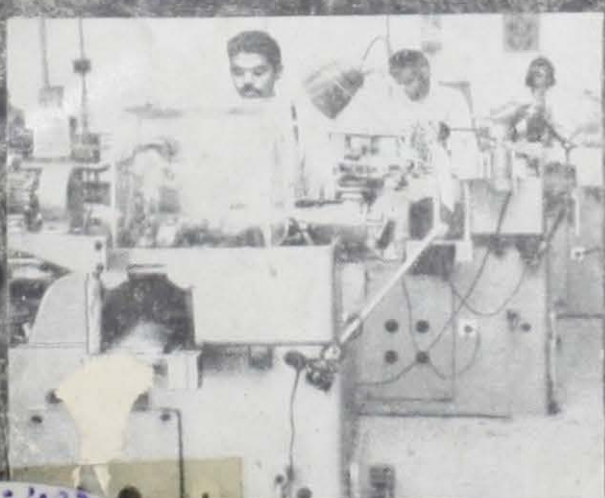


REPORT ON
DEVELOPMENT OF CHRONICALLY
AFFECTED AREAS



NATIONAL COMMITTEE
ON
THE DEVELOPMENT OF BACKWARD AREAS

NOVEMBER, 1981



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**NATIONAL COMMITTEE
ON
THE DEVELOPMENT OF BACKWARD AREAS**

**PLANNING COMMISSION
GOVERNMENT OF INDIA
NEW DELHI
NOVEMBER, 1981**

Price : Inland Rs. 5-50 or Foreign £ 0-64 or \$ 1-98

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SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

I. INTRODUCTION

1. Chronically flood affected areas should be treated as backward areas, and special measures instituted for dealing with their problems, and promoting their economic development.

(Para 1.1)

2. It is necessary to identify the ameliorating steps necessary for the development of the affected areas where damage is caused by natural havoc and is in the flood plains where neither any embankment exists nor are provided in the Master Plan. This is where nature's direct havoc on the economy is felt and this havoc, if chronic, creates the problems of backwardness.

(Para 1.11)

II. IDENTIFICATION OF CHRONICALLY FLOOD AFFECTED AREAS AND STRATEGY TOWARDS DEVELOPMENT

3. The following criteria should be used for identification of the chronically flood prone areas:

- (i) flood frequency of at least once in three years,
- (ii) flood duration of at least 7 days period at a stretch,
- (iii) flood depth of more than the standing paddy at that time, and
- (iv) flash floods with strong current liable to up-root plants even if the duration is less than 7 days.

(Para 2.4)

4. In all flood plains, one single Department must be designated as the Department to maintain sufficient hydraulic data. It is only this data which would enable a demarcation of the chronically flood affected areas and the nature and the change in such areas over time.

(Para 2.5)

5. In all the blocks affected by floods, the exercise to refine the identification of chronically flood affected areas requiring amelioration may be done within the next two years so that a realistic and satisfactory ameliorative programme can be introduced.

(Para 2.8)

6. Unlike the demarcation area of a block which the committee has deemed useful for planning in its reports already submitted, the area considered appropriate for the present report, for obvious reasons, is a water basin or sub-basin.

(Para 2.9)

7. Measures to mitigate flood losses need to be part of a comprehensive scheme where in modification of floods, reduced damage susceptibilities of infrastructure and property are looked at an integrated fashion.

(Para 2.15)

8. For developmental purposes it should not be difficult for a project approach to be implemented covering part areas of the blocks so long as they fall in a basin or sub-basin.

(Para 2.16)

9. Crop damage is one of the worst damages caused in floods. An appropriate cropping strategy and other steps have therefore to be adopted in these areas. The obvious pathways would be to popularise suitable flood escaping or flood tolerant cropping system or intensive crop production with irrigation in the flood free months there. The Committee considers that maximum utilisation of the water resources available in these areas and introduction of suitable cropping strategies would be the most important steps for the development of these areas.

(Para 2.17)

10. Regarding the damage caused to houses, property and infrastructure, strengthening of house structure, raising the level of whole villages or providing ring bunds around villages have been considered as possible alternatives. Each of these alternatives has positive and negative aspects; yet the fact remains that something has got to be done to provide protection to the human settlement.

(Para 2.18)

11. The committee would also like to emphasise the importance of pre-disaster preparedness measures since they can change a major disaster into a minor one and mitigate the suffering of those likely to be affected.

(Para 2.19)

12. The Meteorological Department is reported to have drawn up a comprehensive scheme for improving meteorological telecommunication net work for collection of data and its prompt dissemination to the appropriate quarters. The Committee would suggest early decision on these proposals.

(Para 2.24)

13. The Central Flood Forecasting Organisation is maintaining a net-work of observation stations where gauges have been installed to record river flows, sediment discharge etc. The Rashtriya Barh Ayog

(ii)

have pointed out that there is need for complete review and preparation of a comprehensive plan with a view to bring the network to standards laid down by W.M.O. The net work should come into operation within 5 years. Similar action is necessary in respect of gauges maintained by the Irrigation Department of the States.

(Paras 2.26 & 2.27)

14. There are wide gaps in the hydrological data. No regular information has been maintained about the behaviour of the rivers. The river beds of some of the rivers are reported to have gone up due to reduced velocity of the flood and consequent accumulation of sand. This needs to be verified in the field.

(Para 2.28)

15. The Rashtriya Barh Ayog has referred to the new technologies developed for collection, transmission, storage and retrieval of basic data. While we may not be able to modernise completely collection, transmission, processing and storage of data, a minimum programme should be taken up for meeting the essential requirement of flood forecasting.

(Para 2.29)

16. The present restriction on use of margin money on disaster preparedness measures should be reviewed. Funds need to be provided.

(Para 2.34)

17. The Committee has already recommended a sub-plan approach for allocation of plan funds in respect of the backward areas. It has also dealt with extensively about the allocation of financial resources etc. The Sub-Plan approach would equally be applicable to the chronically flood affected areas identified by the States in accordance with the criteria recommended by the committee. The Committee has recommended a special grant of Rs. 5 lakhs per block, on a phased basis, to take care of certain special items like surveys, investigation etc. As in the case of chronically flood affected areas, a block would not be the unit for identification, but a basin or a sub-basin, the allocation may be on an area basis. A suitable formula would have to be devised so that this additional allocation is also available in respect of the chronically flood affected areas.

(Para 2.36)

III. CROPPING STRATEGY

18. Adequate research support needs to be provided to solve 'Diara' land problems. Suitable research projects should be taken up on crop and varietal improvement, efficient methods of village for timely operations, efficient use of irrigation water, pests and disease management etc. Organised marketing system to pick up the farm produce from the producers and fetch remunerative prices will go a long way to promote this cropping strategy.

(Para 3.4)

19. Given such facilities, and subject to local requirements, the general cropping pattern for the chronically flood prone areas of U.P. should be (a) intensive 'Rabi' cropping after recession of flood water with irrigation and raising crops with improved varieties of wheat, potato, peas and mustard; (b) after 'Rabi' irrigated summer cropping (Zaid) be practised, using suitable short duration varieties of summer maize, mung or paddy so as to harvest the crops before rains; and (c) 'Kharif' cropping when taken up, mostly flood tolerant paddy varieties like Madhukar, Chakia—59 etc., may be adopted.

(Para 3.5)

20. The 'Diara' land in Bihar constitutes the most flood affected areas of the State. Diara lands of Bihar are similar in character to those for eastern Uttar Pradesh. The various practices in the 'Diara' land can be applied to other chronically flood affected areas wherever suitable.

(Para 3.6 & 3.7)

21. Access to irrigation water is essential for promoting intensive crop production programmes during flood free months in chronically flood prone areas of Bihar. Adequate research support as advocated for 'Diara' lands in Uttar Pradesh holds good for Bihar.

(Para 3.7)

22. Flood incidence has been observed to be worst near the confluence of rivers in Assam. These areas which are chronically flood prone may continue to lack adequate flood protection for long years to come. Hence there is an urgent need for restructuring the cropping programme to minimise crop damage and loss of production.

(Para 3.8)

23. In Assam Valley worst floods are experienced in the months of July and August, although in some years floods have been reported in early June or in end of September. In general, however, the cropping has to be restructured to avoid the months of July and August.

(Para 3.9)

24. Recognising the flooding, pattern occurring in the riverine areas, the appropriate cropping strategy would be to raise early 'Ahu' paddy from February to June, followed by late transplanted 'Sali' paddy from September to December. However, farmers' acceptance of this strategy hinges on the availability of irrigation water for early planting of Ahu and for saving the 'Sali' paddy from moisture stress in the valley for year round surface flow irrigation due to topography, the ground water resources appear to be abundant. It is indeed, reported, that in most parts of the valley, ground water is available within a few metres of the surface and offers great scope for exploitation at fairly low cost. The Committee advocates that steps should be taken to popularise an irrigated cropping programme of early 'Ahu' paddy or jute, in the pre-flood season, followed by late 'Sali'

(iii)

paddy or 'Rabi' wheat, mustard or pulses in the post-flood season. The State's efforts in the direction needs to be intensified using available high yielding varieties and technology.

(Para 3.11)

25. In the low lying deep water areas, farmers raise crop mixtures of 'Ahu' and 'Bao' paddy. For 'Bao' paddy varieties like 'Kekola Bao', 'Negheri Bao' etc. are recommended, Nevertheless, the modern technology of paddy cultivation has not yet benefited the deep water paddy culture and there is no breakthrough yet in deep water paddy cultivation. More intensive research has to be undertaken on deep water paddy.

(Para 3.12)

26. An alternate pathway to improve production from such land would warrant systematic development of deeper areas as organised water bodies for aquaculture and use the same as a supplementary irrigation source for intensifying crop production in the remaining peripheral areas when properly drained. Recognising its merit, the committee considers it would be worth-while to test the economic viability of this concept by undertaking a few operational pilot projects in the State before its large scale adoption.

(Para 3.13)

27. The Committee endorses the contingent crop plans and alternate cropping pattern envisaged by the Government of West Bengal.

(Para 3.15)

28. In general, agriculture in Orissa, means raising of paddy. The October-January sown crop of paddy, though covers only upto 5 per cent of the State's paddy area, is practically free from flood and performs best. The season is comparatively cloudless and favours increased photo-synthetic efficiency from November onwards. All efforts should be made to expand paddy area in the October-January season. The Committee advocates this strategy in the flood prone coastal area of Orissa.

(Para 3.18)

29. The success of such a strategy depends on the availability of irrigation water. The Committee, therefore, reiterates its recommendations that immediate steps should be taken to increase irrigation facilities in the flood prone areas.

(Para 3.19)

30. Intensive research, carried out in the country by the scientists of the Central Rice Research Institute, Cuttack, Agricultural Universities etc. and elsewhere on paddy, now offers newer varieties and technology suitable for flood prone areas. Photosensitive high yielding varieties like CR-1009, CR-1011, CR-1018, Pankaj and Jagnath can successfully be grown in rainfed, shallow and intermediate waterlogged areas (15-50 cm water depth). For recurrent flood areas, flood resistant varieties like FRG-7,

FRG-8, BR-13, BR-14, FR-13A and FR-43B are recommended. Where semi-deep (50-100 cm) flood water conditions are experienced, rice varieties like CR-1030, CR-260-30, CR-260-31 etc. would be the suitable varieties. Floating rice varieties like Jaisuria, CNDW 332, 327, 326 and 325 have shown great ecological adaptability and are recommended for deep water areas.

(Para 3.20)

31. The Committee advocates the restructuring of the cropping, which can escape or tolerate flood damage in the flood prone areas. For popularising such a cropping strategy, it is reiterated that steps should be taken to make available irrigation facilities in such areas.

(Para 3.21)

32. Due to management difficulties, deep water paddy produces low grain yields, ranging from 0.5 to 1 tonne per hectare. Suitable varieties are to be evolved to tolerate long periods of complete submergence. Nevertheless there appears no breakthrough in deep water paddy cultivation. In view of the importance of deep water paddy, in the flood prone areas and the formidable problems faced for attaining any breakthrough in its production, the Committee strongly advocates intensification of scientific research on deep water paddy on priority basis.

(Para 3.22)

IV. IRRIGATION STRATEGY

33. A strategy to retain some water in the natural depressions for providing lift irrigation during the later part of the rabi season and during hot weather season should be considered.

(Para 4.6)

34. It should be possible to carry canal water for irrigating lands rendered flood-free during Rabi and summer seasons if there is any major, medium or minor surface irrigation scheme operating in the relatively higher areas in the neighbourhood. The distribution arrangements can be made from the nearest canal water course either through portable pipes or through underground pipe system which may remain undisturbed during the floods. Such irrigation will provide gravity flow to the areas rendered free from floods for Rabi and hot weather crops in and around natural depressions. Drip irrigation and sprinkler irrigation may be tried to secure economy in water use.

(Para 4.6)

35. Wells could be sunk in the areas. They would be normally covered during the period of submergence and can be used for irrigation purposes with manual or animal operated devices as well as with portable pump sets to lift water from the wells in the floodfree season after the monsoon.

(Para 4.7)

36. In West Bengal many channels keep on flowing after the monsoon season even after the lands are

(iv)

rendered flood free. To raise boro paddy or wheat the farmers are used to put up kucha bunds across the flowing channels to impound water and lift the same for irrigating the areas. The system is very crude and adversely affects the regimes of the natural streams or the drainage channels. Instead of putting up temporary earthen bunds, if a systematic programme of construction of sluices with gates are drawn up and construction undertaken, perhaps the purpose will be better achieved and during the monsoon season the gates can be kept opened to allow flood water to pass freely.

(Para 4.8)

37. A system of lifting water during the Rabi and summer season is already in vogue in some parts of the Assam State. This programme should be accelerated.

(Para 4.9)

38. So far as areas subjected to flash floods are concerned, the same strategy of tube wells, wells and river lifts can be considered with similar portable arrangements for pumps, motors and distribution system for providing irrigation during Rabi and hot-weather seasons. In such areas it is most advisable not to try any crops during flood periods.

(Para 4.12)

V. MEASURES TO MITIGATE FLOOD DAMAGES

39. It is fully realised that absolute immunity from flood damage is not physically possible even in the distant future because of unpredictability of several natural forces which might cause an unprecedented situation.

(Para 5.1)

40. The full potential of the Landsat Imagery be utilised to know precise details about the behaviour of various upper reaches in the country.

(Para 5.8)

41. The moderation of run-off would directly help the chronically flood affected areas. For reduction of run-off, the committee would recommend (i) prohibition of production in the hilly catchments; (ii) construction of flood detention reservoirs; (iii) contour bunding in hilly catchments; (iv) small check dams on the tributaries to delay run-off to point of concentration; and (v) elaborate arrangement for flood fighting arrangements at vulnerable points with adequate support of flood forecasting and warning thereof.

(Para 5.11)

42. A number of smaller flood retention reservoirs of suitable capacity should be constructed on or near each river, by excavation if necessary. This will serve to regulate the ferocity of flash floods downstream of these reservoirs. The retained flood waters in various reservoirs can provide ample water supply during the dry season.

(Para 5.13)

43. The upper reaches management can be most effective on a watershed management basis. However, at times a judicious choice between conflicting alternatives has to be made.

(Para 5.14)

44. Any individualistic attempts at soil conservation measures may not yield the effective results. The whole watershed needs tackling in totality by the Governments and the individual farmers should be made to work within the prescribed norms. In consonance with the overall objectives, any financial needs of the individual farmers should be satisfactorily backed by governmental agencies.

(Para 5.15)

45. Embankment construction has been one of the age old method of reducing flooding. The Committee agree that the object of remedial measures of the protection of a chronically flood affected area should be to train the rivers on their way to the sea by constructing protective embankments, judicious dredging, flood escapes etc. One of the main reasons attributed to such frequent breaches has been found to be inadequate maintenance. The Committee endorses the Seventh Finance Commission recommendations on the subject.

(Para 5.17)

46. The importance of preparing a comprehensive plan of action assumes greater strength in the context of drainage management. The Committee would like to emphasise involvement of all the concerned authorities/agencies which would be responsible for sanctioned construction works in the flood plain areas.

(Para 5.18)

47. The maintenance of drainage by dredging and utilisation of the material thus dredged for filling up the hollow areas on the other side of the embankments is a possibility. The maintenance of major/medium drainages wherever maintained by Revenue Department, must be taken over by the Irrigation Department.

(Para 5.19)

48. The Committee, while endorsing the comprehensive treatment of the subject of drainages by the Rashtriya Barh Ayog would like to re-emphasise and recommend the following measures:—

- (i) There is need for closer coordination amongst concerned agencies like the Railways, National Highways, State Irrigation/Flood Control Departments so as to ensure that structures like bridges, roads, railways etc. do not aggravate flood problems.
- (ii) Prior consultation by National Highway authorities, State P.W.D.s and Railways with the State Irrigation/Flood Control Departments should be made obligatory. To facilitate an expeditious check, the Government of India should evolve guidelines/checklist for the purpose of vetting of waterways by the State Irrigation/Flood Control Departments.
- (iii) It should be mandatory that assessment of adequacy of existing waterways should be made

(v)

by the State Committee of Engineers or some other Technical Board and the waterways for bridges to be constructed in the future should be vetted by the State Irrigation/Flood Control Department.

- (iv) The Standing Committee for settling disputes on waterways and sharing of costs, headed by the Chairman, Central Water Commission, should be vested with statutory powers for implementation of its decisions.
- (v) The State should undertake legislation to prevent unauthorised river bed cultivation and encroachments into drains etc. and where such laws already exist, the enforcement agencies should be strengthened. Cultivation of crops like water-melons, vegetables, etc. in river beds and berms, may however, be allowed with caution. The practice of cultivation in the abandoned beds of Dhars and which discharge into main rivers should be stopped.
- (vi) Where suitable legislation with a penal clause for unauthorised crossings over drains has not been enacted, the same should be done and enforced.

(Para 5.20)

49. Flood relief channels should be constructed at suitable points to drain excess of flood water to remote artificial lakes; these should also be provided towards the downstreams and of enlarged channels to carry away surplus water to other artificial lakes. The flood relief channels can be used as feeders for minor irrigation canals.

(Para 5.20)

50. A complete review of the operation of the systems of sluices for drawing up a necessary operational manual for the same is necessary.

(Para 5.23)

51. The paucity of data on river bed behaviours inhibits in making any objective idea about the problem of sand casting. Studies should be undertaken whereby assessment of the problem in the right perspective can be had.

(Para 5.25)

52. The problem of sand casting, beyond a limit, is quite harmful for the crop growth. The Committee would recommend the initiation of scientific studies on the subject so that suitable crop planning can be devised.

(Para 5.26)

53. Rural houses, facing flood fury, are generally made of materials which cannot withstand a high degree of stresses and strains. In the event of raising pucca structures the damage susceptibility can be considerably reduced. Such a scheme should be supported in areas where alternatives are not found to be feasible. In case of its adoption strict enforcement would be desirable as otherwise additional numbers in the hope of receiving doles for construction may get settled in affected areas.

(Para 5.29)

54. Raising of villages as a whole offers another alternative to mitigate the hardships of human settlements. Without liberal support from public funds the proposition can rarely succeed. In case of raising of villages, roads should not be raised correspondingly so as to avoid any interference with drainage aspects. The roads may be allowed to get submerged during floods. Availability of country boats in sufficient numbers would be able to solve the problems of the chronically flood affected areas during that spell.

(Para 5.31)

55. Construction of ring bunds around the villages or human settlements in another way which has been experimented at certain places. Such a scheme may be supported in the event of cost-benefit favouring the same in comparison to other alternatives.

(Para 5.32)

56. Structural changes and land elevation wherever undertaken by individuals or groups, should be encouraged and suitable monetary and other assistance be provided keeping in view the overall policy objectives.

(Para 5.33)

57. Strict regulation of land use in the chronically flood affected areas is necessary.

(Para 5.34)

58. The Planning Commission already provided for soil conservation and afforestation measures in the upper catchment of flood prone rivers. This programme will require to be implemented on sub-watershed basins after identifying the critically affected ones. Effective implementation of this programme will require building of inter-disciplinary teams for each of the basins. The pace of the programme will have to be accelerated along with effective measures to prevent deterioration of new areas. The Committee would recommend special efforts in this direction.

(Para 5.34)

59. Disaster relief, while warding off, the immediate distress, encourages certain attitudes which need to be deplored. There is a tendency to consider relief measures as a right. This in turn tends to remove the incentive to avoid future flood losses and encourages persistent human occupancy of the flood plain.

(Para 5.35)

60. Effective steps should be taken to train and organise local volunteers in fighting flood hazards due to threatened breaches in embankments and also to utilise effective steps to plug the breaches as and when the same occur.

(Para 5.36)

61. The Committee feels that there should be a law to ensure that any building that is constructed in such areas should provide for a plinth above the normal flood level.

(Para 5.37)