



WATER POLICY FOR RAINFED AREAS

Submission of Revitalising Rainfed Agriculture
Network to the Committee on National Water Policy,
New Delhi, December 19th, 2019

Abstract

The policy recommendations have evolved from a decade long work of the RRA Network across the major rainfed states of India. It emerged from field pilot initiatives of the network and its partners, several consultations including the National Convention on RRA held in 2019, Consultation at NRAA and the consultations of the Working Group on Water.

The primary ask of the RRA N is to institute a differentiated water policy for rainfed areas within the National Water Policy. Maintaining parity of investments on water resources, establishing a Department on Water Resources within the Jal Shakti Ministry and to take up a comprehensive and integrated view of water resources development with improving Rainfall Use Efficiency as a metric to measure success.

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Water Policy for Rainfed Areas:

Submission of RRA Network to the Committee constituted to evolve National Water Policy

Revitalising Rainfed Agriculture Network

‘Irrigation’ Approach to Water Policy:

1. The Ministry of Jal Shakti (MoWR) has the mandate to steer the policy, programs and public investments related to water resources. But the Ministry does not have any significant program on addressing the needs of ‘water resources management’ of Rainfed Areas.
2. The Water Policy (wrt agriculture) nearly equates "water" policies with "irrigation" – that only deals with stocking of water in reservoirs (and underground) and channel them through canals or pumped and supplied. The water resources investments as of now are mostly on :
 - a) irrigation (creation of potential and using the potential created) - surface
 - b) subsidised electricity for groundwater use
 - c) micro irrigation
 - d) recharge of ground water

The earlier programs on water resources somewhat relevant for rainfed areas are mostly dysfunctional:

- a) RRR Project: for Rehabilitation of tank irrigation systems
 - b) watershed programs
 - c) MGNREGS (soil and water conservation components)
3. This perspective of “water as irrigation” excludes the rainfed areas, rainfed agriculture and rainfed farmers; and none of the Ministries have a mandate to care for the 'water resources management’ in rainfed areas (for agriculture).
 4. Not investing in Rainfed agriculture is almost equivalent to losing out on India’s nutrition security. 47.5% food grains; 80.2% of pulses, 73% of oil seeds, over 90% of millets and even 40% of rice comes from rainfed agriculture.

The Scale of Exclusion of Rainfed Areas

5. Based on percent irrigated area and drought frequency, about 197 districts spread across the country in different rainfall regions are categorized as drought prone districts. Another 115 districts, though have more than 40% irrigated area in each of the districts, have more than 100,000 ha of rainfed area. A total of these 312 districts out of 672

districts constitute important rainfed systems; *i.e. over half of the country does not figure in the National Water Policy!*

6. *In spite of the 110 million ha of irrigation potential created, the net area irrigated is only 68.5 million ha; thus, much of the agriculture in the country will potentially remain rainfed.*

Requirement of Rainfed Areas:

7. Risk and uncertainty (arising out of rainfall failures) affecting larger rainfed agri areas and larger number of people is the major challenge of 'water management' in rainfed areas; more so with the climate change.
8. Growth / private investments in rainfed agriculture cannot be achieved unless we deal with risk and uncertainty.
9. Only the residual risk can be met by insurance. The primary risk only can be met by managing rainfall/ 'water' locally to meet moisture deficits / dry spells.

Rainfall Use Efficiency : A Relevant Paradigm of Water Management for Rainfed Areas:

10. The conventional '*irrigation paradigm*' disregards the mandate of state to address the issues of rainfed areas- it is more tuned to increasing 'irrigated area' and improving use efficiency of water used for irrigation. Rainfed areas have 'Security of Crops' i.e. security of getting an average yield as the primary requirement- that can only be achieved through management local rainfall - from rain- moisture- to the discharge at the outlet of a micro watershed. This can be extended to 'support to Crops in critical stages' for improved yields / increasing cropping intensity in the case of high rainfall rainfed areas.
11. There is enormous potential in increasing and improving both the production and productivity of rainfed crops all over India, through strategic combination of direct precipitation and strategic water application. The amounts of water applied per unit of land under such circumstances is small, making such application quite efficient.
12. Rainfed Areas need to have '**Rainfall Use Efficiency**' as a metric for public investment; defined in terms of achieving security and productivity achieved extensively (area and people) in the rain dependent extensive cropping systems.
13. In the rainfed areas, the first claim on water should be for securing crops and livelihoods extensively; whatever be the tenurial rights on water extraction structures (water bodies/ borewells). This must be the policy direction and investment criteria.
14. A progressive movement towards 'Water and its Access As Commons', at least in the period of droughts.

National Water Policy Must Differentiate Rainfed Areas:

15. One national water policy in the area of agriculture that only deals with 'irrigation' and 'groundwater depletion' will exclude half of the country and its people dependent on rainfed agriculture!. It also biases focus of the 'Jalshakti Ministry'.
16. The National Water Policy and Jal Shakti Ministry must have a differentiated focus on Rainfed Areas as the requirements (policy, investment, technology, institutions) are different. *And, it must have half of the attention and budget allocated for rainfed areas that constitute about half of the country. Once this is agreed, there are several experiences across the country to evolve the 'Water Policy for Rainfed Areas'*

It pays to Invest on Water in Rainfed Areas:

17. The productivity of water used in securing and supporting rainfed crops is proven to be very high. Several studies suggest high rate of return on investments on protective / supportive irrigation.
18. Sustained investments in water management in Rainfed Areas pay big dividends with a win-win scenario for the national government, farmers and from the perspective of sustained natural resources. Public investments on water in rainfed areas have much higher social rate of returns.
19. CRIDA estimates that crop production can be enhanced through supplemental irrigation by a total of 28-36 M tonnes from an area of 20 -25 M ha during drought and normal monsoon periods which accounts for about 12 % increase over the present production. The benefits could be still higher if initiatives like improved cultivars, SRI cultivation in rice, crop and land use diversification, use of improved irrigation technologies like drip and micro-sprinkler (which further increase water use efficiency etc.) are taken up.
20. Water used for such supplemental irrigation will not reduce the river flows. It is estimated that out of the 114 billion cu.m water available as surplus, about 19.4% is sufficient for supplemental irrigation (of 100 mm at reproductive stage) to 'irrigate' 25 million ha in normal monsoon year; this leaves 81.6% to meet river flows and other requirements. Even during drought years, 31 billion cu.m is still available after making provision for irrigating 20.6 million ha.
21. Central India and Eastern India were identified for their potentiality without affecting the water balance even after harvesting the runoff for critical/ supplemental irrigation. The cropping intensity can be substantially improved in these areas with comprehensive rainfall (water) management.
22. Water harvesting and supplemental irrigation at farm level do not jeopardize the available flows in rivers even during drought years nor cause any significant downstream effects, especially in central and eastern regions.
23. Recurring public investments on drought management and the human misery associated with droughts can be potentially saved to a larger extent with a focused Water Policy for Rainfed Areas.
24. Most of the districts under considered as Aspirational / Backward / Poor and those with high nutritional deficiencies are Rainfed Areas. Investments in water resources in rainfed

areas are highly inclusive, results in high social rate of return and addresses multiple issues of droughts, low productivity/ growth, insecurity, poverty, nutrition and others, if appropriately designed.

Relevant ‘Water Policy’ / ‘Water Investments’ for Rainfed Areas:

25. Rainfed areas are diverse and the ‘water’ requirements and sources are diverse and location specific; even within an agro-ecology. The ‘Water Policy for Rainfed Areas’ needs an innovative framework to enable ‘local solutions’ to emerge to the area specific problems/ opportunities.

Key Concepts and Approach of Water Policy for Rainfed Areas

26. The focus of Water Policy for rainfed areas needs to be on increasing ‘Rainfall Use Efficiency’; efficiency as measured in terms of ‘securing and supporting’ crops in extensive areas increasing security and enhancing incomes for larger number of households.

27. ‘Irrigation’ in rainfed context (as in others) needs to be defined as meeting ‘moisture deficits’ in the root zone arising out of gaps in rainfall events/ drought spells. This must be neutral to the **form** (moisture/ water), **source** of water (soil water/ groundwater/ surface water) or **method** of application of water.

28. Effectiveness of public investments can be measured by the metric “Rainfall Use Efficiency” as detailed earlier.

29. The ‘Water Policy’ for rainfed areas need to be **integrated and comprehensive** to consider management of local rainfall and its flow in various forms – soil water, evaporation and evapotranspiration, soil moisture, dew, groundwater, surface water; i.e. water planning in rainfed areas should flow in the ‘route of rainfall’.

30. Site and purpose specific integration of technologies – from improving soil organic matter to harvest & retain moisture, farm ponds, lifts, micro-irrigation, mobile irrigation technologies, pipe-line grids etc., combined with a scientific and participatory mapping of resources, water budgeting, mobilisation of community to establish usage and extraction norms and governance systems – all need to be integrated.

Jal Shakti Ministry Need to have a ‘Water Resources Department for Rainfed Areas’ with Dedicated Programs

31. Considering the magnitude and nature of the work, Jal Shakti Ministry must have a separate Department for Water Resource Management for Rainfed Areas; with a multi-disciplinary team – agriculture, irrigation, water, soils and agronomy and others.

32. Development Block is an appropriate unit of planning and will have reasonable uniformity in planning and execution. The present District focus must give way for Block level planning and implementation as a district is too diverse and larger unit for

comprehensive planning. Within the Block – a combination of hydrological and administrative units may be taken up for development in phases.

Action Areas under Water Policy for Rainfed Areas

33. In line with the above approach, action on water in rainfed areas need to be focused on :

- a) Taking up comprehensive measures in promoting diverse crop systems, soil organic matter, *in situ* measures and others that helps in reducing evaporation, harvesting rainfall locally and retain it for long in the soil profile.
- b) investment on locally harvesting, storage and use of rainfall (in its different forms), regulation on the use of locally harvested water (above and below ground) to meet the first claim on securing and supplementing rainfed crops in extensive areas after meeting the livestock and livelihood requirements;
- c) Mechanisms for maintenance of soil & water conservation structures and water bodies, regular desilting / silt application to rainfed lands.
- d) Limiting extraction and use of stored water (above or below ground) to the limits of the local crop-water budgets, provisions for livestock and other livelihoods, and facilitating participatory decision making and governance.
- e) Supplementing local rainfall with transfer of water from other watersheds/ streams/ rivers to meet the soil moisture deficits at scale.

Data gaps and the Need for Data

Data available in the context of rainfed areas as described above is scanty and not amenable for any analysis. A special *data centre for rainfed areas* needs to be instituted to generate data on rainfall, soil moisture, crops, water bodies and groundwater (both historical and in season) using local measurements and remote sensing.

34. Such data needs to be made available at the Gram Panchayat level to enable local level decision making and participatory governance of the water resources.

Specific Recommendations of the RRA Network:

1. The uniform National Water Policy is exclusionary and must recognise the specific needs of ‘rainfed areas’ that constitutes over half of the country’s agriculture. **Water Policy for Rainfed Areas** need to be instituted within the National Water Policy with a framework relevant for rainfed areas.
2. Considering the diversity in rainfed areas, *Water Policy for Rainfed Areas* need to enable **decentralised and location specific action** while laying an overarching framework principles at the national level.
3. **‘Rainfall Use Efficiency’** be taken up as the metric for investments and assessment on an *area basis*; in place of a narrow ‘water use efficiency’.

4. **Reducing risk and uncertainty, support irrigation at critical stages** for improving productivity, increasing cropping intensity, soil cover, ensuring livestock and livelihoods needs are to be the **core purpose of 'Water Policy for Rainfed Areas'**.
5. **Investment parity on Water Resources** must be maintained duly allocating resources for rainfed areas. Water Management in rainfed areas needs investments dedicated for the purpose and should not be subsumed under any other broader program.
6. **Local participatory governance and establishing norms of water access**, use and first claims, and related institutional mechanisms need to be integral to the policy.
7. **Technology integration across multiple forms of water** – evaporation/ evapotranspiration, soil moisture, dew, rainfall, surface and groundwater harvested must be considered integral to securing crops and livelihoods in rainfed areas.
8. Mechanisms must be defined for **maintenance** of water bodies, soil and water conservation assets, desiltation / silt application.
9. Traditional water bodies are numerous in number and are in much dilapidated conditions. A structured revival of these tanks, other larger local waterbodies with institutional mechanisms and participation is much needed.
10. Data needs for managing water resources in rainfed areas are intensive and much needed for local decision making. A dedicated data generation and sharing process that includes rainfall, soil moisture, crops, water bodies, groundwater etc., need to be set up.
11. Jal Shakti Ministry must establish a Department within is Ministry with multi-disciplinary professions to exclusively focus on Water Management in Rainfed Areas.
12. Jal Shakti Ministry must maintain parity of investment between 'irrigated' and 'rainfed areas'. A Comprehensive program with Block as a planning unit is much needed for the purpose; initially targeting about 100 Blocks with 1000 ha in each Block that can be expanded later on. The investment needs are around Rs.40,000 per ha over a period of 3 to. (for any macro irrigation development capacity establishment will have 2.00 to 5.00 lakhs per ha)

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