

## PREAMBLE

Rainfed agriculture plays an important role in the Indian economy. In India, 68% net sown area (136.8 m ha) comes under rainfed agriculture. In India, some 48% area is under food crops and 68% area under non-food crops. According to the National Rainfed Area Authority (NRAA) almost 50% rural work force and 60% livestock is dependent on rainfed agriculture

More than 177 districts of India are dominantly rainfed districts. Arguably, a significant increase in the form of groundwater irrigation is reported from some of these areas in the last few decades. Rainfed areas also match closely with the areas characterized by human poverty. Under various programs, the Government has invested almost thrice the amount in irrigation projects as compared to investments in rainfed areas. Subsidies continue to flow to farmers with irrigation facilities, in the form of drips, sprinklers or fertilizers. Under the National Food Security Programme, emphasis to crops like wheat and paddy is obvious. Various policy documents fall short on the manner of priority given to water, soil and especially to rainfed agriculture. This is the straightforward rationale to revitalizing rainfed agriculture in India.

The assumption that large dams (and their canal networks) play a magical role in solving water scarcity and covering so-called irrigation backlogs becomes questionable. Experience from the last 20 years indicates that the actual contribution of these dams to irrigation is quite limited – in the range of 10% to 12%. Even in States like Punjab and Haryana, the contribution of groundwater is much higher than the contribution from large dams, adding an important dimension to the debate on ‘rainfed versus irrigated systems of agriculture’. The conundrum of debates around rainfed agriculture renders the task of managing water resources from areas dependent on rains and rainfed farming, far more challenging than what is commonly perceived.

Why then is one arguing the case for ‘water management in rainfed agriculture’? A major challenge for rainfed areas is that of protecting, conserving and intelligently using water resources especially considering two factors. Firstly, given the overarching impacts from Climate Change, rainfall vagaries will bear a profound impact on water resources from such areas, especially in scenarios that require ‘buffers’ during the prolonged dry spells of the monsoon. Secondly, a water management strategy in rainfed areas also holds the key to water management solutions in areas where large-scale groundwater overexploitation has occurred and both Kharif and Rabi cropping has become vulnerable to water shortages. Community awareness and sensitization around water management, especially in context to RRA, therefore gains significance. One of the principles that emerges as a *commonality* across many of the case studies presented during the May 2010 writeshop in Pune involves accepting water as a “common pool” resource. Water resources, today, are increasingly being pulled into the private property domain whereas they should be treated as common pool resource – particularly in the RRA context, where access to such resources is also a major challenge that ought to be overcome.

Ensuring food security has become a challenging priority in the briefly laid-down context above. There is a need to estimate productivity of water resources and rejuvenate the practices of mixed cropping/inter cropping as one of the main components of water management under a programme that looks into revitalising rainfed agriculture. Other productivity criteria such as water extracted per unit energy used or water extracted per unit of rainfed crops versus irrigated crops can also be introduced into mainstream productivity calculations. All such issues can be pitched at the regional and national level, as a policy objective. At the same time, ensuring water security to the rainfed farmer, under the widespread effects of Climate Change, becomes equally crucial in process of revitalising rainfed agriculture.

To achieve this, a typology can be prepared at the national level for rainfed advocacy (refer table 1, at end of document). Some pilots can be implemented to revitalise rainfed farming in core irrigated areas to understand the importance of rainfed agriculture. Other pilots could be within the 'dominantly' rainfed regions. The pilots are not necessarily projects but are research activities that include institutional, physical, policy aspects and even capacity building, in addition to building a solid knowledge and skill base around water resources in planning and implementation of rainfed farming programmes. There is also a need to define the scale for the pilots and the geographies in which they can be rooted. Micro-interventions should be portrayed in the right way, in order to overcome the misplaced rationale of "*only large-scale solutions will work*". Training and capacity building around water management in rainfed agriculture is also imperative.

Finally, water management in any area, rain fed or irrigated, should be in the form of a process and the next step in this direction is to begin the definition of the process through some key pilots.

### **WATER MANAGEMENT IN RAINFED AGRICULTURE: PILOTS**

RRA is a policy initiative and not a funding initiative. It has a specific set of objectives (outlined below):

- To bring together existing knowledge on rainfed areas;
- To identify key areas where public investment is required;
- To explore forward and backward linkages of such investments;
- To bring out possible ways of financing such investments through ongoing government programmes like RKVY or NREGS;
- To propose new ways of stepping up such investments; and
- To lay on the table the forms such investments (both public and private) should take.

The pilots will help identify the crucial gaps in existing knowledge of rainfed areas as also on some innovation or method or way of working which has not been attempted at all or not tried out at a scale. The funding aspect of the RRA initiative comes in either to bring together existing knowledge into an accessible format or to generate new knowledge through carefully designed

and documented pilots to cover the gaps and untried methods and to engage in a policy dialogue based on this knowledge. The available funds, therefore, ought to be used strategically. The pilots are part of a process that is meant to generate new knowledge through such initiatives – knowledge with an uptake potential, so that it serves and compliments the list of objectives given above. RRA network will involve collation of existing knowledge to facilitate policy dialogues and to integrate newer lessons from rainfed farming to the existing knowledge base. This will enable healthier engagement with policy makers and scientists in policy dialogues, based on these knowledge products. The pilots intend to generate new knowledge through such initiatives – knowledge with an uptake potential.

Five scenarios for pilots involving water management in rainfed areas emerged as a consequence of the discussions, especially from the May-2010 workshop held in Pune. These five scenarios are:

1. Choiceless rainfed agriculture, because of lack of choice.
2. Erratic support, especially with regard to protective irrigation.
3. Most assured irrigation, as protective irrigation in Kharif. *Rabi irrigation virtually not present.*
4. Support irrigation for Kharif but then Rabi and horticulture not supported (Maharashtra is classic example 400-600 mm rainfall)
5. Number of 'rainfed-by-choice-farmers' limited. Every farmer irrigates in India if has a choice. So, a scenario where this has happened

Analysing these scenarios further, it is obvious that farmers under these five broad scenarios would fall into three categories.

1. where large-scale groundwater overexploitation has occurred, prompting farmers to forego protective irrigation and maximise returns from the rabi crop, leaving the Kharif virtually to 'fate'
2. where groundwater development is quite limited, but farmers have created some access through private investments on wells – in other words, farmers involved in large-scale protective irrigation as priority; in other words, where the larger stake is still in Kharif farming
3. areas that have no access to irrigation – neither in Kharif nor for Rabi. It would be prudent to root the pilots under these three scenarios

The primary reason for arriving at these three classes is the fact that these three categories may exist even in a single area, say a watershed or a slightly larger unit of a small river basin. As mentioned before, *the funding from the RRA initiative is limited*. Therefore, operationalising the pilots through an independent project is unlikely. A ball-bark of Rs. 5 lakhs per pilot is being thought of so that that the pilot can actually be a part of an existing initiative with focus on one or more aspects of rainfed farming. Hence, the pilots would most securely be embedded within a larger programme or project that is attempting to pursue the linkage of water management to efforts in programmes that include one or more of the following components – millet promotion, seed management, enhancing soil-fertility etc. The general organising principle

should be that rather than the network partners taking money from the RRA initiative to fund their ongoing programmes, they should use funds available from elsewhere (their own sources, NREGS, RKVY, ongoing Ford/HIVOS funding etc.) to arrive at results, which are then made available for larger consumption through the policy platform of RRA. RRA funds should be used only to run pilot initiatives and for networking.

The network funds for the pilots on *water management in rainfed agriculture* will include many of the following (as activities):

1. To document both good practices and gaps in knowledge, especially on *moisture management and protective irrigation*.
2. To study the significance of energy, efficient use, recharge, conjunctive use of surface water and groundwater with regard to rainfed agriculture, in the pilot areas.
3. Improved access for all...an opportunity for “community level” management, especially with regard to ‘protective irrigation’ or ‘securing protective irrigation for rainfed crops.
4. To specifically focus on developing strategies for securing irrigation to overcome rainfall vagaries.
5. To attempt management of drought buffers against rainfall failure – here the contextual development of seasonal groundwater supply may also be considered.
6. To explore whether some protocols on managing protective irrigation is possible.
7. To explore whether peoples’ institutions centred around sustainably securing rain fed crops and improving productivity are possible (on lines similar to ‘water user groups’).
8. While setting a paradigm for areas which have both rainfed and irrigated farmlands, whether setting priorities on groundwater use: *drinking water, critical irrigation for kharif, rabi and summer crops is possible*.
9. To carry up the learning from the pilots into the policy domain.
10. Facilitation through external inputs to such initiatives – the details could be decided by the network.
11. Workshops for sharing cross-cutting learning (millets, soils, seeds and water) and for exposure visits.