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Capability, Sustainability, and Collective Action: An Examination of a River Water Dispute

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Abstract In this paper, a framework is developed to consider collective action, sustainability and the capability approach with regard to resolution of water disputes, followed by a brief discussion of how identity can hinder cooperation or the development of universalism. This framework is then examined with a case study of the Cauvery river dispute in India. At the heart of river water disputes are issues related to justice and fairness, which depend to a significant extent on: how citizens perceive their claims over river water (shaped by cultural and historical factors); the extent to which citizens are able to collectivize their claims through location, economic activity and identity, and use their voice to influence the state; the extent to which the state policy and actions reflect the 'voice' and collective interests of different groups; and how the various riparian states recognize and deal with each others' claims. The framework discussed here suggests that the capability approach provides us with a much broader framework than collective action or Robert Solow's sustainability as inter-generational fairness. These are conjectures for further exploration.

Key words: River waters, Collective action, Capability approach, Sustainability, Conflict resolution

Introduction

Claims over natural resources are socially and institutionally conditioned. A predominantly legal approach to such claims focuses on how property rights are defined. The main mechanisms in the case of water are the land-based rights to groundwater, and access-based rights such as 'riparian' rights to surface waters. However, since water is a fugitive resource, such rights are either not fully developed or are incomplete. Therefore, developing property rights is not a (Coasean) solution¹ to river water

disputes, which are a special case of conflicts.² As in the case of inter-state or civil conflicts, often there are a number of factors involving historical, social, political and institutional aspects. At the heart of river water disputes are issues related to justice and fairness. These depend to a significant extent on: how citizens perceive their claims over river waters (shaped by cultural and historical factors); the extent to which citizens are able to collectivize their claims through location, economic activity and identity, and use their voice to influence the state; the extent to which state policy and actions reflect the 'voice' and collective interests of different groups; and how the various riparian states recognize and deal with each others' claims.

This paper aims to develop a framework to consider river water disputes from the view-points of collective action, sustainability, and the capability approach, and to identify issues for policy. This framework is then examined through the case study of the Cauvery river dispute in southern India.³ Although I use an inter-state dispute, many of these arguments may also apply to international water disputes. Following this introduction, the next section summarizes the main elements of applying the capability approach to access to water. In the third section a framework is developed to consider sustainability and the capability approach in the context of river waters, while the role of identity is discussed in the subsequent section. The fifth section is devoted to the Cauvery case study, followed by some conclusions in the final section.

Capability approach and access to water

In an economic approach to water policy, water — like any scarce commodity — needs to be allocated on the basis of maximizing welfare or utility. Decisions are based on comparing marginal benefits and costs of allocating water to different uses. Benefits are usually assessed on the basis of productivity (where water is an input to production) or willingness to pay (where water is mainly for consumption). A number of problems and limitations of such an approach are discussed in Amartya Sen's *Rationality and Freedom* (2002, pp. 553–575). An economic approach to water tends to be dominated by instrumental and utilitarian values, and inter-temporal allocations are biased in favour of present generation due to a positive discount rate.

A commitment to sustainability as inter-generational fairness implies that the use of natural resources (such as fresh water) to meet the needs of the present population does not compromise the ability of future generations to meet their needs. As Anand and Sen (2000) point out, fairness here implies universalism to the extent that citizens of the present generation and citizens of future generations, irrespective of race, gender, and so forth, are treated in a similar manner. In practice, however, sustainability is interpreted as a natural resource constraint on development by imposing limits; for example, on how much water can be

extracted or used. A potential problem in these approaches is that people concerned are treated passively. On this, Sen points out:

it must be asked whether the conception of human beings implicit in it is sufficiently capacious. Certainly, people have 'needs', but they also have values, and, in particular, they cherish their ability to reason, appraise, act and participate. Seeing people in terms only of their needs may give us a rather meagre view of humanity. (Sen, 2004, p. 1)

Thus, there are three main messages concerning sustainability based on the capability approach: to shift away from a focus on needs in the World Commission on Environment and Development (1987) definition of sustainability to one that concerns "capabilities of people in the present without compromising the capabilities of people in the future" (Sen, 2000); to recognize that universalism implies treating all human beings equally, and therefore entails not just protecting the rights of future generations but also an obligation to protect the rights of the poor within the present generation (Anand and Sen, 2000); and this needs to be achieved not through coercion, but by facilitating and enhancing the substantive freedoms of individuals.

The capability approach to water requires a change in emphasis of water policy from a commodity aspect of 'how much water there is' to what functionings such water enables the individual to achieve. Furthermore, "... in getting an idea of the well-being of the person, we clearly have to move on to 'functionings', to wit, what the person succeeds in *doing* with the commodities and characteristics at his command" (Sen, 1999a, p. 6; emphasis in original). An example may be considered, even at risk of simplification. Access to water in the conventional approach to water policy does not distinguish between an able-bodied or a disabled person; both are treated similarly in terms of processes and privileges. However, a disabled person may not be able to take advantage of such water, or may need to depend on others even to exercise access.

There is potential to attract criticism that the capability approach is about substantive freedoms and not about basic capabilities or particular ingredients of quality of life. However, access to water, especially the issue of river disputes, presents us with an opportunity to examine important challenges to operationalizing the capability approach to sustainability. First, there is the issue of resolving or balancing the exercise of well-being freedoms of one group of users of water (say, an upstream state in the case of a river, or farmers in the case of a lake) versus such freedoms of other users (downstream users of a river or those who depend on a lake for drinking water). Second, there is the issue of potential value conflict between the exercise of well-being freedoms (mainly related to maintenance of basic capabilities of one group of users) and the exercise of agency freedoms and 'other-regarding' preferences (where in the sense of Kant's injunction, such users have the obligation to protect the freedoms

of more vulnerable users — such as downstream users or, for example, other species or biodiversity dependent on the river). As Sen points out, “the use of socially responsible reasoning and of ideas of justice relates closely to the centrality of individual freedom” (1999b, p. 261). Third is the issue of how this moral responsibility can be extended to include considerations about the well-being of the deprived and the poor in the present, as well as the well-being of people, in the future.

While there can be intrinsic values of access to water (spiritual and aesthetic values), the instrumental values are more directly relevant to well-being freedoms such as being able to, for example:

- be free from thirst;
- clean oneself, or other members of the family or one’s livestock and animals, or living environment (house, yard, or other belongings) for health and enjoyment;
- appear in public without shame (clean clothes);
- be free from hunger (by using water to produce food-for-subsistence);
- travel, and transport personal belongings safely;
- use water creatively and produce food or other commodities of value to others.⁴

The Millennium Development Goal of reducing by one-half the proportion of population without access to improved sources of water and basic sanitation recognizes the instrumental role of access to water in guaranteeing some of the more substantial freedoms, including the right to life and well-being of infants and children.⁵ This discussion suggests that the capability approach to access to water requires us to address water policy with a significant change in three dimensions, namely: changing from viewing water as a commodity to focusing on the ability of individuals to access and use water in achieving well-being freedoms (i.e. what functionings the water enables individuals to do or achieve); recognizing the scope for individuals to exercise agency freedoms in using their access to water for the well-being of others (including, for example, those in other parts of the world or those of future generations);⁶ and recognizing the values that individuals place on freedom over and ability to influence processes (personal as well as social or systemic) (see Sen, 2002, p. 624).

River water disputes — collective action, sustainability, and the capability approach: a framework

Water disputes concern water resources that are public or common goods. Resolving such disputes⁷ requires inter-dependent actions by more than one party; that is, collective action (see Sandler, 1992; Anand, 2003). A narrow definition of rationality would suggest that each agent would like to use as much water as possible.⁸ In the absence of binding agreements, upper riparians have an advantage that their use of river waters is not dependent on actions of others. While their actions create an externality

for downstream users, the latter cannot reciprocate except through protest. Prior use doctrine has evolved mainly to protect the rights of downstream users.

Collective action is, however, not costless. Mancur Olson's (1965) seminal analysis suggests that collective action will take place only if benefits to the individual agents exceed costs to themselves. For the upper riparian, the cost of participating in collective action is the water foregone (and the attendant reduction in patronage that can be distributed). Based on a narrow rationality, the lower riparians too would like to claim as much of the river water as possible. The cost to them is the potential loss of credibility of the claim (and the scope for entirely losing the riparian right). The true costs and benefits are only known to the agents and are difficult to assess. Hence, the difficulty in predicting when collective action works — and when it does not work. Related to this is the question of whether there is any issue linkage. Thus, whether or not two riparian states will cooperate depends on whether the river is the only or main transaction between them — if not, on whether there is any issue-linkage; and if so, on whether the issues are considered in a compensating framework or whether they are considered in isolation, each issue being the subject of a different framework of agreement.

The discussion may be summarized with the help of a framework as presented in Figure 1. An economic approach in each of the riparian states tends to focus on item 1 in the top-left quadrant, or item 2 in the bottom-left quadrant, of the diagram. Where collective action is facilitated or mediated, it may produce some accommodation or cooperation (type B in Fig. 1). However, this is still significantly within commodity aspects, and at best concerns the well-being freedoms of people in the respective states; moreover, there is little use of agency freedoms. Supposing that each of the riparian states signs up to sustainability, such a commitment in the first instance leads to a discussion about protecting the rights of future generations, but it remains a 'limited universalism', since the basic capabilities of the present generation of people in the downstream state are not yet taken into consideration. However, when sustainability is interpreted from the capability approach, the implicit commitment to a broader universalism suggests that both type A and type B fairness issues are simultaneously considered.

This can be technically developed using the following notation. For simplicity, let us assume that a river is shared by two agents or states; namely, an upstream (*us*) and a downstream (*ds*) state. In each state, there are three main uses of river waters: *a* for agriculture and other productive uses, *d* for domestic consumption and drinking water supply, and *e* for environmental flows or protecting ecological functions. There are also just two time periods, 1 being the present and 2 being the future.

The amount of water used by each state at present is given as:⁹

$$t_1^{us} = a_1^{us} + d_1^{us} + e_1^{us} \quad (1)$$

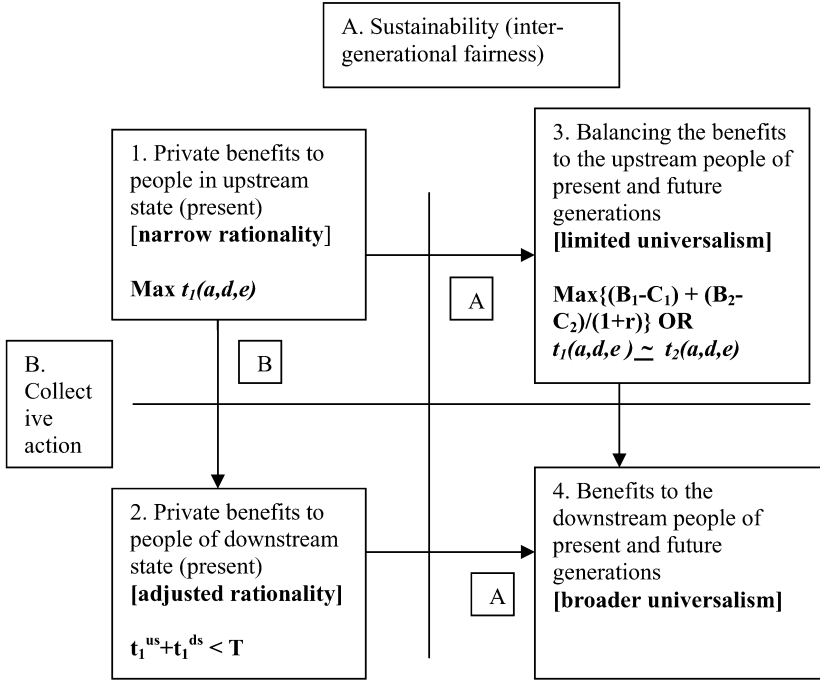


FIGURE 1. A framework to consider capability approach within the contexts of sustainability and collective action.

$$t_1^{ds} = a_1^{ds} + d_1^{ds} + e_1^{ds} \quad (2)$$

Based on narrow rationality, each state will try to maximize the amount of water it can get. Inter-state river water dispute arises because the total amount of water (T) available in the river:

$$T_1 < t_1^{us} + t_1^{ds} \quad (3)$$

Intra-state conflicts also can arise if the right-hand side in equations (1) and (2) are in excess of the left hand side; that is, the amount of water (legally) available in that state. A cost-benefit analysis-based approach would allocate water to those uses that will maximize the benefits. However, allocation of water to uses a , d , and e depends on institutions, laws, knowledge, technology, history, and whether one group of users is more organized (in the sense of Olson, 1965) than others to press for their claims. In general, there is a danger that the use with least ‘voice’ tends to be that of environmental flows or ecological functions (e).

Collective action framework (on the lines of Olson–Sandler–Barrett)¹⁰ encourages the two states to come to an agreement such that equation (3) is reversed. In the negotiations, each state may use various justifications why allocation to a , d , or e within their state needs to be increased, and as a result why their total claim t must be increased. Integrated water

resources management (IWRM)¹¹ is sometimes suggested as a solution (see, for example, Biswas *et al.*, 2004). However, in essence IWRM implies that each use of water (*a*, *d*, and *e*) is given equal importance (not in terms of quantity, but in terms of consideration in planning); and that water is allocated to uses that maximize the net benefits, irrespective of whether they are in an upstream state or a downstream state. However, in the absence of coercion, IWRM is possible only if there is high degree of cooperation between the two riparians. When there is a water dispute, IWRM can at best be a distant goal and moreover it is not clear whether it can guarantee sustainability requirements.

If, either through mediation efforts by outsiders or engagement by various stakeholders within each state, a climate is created for cooperative outcome, each state may recognize the need to go beyond narrow rationality. The needs of the poorest in the other state may now be given (some) importance in allocation decisions. (This commitment to fairness is broadly indicated by the arrow marked 'B' in Figure 1.)

A commitment to the principle of sustainability requires each state to decide how they balance the needs of the present versus those of the future. Sustainability can have four alternative interpretations: First, sustainability as inter-temporal optimization implies choosing the water allocation decision that produces maximum present value of net benefits. Thus in each state, water allocations are based on:

$$f(a, d, e) \rightarrow \text{Max}[(B_1 - C_1) + ((B_2 - C_2)/(1+r))] \quad (4)$$

where *B* are estimated benefits, *C* are costs and *r* is the rate of time preference (discount rate). Many limitations of this approach are discussed in Sen (2002).

A second interpretation of sustainability is to leave the world as we inherited it. In our model, this means that allocations to different uses are maintained without any change.

$$t_1(a, d, e) = t_2(a, d, e) \quad (5)$$

However, with improved technology, agriculture, for example, may in future require less water than at present; or, with improved knowledge and understanding, future citizens may realize that allocation for environmental flows needs to be increased.

A third interpretation of sustainability by Solow (1992) takes these issues into account, according to which sustainability is a general and not a specific obligation that leaves future generations as well off as the present generation. Thus, for each state, Solow's approach in essence means protecting the ability of future generations to use river water as they please:

$$t_1 \approx t_2 \quad (6)$$

Solow does recognize that if there is reason to protect specific aspects of the environment, it should be possible to do so.¹² For example, while

details of allocations to a and d are left to each generation, we may decide to protect e :

$$t_1(e) \approx t_2(e) \quad (7)$$

These above three interpretations of sustainability encourage each decision-maker (i.e. state) to think about future generations, but they do not help resolve the issue of fairness in present allocation. Therefore, it is possible that each state is committed to sustainability, but this does not necessarily help resolve the current river water dispute.

A fourth interpretation of sustainability arises from the broad universalism inherent in capability approach (following Anand and Sen, 2000; Sen, 2000). Thus, each decision-maker focuses on expanding substantive freedoms and what functionings the water available makes possible, rather than on quantities of water. In so doing, the expanded agency-freedoms also come with Kantian responsibilities. Therefore, allocation functions should be interpreted as:

$$f(a_1^{us}, d_1^{us}, e_1^{us}) \approx f\{(a_1^{ds}, d_1^{ds}, e_1^{ds}), (a_2^{us}, d_2^{us}, e_2^{us})\} \quad (8a)$$

$$f(a_1^{ds}, d_1^{ds}, e_1^{ds}) \approx f\{(a_1^{us}, d_1^{us}, e_1^{us}), (a_2^{ds}, d_2^{ds}, e_2^{ds})\} \quad (8b)$$

In this approach, each state takes into account not only the needs of the future in that state, but the current needs of (poor) people in the other state. From this discussion, the following important points can be identified:

- a. Collective action is mainly useful in producing cooperative outcomes that meet the needs of the present population in the two states, but it cannot guarantee sustainability and fairness for future generations (as they cannot participate in collective action).
- b. Sustainability is mainly useful in highlighting the needs of future generations and protecting inter-generational fairness, but it cannot help resolve the tension between the needs of the present generation versus the needs of future generations.
- c. The capability approach appears to enable us go beyond these two aspects, and use fairness and justice broadly. A strict interpretation suggests that, given the universalism of a commitment to fairness inherent in the capability approach, the needs of the poor or vulnerable (whether human or non-human), and whether of present or future generations, will be protected without requiring a separate commitment to sustainability.

While this framework has been developed mainly at the level of states, we can extend each of the three aspects to understand how individual citizens interact, and whether their well-being is improved and sustained.¹³

The role of identity in river water disputes

River water disputes are seldom only about water. Usually, such disputes and disagreements arise because of historic, political, geographic, and economic reasons. In this section, some examples are discussed regarding how identity becomes embedded in water discourses, followed by examining the implications for considering identity within a capability approach.

A limited interpretation of identity

The literature on identity is vast and spans disciplines such as psychology, sociology, philosophy and economics. Is identity a scalar? If so, is it a category variable or a continuous variable? Alternatively, is identity a vector? Or is it a combination of scalars and vectors?¹⁴ Much use of the term identity pertains to its use as a noun, as a qualitative and unambiguous descriptor of an individual. This description seems to use identity as a scalar, a binary or polychotomous category variable. For example, in econometric models, aspects of identity are usually captured as dummy variables: gender (male or female); ethnicity (Hutu or Tutsi), community (Hindu or Muslim). For example, following Daniel McFadden (1999), within the neoclassical model of rational behaviour, it is possible to consider identity as a source of values that in turn influence preferences. In the discourses within sociology, political science, and participation literature, it is recognized that identity is not 'given', but something that is actively constructed or shaped by the inter-play of motivations, vested interests, and contexts.¹⁵

There are several ways in which identity can influence river water disputes. The first is where a river is a *direct source* or an ingredient of identity reflecting a historical affiliation, and 'prior use' rights due to location. We need look no further than the roots of expressions such as 'Indian' (person of land of Indus river) or the Punjab (the land of five rivers).

Through literature, metaphors, fables, and poetry, certain uses of waters can be given more prominence than others. For example, in many countries, including in India, a significant share of freshwater is allocated to agricultural use.¹⁶ This is legitimized as a 'good thing', because it is (supposedly) about food security, ending hunger, keeping the land green ('subhiksha') and in general fostering prosperity. On the other hand, the process of building dams to transport water to large cities is usually portrayed as a 'bad thing'. If cultivation of two crops of rice is constructed as an essential ingredient of the identity of a certain people, the identity itself then becomes the justification to grow two crops of rice. If natural or human-induced water shortages interfere with the possibility of growing two crops, such interference is seen as a threat to identity. This can interfere with exercise of reason and economic rationality in examining

farming as an economic activity in the context of scarce resources and considerable uncertainty (e.g. in rainfall patterns).

A third way in which river waters and identity become inter-connected is in shaping or influencing discourses concerning water itself. Much of the 'discourse' on water resources in India (and elsewhere) assumes a 'masculine' perspective, while rivers are usually represented as 'feminine' entities. A masculine perspective to control rivers and water resources is not a new or recent phenomenon.¹⁷ A product of this masculinity is the paradigm of 'taming the rivers' to control, contain, and restore order, and to create certainty. Many irrigation projects designed and executed by the British in India during the nineteenth and early-twentieth centuries were conceived within this paradigm, and there has been little change even after Indian independence in 1947.¹⁸ With time, the metaphor of 'taming of waters' was replaced by other more nuanced metaphors; but the underlying bias towards large and multi-purpose projects remains unchanged (see Singh, 1998). This is reflected in the following section from paragraph 1.8 in *India's National Water Policy* of 1987:

Water is one of the most crucial elements in developmental planning. As the country prepares itself to enter the 21st century, efforts to develop, conserve, utilise and manage this important resource have to be guided by national perspectives. The need for a national water policy is thus abundantly clear: *water is a scarce and precious national resource to be planned, developed and conserved* as such, and on an integrated and environmentally sound basis, keeping in view the needs of the States concerned. (Government of India, 1987; emphasis added)

The above paragraph has been retained intact in section 1.4 of *India's National Water Policy* of 2002. While the latter recognizes the need for a paradigm change from "the present emphasis on the creation and expansion of water resource infrastructures for diverse uses, ... (to) emphasis on the improvement of the performance of the existing water resources facilities" (Government of India, 2002, paragraph 22), overwhelming emphasis on projects, however, remains unchanged. For example, the word 'project' appears at least 40 times in the 2002 policy document. In this context, while identity is invoked as an overt instrument of participation, an appeal is made to the individual to use her/his 'freedom to act' to show solidarity by participating in the process of collective claims (e.g. protests or violence); such participation is defined in a binary manner ('either you are with us or against us') such that the individual's freedom to choose is substantially restricted.

Going back to the framework discussed in the previous section, identity in the above examples acts in the opposite direction to collective action (arrow B in Fig. 1). Identity may not significantly affect sustainability considerations within a state, but it can hinder such sustainability considerations when the ecological benefits are mainly in the other state.

In this sense, identity can reinforce existing ‘horizontal inequalities’ or foster new ones (Stewart, 2001). In the language of social capital, identity in the interpretations above tends to work mainly toward ‘bonding’ social capital.

A broader interpretation of identity

Sen notes that “capabilities of persons to lead the kind of lives they value — and have reason to value” can be enhanced by public policy, and also that public policy can be influenced by the effective use of participatory capabilities by the public (Sen, 1999b, p. 18). Furthermore, Sen highlights that having greater freedom to do things one values is significant in itself and also important in fostering the person’s opportunity to have valuable outcomes. The agency aspect is highlighted here and there is an important tension. A focus on justice requires that institutions are designed to disregard differences and treat individuals equally. Identity, on the other hand, focuses on attributes that are unique to each individual and thus focuses on the difference. As Fraser (1996) points out, it is not a choice between these two aspects, but how we could create a ‘bivalent’ conception of justice that focuses on both redistribution as well as recognition aspects.

Sen (1999c) emphasizes that an individual can have multiple identities simultaneously, why we need to place reason before identity, and how collective action based on certain aspects of identity can lead to disastrous outcomes, such as communal riots. The concept of plurality of identities is also recognized in sociological and cultural studies, where identity is seen both as a product of discourse and a subject of discourse itself. As Hall notes, “precisely because identities are constructed within, not outside, discourse, we need to understand them as produced in specific historical and institutional sites within specific discursive formations and practices, by specific enunciative strategies” (2000, p. 17).¹⁹

A number of important points related to identity need to be summarized before we examine the link between identity and capabilities:

- (a) Identity has an individual aspect²⁰ (how I perceive myself) and a ‘socially grounded’ aspect (how others perceive me). Some aspects of this identity are binary or polychotomous variables; others are continuous variables. It is also possible that some of these are vectors (having both direction or inclination and intensity).
- (b) How these different aspects of identity are processed by the individual concerned allowing some of these to influence preferences (e.g. in voting or contribution to public good or common problems), or in evaluation, is a complex process. While it is clear why we need to place reason before identity, to operationalize this we need a deeper understanding of how identity influences individual agency or perception of ‘significant others’ and the development of co-agency or ‘fellowship’²¹ and engagement in collective action. While it is

possible that various identities are available to an individual, whether the individual has the agency freedoms to evaluate and choose particular identities is determined by social, cultural, and political aspects. The importance of this 'freedom to act' versus 'freedom to achieve' is recognized in the Arrow Lectures by Sen: "... in assessing a person's freedom in this perspective, the concentration has to be on what a person is free — and permitted — to do, and not on what she manages to achieve" (2002, p. 597).

In this light, identity can significantly determine why a person values a kind of life, and comes to value or have reason to value some things (or functionings). Going back to the framework discussed in the previous section, identity interpreted in this sense reinforces the commitment to broader universalism even while the peculiarities are recognized and embraced. In the language of social capital, identity interpreted in this sense helps to develop both bonding and (mainly) bridging social capital.

Identity, sustainability, and capability approach: an examination of the Cauvery dispute

The Cauvery dispute in India is a typical inter-state dispute in a federal context.²² This dispute between the two main riparian states of Tamil Nadu and Karnataka goes back to contested claims based on specific interpretations of riparian rights.²³

The main arguments

While the Cauvery dispute is fairly complex, in this section an attempt is made to summarize the main view-points of each of the two main riparian states.

The main arguments of Karnataka

The main arguments are presented by each state to the Cauvery Tribunal, and are not in the public domain. However, from the material that is available in the public domain, mainly a set of three volumes published by the government of Karnataka,²⁴ and from the statements made by state political leaders and reported in the newspapers, the following five main points can be identified.

First, Karnataka's claim is that, at the end of 50-year period in 1974, the 1924 agreement in its entirety should be deemed to have expired. Therefore, claims based on that agreement should not determine current allocation of waters. According to Karnataka, the 1924 agreement was made at a time when Tamil Nadu was under British rule and Karnataka was under Maharaja's administration when Karnataka did not have the freedom to argue strongly to put forth its interests.

Second, in Karnataka's view, the farmers in the upstream areas have as much right to irrigate and grow crops as do farmers in the downstream areas. Karnataka's claim is that the so-called prescriptive rights of downstream farmers were protected by the British administration, which could use its authority and powers to extract more waters for downstream needs than would normally be the case.

Third, it is argued that Karnataka is mainly dependent on the South West monsoon (June–September) that contributes significantly to the flow of river Cauvery. On the other hand, it is argued that while Tamil Nadu is pressing for claims, it also benefits from a significant amount of rain from the North East monsoon (October–December), which it does not have to share with other states. It is suggested that a claim on Cauvery waters ignores this unequal distribution of rainfall and the resulting runoff.

Fourth, it is argued that a downstream state cannot make a claim when there is scarcity of water and inadequacy in upstream areas. Thus, it is argued that Karnataka can discharge waters to Tamil Nadu only if there is adequate quantity of water to meet Karnataka's needs. In recent years, this has been an important issue with regard to implementing the flow pattern as stipulated in the interim award of the Tribunal. The Government of Karnataka finds itself in a difficult position to release waters to Tamil Nadu when its own farmers face acute water shortages, occasionally leading to suicides.²⁵ The government of Karnataka is thus pushed into a tight corner whereby implementing the Tribunal's award in terms of flows in summer months is perceived by local farmers as denying them water.

Fifth, Karnataka argues that riparian rights need to be reconsidered, such that the share of river water is in proportion to the basin area and contribution to river flow. For example, according to the Government of Karnataka (n.d., p. 10), the extent of Cauvery basin area and yield contribution are as presented in Table 1.

The argument is that Karnataka's claims over Cauvery waters must be related to its contribution to Cauvery flow and also its needs in terms of drought prone area in the basin.

Table 1. Cauvery basin area and yield contribution by different riparian states according to Government of Karnataka (n.d., p. 10)

	Karnataka	Tamil Nadu	Kerala	Pondichery
Basin area in square kilometres (% of total basin area)	34 273 (42.2%)	43 868 (54.3%)	2866 (3.5%)	148
Drought area in the basin in square kilometres (% of basin area in the state)	21 870 (63.8%)	12 790 (29.2%)	–	–
Contribution to water in the river in TMC feet	425 (53.8%)	252 (31.9%)	113 (14.3%)	

The main arguments of Tamil Nadu

In the case of Tamil Nadu, there is no published information from the government in the public domain to gauge the government's stance. However, on the basis of reported items in the newspaper media, and occasional statements in the Policy Notes in the State Legislature, the following points can be identified.

According to Tamil Nadu, the 1924 agreement is foundational to the development of key projects in both the states and therefore cannot now be changed, as any such change would have significant detrimental effects. In Tamil Nadu's view it appears that the provision of review at the end of 50 years relates to various arrangements for implementing the agreement, rather than changing the core principles of the agreement itself.

Second, the long history of farmers in Cauvery delta irrigation and producing rice should not be denied. As the 1924 agreement recognized these prescriptive rights, these need to be protected. Farmers in Karnataka are not denied the use of the waters but there is a limit on water volume and area to be irrigated so that downstream users' rights are not jeopardized.

Third, monsoon features are natural factors based on which claims cannot be made. These monsoon patterns existed long before river water-sharing agreements came into force. The main point seems to be that Karnataka is free to exploit the South West monsoon or other sources so long as the flow of water in Cauvery is guaranteed, such that the downstream farmers' prescriptive right is not negatively affected.

Fourth, an inter-state river is common and not private property of the upstream state. Hence, it cannot be argued that, after the needs of one state are met, only excess waters, if any, will be released.

Fifthly, Tamil Nadu seems to recognize that the basin area, contribution to river flow and other factors can be taken into account. However, this needs to be applied to distribution of waters beyond those needed to meet the prescriptive rights of downstream farmers.

Analysis and issues in applying the capability approach

River water disputes are presented by political parties to connect river water claims to identity, and thereby enhance their own legitimacy as protectors of the rights of people. In each state, there is political competition to create support bases; thus there are forces that try and use various aspects of identity such as gender, caste, and occupation. Some parties try to appeal to the 'vertical' forces of identity (all voters belonging to a particular caste irrespective of class), others try to use 'horizontal' forces of identity (language or religion) that cut across different castes. River water disputes provide political parties with the opportunity to use the horizontal dimension to emphasize one aspect of identity over other aspects to gain votes. Identity seems to force the political parties to interpret rationality narrowly. At present, the legal approach to dispute resolution focuses mainly on claims over quantity of

water by each state, and this creates 'perverse' incentives for each state to ignore the common property or public good dimension, and to treat the water as a private good. Therefore, in terms of the framework developed in the third section, the legal approach militates against the possibility of cooperation.

The claims mainly focus on the use of water for irrigation purposes. Based on the data for the period 1934–1972, Sanjivi Guhan (1993) reported that the total annual yield of water from Cauvery was 670 TMCft at 75 per cent dependability and 740 TMCft at 50 per cent dependability.²⁶ The claims made by the four riparian states together stand at about 1150 TMCft (and thus exceed the total flow in the river as expressed in equation (3)). A majority of these claims are for irrigation purposes, while industrial and drinking water supply requirements are estimated to be less than 100 TMCft. Currently, there is little discussion about environmental flows or ecological functions. Thus, there is hardly any use of the sustainability principle.

The analysis so far may be summarized as follows:

- (a) From human development and other macro-indicators, the two riparian states are not significantly different, although they have distinct languages and traditions. This may have played a role in facilitating the discourses of identity creation. For example, different languages mean that there is some degree of monopoly by newspapers or other media (such as television networks) depending on where they are based, even if English-language dailies make an attempt to be less parochial than vernacular media. As briefly discussed by K. T. Appiah (2001), just as state institutions can shape identity, media can have an influence. As in the case of communal riots (see Varshney, 2004), in the case of inter-state or international conflicts, the development of inter-ethnic or inter-group institutions may be crucial to the development of trust. Such trust formation may be crucial to questioning and de-constructing perceptions about identity of the other.
- (b) The electoral analysis in P. B. Anand (2004b) suggests that winning a majority of seats in the constituencies in Cauvery basin districts is crucial to government formation in both Karnataka and Tamil Nadu, no matter which particular coalition ultimately manages to form the government. This seems to prevent respective state governments from 'yielding' any concessions to the 'other'.
- (c) Moreover, while ecological functions are important, it has also been noticed during my fieldwork that paddy cultivation continues all the way from the highlands in Coorg to Cauvery Delta districts. Discussions indicate that cultivation of paddy in the highlands is a recent phenomenon. Three plausible explanations can be considered: that upland farmers are diversifying into paddy cultivation as coffee prices remain low; that while plantations remain the main crop of large farmers, small farmers find subsistence farming of rice as the

most viable survival strategy; and that there is political encouragement to 'question history' and grow paddy because the prescriptive right of downstream farmers was a similar human construct.

There are several important messages from the capability approach for resolving river water or other natural-resource-based conflicts, four of which are highlighted here.

First, rather than focusing on goods or natural resources or property rights to command them, a capability approach requires us to examine what these goods do to people; what functionings can be achieved; and how these alternative functionings are valued.

Second, we need to examine and evaluate the way in which identity is constructed, portrayed or interpreted, and how these processes can significantly influence the arguments about command over natural resources. As Sen notes in his first Tanner lecture: "If human beings were very like each other, this would not have mattered a great deal, but there is evidence that the conversion of goods to capabilities varies from person to person substantially, and the equality of the former may still be far from the equality of the latter" (Sen, 1979, p.219). Identity, and an understanding of the processes that influence it, can have a significant influence on many of the dimensions relating to substantive well-being freedoms, as well as their exercise of the agency freedoms. Identity can enter the decision calculus as a variable indirectly through endowments, which may in turn limit the range of functionings that individuals belonging to certain social groups can achieve. Alternatively, it can also influence the process of preference formation and agency.

Third, it can be argued that adapting the capability approach helps societies or groups of people in a society to evaluate different constitutive elements of identity and help them in placing 'reason before identity' (see Sen, 1999c). Collective action is used in resolving disputes and conflicts rather than in prolonging them. Institutions that facilitate information sharing and the process aspect of freedoms and transparency guarantees are related to this.

Fourth, it can be argued that, as an approach that focuses on how substantive freedoms enable individuals to participate in, and contribute to, socially enhancing such freedoms, the capability approach helps us to examine individual and collective capabilities, as well as whether identity imposes restrictions on some groups of people in the society, and thus embeds inequality. For example, riparian rights are not socially indiscriminant. A number of studies suggest that lush green fields and parched throats do co-exist (see Bhatia, 1992; Shiva, 2002). As already noted, much discussion on river water disputes focuses on states as though they were rational individuals. The relationship between preferences of individual citizens and the state policy is left to public choice or political economy models. The capability approach enables us to examine the link between substantive freedoms at the individual level and how these contribute to collective action.

Four specific examples may illustrate how the above may be operationalized.

Enhancing freedoms

The main emphasis of a capability approach is to enhance substantive freedoms. In the context of river water disputes, this could include consideration of rights and promotion of discussion and dialogue about functionings that can be actually achieved. Sen reminds us of the potential conflict "... between (1) having less inequality of freedoms and (2) getting as much freedom as possible for all, irrespective of inequalities" (1999b, p. 285). The capability approach to water is necessarily concerned with both 'aggregative and distributive' issues, and these need to be addressed not through the use of a technocratic formula, but within a participatory process. This is not a glib acknowledgement of participation, but a requirement that water policy (or, for that matter, any public policy) is essentially about freedoms. People are treated as free agents capable of rational decision-making, where such rationality includes other-regarding preferences and a commitment to fairness. With regard to rights, it is important to note that while rights may be helpful means to promoting and guaranteeing freedoms, they are not ends in themselves. There is some discussion concerning right to water, but this discussion needs to be expanded and embedded within the broader universalism in the capability approach.

Promoting a dialogue about sustainability

As mentioned in the third section of this paper, a strong interpretation of the capability approach suggests that a separate commitment to sustainability may not be necessary. However, in the transition to such an interpretation, discussion about specific environmental issues may be helpful in expanding informational basis and reminding us of our Kantian responsibilities associated with the freedoms. Anand and Sen (2000) suggest that dialogue and discussion of important environmental issues can contribute to a shift in the basis of values toward broader universalism. While the main emphasis in sustainability tends to be mainly towards intrinsic values and the rights of future generations, the capability approach can help in broadening the universalism to include both human as well non-human values.

Embedding policy within participation and process freedoms

At present, the legal approach recognizes only the governments of the disputant states as legitimate parties in the case of a river water dispute. Citizens cannot directly participate or know about the proceedings of the tribunals. They can only express their view-points through collective action (mobilizing an interest group) or 'voice' through media. Enabling participation of people and the citizens of co-riparians to exchange their view-points and arguments more openly, and debate about issues, is a crucial element.

Enhancing possibilities of cooperation

Studies of ethnic and communal violence suggest that people who have lived for many years as friends or neighbours can suddenly become engulfed in ethnic hatred (see Varshney, 2004; Bardhan, 2004, chapter 9). Varshney's observation highlights the importance of inter-ethnic civic organization in minimizing such conflicts or avoiding bloodshed. Currently, the dispute is orchestrated mainly by the state governments. Promoting opportunities for the development of 'bridging social capital' and dialogue is crucial. There is a role for public argumentation and deliberation and also the promotion of democratic citizenship in education and curricula. Making available Tamil and Kannada languages as options in school education in both Karnataka and Tamil Nadu states can also go some way towards bridging the 'distance'.

Conclusion

This paper has attempted to examine river water disputes as a special case related to sustainability. The framework developed here highlights the potential contribution that the capability approach can make in improving our understanding of the ethical concerns at the core of such issues related to sustainability.

At present, much discussion on water disputes tends to be mainly based on economic approaches, clarifying property rights or the legal approach to setting out dispute resolution mechanisms in the form of tribunals or river authorities. There has also been considerable discussion on the so-called integrated river basin management. The main weakness in these approaches is that they approach water policy mainly from a commodity perspective, thus neglecting the human and social dimensions. Water disputes are not merely over commodities or squabbles over imperfect property rights, but are closely linked to aspects of justice and fairness. While sustainability and collective action approaches suggest that rationality can be broadly interpreted to include other regarding preferences, identity tends to be used to work in the opposite direction and to use considerations of security to restrict preferences to 'self-interest'.

In as much as individuals have multiple identities, some of which are relevant to claims over natural resources, it is possible to broaden the definition of identity such that reason and other regarding preferences are not excluded. Within the capability approach and expansion of freedoms, participation and collective action possibilities can help in expanding the informational basis of policy choices. The capability approach also requires that the expanded freedoms come with Kantian responsibilities, such that a pursuit of freedoms is concomitant with pursuit of sustainability as commitment to fairness and universalism.

However, the recommendation to use the capability approach has some limitations. First, the emphasis on increasing substantive freedoms

requires a social and collective process to pursue the creation of such freedoms. A policy-maker concerned with, say, water resources may argue that their responsibility is limited to water resources and increasing substantive freedoms is someone else's responsibility. However, a water utility that embraces the ethos of participation is more likely to take its service obligations seriously and use resources available at its command to meet them. As I have argued elsewhere, the capability approach is likely to be more effective than a right to water (Anand, 2006b). Secondly, a strong interpretation of the capability approach (and thus, a commitment to universalism) suggests that a separate commitment to sustainability may not be necessary. However, a deep ecology perspective and an environmental ethic may help citizens to remind themselves of their commitments or of their Kantian responsibilities. From this perspective, the capability approach can be misunderstood to be mainly concerned with human development, and thus essentially anthropocentric. However, the universalism inherent in the capability approach is far from anthropocentric. Thirdly, to the extent that capabilities are determined by institutions, identity may limit the opportunities available to an individual. Even as an individual has multiple identities, the opportunity set of one's identities and the freedom to choose an identity can be severely restricted by institutional mechanisms. Also, an individual may not even be aware of various identities available to him/her and of the fact that she/he has the freedom to choose. These features of identity make it a fertile ground for political manipulation, more so when it can be linked to inadequately defined and difficult to enforce common property resources.

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Notes

- 1 Following Ronald Coase's theorem concerning the role of property rights (Coase, 1960).
- 2 Interaction between two riparian states can range from political union (perfect cooperation) at one extreme to outright war (pure conflict) at the other extreme. However, as Wolf *et al.* (2003) observe, in most cases, contested claims over waters seldom lead to armed conflicts. However, the expression 'water wars' remains

- attractive to some journalists and researchers; examples include Ohlsson (1995), Homer-Dixon (1998), de Villiers (1999), and Swain (2000). Others argue that, in the context of water, more important than the traditional wars are the so-called 'paradigm wars'; that is, conflicts of view-points, of institutions and norms (Shiva, 2002).
- 3 Cauvery is a perennial river in south India originating in the Western Ghats and flowing eastwards into the Bay of Bengal. It is approximately 800 km long and drains a basin of area of about 75 000 square km.
 - 4 This last item partly includes an agency-freedom (i.e. going well beyond one's own well-being; see Sen, 1985).
 - 5 See Anand (2006a), where regression analysis based on cross-country data clearly indicates the link between improving access to water and access to sanitation and reducing the infant mortality rate.
 - 6 This relates to sustainability (see Anand and Sen, 2000).
 - 7 Although the focus of this paper is on river water disputes, this is a special case of contested claims over natural resources. Much of the analysis here is also relevant to, for example, trans-boundary issues of forest and biodiversity conservation, pollution control, and control of communicable diseases.
 - 8 This can be considered a prisoner's dilemma problem. As the decision has to be made simultaneously and commitments (promises) of the other agent cannot be enforced, each agent ends up making decisions purely on the basis of private benefits or costs, although both know that the cooperative outcome is superior (see Dixit and Nalebuff, 1991; Schick, 1997). Alternatively, this can be considered a case of externality. Thus, there is divergence between marginal social costs and marginal private costs, but each agent may end up choosing to use too much water than is socially desirable (see Barrett, 1994; Anand, 2004a).
 - 9 Two important points need to be noted here. First, although in all the equations I mainly talk about quantity, it is recognized that quality of water is equally important. The assumption here is that any use of (remaining) water that is returned to the river meets with environmental quality standards such that quality of water in the river is not irreversibly changed. Second, although we are assuming that each state recognizes and protects allocation for the environmental flows, in reality it is quite possible that increased allocations to a and d result in diverting water away from e .
 - 10 Sandler (1992) develops more formally various issues related to collective action, building in some respects on Olson (1965). Barrett (1994) focuses on a different aspect of collective action, namely self-enforcing agreement.
 - 11 The IWRM approach can be expressed as the requirement that: $T=(a^{us}+a^{ds})+(d^{us}+d^{ds})+(e^{us}+e^{ds})$.
 - 12 It is possible to apply the so-called 'strong sustainability' principle, which applies sustainability constraint to each of the uses a , d , and e .
 - 13 See Bardhan (1995, 2000, 2004) for discussion on collective action for irrigation.
 - 14 It is quite possible that, where individuals have the freedoms, they may be processing these various combinations but choosing specific aspects of identity suitable to given contexts. A teacher in one school may attend Parent-Teacher Association meetings as a parent at the school where his/her children are studying. In modelling terms, the individual may be using both scalars and vectors.
 - 15 See, for example, Fraser (1996), Hall (2000), Woodward (2002), and Bardhan (2004).
 - 16 Globally, it is estimated that 70 per cent of all water diverted for human use is used for agriculture. See Rijsberman (2004, p. 500).
 - 17 According to one of the Hindu epics, Ganges was brought down from the heavens at the request of Bhagiratha to wash the sins of his forefathers. However, bringing Ganges down to earth would not have been possible had it not been for Lord Shiva agreeing to use the locks of hair on his head to cushion the enormous kinetic energy of the Ganges gushing from the heavens to the earth, so that it is released slowly. The parallel between this and the modern engineering approach to irrigation and flood control is striking.

- 18 An example is the following sentence in Nehru's Inaugural Address at the Third Session of the United Nations Economic Commission for Asia and the Far East on 1 June 1948: "... We have these big river valley schemes which in addition to irrigating land, preventing floods, soil erosion and malaria control, will produce a very great deal of hydro-electric power and at the same time we will have industrial development."
- 19 Thus, for Hall, identities (the plural) are "... never unified; ... never singular but multiply constructed across different, often intersecting and agnostic, discourses, practices, and positions" (Hall, 2000, p. 17).
- 20 See Appiah (2001).
- 21 See Schick (1997, pp. 118–122). Schick uses fellowship instead of friendship or love and defines it thus: "A person is moved by fellowship where what he does is socially grounded and he sees it in terms of the wantings, the values, or certain others. He not only wants to do what these others want him to do (or want someone to do) and thinks he is doing that, but he sees what he is doing as what these others want done" (1997, p. 119).
- 22 Details of the dispute are discussed in Iyer (1999), Salman (2002) and Anand (2004b). See Appendix A for a short summary.
- 23 The other two riparian states are Kerala and Pondichery.
- 24 Government of Karnataka (n.d., 2002, 2003).
- 25 Approximately 2000 deaths per annum in Karnataka are said to be suicides. However, suicide among farmers in Karnataka appears to be mainly related to debts and financial crises (Menon, 2003). The Expert Committee on Investigating into Causes of Suicides by Farmers, set up by the Government of Karnataka in its 2002 report, identified alcohol, family problems and poverty as the three main causes of suicide.
- 26 1 TMC foot=1000 million cubic feet=27 million cubic metres.

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Appendix A. The emergence of the Cauvery dispute

It is possible to identify five phases in the development of the dispute:

- (1) *Planning* (up to the year 1892): Irrigation is not new to the Cauvery region. However, during the period between 1860 and 1892, plans to develop 'modern' irrigation systems by building dams were being developed. Some of the area in present-day Karnataka was within the British Madras Presidency and some of the area was under the administration of Maharaja of Mysore. However, in cropping patterns and irrigation, there was not much difference.
- (2) *Dam building* (1892–1924): A first agreement between the provincial governments of Madras (under the British) and Mysore was reached in 1892 and discussions continued as plans began to be finalised for Mettur Dam project (now in Tamil Nadu) and Krishna Raja Sagar project (now in Karnataka). A further agreement with detailed arrangements for river water flows was developed through discussions from 1910 onwards and was finally reached in 1924.
- (3) *Putting words to work* (1924–1974): Co-operative use of river waters was facilitated by the 1924 agreement. However, the agreement was due for review after 50 years.
- (4) *From disagreement to dispute* (1974–1990): Discussions between Karnataka and Tamil Nadu during the 1960s and 1970s did not produce an agreement. According to Guhan, between 1968 and 1990, there were 26 ministerial meetings concerning the Cauvery river (1993, p. 29); 5 of these were bilateral meetings between Karnataka and Tamil Nadu and 21 were tripartite meetings involving the Union Minister for irrigation as well. He also notes (p. 34) that while some progress was made on technical proposals during 1972–76, these technical discussions did not result in political agreement. According to him, when the government of India played a mediating role as in 1972–76 period, an agreement seemed more likely. By 1981, the

claims from the riparian states became quite divergent. The government of Karnataka claimed 465 TMCft of water; Kerala claimed another 100 TMCft; Pondichery's claims were for 10 TMCft. This adds up to 575 TMCft. Government of Tamil Nadu wanted the flows to be in accordance with the 1892 and 1924 agreements. In its view, the existing utilisation suggested that the total amount of Cauvery water used was 748 TMCft; of which Tamil Nadu (including Pondichery) used 566 TMCft; Karnataka used 177 TMCft and Kerala used 5 TMCft. By the late 1980s, successive years of drought increased water stress and this may have contributed to hardening of positions by both Karnataka and Tamil Nadu states. In the absence of agreement, in 1986, government of Tamil Nadu requested the federal government to constitute a tribunal under Inter-State Water Dispute Act, 1956.

- (5) *A court to decide* (1990 to date): The Cauvery Tribunal was constituted in June 1990 and the tribunal gave its interim award in January 1991. The interim award stipulated Karnataka to release 205 TMCft of water to Tamil Nadu. There were riots mainly in Karnataka and in the violence some 25 lives were lost. Since then proceedings before the tribunal have continued. The tribunal's term is due to be completed in August 2006. In April 2006, two members of the Tribunal issued a majority ruling requiring that each of the states submit details of actual water allocations within a proposed upper limit and that an expert panel is constituted. The proposal has since been dropped but now the reports of the assessors have been made public. These reports assumed total average quantity of water available to be 740 TMCft and of this they suggested allocation as follows: 395 TMCft for Tamil Nadu; 250 TMCft for Karnataka; 33.4 TMCft for Kerala; and 7 TMCft for Pondichery. Both Tamil Nadu and Karnataka have expressed disagreement with these reports. All four states are requesting that the tribunal give its final award soon.