Alternative National Water Policy: A Critique

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Ramaswamy R Iyer's "National Water Policy: An Alternative Draft for Consideration" (EPW, 25 June 2011) cannot be called a policy because it is not designed to meet any quantified targets in light of what is known about the science of hydrology, argues this critique.

Ramaswamy R Iyer has presented a "National Water Policy: An Alternative Draft for Consideration" (EPW, 25 June 2011, henceforth NWP-ADC). There are several things in it that deserve to be questioned and debated.

(1) The draft policy does not take cognisance of statistics, targets, strategy, and plans of action. Thus, it does not seem to be designed to achieve any particular water-related objectives. Factoring in these is essential to ensuring that the recommendations pass the test of feasibility. (2) It is based on many dos and don'ts decided a priori, and handed out in the manner of axioms, to be taken without question. (3) Several of the recommendations are not in agreement with the science of hydrology. (4) Many of the recommendations seem to be based on ideology, rather than objectives.

1 A Policy without Targets and Strategy?

The National Water Policy (NWP) of 2002 was criticised by many for stating what should be achieved, but without any strategy or tactical plan for how it would be achieved, thereby making it nothing more than a wish list. Iyer's draft policy starts with a declaration "This is a policy statement and not a strategy or a plan of action" (p 201) and is not concerned with statistics, targets, or programmes.

This leads to the basic question: what is a policy? Dictionary.reference.com defines "policy" as "a course of action adopted and pursued by a government; a plan of action; way of management, government, administration", and offers "strategy" as a synonym for "policy".

This is not just quibbling about semantics. A policy must be designed to achieve some quantified objectives, by some clearly stated means, and the objectives and the means both must be feasible as per the current state of knowledge. And determining feasibility unavoidably brings in statistics. Thus, what Iyer has drafted cannot be called a policy.

2 Axiomatic Policy?

Many recommendations of the NWP-ADC are based on assertions that are worded to have a strong sentimental appeal, but are purely axiomatic, i e, postulates or propositions that are not logical deductions, and whose truth has to be taken for granted.

For example, paragraph 4.2 states that: "Rivers are natural phenomena and not human artefacts. They are not pipelines to be manipulated at will, turned in different directions, cut, rejoined, welded" (p 203). Iyer dishes this out as an axiom, to be accepted without question, and then he builds a lot of policy recommendations on this axiom.

The issue here is not whether rivers can or cannot be turned in different directions. That can be debated. The issue is that a policy statement to that effect cannot be handed out as an axiom. There are many instances all over the world, including many in India, where rivers have been turned in different directions, yielding huge benefits, and no calamity has befallen. The Suez and Panama canals have gone a step further and have welded two different oceans, with enormous visible benefits, and no visible disaster. Still, if Iyer has anything against modifying the land phase of the hydrologic cycle, he should present a logical analysis why rivers should not be turned in different directions, and it can be examined.

A lot else in the NWP-ADC is similarly based on axioms. For example (p 203), "A river must flow. If it does not flow, it is not a river." The simple counter to this would be "A river must fill reservoirs, irrigate fields, and generate hydropower. If it does not, it is not a river." Since axioms are beyond debate, there would be no way to challenge an opposing axiom either. This kind of debate – of my axiom versus yours – is hardly the way to formulate national policies.

3 Science of Hydrology

Many of the recommendations are not in agreement with the science of hydrology. Three examples should suffice.

Opinions expressed in this article are personal.

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• Paragraph 6.2.1 argues that the total agricultural demand for water can be significantly brought down by improvements in water-use efficiency. While the need for adopting better irrigation practices is beyond argument, it is unlikely to make any change in the total agricultural demand. Here is why.

First, it is necessary to appreciate the difference between consumptive use and non-consumptive use. The water that is used by plants in respiratory processes and in building their tissues, as well as that lost due to direct evaporation, is consumptive use. It is called thus because this water is no longer available to the land phase of the hydrologic cycle. The water that percolates to underground formations from fields and canal beds is a non-consumptive use. To be very precise, it is not even a use. This water remains in the land phase of the hydrologic cycle, as groundwater recharge.

A true reduction in use is achieved only by reducing consumptive use. However, there is very little scope for reduction in this component. Significant reduction is possible in non-consumptive use by lining canals, by adopting drip irrigation, etc. But this apparent saving will show up as reduced groundwater availability elsewhere, which will have to be compensated from other sources. Thus, reduction in non-consumptive use does not result in any net saving at the basin level.

• The same flaw is seen in the suggestion to reduce industrial demand by recycling and reusing (paragraph 6.2.3). Reduction in consumptive use by industry requires modifying industrial processes. Recycle and reuse will not reduce consumptive use. It will reduce the abstraction to the extent water is recycled, but it will also reduce return flow to the system by exactly the same quantum. Again, there is no net saving at the basin level.

• Finally, this hope for significantly bringing down total agricultural demand is based on the assumption that the area irrigated and crop patterns will remain unchanged. But there is no reason why they should. Any net savings are likely to be claimed:

• for extending canal irrigation to areas that are presently not covered.

• for more irrigated crops on the same area;

• to grow crops that need more water;

• to store water for next year, to improve system reliability.

All this is not to be seen as an argument against improving irrigation practices, or against recycle and reuse. The point is that improvements in water-use efficiency, or recycle and reuse in industry, will not have any significant impact on total abstraction.

Incidentally, the main issue with industrial effluent is that of quality, and not so much of quantity. Untreated or partially treated effluents are polluting many rivers. If industry is forced to recycle and reuse the effluent, it will stop the pollutants from reaching the river. However, industry will have to treat the effluent to acceptable standards for reuse, separating out the pollutants. The problem with safe disposal of the removed pollutants remains. Removing and dumping them in landfills, from where they will slowly leach in to the aquifer, is far worse. In short, there is no escape from enforcing safe disposal of pollutants, and that objective is not achieved by enforcing recycle and reuse.

4 Water Management Ideology

The last 25 years or so have witnessed the emergence of a water management ideology that is opposed to technology-based options – large dams, interlinking of rivers, initially storage-based hydropower, then even run-of-the-river hydropower; chemical fertilisers, pesticides, biotechnology, genetically modified crops, etc. Iyer's NWP-ADC is heavily soaked in this ideology. Four issues need attention.

4.1 Large versus Small

Paragraph 8.2 makes a strong argument for shifting supplies from large projects to small water-harvesting programmes, with big projects being regarded as projects of the last resort. But Iyer does not clarify what, in his opinion, are the indicators to determine whether a project qualifies as a "last resort" option (p 204).

Recommendations that do not incorporate numbers are open to any interpretation, and are not likely to bring about any change. Suppose Iyer's formulation finds its way in the new NWP without any change. That would still not change anything because proponents of large projects could easily claim that every single dam that has been built, is being built, or being contemplated, is indeed the "last resort" option.

Opposition to large projects is nothing new. Most other civil society actors who speak on this subject have no hesitation in rejecting large projects altogether. It seems Iyer does not want to go that far, but also does not want to be seen as supporting large projects.

That apart, there are several engineering problems with this recommendation:

• Whatever be the quantity of water supplies shifted from large reservoirs to rainwater harvesting, there is still the problem of storing that water, awaiting its use as per crop schedule. If small surface storage (tanks, ponds, *johads*) is used, then the area submerged will be even greater than that submerged by large projects. It is elementary topography that for a given volume, the less the depth of storage, the more the submergence area. Thus, if Iyer's hostility towards large projects is because of the submergence they cause, then rainwater harvesting in small check dams, tanks, johads, etc, will submerge even more land.

• More surface area of storage in small ponds will also result in more evaporation loss.

• If the harvested rainwater is to be stored in the aquifer by artificial recharge, then the quantity of water that can be stored is very small. The Central Ground Water Board has estimated the potential of artificial recharge as just 36 billion cubic metres (BCM). The potential for storage in large dams is around 300 BCM. Thus artificial recharge cannot replace large surface storage. (This is not an argument against rainwater harvesting or artificial recharge. Both rainwater harvesting and large dams are equally necessary.)

• Replacement of reservoir storage by aquifer storage results in a double whammy for energy. On one hand, it reduces (hydro) electricity generation, and on the other, it increases electricity consumption for pumping. Water and power engineers have been alerting against this, and in 2010, it was reported that in central Maharashtra for example, there was water in the aquifer but no electricity to pump it out.

• Finally, and contrary to popular perception, small water-harvesting schemes

do not enable more flow in the river. For a given quantum of irrigation use, from the perspective of the river, whether the water is first allowed to reach the river and then abstracted from it, or whether it is intercepted before it reaches are one and the same thing. A certain quantity of water is abstracted from the land phase of the hydrologic cycle, and is denied to the river flow. One cannot have water in the field, and have it flow in the river too.

Thus, the assertion that "micro-watershed development...holds considerable promise" (p 204), is nothing more than a fond hope.

4.2 Environmental Flow Requirements

"Humanity receives water from, and cannot presume to allocate water to, nature and ecology" (p 205) is a very noble sentiment. Reality is, however, different. If abstraction of water from the river is unavoidable, there has to be some way of limiting such abstraction. Otherwise humanity may, and sometimes does, abstract close to 100% of the flow. Whether a maximum is prescribed for abstraction, or a minimum is prescribed for river flow, it amounts to allocation of water to the environment.

As per India's Constitution, sharing of the waters of interstate rivers – and most major rivers are interstate – can be decided either by an agreement amongst the party states, or be allocated by a tribunal. In an interstate dispute, each state argues its case with a specific quantum of demand, supported by detailed justification. Then the adjudicating authority takes a decision.

The memorandum of understanding (MOU) for sharing of the waters of the upper Yamuna allocates 0.32 BCM for EFR, out of a Mean Annual Flow (MAF) of 12.98 BCM, i e, 2.4%. The recent Krishna Tribunal Award allocates 73 BCM to three states and 0.17 BCM for the environment, i e, 0.17%. Once water is allocated by a water-sharing agreement, or by a tribunal, it is very difficult to make any change. It is certainly not possible to make a change by an executive order, taking away some water from the share of one or more states and allocating it for environmental flows.

The Yamuna or Krishna basins are just examples of what happens when EFR is placed on a high pedestal, beyond debate. If the proponents of the environment feel that the allocation for EFR in these basins is not adequate, they have themselves to blame. The interest of the environment lies in demanding an allocation, duly supported by detailed justification, rather than taking a high sounding line that "Humanity...cannot presume to allocate water to, nature and ecology".

4.3 Displacement

For displacement caused by water resources projects, paragraph 17.6 recommends (p 207):

> Where some displacement is found to be necessary, it should be based on the free, informed prior consent of the people likely to be affected in any manner. There should be no forced displacement.

Whether displacement should or should not be forced, is not an issue to be argued in the water policy. Construction of dams is not the only reason for land acquisition and displacement. Land is required for many different purposes – construction of roads, airports, railways, industries, mining, housing, and even for protection of wild life. For a displaced person, the pain and hardship is exactly the same irrespective of whether he is being displaced for construction of a large dam or for protection of core tiger area.

At any point of time, there exists a land acquisition and rehabilitation policy, and also relevant laws. There is no justification for a separate policy for water resources projects, and even if there was such a need, the platform for that debate is the land acquisition policy or act.

4.4 Independent Evaluation

Paragraph 17.8 (p 207) recommends that environmental impact assessments (EIA) must be made "more truly independent". This is unacceptable, and for several reasons.

- In civil society lingo, independent means exclusive of government agencies. The demand for independence insinuates without any basis whatsoever that EIAs done by government agencies are suspect.
- It is also not a given that analysis by agencies outside the government will be immune from outside influence. Non-governmental organisations (NGOs) also need money for their operations, and thus can be manipulated by donors. In the case of most NGOs, it is rarely known who funds them. So-called independent evaluation actually is fraught with the danger that anyone, Indian or foreign, may influence major infrastructure decisions through NGOs funded by them.

5 Conclusions

There are two ways to draft a water policy. The ideological approach decides a priori the actions that are acceptable and ones that are not acceptable. This approach makes no prior commitment to achieving any particular targets. The management approach decides a priori what targets need to be achieved, and tries to formulate a policy to achieve those targets, to the extent feasible. This approach makes no prior commitment to include or exclude any particular actions.

The management approach is flexible, because the targets can be modified to strike a balance between what is desired and what is acceptable. The ideological approach is inflexible because ideology cannot be changed to achieve any particular target. During the short history of drafting an NWP for India, the experience has been that alternate water policies drafted by civil society invariably follow the ideological approach.

Civil society can contribute a lot towards formulating a NWP. However, they need to accept that policy is a statement of the path to be taken to reach a specified set of targets; the stated path has to be feasible, and demonstrably so. The targets should determine the policy, and not the other way round.