Kaveri Dynamic Water Management & Livelihood Protection System

A sustainable solution for a 100 year old problem

The Takshashila Institution

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The current system has failed

The current system of water allocation through tribunals and courts has failed and is not a suitable model for the future.

We must adopt a new framework to manage the Kaveri River Basin to:

- protect livelihoods
- conserve water
- improve inter-state relations

Administrative allocations have failed, and will continue to fail

Whether set by tribunal, court or negotiations, administrative **allocations are fixed**, **but water requirements change constantly**. This is a fundamental failure of the current system.

No amicable solution in sight...since 1892

Because there is no objective measure to allocate water drawing rights, we have relied on **arbitrary means of court judgements**. However, river water allocation is more an economic issue than a matter of justice. Court verdicts therefore have increased resentment, periodically leading to political crises. Inter-state tensions are not in the national interest.

Livelihoods under threat

With **few incentives for farmers and consumers to conserve water**, there has been rampant overuse and dependency on water. When water supply drops, livelihoods are threatened. This will get worse under the current system as demand for water rises due to economic and population growth.

Environmentally unsustainable

In the cities, underpriced water and unregulated borewells have led to **inefficient use and wastage of water**. In villages, a combination of unregulated use of river water and ground water, free/subsidised electricity and fertilizers has led to unsustainable cropping patterns. Demand is insatiable because there are no incentives for water conservation.

How will the new system work?

When States draw water above their basic entitlement, they will **pay** the Kaveri River Authority (KRA).

When States do not draw their basic entitlement (either due to insufficient flow or conservation) they will **receive payments** from KRA.

States will receive more money for water saved than they pay for water used.



How will water be allocated?

The water allocations will be calculated and assigned on a weekly, in advance basis by the KRA. Weekly entitlements will be proportional to actual water availability.

Super Overdraw

Limit (Charged

Rs 26 Cr/TMC)

(No Charge)

(Credited at

Rs 38 Cr/TMC)

Basic Entitlement

If a state does not announce its decision to take its entitlement, other states will be able to purchase it from the KRA.

Reserve price for auction will be Rs 38 Cr/TMC (i.e. the rate for overdraw entitlement)



All figures are in TMC

Example 1: When there is a shortfall of water

As the shortfall causes States to avail less than their basic entitlement, they will **receive compensation** at Rs 38 Cr/TMC:

| Karnataka | Rs 1026 Cr |
|------------|------------|
| Tamil Nadu | Rs 1596 Cr |
| Kerala | Rs 114 Cr |
| Puducherry | Rs 27 Cr |



All figures are in TMC

Example 2: When States overdraw available water

When States overdraw water above their basic entitlement, they **pay overdraw charges** of Rs 26 Cr/TMC to the Fund:

| Karnataka | Rs 2366 Cr |
|------------|------------|
| Tamil Nadu | Rs 2262 Cr |
| Kerala | Rs 676 Cr |
| Puducherry | Rs 26 Cr |



All figures are in TMC

Why this will work better than the status quo?

The proposed system of water allocation is superior to the status quo:

- better secures the livelihoods of people who depend on the river

- more efficient use and optimum allocation of water

- improves social stability and builds social capital

Basic water security

States will have access to the basic entitlement (fixed, when there is adequate flow, and proportional, when water is inadequate) without paying any charge. The basic entitlement is in accordance with CWDT 2007 award for all parties. Overdrawing is permitted on a charged basis.

Livelihood Protection Insurance

States will receive compensation payments during periods where the water flow is below their basic entitlement. States can use these funds to protect the livelihoods of those adversely affected by water shortages, invest in water infrastructure and use it as budgetary support.

Better inter-state relations

Instead of confrontation and acrimony over just entitlements, States will be able to benefit from the Cauvery river in an amicable manner. States will realise the value of the scarce water resources and avoid extravagant claims.

Efficient water-use

States can decide how much water they require and plan the water intensity of their agriculture and industry. They will be entitled to overdraw and super-overdraw water should they need more water. With negative incentives for overdraw, the States can gradually move their economies towards lower water dependence.

States' autonomy protected

States will have full autonomy on how to spend the payments received from the Kaveri River Fund. States can construct additional reservoirs to better manage their entitlements.

How will the new system be set up?

A Union-State partnership under the aegis of the KRA

- KRA will administer the allocation system and manage the Kaveri River Fund

- use modern technology to monitor flows and utilisation

Capitalising the Kaveri River Fund (KRF)

To be sustainable we estimate that the KRF needs to be **initially capitalised at Rs 21,000** Cr. Over a ten-year period, the estimated maximum capitalisation will be around Rs 68,000 Cr.

Union-State partnership in governing the KRF

The Union government and the governments of Karnataka, Tamil Nadu, Kerala and Puducherry will be equity holders in the fund; the Union government will hold a 49% share, and the remaining will be subscribed by the State governments either equally or according to their individual decisions. The KRF will be administered and managed by the Kaveri River Authority.

International financial institutions like the World Bank, ADB or the AIIB may be approached for financing the setup of the system.

Making the Fund sustainable

In addition to receiving income from water allocations and auctions, and expenditure on paying states conservation benefits, the Fund could manage the risk of water shortage by investing in contrarian assets (e.g. water treatment plants and infrastructure) that will appreciate faster than the depletion of Cauvery water.

Investing in Water Resources Management

Accumulated surpluses from the Fund could be used for investing in construction of storage reservoirs, educating farmers & citizens on water conservation and financing livelihood transitions to low-water economies.

Risks & Challenges

To ensure that the system works well, Union and States must make some adjustments to their agriculture, electricity and fiscal policies.

Groundwater

Groundwater (borewells) are highly cost-effective as such water is not priced; because of subsidised electricity, the cost of extracting groundwater is as low as 0.05 paisa per litre. For the system to be effective, all states must regulate groundwater use and rationalise electricity prices.

Entitlement levels

The basic entitlement, overdraw & super-overdraw levels are set using data from the CWDT 2007 award and the demands of the States. These may not be at levels that will ensure the sustainable operation of the water sharing model. It is advisable to review these levels after a period of three years.

Water scarcity

By many estimates, the river is likely to provide less water while population and economy will register growth. The Fund may not be sustainable in the face of more payouts than incomes – it is advisable to review the overdraw charges every five years.

Agriculture Policy

A deeper underlying issue is the pattern of agriculture in South India: managing water resources better requires rationalisation of the prices of electricity and fertilisers and proper setting of the Minimum Support Prices.

Ecology

One reason attributed to low rainfall in the catchment area is massive deforestation and unplanned urbanization in Western Ghats. While it is difficult to directly link this phenomenon with reduced rainfall, the long term impact of this is catastrophic.

Implementation: 5 steps

It is possible to improve the way the Kaveri River Basin is managed within a period of 2-3 years at an initial outlay of Rs 21,000 Cr. The 10-year total outlay will be less than Rs 68,000 Crores. All outlays must be shared between Union and 4 river basin states

1. Immediately. State governments must set up a Kaveri River Authority (KRA) with the participation of the Union government, to adopt the new river water management system.

Chairmanship of the KRA should rotate between CMs of Karnataka, Tamil Nadu, Kerala and Puducherry. KRA will be an independent steward and administrator of the water sharing system. States will retain all powers of construction of reservoirs, dams and water use.

2. Within 3 months. Union & State governments to set-up and capitalise the Kaveri River Fund (KRF)

KRF should be professionally managed with a mandate to protect livelihoods of the people of the Kaveri Basin against adverse water circumstances.

3. Within 6 months. States to set-up Kaveri River Management Cells (KRMCs)

State KRMCs execute water drawing procedures, administer states' Kaveri budget allocations and carry out the bidding at water auctions.

4. In 1-2 years. State governments must decide their state-level water management and livelihood support policies.

5. Ongoing. Union and State governments to launch education campaigns on the new system and water conservation practices. 10

Additional Information

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Some ideas on how to refine and finetune the implementation

How states should manage their fund

States should use the compensation to invest in infrastructure that will make the economy less water-intensive and more water-efficient. In extreme cases, funds can be used as cash payouts to those whose livelihoods are drastically affected by water shortages. States should set up similar dynamic water management systems.

How do we estimate overdraw charges?

Overdraw charges are calculated on a willingness to pay (WTP) estimate: a state can pay around 5% of its annual expenditure if it wants to draw water to its maximum claim.

Litre saved is more valuable than litre purchased; so compensation for underutilisation is 1.5 times the overdraw charge.

Future adjustments

KRA can raise or lower the overdraw charge according to the scarcity of water; based on a nonlinear scale; i.e. if volume falls by 10%, unit charge should be raised by more than 10%. It is not necessary to change the entitlement levels.

Construction of reservoirs

States can be permitted to construct new reservoirs along the river basin as long as it fills them using its basic entitlements, or pays overdraw charges.

Measurement points & Open data

States must increase the number of measurement points along the river basin and make them available to the public on a real-time basis.

Additional Information

Allocating non-normal flows

Water allocation when quantities are below or above the Basic Entitlement will be pro-rated accordingly, with compensation for shortfalls and charges for overdraw. If there is surplus water beyond the combined overdraw limit, it will be auctioned.

Some ideas on how to refine and finetune the implementation

This proposal was presented by the Takshashila Institution at a roundtable discussion on October 27, 2016

Attendees:

Arvind (MLA) Basavaraj (MLA) Dr P Somasekhar Rao S Vishwanath Ashwin Mahesh Dr SS Meenakshisundaram Doraiswamy R Lavanya Muralidhar Rao Vinay Viswanathan Dr Krishna Raj Lakshmikantha Dr T N Reddy Narayan Ramachandran

Ravi Narayanan Dr Vishal Mehta Dr Sharachchandra Lele Akshata M Vivek Anandan Nair Avinash Gowda Ramanjit Singh L K Atheeq

Discussion

Feedback from the roundtable attendees

Pegging the entitlement levels correctly

- The entitlement levels for the four states should be pegged with 90% reliability for basic, overdraw and super overdraw levels.
- Each state has a capacity to add to the flow of the river and the benefits should accrue. This should be factored in entitlements, by having a dynamic baseline proportional to the inflows.

Dynamics of the Kaveri River Fund

- It is unclear from the model how the fund would be financed in surplus years and what the relative compensation to different states would be in such a case.
- Economics of ground water vs. river water must be worked out carefully.
- The model depends on forecasting ahead in but predicting the intensity of distress is difficult.
- The model must include how the fund will play out at the level of an individual farmer.

Checks against gaming of the model

• By building storage or bore wells, the system can be gamed. Measures should be included in the model that prevent gaming by both upper and lower riparian.

Feedback from the roundtable attendees

Compensation for families with and without land-holdings

- The relative compensation for families with unequal or no land-holdings should be worked out in the model.
- The political uptake of this model will depend the compensation between landowners and non-land-owners.

Maintaining the ecological integrity of the river

• The temporal and spatial flow variations should be factored in the model

Others

- The political economy of setting up an institution like the Kaveri River Authority is an emotive and passionate issue which must be carefully considered.
- It must be independently studied whether a rationing approach or a conservation approach should be followed in the model.
- Water that is needed as water and water that is needed as money cannot be fungible.