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SUSTAINABILITY STRATEGY FOR TRANSFORMING DRYLANDS IN ANDRA PRADESH - BUILDING UPON LOCAL INNOVATIONS, RESOURCE ADVANTAGES AND MARKET POTENTIAL

ABSTRACT

Dry regions have often been seen as resource poor regions. Development administrators assume the role of designing patronizing interventions. The major departure in the proposed strategy implies building upon the strengths of the dry regions rather than their weakness. Converting crisis into opportunities has not been a new phenomenon in the Andra Pradesh administrative culture. Be it the potential for cheese made out of cow's milk, castor, sunflower, ceramics or other similar farm or non-farm activities in which substantial gains have been made, though localized in nature. But that precisely is the point. The declining area under the coarse grains, increasing current fallows, growth in the livestock sector particularly poultry and leather industry signify some pointers for future.

It has to be admitted that if mere money was the constraint then there should have been some successes in dry regions explained by entirely the availability of money. Similarly, one can not believe that inspired administrators have been particularly lacking in dry regions. But one factor which out stand in all the previous successes is the role of technology, markets and supporting institutions. It is this combination of technology, market and institutions which has to become a basis for fundamental transformation of dry regions in Andra Pradesh.

The technology should not be confused with merely the solutions developed in laboratories. Many exciting innovations have been developed by the artisans, farmers and pastrolists which can as well become the building block of future transformation. Since ecological variability in dry regions is high, the technology transfer will become less important than science transfer. Development of science which leads to client oriented technologies would require investments in dispersed and decentralized R D institutions with close involvement of business, scientific entrepreneurs, NGOs etc. The role of administration is spot, sustain and spawn innovations. The linkage between indigenous ecological knowledge and modern science and technology gets most clearly highlighted in the work of APSRAC. The micro watershed delineation would require matching local perceptions with scientific potential. Similarly there are many other areas where formal and informal knowledge systems can coalesce.

Rehabilitation and revitalization of tanks and their catchments in dry regions is a major challenge to technologists, administrators and farmers organisations/NGOs. Conversation of irrigation tanks into percolation tanks, catchment area planning, encouragement of cultivation of medicinal or other plants for developing herbal pesticides, organic soil amendments, veterinary medicines through private sector involvement can turn around the economy of dry regions. It is obvious that the PDS will have to be strengthened. One should not insist that if the advantage of the regions lies in value added products, or production of seeds or other similar items, these regions should still produce only their food requirements. Agro-horticulture is bound to further reduce the area under food crops. But its quite possible that with the revitalization of tanks, the productivity of food crops would increase in the command areas of these tanks or the wells in the down stream. APSRAC can be requested to map the tanks in all the dry regions. With the help of agriculture and industrial scientists' potential for using silt, weeds, other shrubs and tree products for agricultural or other purposes can be identified. Proposal for specific thrust areas can then be circulated among the potential investors both large and small, public and private.

It is true that one cannot make institutional and technological development into a chicken and egg problem. At the same time one has to recognize the need for institutional development and incentives in place for self management structures and supporting rules to emerge.

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The galvanization of extension machinery of agriculture, forest and other departments including education is another urgent task to scout for local innovations with due credit to innovators (Individuals or communities).

Some kind of technology mission or an interdepartmental Development Force with strong institutional bias and involvement of private entrepreneurs (not just the large corporate sector) should be the next step. The expertise in the field of science, technology, design and programming can be mobilized for a time bound development of operational plans for dry regions. It may not be out of place to mention that DAD would not succeed if the meetings for the purpose continue to take place at the end of the day. More than any thing else the new strategy needs time and attention and in a concentrated manner.

INTRODUCTION

Sustainability of any developmental intervention depends much more upon the stakes it builds in its design of the people it aims to help than on just the money or resources. Stakes of the people who have solved problems and generated solutions without external help will make the strategy sustainable. These developmental entrepreneurs in some cases could be poor people but could as well be well endowed people in other cases. The fact they have excelled in some field of knowledge also means that they reflect a different value and approach to enterprise.

Why DAD?

There are three expectations of the political system regarding the transformation of dryland in the state. (1) It should be on a large scale (2) it should reduce the uncertainty and drought induced distress to some extent and (3) it should generate employment through conservation of soil and other natural resources.

Strategy

The strategy for transformation may build upon five key concepts (a) It should build upon local innovations regarding sustainable natural resource management (B) It should build upon the strength of each region rather than the weakness (c) It should not merely look at land, crop or water based strategies. Instead the non-farm and informal sector which have absorbed much of the additional work force should receive priority attention (d) the science and technology should be employed to generate quality consciousness in every investment. Without quality it is unlikely that market would support the enterprise and (e) the involvement of private sector, large as well as small in either supporting an existing opportunity or generating new opportunities must be given importance if efficiency in resource management has to be ensured.

It has also to be noted that certain options for resource management in dry regions would require rethinking the role of extension services. For instance if certain herbal pesticides can be developed by drawing upon the knowledge as well as the plant resources of dry regions, the demand for such herbal pesticides from irrigated regions may be generated through the on farm trials by extension workers. Such a strategy would also serve a political purpose. It will generate in the leaders of the irrigated regions a concern and stake for the development of dry regions.

Conventionally the development strategies have aimed at identifying the problems of dry regions and providing solutions. Obviously in this process the role of State and Public Sector became paramount. This by itself would not have created any problem if client orientation and quality consciousness had been institutionalized. Such an orientation could never come about. Hence the need for identifying the alternative strategies for incorporating client perspective in planning. Spot-

ting, sustainability and spawning the local innovators will be the hub of turn around strategy.

Building upon strengths

When one looks at the outstanding examples of induced innovations in dry regions, one cannot think of many strategies which not only worked but also got rapidly replicated. However, few outstanding examples of such innovations are Sericulture, Sunflower, Horticulture (ber and pomegranate) and to a limited extent, value added products such as cheese based on cows milk. In each of these examples generally by chance an opportunity was perceived and an enterprising officer provided the support. The concern of the State Government is that if a change has to be brought about at large scale, one cannot rely entirely on availability of an enterprising and inspired officer. While such officers would contribute better than others, the proposed strategy must improve average performance substantially even in the areas where bureaucratic difference may be high to begin with.

One way to generate such a strategy is to recognize that different regions share different strengths. In one district or part thereof the silt of the tanks could provide spur for ceramics or tile industry (Chittoor). In another district it could be mango, leather, citronella, craft activities, natural dyes or dye-based products.

Identifying these strengths

Government has a considerable advantage in terms of mobilizing a wide spread participation of grassroot machinery in the form of campaigns or drives. There is a need to have time bound campaign involving local level officials like VLWs, Primary School Teachers, Forest Guards etc., for scouting local opportunities either through proven success or through identification of a resource which has not received enough attention. The indigenous innovations which have been developed by the people without the help of Government could be by the people without the help of Government could be inventorised to act as a point of reference or departure from the existing scheme of things. The latter kind of opportunities based on specific endowments would imply looking for a resource in which regions is rich. For instance, a region rich in raw hides and skins may be extremely poor because of low value realization. Hence if a private entrepreneur can be identified who with the support of science and technology can generate enterprise, then the available resource can be augmented.

One can also use a competitive mode for a scouting innovations and resource opportunities. Prizes can be announced to be given by the Chief Minister for the best three submission of innovations or opportunities from each district or taluka. The condition should be that one should identify an area or opportunity which has not received attention or has been developed without outside help through local resources or local creativity or both.

Generating large scale opportunities for resource augmentation

In most of the dry regions tanks have been one of the important investments whether for irrigation or for augmenting recharge through percolation. It is well known that majority of tanks have become derelict and have lost their utility. With the help of remote sensing not only all these tanks be identified but also prioritized in terms of either the most eroded or erodable catchment or in terms of the maximum number of wells down stream. In some cases, tanks may have to be desilted and repaired. In other cases an irrigation tank may have to be converted into a percolation tank. In the latter case, a problem would be faced in dealing with private this compensation, they may not like to move out of their tank beds. In such cases, a scheme will have to be developed to provide this compensation. Similarly in other cases, the catchment may have been degraded and may call

for not only soil conservation works but also afforestation. Investment for these activities will have to be provided. A question can be raised as to what is the guarantee that these tanks once rejuvenated or rehabilitated would not go out of use for want of social institutions. There are two ways to look at it - (1) for want of better utilization, the incentives for management may have come down in past (2) once the tanks are rehabilitated; further inputs for technological upgradation or deepening of wells, repair of drainage channels etc., can be graded incentives for rehabilitation package. Some which will be available with minimal incentives from the farmers. While other incentives would follow only when farmers' institutions have been developed by the people. In some cases, Government may even explore the opportunity of private enterprise for managing these tanks and selling the water. In such cases, disputes are likely to arise because the common property is now being privatised. The answer to the problem is that in the absence of such an entrepreneur, the resource degradation has in any case made this common property inconsequential. Alternatively, incentives can be provided on the basis of the efficiency of management. And these incentives can be in the form of seeds or other such inputs provided the rehabilitated tanks have been maintained properly.

The tank restoration would also imply identification of the fault lines through remote sensing in the down stream. This will help silting of new wells. The technological feasibility in this regard has already been demonstrated by APSRAC.

While restoring the tanks, the catchment of these tanks will have to be treated. In some areas, these catchments would include public lands whereas in other areas these could be either private lands or mix of both. The norms for various structures in past have been standardized and therefore generated lot of inefficiency and in some cases corruption. The challenge should be very precisely posed to the implementing authorities about the need for reducing unit cost for various structures through innovations, modifications and use of local materials. There should be a complete moratorium on the classical contour bunding activity. On the other hand, restoration of field bund oriented drainage system may be need to be strengthened. This programme may in some cases be taken up in conjunction with tank restoration while in other cases can be an independent programme.

Identifying focus enterprises/anchor activities

While in past there was some thrust on specific activities in different regions, there was no orchestration of the entire developmental activity around those thrust activities. There has to be a point of departure with regard to the role such a key activity has to play in future dryland development. For instance, if a private sector industry, an export house or any other entrepreneur shows interest in developing an agro processing plant, then all the development activities in that region should revolve around generating a favourable opportunity for that enterprise. The plantation whether of trees, grasses or medicinal plants could be done under wage employment scheme or on profit sharing basis even on the private land. This will require doing away with subsidy oriented programmes in same region. A mistake in the past was to develop a resource and then look for its market. In future one will have to identify user and then tailor the development strategy in line with user perspective. This will obviously modify the role of public administration.

Indigenous knowledge as precursor for dry land development

Most small households in dry regions do not survive on any single enterprise or activity. Same household would have some income from crop, livestock, craft, trees or labour. The portfolio of different households may vary within a limited range defined by ecological conditions. The natural resources in a given region cannot be conserved if this portfolio is disturbed very much. For instance if investments for dairy disturbs the ratio of different species without augmenting the supply of dry and green fodder, then ecological balance is likely to be impaired. AT the same time, the conventional approach of an outsider-whether in bank or in administration deciding which enterprise should be chosen by the household when and where will also not work. There is a scope for group

based interventions and some initiatives in this regard have already been taken up in the state. The knowledge in managing these portfolio is not uniformly distributed. Some people or communities excel while others perform in an average manner. The challenge is to identify the outstanding performers and generate opportunities among the rest for learning from his or her experience.

Several studies have shown that there are large number of plants, trees, grasses and shrubs found mainly or only in dry regions. The value addition in these plants for developing herbal pesticides, veterinary medicine, farm implements or soil enrichment material will require use of science and technology. Once an inventory of these plants and potential sites for their concentrated development is prepared, the position paper on the subject could be sent to different industrialists inviting them to invest in a specific area of their interest. In this regard successful small scale entrepreneurs may be given similar opportunities as large scale corporations.

Rethinking Watershed Development: Agro-industrial watersheds

Way back in 1980, the idea of agro industrial watersheds had been mooted. The concept was that demand for soil and water conservation sectors was unlikely to grow if the conserved moisture was going to be used only for low value added crops. If medicinal plants or other crops which can attract processing industry are developed, the watershed structures may not only be maintained but also be scaled up. The basic integrated land use planning units developed by APSRAC are extremely useful basis of invoking participation of scientists, local extension workers and farmers in generating investor's opportunities. A care has to be taken that while prioritizing watersheds, one does not ignore the factors such as proximity to city, high wage rates or other alternative means of employment. If such will be the case, then the incentives of farmers to invest in watershed structures would be minimal. The experience of Ranga Reddy district and some other places illustrated this.

Banking Technology Tie-up

It is a pity that there are no standing committees on science and technology at any level in he government. As a result, the science and technology inputs into developmental planning remains highly neglected. Both the CSIR as well as ICAR institutions and SAUs have their operational area of work in different parts of the state. Similarly bankers have also identified their areas of operation. There is a need for both the institutions to have joint strategy of regional development. The state government can decide to stop the subsidy oriented target group programmes and use that money either to reduce the transaction costs of banks and the scientists or set up revolving risk funds at village and mandal level for meeting the risk underlying technology trials. The risk fund of this kind would provide much greater efficiency in the development of technologies rather than continuing subsidies. Such an interaction will also create pressure on the scientific institutions for recasting their research agenda. In some specific cases the quality problems faced by the agro or rural industries may become the precise research problems to be resolved through on farm research.

Recasting technology transfer approach

The conventional extension systems in dry regions have become more or less obsolete. The major reason is that Government has been hoping a strategy suitable for irrigated regions would work for dry regions also. Similarly a strategy which might have been relevant in 50s or 60s would be relevant for future. Both these assumptions are wrong. In fact given the ecological heterogeneity there is very little scope for diffusing technologies as attempted hitherto. Therefore, several new initiatives are called for. (a) Emphasis should be on transferring scuebec rather than technology, (b)

technology development/adaptation through on-farm trials and (c) group based rather than individual based communication interventions.

The change in extension systems may involve three stages of transformation.

1. Unlearning the past dogmas
2. Generation of competitive spirit coupled with curiosity and willingness to try and
3. An ability to work with the farmers, pastoralists, horticulturists, and other rural produces in an experimental mode.

There is no doubt that a lot is available in modern science that can be adapted in the drylands. Given the high ecological variability it will be futile to expect readymade technologies developed at the research stations to diffuse widely. At the same time there would never be enough scientists to develop readymade technologies in each of the watersheds in the state. The way out is to recognize that while watersheds are highly variable, the basic principles which determine the size, site and composition of structure s of whatever kind do not vary much. Therefore the extension workers will be enable with the help of the scientists to isolate the generalisable principles from the best indigenous innovations. These principles through value edition with the help of onfarm research will become technologies. It has to be noted that on one hand administration complains about the lack of availability of technology and on the other hand it has refrained from making substantial investments in decentralized R & D systems. And here I refer to both the R & D systems that is the CSIR and ICAR on one side and private sector as well as NGO led action research on the other. The long term experiments are necessary for generating viable options as the conditions keep changing. It may be a good idea to set up in collaboration with the private sector R & D consortiums around the specific sector or product so that highest standards of quality and cost effectiveness can be achieved in time bound manner. These consortium would draw upon existing infrastructure of ICAR, SAU, CSIR and private sector. For instance if desilting of tanks is silt, then R & D to find which silt is suitable for what kind of ceramics or tiles or insulating materials would be the focus of one of the consortiums. This investment will deliver results within a short period because some of the trials would deal with refinement of existing innovations already developed by the people. The market forces can develop as evident in Chittoor on their own but the process may be slower. The State Govt. can speed up the match making between entrepreneurial interest and local endowments.

Unlearning the past dogmas in extension would also require recognition of the need for extension system to take interest in diffusing local innovations some of which may not require monetary inputs. In sixties and seventies, it made sense for Govt. to bear the cost of disseminating technologies particularly based on agri-inputs in irrigated regions. The extension system must be systematically and significantly diverted from the irrigated to dry regions.

Given the fact that viability of service centres in dry regions in the short run may not be achieved because of the limited demand, Govt. may have to invest resources for making these centres viable. Subsidies linked to the turnover aimed at making the outlets in dry regions viable would be much more useful incentive than the use of the same subsidy for reducing the cost of the inputs for the producer. Direct subsidies may lead to inefficient utilization as well as closure of the outlets in due course. During the Medak experiments, IFFCO closed down its service centre after three years because against the viability norm of 300 ton sales of fertilizer per year it could sell only 30 tons. Studies in Gujarat have shown that one of the important reasons for under investment of inputs in good rain fall years is the constraint of frequent stockouts in the cooperative or other fertilizer distribution centres at local level. A low capital base and bad management in the past has made the cooperative structure moribund. The private initiatives have obviously not come about because of increased risk and uncertainty. Wherever technology has diffused whether it is sunflower or any other such crop, the inputs support system has also followed up. therefore the role of the State Govt. is not to thwart the marker forces but provide institutional incentives for the private and

voluntary initiatives to spur in the sectors and spaces where these are not present. The analogy of bypass is quite an opt one. Although we should realize that a total bypass may generate resistance and lead to sabotage by the lower level bureaucracy. Therefore their involvement is vital and necessary. The extension system is highly biased towards crops. The livestock and non-farm sector are totally ignored.

Giving women their due

In large parts of dry regions because of high male emigration seasonally or otherwise, large number of households are headed or managed by women. Home Science department of APAU has developed technologies for adding value to some of the coarse grains through processing. They are examples of lijjat pappad, demonstrating the potential of women groups. Samakhya has also been very active in this field. It would be useful to identify specific food processing technologies with buyers involvement in the product development and testing. The role of packaging, product design etc. does not have to be over-emphasized in this case as well as other similar cases. The livestock development programme, craft and in some cases vegetable and flower production, seedling raising, production of mango crops and many other similar activities in dry regions can be a means of empowering women. Not to mention, leadership in the hands of women in any other programme may, other things being same, improve the chances of programme success.

There are several other areas of concern which for want of time have not been properly developed here. The issue of farm machinery, hand & bullock down implements is extremely important. The implements help bring seed and moisture together. Similarly the indigenous innovation documented in Junagadh, Gujarat, about digging groundnut or sowing of wheat in ferrors may have application in AP too.

Livestock is a major resource in dry regions but attempts to add value to wool, mutton and other products have been quite weak.

There are many examples of new norm-farm opportunities which have to be encouraged through involvement of market research and development agencies. Dry regions also have high bio-diversity and dispersed in situ gene banks will provide an insurance against gene erosion. These gene banks will also enrich and renew local ecological knowledge system.

Finally any policy for sustainable development has to succeed through following methods.

	Ecological resources	Institutions	Technologies	Culture
Access	XX			
Assurances		XX		
Stability (skill)				XX
Attitudes				XX

Indication are that, many of these dimensions are already been seen as vital for restructuring DAD strategy.

Once a care group has been set up, we at IIM-A would be very keen to support initiative in such a vital sphere of social development in A.P