for information on crop varieties and agriculture extension service in some years away notwithstanding the right that the WUA in Andhra Pradesh and Chhatisgarh has been granted today.
These set of rights provokes one to admit that vesting of a substantive right is one thing while having a capacity to claim it another. Both the Andhra Pradesh Farmers' Management of Irrigation System rules, 2003 and the Chhatisgarh Sinchari Prabandhan Me Krishko Ki Bhagidari Niyam 2006 not only talk about the rights of the WUA but also try and pin down the right of its members. The analysis of the rights of the WUAs and the individual water user should make clear that while everyone agrees that India should evolve a formal water rights system, this is simply a starting point. The recognition of rights has to move beyond this commonly agreed, indeed axiomatic, proposition. We must identify the precise nature of the water rights we are discussing and also how to evolve them in the specific social and legal context of our country. The critical concern on increasing the access to the water resources apart from larger questions relating to who controls the resource as well as ownership rights on them have never been addressed. For example, in Mexico the large scale irrigation management transfer programme was accompanied by a revision in the water rights law, and water users' organisations are even demanding rights to water at the headwork of irrigation systems. The fact that this has not happened in India and the argument that this needs to happen fast can be more strongly put in a historical context. Notably, medieval inscription of South India have revealed various functions relating to irrigation, which were exercised by the village assemblies. These included ownership of water resources, powers to arrange for construction, repair and maintenance of tanks, powers regarding land transactions relating to irrigation, levy and collection of cess, powers to engage and remunerate local functionaries, maintenance of records, dispute settlement and relations with the Central Governments. The State of Maharashtra has already taken a lead in this regard in the Maharashtra Management of Irrigation System by Farmers Act 2005 by building in such water entitlements in the Act.

On the other hand many National and International NGOs are very positively working through public awareness campaign in the area of conservation of water resources. After having concluded, the investigator may propose some suggestions which might prove helpful to overcome and resolve the problem and conflict of conservation of water resources.
Suggestion

Priority to Sustainable Groundwater Development and Management

Sustainable groundwater development and management need to be taken up by incorporating studies on artificial recharge to groundwater and rainwater harvesting, management of Salinity ingress in coastal regions, sustainable management in areas with high levels of groundwater development, conjunctive use of surface water and groundwater, and regulation of groundwater development. There are number of ground water extraction structures in the country which are very old, have outlined their working life, and are not functional. Such structures need replacement for restoration of old/already created potential.

Joint Mechanism for Watershed Management with Nepal and Bhutan to Prevent Floods

Every year some part or other of the country gets flooded. A multi-pronged approach consisting of measure of prevention, protection, management, forecasting, and early warning are needed. Floods can be prevented or significantly moderated by watershed management of catchment area of rivers. For international rivers originating in Nepal and Bhutan, a joint mechanism for watershed management needs to be evolved. Another way is to preserve and augment flood cushions like natural swamps and lakes which can be developed into detention basins. Also, capacity of existing depression can be improved for absorbing flood waters. Construction of dams and reservoir schemes with adequate flood cushion provide long-term solution of flood problems. Efforts should also be made for utilizing the existing reservoirs in the country for flood moderation to the extent possible Watershed management in the hilly catchments of the rivers originating in Nepal, Bhutan and hilly areas of India should be selectively chosen and fully funded. Implementation should be made through a joint mechanism. The Ganga- Brahmaputra-Barak basins are our most flood-prone basins. There is clearly a need to build storage reservoir in the
northern tributaries of the Ganga, Brahmaputra and its tributaries. These storage projects need to be investigated designed and executed expeditiously for the northern tributaries of the Ganga, co-operation with Nepal is required. The strategy of flood control through embankments has been pursued by the states over the years. A holistic view of an entire tributary or a large stretch of a tributary needs to be taken. The recommendations of expert groups and contemporary international experience in other rivers in India with monsoon climate need to be looked into. An integrated flood management approach must look at river basins as a whole and not as individual silos at a State-level.

**Preparation of Micro Watershed Based Master Plans**

Micro Watershed-based master plans should be prepared to ensure the sustainability of water resources by taking care of demand and supply. The inputs of professional institutions, non-governmental organisations (NGOs) and community based organisations should be utilised in planning development and management. All possible measures must be taken for rain-water harvesting and ground water recharging. As part of the Integrated Water Management approach, traditional sources of water must be identified, strengthened and developed with community participation. Rehabilitating the existing village tanks, creating detention basins by storing rain water in local depressions, abandoned mines/quarries etc. for water harvesting needs to be encouraged for the development of water resources. In view of the higher efficiency of micro-watershed areas for water conservation, small dams should be built, wherever a suitable site is available. To avoid evaporation losses from such small storages, underground siphon systems which conserve water and recharge the aquifer should be used. Open storage should be developed as water harvesting structures in order to reduce evaporation losses.

**Prohibition of Water Intensive Cash Crops in Drought-Pron Areas**

The cropping pattern in drought-prone areas should be sensitive to local constraints with regard to availability of water. In areas where there is shortage of
water, farmers should be discouraged from water intensive cash crops. Agriculture bore-wells should not be allowed to be deeper than drinking water bore-wells. Recycling of waste water and use of such water for crop cultivation, should be encouraged as a part of enhancing the productive use of water. There should be a shift from flood irrigation to drip or sprinkler irrigation system on the basis of Maharashtra experience. As a result of that 30 percent water could be saved. Water distribution system for irrigation should be developed through pipeline rather than open channel system, this method will save 60-70 percent of water. State of Gujarat adopted modern techniques for irrigation and water conservation sector. Concern authorities emphasised on groundwater management and recharge as well, and decided to use stored rain water for the purpose of irrigation. More than two hundred thousands of check dams were constructed during 2001-2006, as a result of that groundwater table has been started to rise every year. Gujarat state formed a policy to adopt micro irrigation pattern. Micro irrigation pattern is helpful to save water and increase productivity of agriculture produce. Other states of India should borrow and adopt the Gujarat model for irrigation in the agriculture sector.

**Water Education must be Included in Academic Curriculum**

Conservation of water resources strategies and traditional systems must be included in the formal school curriculum through infusion of appropriated education material. A committee must be formed comprising representatives from management institutions, AICTE, UGC, industry, Ministry of Environment and Forests, Human Resources Development Ministry and Ministry of Water Resources to work jointly on this. The programme of Water Education and Training must be continued with further linkages with the publicity and awareness mechanism of Ministry of Water Resources. This may include a manual on public participation in all activities of Ministry of Water Resources. Public transport like railways, buses, and even airways can be extensively used for water conservation awareness through well designed awareness material.
Penal Provisions for Wastage of Water

Intensive leak detection and rectification programme should receive priority. Severe penalties should be levied on those found responsible for leakage and wastage of water. To reduce wastage of water, adoption of low volume flushing cisterns, waste not taps, etc. should be adopted so as to minimize the need for fresh water. Ministry of urban Development/Town and Country Planning Organization should take up the matter with the States and Urban Local Boards to promote usage of such cisterns so as to conserve fresh water. Central Public Works Department should also widely use such cisterns in the buildings constructed by them. Recycling and reuse of sewage after the desired degree of treatment (depending upon the end use) for various non-potable purposes should be encouraged. Industries and commercial establishments must be persuaded to adopt reuse of treated sewage and recycle treated trade effluents to the extent possible in order to cut down the fresh water demand.

Water must be Treated as Economic and Social Good

Access to water has been recognised as a basic human and animal right. The right of the community over common resources, environmental water rights (i.e., the role of water as the sustainer of the natural environment of which it is a part and of equatic and riparian life), and the water rights of the river (or acquifers) itself for the maintenance of its quality and integrity, also need to be considered. On the same footing, water has to be regarded as an economic and social good in the context of irrigation, industrial as well as domestic use, etc. Principles to govern the relative priorities of different demands and the sharing of waters by different users need to be laid down. Economy in the use of this increasingly scarce resource has to be promoted and enforced. In sectoral planning, for big projects or small, whether for resource development or management, the full participation of the people and the NGOs with a good record of social mobilisation will need to be ensured from the earliest stages. To cover all these and other related aspects, a comprehensive National Water Code, that is, not one single law but an integrated set of water resources conservation and management laws may be needed.
The Introduction of a Comprehensive Water Resources Conservation Law Framework

The broad and effective framework needs to be inscribed in context that ensure the application of basic principles throughout the water and its resources conservation sector. Differences can be made at the more specific implementation level depending on local circumstances but the basic framework should be the same because of the unitary nature of water and the water cycle. The development of water policies at the Union and State levels has been a useful starting point in this process. The introduction of a comprehensive water resources conservation law framework is necessary to remedy the shortcomings of existing and old framework and provide answers to the new challenges that have surfaced in the past few decades. The various links from the local to the national level indicate that there is a need for a framework at the national level, which is the only level at which national level planning and coordination can be effectively undertaken. The need for some form of intervention of the Union government has been a recurrent feature of Water policy over the past few decades. Another possibility is the listing of water on the concurrent list in the same way that forests were listed ‘In view of the current constitutional position where states have the main mandate to regulate water, this should in fact be the first obligation of states in the development of their water law’. No further sectoral and issue-specific water-related legislation should be adopted until a framework legislation has been put in place. Such legislation must by definition be in consonance with existing constitutional principles and Supreme Court Case Law. The need for a comprehensive water resources conservation law includes not only national and international water instruments that give water law a broader scope but also the inclusion of issues, which are directly related. A broader legal framework needs to be inscribed in a broader institutional context. The existing framework is inappropriate insofar as, at the Union level, the main ministry concerned with water is Ministry of Water Resources. Its focus on water as an input for economic development activities such as irrigation and hydropower makes it an inappropriate place for considering water in its various dimensions in
its present form. The institutional framework that can address the challenges of the future must directly reflect the priorities of the legal frame.

**Adoption of California Model**

We can borrow and adopt the model implemented in California. The citizens of the well known Silicon Valley have assumed ownership of all water in their watershed, and have been operating a water system for over seven decades, integrating surface water, groundwater, artificial recharge, imported water, water reuse, water treatment, and public education. Comprising over 15 cities, the Silicon Valley Water shed is a collection of some 23 smaller watersheds, covering an area of about 3,400 sq. km. At the core of this democratically managed watershed is a competent cadre of scientists, engineers, and biologists, aided by a well laid out network of monitoring stations. A democratically elected board makes management decisions based on input from its technical staff, portraying an admirable synergism between Science and Policy. Against this backdrop, India faced with an immense task of a transition from an infrastructure of existing tanks, canals and other water structures, to making them part of a watershed-based local management system. This holistic principles guided by the hydological cycle. In sheer scope, this transition will be unprecedented anywhere in the world. It is obvious that the success of the new approach, founded on local management, requires for its success the setting up of a science-engineering infrastructure, supported by adequate trained personnel. Simultaneously, appropriate legal mechanisms have to be set in place enabling local citizens to take ownership of water as a necessary prerequisite for management.

**Population Growth must be Minimised**

India is limping under heavy weight of its population growth and at present is feeding over one billion populations. The population growth is closely linked with the rise in poverty level. In search of better opportunities there is a continuous exodus of human being from villages to cities making an unprecedented population pressure in urban India. Consequently slums are
increasing day by day causing dirt and disease in the cities. The space that the population occupies and the resources that they utilize result in systematic depletion of natural resources. In India there is no programme, no policy no law in sight to size the oversized population. This is the biggest problem that India faces, which can only be tackled by making people aware of the negative consequences of population growth and also by enacting a law which can deter as well as reward the people to bring down the population growth to zero level.

**Incorporation of National Water Resources Conservation Plan**

The thoughtless and extravagant consumption of natural resources by masses has resulted in unprecedented resource crunch. We are consuming 40% more than what we are generating. The time has come that the country should put environmental agenda at the heart its decision making process to check untrammelled consumption of resources without sufficient regenerating measures. Water resources are fast depleting, and national rivers are drying up, the water table has gone down. In near future India is going to experience the shortage of water, therefore the government should prepare a National Water Resources Conservation Plan, where cost bearing consumption policy must be incorporated.

**Appointment of a Parliamentary Laws Implementation Committee**

The Courts, particularly the Supreme Court of India are distressed and Complain in despair that the directions of the court are not carried out by Lethargic Executive. Again the non-implementation of Laws and non-compliance of the directions given by the courts through Public Interest Litigations, Justice Chinnapa Reddy suggested the appointment of a Parliamentary laws implementation committee. The government should consider the proposal seriously so that laws and directions are vigilantly complied with, till then the Apex Court should appoint an expert committee to monitor the implementation of its decisions, the courts must not issue directions which are incapable of enforcement (sweeping directions), because it gives a wrong message and lowers their credibility in the eyes of the public.
Adoption of Australian Model for Integrated River Basin Management

The burning issue that requires attention is to move the responsibilities of managing water resources. There must also be a team of people-termed as the Basin Authority that involves all stakeholders in the river basin including governments. This is to manage water, plan future use and leverage benefits to the entire river-basin. The use of Integrated River Basin Management (IRBM), as in the Murray-Darling River basin in Australia, can be sensibly applied in India only if certain prerequisites are met. These include establishing a system of licensing and registering groundwater structures, a principle of developing a "user pays, polluter pays" method at the operational level, a rationalisation of electricity pricing and supply policies for agriculture and the creation of legal framework to facilitate institutional reform in irrigation system, urban and rural water supply and sanitation systems.

Storage Capacity must be Increased to Regulate the Vast Run-Off

In our country, we must increase our storage to regulate the vast amount of run-off. Some of this storage, especially that created in open basins, such as the Brahmaputra, the Ganga, the Mahanadi and the Godavari, may also need to be transferred to closed basins. For many years policy makers have been suggesting the National River Linking Project to help sustain India's demand for water. The National River Linking Project plans to transfer surplus waters of the four river basins mentioned to water scarce basins in the southern and the western parts.

The researcher strongly submit that, though River Linking Project would be able to meet the water shortage in near future but it is a very costly affair and country like India may hardly afford that heavy cost. Apart from this many social and political conflicts will arise in completion the River Linking Project.
Compulsory Cuts in Emission of Green House Gases to Regulate Climate Change

Many major rivers in the world are at risk of drying out because of climate change and dam construction, which could affect fresh water supplies and Marine life. Rivers regularly no longer reach the sea, like the Indus in Pakistan, the Nile in Africa. There are millions of people whose livelihoods are at risk. Rivers are the world's main source of fresh water, and about half of the available supply is already being used up. Dams have destroyed habitats and cut rivers from their flood plains, while climate change could alter the rules by which rivers have lived by for thousands of years. Governments should strike agreements on ways to better manage shared water resources in order to minimize damage. Cuts in emissions of green house gases can mute the worst impacts of global warming such as water shortage for billions of people. No serious attention had urged at Cancun in this regard, necessary steps must be taken on global warming, that could curb negative impact on rivers. Climate change may mean increased precipitation in some areas, increased drought in some others, and increased variability of precipitation. We must start from the fact that the availability of fresh water in nature is finite, and learn to manage our water needs within that availability. Primacy will have to shift from large, centralised, capital intensive 'water resource development' projects with big dams and reservoirs and canal systems to small, decentralised, local, community led, water harvesting and Water shed-development programme, with the big projects being regarded as projects of the last resort; and the exploitation of groundwater will have to severely restrained in the interest of resource-conservation as well as equity. Instead of Killing rivers and then trying to revive them, we must learn to keep rivers alive, flowing, healthy and clean.

Urgent Need to Modify the National Water Policy 2002

There is an urgent need to change and modify the National Water Policy 2002 according to near future perspectives. The changes must not be piece-meal
and fragmented. They need to be integral parts of a holistic vision. There is the multiplicity of perspectives on water that must be taken into account while modifying and drafting National Water Policy. The different perspectives are:

(i) The rights perspective, focussing on the fundamental or human right to water, traditional rights of access of communities (tribal or others) to rivers, lakes, and other sources of sustenance and livelihoods.

(ii) The community perspective urging the right relationship between state and civil societies, the empowerment of people vis-a-vis the state, the community management of common pool resources, mobilisation of people for local water augmentation and management, social control of water use and sanction against misuse.

(iii) The state perspective, concerned with legislation, policy formulation, planning, administration, `governance' at all three levels, ensuring/enforcing rights, providing or facilitating or regulating water supply and sanitation services, preventing or resolving or adjudicating inter-state/inter-sector/inter-use/inter-area water disputes, prescribing and enforcing quality standards, managing water relations with other countries, ensuring compliance with international law.

(iv) The economic perspective that sees water as economic good subject to market forces, and argues for water markets, the full economic pricing of water, the privatisation of water services, private sector participation in water resource projects.

(v) The legal perspective with the constitutional division of legislative powers, Centre-State and Inter-State relations on water, Inter-State river water disputes, riparian law, international water law, questions of ownership and/or control of water, etc.

(vi) The environmental/ecological perspective concerned with the protection of the environmental/ecological system from the impact of 'developmental' activities.
Groundwater Should be Treated as National Asset

Groundwater should be treated as a national property and therefore there is a need for a strong institutional and legal framework for its usage, conservation and maintenance of quality. Exploitation of groundwater in a approved manner may be allowed only by granting licenses. Further ground water should be recognized as the common property resource and there is need for effective regulation of this resource. This entails mobilization of local communities to check private excesses and specially protect the interests of the poor, dalits, adivasis and women. These efforts need legal and administrative backing from the state.

Roof-Top Rain Water Harvesting must be Made Mandatory

Mandatory provision of roof-top rain water harvesting structures may be extended to the old buildings, whether in residential or industrial areas. The industries should come forward and adopt the structures. Before carrying out the construction of such structures, the factors which need to be taken into account are hydrogeology, soil cover, topographical gradient, aquifer system, depth-to-water, amount and pattern of run-off, etc., besides the area of the roof from where the amount of rainwater is to be collected. Further the government should work with the people and modify policies to facilitate community participation in developing and maintaining rain water harvesting systems. The government should make it compulsory by framing laws to prepare areawise water harvesting structures so that not a drop of water is wasted.

Urgent Need of a Treaty Between India and China Over Sharing of Water of Brahmputra and Sutlej Rivers

Tibet dominates the Himalayan piedmont and, thereby, the Asian water towers. The government of India, having inherited past treaties signed by the British with Tibet, should have gained an advantage over control of these water towers. Sceintists and policymakers have begun to recognise how climate change has the potential to reduce snowpack and glacier mass in the Tibetan
plateau, altering one of the world's most crucial hydrological systems. China can claim sovereign right to control the world's largest freshwater resources outside the polar regions. These water resources, vulnerable to global and regional warming, are critical for sustaining South Asia's food and water security. China has completed dam construction and water diversion projects on the Salween and Mekong rivers, despite regional and global criticism that these will be socially and economically devastating downstream. China plans to build 59 reservoirs on rivers flowing out of the Tibetan Plateau to save glacier run-off. A 540 Mw run of the river power project is under construction at Zangmu and feasibility studies have been completed for five more such projects further upstream on the Yarlung Tsangpo. Tapping the power of the river Tsangpo (called Brahmputra in India) as it bends and plunges down towards Indian and Bangladeshi flood plains. India and China only have a couple of Memorandum of understandings in sharing flood-season hydrological data on these rivers. The researcher most strongly submitted that, India should start negotiating a legally binding treaty on the Brahmputra and Sutlej rivers. As of now both countries have no legal and policy architecture in place to deal with a looming water dispute.

In addition to various suggestions made in this study there may be further need to conduct research in various areas, seperately in the conservation of water resources and impact of degeneration and mismanagement of the society and development process in the society. More empirical studies may be needed to evolve the strategies and policies to make erosion and deteriotation of water resources negatived and make the system of conservation of water resources, particularly legal system, more efficient and meaningful.