

From conflict to context-based metrics

The stories of the Cauvery and California's Central Valley

Writers: Rylan Dobson & Alexis Morgan

Banks of River Cauvery, India
Source: Ashwin Kumar



Water Conflicts

Few things convey conflict like an image of a truck on fire. This photo, taken in India from September 2016 does just that, serving to remind us that the 125-year conflict between the states of Tamil Nadu and Karnataka over water allocations in India's Cauvery River basin is still alive today. The Cauvery River is relied on by both states to support their agricultural sectors, and despite a "normal" monsoon season in the region this year, shifts in average monthly rainfalls left reservoirs abnormally low, igniting tensions once again and setting the stage the world's latest tragedy of the commons. The international obsession with disturbing images and political turmoil often overshadows the desperate stories of farmers, who are forced to make agonizing gambles with their crops, lest the water run dry and their meager means of support collapse. To make matters worse, politicians are just as quick to re-assert these provincial water claims as they are to condemn the violence caused by them.



Truck with TN number plate burns as the Cauvery protest continues in Bangalore. Source: Abilash Mariswamy

Tensions surrounding water allocation between the Indian states of the Cauvery River basin stretch back to mid-1870s when the British relinquished control of the Karnatakan city of Mysore, while retaining their colonial control through the Madras Presidency. The first formal agreement for a regular supply of water between the two states was reached in 1892, and reworked again in 1924. Since then, numerous attempts have been made throughout the years to renegotiate the original agreements, but with little success. In 1990, the Supreme Court of India ordered the establishment of a tribunal to resolve these issues, mandating the reallocation of water between the two states. The tribunal's first decision in 1991 was met with riots in both provinces, refusing to comply with the award. Both sides revealed stark differences in the philosophical foundations underpinning their allocational demands:

Karnataka's core argument is that they have a growing need for drinking water and that there are other hydrological imbalances that favour Tamil Nadu that need to be rectified. An example that is often cited is Tamil Nadu's longer monsoon season, which allows for an extended growing season that is less reliant on water from the Cauvery River. Other perceived imbalances are Tamil Nadu's underutilization of their groundwater reserves, and wasteful use of river water by farmers of the state. These arguments tend to follow the Harmon Doctrine of allocation, which aims to "uphold absolute territorial integrity" of water interests, placing disproportionate control of resources to upstream states as Karnataka is to Tamil Nadu.

Tamil Nadu argues that as their water allocations are primarily used for agricul-

ture per the agreements from 1892 and 1924 originally state, Karnataka's shift in usage for agricultural purposes is not a valid reason to alter their allocations. Since the original agreement, Tamil Nadu has developed its agriculture according to these allocations, so they believe that reductions now would result in widespread economic downturns. As such, the Tamil Nadu arguments tend to follow the doctrine of prior appropriation.

Beyond the issues of appropriation and the widespread disavowal of the tribunal award volumes lies a threat of greater conflict. The lack of reliable data, reliable institutional mechanisms, and a credible governing body to provide guidance in water shortage crises has stoked the embers of discontent, leading to what the media has sometimes dubbed a water war.

"I really don't know what I'm going to do," remarks Lax Iyer, a farmer who migrated from India to the United States many years ago. Iyer faces similar challenges on his farm in the California Central Valley, where he contemplates this issue, 9000 miles from Tamil Nadu and Karnataka. On one side of the road is an orchard in bloom, on the other, an orchard in danger of being engulfed by dust.

Last summer, authorities failed to deliver a sufficient amount of water to the 15,000 farmers of the San Joaquin Valley with junior water rights – those who get their water allocation only after senior water rights holders have filled their needs. Frustrations are mounting as workers are laid off, farm land is fallowed, and water allocations sold off far above market rates. Thirsty, high-profit almond orchards being ripped out as water scarcity threatens the investments of farmers in the region. This is a reality which Iyer must face as his almond farm, as well as his American dream, dries up before his eyes.

In the Central Valley, the water supply is significantly imbalanced, with northern and western portions of the region who receiving high precipitation in contrast with the naturally arid south and east. This imbalance has been amplified over the years by diverting groundwater through pumping, so much so that the area is often described as one of the most hydrologically engineered areas on earth. This has impacted the region so severely that the land level over these groundwater reserves has dropped over 20 meters in the last century. To make matters worse, a recent study indicated that of the 27 major rivers in the California Central Valley, 16 were being drawn on at over 100% of their natural supply. Simply put, the demand has surpassed the threshold for renewable freshwater.

As the region enters another year of drought, authorities of the Central Valley Project announced that with high probability, surface water would not be delivered to farmers lacking senior water

rights. While this may appear unfair to many farms, the problem truly lies within the broken, antiquated system of water allocation which has operated in an unrealistic, overly-generous way. Critics have argued that water allocation policies in the state have never been evaluated according to science, rationale, or democratic process, ever since the state was founded back in 1850. California's legal frameworks are compatible with reform in principle, but the process of overhauling the system from a governmental standpoint is burdensome and expensive, in addition to the major threat re-allocation and modification would present to current water rights holders, not to mention. As it stands, California is left with a broken allocation system stuck in a political quagmire; between the status quo and its downward spiral.

Wildflower bloom in California's Central Valley near the town of Arwin Source: Marc Cooper





California Aqueduct Crossing the San Andreas Fault, USA
Source: Michael R. Perry

Compounding this challenge is the fact that California’s water rights system has not adapted to consider the population and economic growth of the state, nor considered the projected effects of climate change and its implicated effects on energy, food, water and biodiversity – the so called “nexus”. The California Central Valley is relied on to produce 25% of America’s food on less than 1% of the nation’s farmland. The net impact of subsidized, water-thirsty crops consuming 70-80% of the available water in the area is that energy brown-outs, loss of freshwater species, and community water rationing have become regular occurrences in California. Water rights for groundwater remain separate from those for surface water, and until late 2014 were subject to no legislation at all. Even with new groundwater legislation now in place, implementation of the changes will only begin to be phased in by 2020, setting the stage for yet another tragedy of the commons.

Formal allocation failures

Despite their geographic and economic separation, both the Cauvery River Basin and the California Central Valley draw many similar stories to the surface – stories of wells running low and social tensions rising. Unrealistic allocation laws, poor water governance, patchy data, lack of accountability on environmental issues and a failure to establish sustainable thresholds for hydrological systems have resulted in an urgent need to address oversubscribed water resources.

Both basins have placed their hopes in the formal public institutions of their regions to establish and enforce water allocation, and it is important to recognize the stark realities that have driven these success stories. These successes occurred in situations where public sector agencies collabo-

rated with local, often informal networks to improve the situation. Despite these efforts, the negative impacts of mismanaged resources continue to grow, while businesses, communities and above all, the natural environment continues to pay the cost.

The time has come to be realistic about basin thresholds. We must set aside water allocations (i.e., junior & senior water rights) and consider how much renewable water is available each year (i.e., precipitation). We must honestly ask ourselves, “How much does nature need, and therefore how must society act to ensure that we have enough water for energy, food, drink, and its other essential uses for our wellbeing?” Answering this question is the basic foundation for setting context-based

targets (Figure 1). To say it another way: What is a given user’s share of water use that is fair, sustainable, and optimizes societal wellbeing?

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Illustrative concept of a volumetric context-based water metric

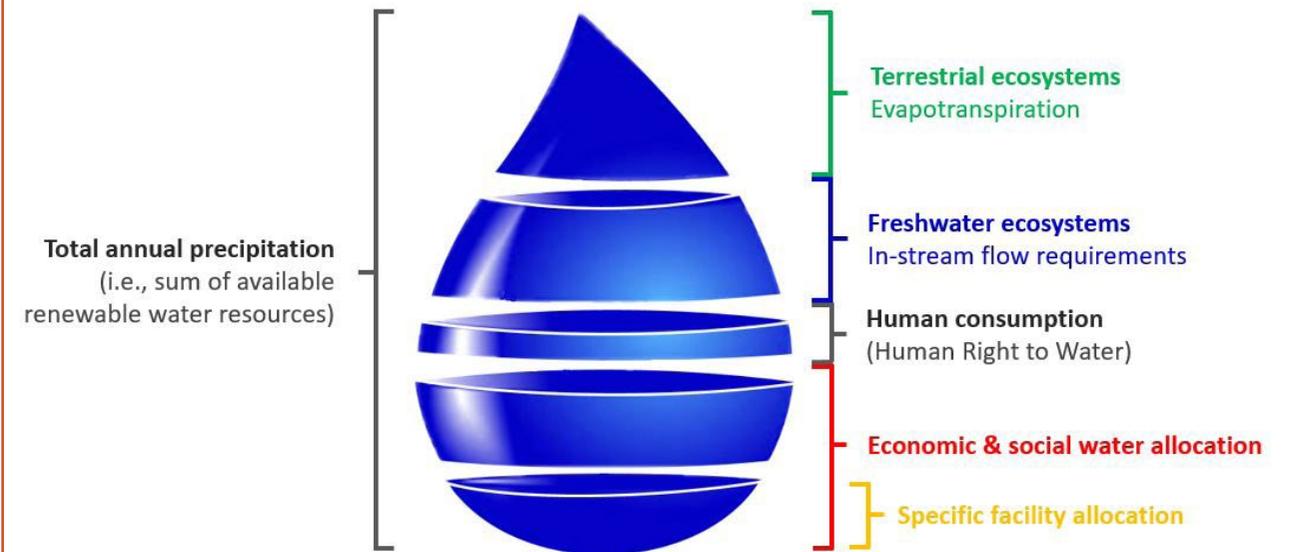


Figure 1: The basic idea behind a (volumetric) context-based water metric

Allocations that effectively accommodate these various economic and social needs of a basin require many things:

1. Clear system boundaries
2. Careful consideration of the trade-offs between food, water, energy, and nature;
3. Access to water data, in-depth knowledge of seasonality, geography and other local water management plans
4. Support by clear institutional mandates that have the capacity to proactively engage and communicate with stakeholders
5. Allocation mechanisms that bring together the above aspects and optimize wellbeing for basin water users.

The degree to which each of the above elements are present in the Cauvery River Basin and the California Central Valley varies, but despite their differences, the similarities in the needs of the regions are striking.

Looking forward, there is no question that the public sector will remain the leading party in finding solutions to water allocation issues. However, with the present threats of water scarcity and growing interest to address these shared challenges in the private sector, there are many new opportunities to design functional, rather than regulatory strategies. Indeed, one could argue that consensus-

Harnessing business to drive context-based targets

The development of context-based metrics uses an objective, scientific approach to establish sustainable basin thresholds, while embracing subjective socio-politically oriented stakeholder-driven processes to determine fair allocations. To explore various allocation options, data must be made readily accessible to the public, and scenarios that assess the trade-offs between

driven allocation processes that respect system boundaries are indeed the only way to ultimately address water crises, but when it comes to water, success is driven by active, collaborative problem solving, more so than by rules and regulations alone.

food, energy, water and nature must be explored, even if they present solutions that are hard for the public to stomach. In short, it drives collaboration towards sustainable water use. By respecting the limits of our water systems and engaging in fair-share allocation processes, we can help to reduce shortages and maintain the social license of business to operate or grow.



Banks of River Cauvery
Source: Ashwin Kumar

Benefits and challenges of context-based targets

Context-based target setting is not without its challenges:

1) The process of equitable allocation between users is fraught with ethical questions. Methodologies will need to handle nebulous variables such as the human right to water, and cultural/religious approaches to water.

2) The availability of reputable and consistent water data varies across locations.

Finding a source of objective data can be complicated when setting context-based water targets.

3) The reporting of context-based targets involves complex metrics that may require teaching for audiences accustomed to simpler water metrics. Context-based targets are more nuanced than common metrics such as total water use, etc. To clearly communicate the benefits of such an approach, the community must educate its constituents.

4) Finally, the business community will need to broaden its perspective on the basin when developing context-based targets to consider the social, economic, and political context in which food, energy, water and ecosystem security could be impacted through their decisions.

With accessible data and scenario modelling, encouraging companies to engage in such a process may still be difficult, but the true challenge lies in

merging this system into a politically-gridlocked public water governance. Unlocking this system will require multiple actors to apply pressure in the right spots. For example, aligning corporate water metrics with those set by the public sector forms an important foundation for a collective response to shared water challenges. The benefit to the business community through this alignment is a more stable business environment, a reduction in business risks and potential reductions in operational costs.

The shared water challenges present in both the Cauvery river basin and

the California Central Valley are long standing, complex and won't be solved through the individual actions from any one group. Effectively addressing these shared challenges will require innovative, new approaches that go beyond traditional public sector solutions to good water governance. We, at WWF along with other leading NGOs such as World Resources Institute, believe that establishing context-based water stewardship targets within a basin will greatly support the current public sector efforts and the Sustainable Development Goals. Solving the water challenges in places like the Cauvery and

the Central Valley that have not been unlocked for over a century will require patience, innovation, a willingness to listen and a passion to work collectively. But when everyone's shared future is on the line, what other options do we have? 