Government of Rajasthan

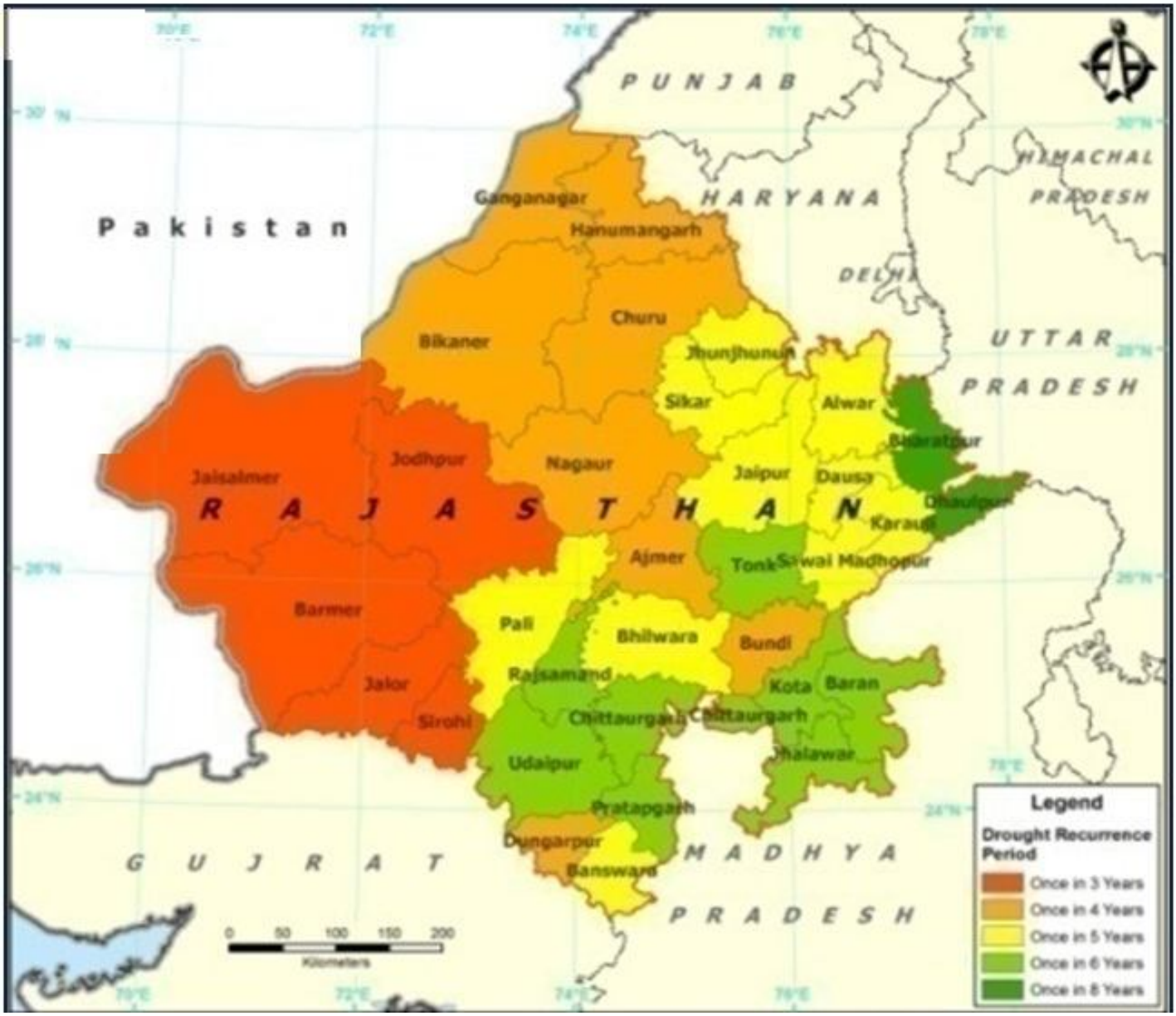
CRISIS MANAGEMENT PLAN

DROUGHT

2014

I N D E X

Map depicting drought prone area and drought frequency of the State|



1. Approach for CMP :

The crisis management plan will promote an approach that moves drought management practices from reactive to more proactive management. It aims to provide state wide coordination for efforts towards integration of science, policies and implementation by strengthening drought monitoring, drought risk assessment/prediction; drought early warning services and sharing best practices at the village, district and the state level.

The CMP advocates and facilitates integration of resources of various agencies such as water resources, revenue, agriculture, disaster management and relief, medical and health, animal husbandry and energy etc. At the same time, it aims to strive for parallel and interactive vertical integration of science, policy and society through drought monitoring, risk assessment prediction and management through mitigation, community preparedness and effective response in a time bound manner for restoration of normalcy.

The indentified priorities of CMP are to clarifies the goals and defines the roles and responsibility of various stakeholders at all levels. It does not replace the procedures of contingency action plan in-vogue at various levels instead flags the crisis situation which can be of catastrophic nature in respect of the State of Rajasthan. The CMP calls for moving towards a proactive, multi-sector, multi stakeholder, technology driven and participatory approach for crisis management for all sort of drought situations and also restricted to the management intervention required during the time of crisis.

2. Drought a Crisis

Low rainfall coupled with erratic behaviour of the monsoon in the state makes Rajasthan the most vulnerable to drought. Of all the natural disasters, drought can have the greatest impact and affect the largest number of people and livestock. Drought invariably has a direct and significant impact on food production and the overall economy. Drought, however, differs from other natural hazards. Because of its slow onset nature, its effects may accumulate over time and may linger for many years. The impact is less obvious than for events such as earthquakes or flood but may be spread over a larger geographic area. Because of the pervasive effects of drought, assessing its impact and planning assistance becomes more difficult than with other natural hazard

There is no universally agreed upon definition of drought. It may be generally defined as a temporary reduction in water or moisture availability significantly below the normal or expected amount for a specified period. The impact of drought results in shortage of food, fodder and water, or in discrepancies between supply and demand for food, fodder and water. Drought is widely recognised as creeping natural hazard that occurred due to natural climatic variability and with varying frequency in all climatic regimes.

Types of Drought

Droughts may be grouped by type

Meteorological drought

Results from a shortfall in precipitation and is based on the degree of dryness relative to the normal or average amount and the duration of the dry period. This comparison must be region specific and may be measured against daily, monthly seasonal or annual timescales of rainfall quantum. Rainfall deficiency on its own, however, does not always create a drought hazard.

Hydrological drought

This involves a reduction of water resources such as streams, groundwater, lakes and reservoirs. Its definition involves data on availability and off take rates in relation to the normal operations of the system (domestic, industrial, irrigated agricultural) being supplied. One impact is competition between users for water in these storage systems.

Agricultural drought

It is the impact of meteorological and hydrological droughts on crop and livestock production. It occurs when soil moisture is insufficient to maintain average plant growth and yields. A plant's demand for water, however, is dependent on the type of plant, its stage of growth and the properties of the soil. The impact of agricultural drought is difficult to measure due to the complexity of plant growth and the possible presence of other factors that may reduce yields such as, quality of seeds pests, weeds, low soil fertility and poor agricultural practices.

Famine drought

This can be regarded as an extreme form of agricultural drought, resulting from metrological & hydrological droughts where food, fodder and water shortages are so severe that large number of people become unhealthy or die. Famine disasters usually have complex causes often including war and conflict. Although scarcity of food is the main factor in a famine, death can result from other complicating influences such as disease or lack of access to water and other services.

Socio-economic drought

correlates the supply and demand of goods and services with the three above-mentioned types of drought. When the supply of some goods or services such as water, hay or electric power is weather dependent, drought may cause shortages. The concept of socio-economic drought recognizes the relationship between drought and human activities. For example, poor land use practices exacerbate the impacts and vulnerability to future droughts.

While any of the above types may result in an acute drought, the hydrological and agricultural varieties are frequently endemic in certain areas in a chronic form needing long-term measures rather than crisis management or emergency response required for an acute drought. In other words, 'Crisis Management' is most frequently required in case of Meteorological Drought although the crisis precipitated by an acute drought acquires extra-ordinary severity where Hydrological Drought is already in evidence.

An acute drought is an event where, due to scarcity of water, for any reason - though mostly on account of scanty (-60% to -90% of normal rain) or deficient rains (-20% to 059% of the normal) results in substantial failure of agricultural operations causing loss of rural livelihood and reduction in over-all availability of water for human/cattle/crop consumption.

3. Facts of Monsoon Rainfall

The average normal rainfall of Rajasthan 53.1 cm. Western Rajasthan receives average rainfall of 27.9 cm and Eastern Rajasthan receives average rainfall of 63.1 cm. The general trend of Isohyets is from northwest to southeast. There is a very rapid and marked decrease in rainfall in the west of the Aravalli range making western Rajasthan the most arid part. The average annual rainfall in this part ranges from less then 10 cm in north-west part of Jaisalmer (lowest in the state), to 20 to 30 cm in Ganganagar, Bikaner and Barmer regions, 30 to 40 cm in Nagaur, Jodhpur, Churu and Jalore regions and more than 40 cm in Sikar, Jhunjhunu and Pali regions and along the western fringes of the Aravalli range. On the eastern side of the Aravalli range, the rainfall ranges from 55 cm in Ajmer to 102 cm in Jhalawar. In plains, Banswara (92.0 cm) and Jhalawar (95 cm) districts receive the maximum annual rain. Mount Abu (Sirohi district) in the southwest, however, receives the highest rainfall in the State (163.8 cm). The yearly total rainfall is highly variable at different places all over the State and it is most erratic in the eastern half with frequent spells of drought, punctuated occasionally by heavy downpour in some years associated with the passing low pressure systems over the regions.

The southwest monsoon which has its beginning in the last week of June in the eastern parts, may last till mid-September. Pre-monsoon showers begin towards the middle of June and post-monsoon rains occasionally occur in October. In the winter season also, there is sometimes, a little rainfall associated with the passing western distribution over the region. At most places, the highest normal monthly rainfall is during July and August. The number of rainy days during this period varies widely in different places, ranging from 10 in Jaisalmer to 40 in Jhalawar and 48 in Mount Abu. Rainfall during the rest of the period ranges from 2.1 cm at Jaisalmer to 7.2 cm at Jaipur, distributed over 2.5 to 6 rainy days.

Drought situation

Low rainfall coupled with erratic behaviour of the monsoon in the State make Rajasthan the most vulnerable to drought. Based on historical data the frequency of occurrence of droughts in the State is given in Table 1.

Table 1: Frequency of drought in Rajasthan

S.No.	Recurrence Period (Year)	Districts
1	Once in 3 years	Barmer, Jaisalmer, Jalore, Jodhpur and Sirohi

2	Once in 4 years	Ajmer, Bikaner, Bundi, Dungarpur, Sriganganagar, Nagaur, Hanumangarh and Churu
3	Once in 5 years	Alwar, Banswara, Bhilwara, Jaipur Jhunjhunu, Pali, Sawai Madhopur, Sikar, Dausa and Karauli.
4	Once in 6 years	Chittorgarh, Jhalawar, Kota, Udaipur, Tonk, Rajsamand and Baran
5	Once in 8 years	Bharatpur and Dholpur

Of all the natural disasters, drought can have the greatest impact and affect the largest number of people. They invariably have a direct and significant impact on food and fodder production, drinking water and the overall economy. Drought, however, differs from other natural hazards. Because of its slow onset, its effects may accumulate over time and may linger for many years. The impact is less obvious than for events such as earthquakes or cyclones but may be spread over a larger geographic area. Because of the pervasive effects of drought, assessing their impact and planning assistance becomes more difficult than with other natural hazards.

Typical adverse effects

- Adverse effects can be grouped into sectors; economic, environmental and social.

Economic

- Losses in production of crops, dairy and livestock, timber and fisheries
- Loss of national economic growth and development
- Income loss for farmers and others directly affected
- Losses from tourism and recreational businesses
- Loss of hydroelectric power and increased energy costs
- Losses to industries related to agricultural production
- Decline in food production and increased food prices
- Unemployment from drought related production declines
- Revenue losses to government and increased strain on financial institutions

Environmental

- Damage to animal and fish species and habitat
- Wind and water erosion of soils
- Damage to plant species
- Effects on water quality (salination)
- Effects on air quality (dust, pollutants, reduced visibility)

Social

- Food shortage effects (malnutrition, famine)

- Loss of human life from food shortage or drought related conditions
- Conflicts between water users
- Health problems due to decreased water flow and pollution
- Inequity in the distribution of drought impacts and relief assistance
- Decline in living conditions in rural areas
- Increased poverty, reduced quality of life
- Social unrest, civil strife
- Transhumance for employment or relief assistance

Factors contributing to vulnerability

- Drought is more likely in dry areas with limited rainfall. Physical factors such as the moisture retention of soil and timing of the rains influence the degree of crop loss in droughts. Dependency on rain-fed agriculture increases vulnerability. Farmers unable to adapt to drought conditions with repeated plantings may experience crop failure. Livestock-dependent populations without adequate grazing territory are also at risk. Those dependent on stored water resources for irrigation will be more vulnerable to water shortages and may face competition for water.

- Drought related effects will be more severe in regions with overall yearly food deficits and for largely subsistence level farming and pastoralist systems. In these areas, drought can more easily lead to famine and deaths. Food shortages will have the greatest impact where malnutrition already exists.

- Where governments and assistance agencies have not adequately planned drought response, assistance measures may be poorly targeted or ineffective. Vulnerability to death may increase when coping mechanisms have been exhausted and abnormal migration takes place. Situations in relief camps such as overcrowding and poor sanitation may cause death from disease.

Elements of Management of an Acute Drought:

(i) Constant monitoring of rainfall and hydrological status;
(ii) Detection of Early Warning Signs other than rainfall statistics to identify a potential drought;
(iii) Appearance of Drought like Conditions;
(iv) Assessment of Damage and Requirement of Assistance for distress mitigation in the event of actual outbreak of a drought.
(v) Sanction of Assistance for different relief activities;
(vi) Monitoring of progress of Drought and Administration of Relief.

4. Crisis Indicators

1. Monsoon Behaviour

The behaviour of monsoon is usually erratic and uncertain in the State. Kharif production depends on the quantum and distribution of rainfall. The monsoon normally onsets in the first week of July and withdraws by the end of August or seldom it may give sporadic showers in September's first fortnight. Thus the optimum moisture availability period varies from 50 days under normal conditions with 12-28 potential rainy days. The behaviour of monsoon is broadly classified as under:

a) Normal season with normal onset, cessation and distribution of monsoon

b) Delayed onset of monsoon

c) Normal onset but early withdrawal of monsoon

d) Normal onset and cessation but prolonged drought period in between (inter-spell dry period

e) Flood/Excess rains

f) Uneven distribution of rains

2. Early Warning Indicators of Drought :

For Kharif (Sowing June to August)

a) Delay in onset of South-West Monsoon.

b) Long 'break' in activity of South-West Monsoon.

c) Insufficient rains during the month of July.

d) Rise in Price of fodder.

e) Absence of rising trend in Reservoir Levels.

f) Drying up sources of Rural Drinking Water Supply.

g) Declining trend in progress of sowing over successive weeks compared to corresponding figures for "normal years"

For Rabi (Sowing November to January)

a) Deficiency in closing figures for South-West Monsoon (30th September).

b) Serious depletion in level of Ground Water compared to figures for "normal years".

c) Fall in the level of Reservoirs compared to figures for the corresponding period in the "normal years" - Indication of poor recharge following SW Monsoon.

d) Indication of marked soil moisture stress.

e) Rise in price of fodder.

f) Increased deployment of water through tankers.

5. Crisis Management Framework

This framework has been prepared in order to identify the fundamental aspect of crisis situation, it includes the phases of crisis, magnitude, outcome of crisis phase, trigger mechanism and strategic response matrix.

Level I	Phases of Crisis	Vulnerability Magnitude (area specific) (Scale : Zero – 10)	Outcome of the Crisis Phase	Identified Trigger mechanism	Strategic Response Matrix / Action
1	Normal	Zero. (Rainfall is above +19% to -19% cumulatively for more than 4 weeks period through out the season)	Nil	Nil	➢ Developing and Strengthening drought preparedness ➢ assessing food and water requirements and resources, ➢ constant monitoring of drought-related characteristics ➢ Drawing up of perspective plans with the vision of drought proofing under the ongoing schemes/ programmes of Central/ State Govt.
2	Alert/ Watch	1 - 2 Forecast of late onset of monsoon coupled with continuing water crisis and heat wave. Delayed onset of monsoon and anticipated deficit rainfall in the areas already affected by drought from the previous year. (Apr - Jun) (Rainfall forecast expected to be less than the normal rainfall and below -19% and the deficit continues for more than 2-3 weeks & Soil moisture level is unsustainable	Incipient Sudden acceleration of demand of employment.	Contingency Action Plan • Crop • Water • Health	➢ Preparation of updated Contingency Crop Plan and its propagation through effective agro-advisory services ➢ Propagation of short-term water conservation measures, water budgeting, ➢ Proper health advisories and ensuring availability of emergency medical services ➢ Continuation of ongoing alternative employment generation programmes in drought affected /prone areas, through MGNREGS as a part of supplementary employment and as a social safety net support Monitoring over exploitation of ground water for nonagricultural and nondrinking purposes (i.e.industrial/ commercial/

					entertainment purposes) Advisory Note: (The ULBs may be directed to control the extraction of water) ➢ Energising the Identified alternative sources for the requirement of water, food, fodder and power. - Meeting of Crisis Management Group (CMG) to review and revitalise the role of concerned machineries.
3	Warning	3-4 Delayed onset of monsoon. Deficit Rainfall for more than two weeks. Acute water Crisis. (Jun – Mid July) (Rainfall is less than the normal rainfall and below -19% and the deficit continues for more than 3 – 6 weeks & Soil moisture, GW & SW level is lower than previous normal average	Moderate	• CAP (Crop) • CAP (Water) • CAP (Health) • CAP (Food & PD)	➢ Effective role of Extension machinery and realising the objectives of Contingency Crop Plan by ICAR. ➢ Operationalising short-term water conservation measures by municipal and district agencies, water-budgeting by the Ministry of Water Resources (Irrigation), M/o rban Development (PHED) and by Drinking Water & Sanitation **Advisory Note:** - Identify alternative sources when the town is in "Warning" period and the supply of water may be altered ➢ Judicious use of drinking water (restricted supply of water for basic requirement and alternative non-potable water for other purposes) ➢ Meeting of CMG to review the action plan initiated by line Departments and affected State Governments and taking decision for movement of water and fodder from surplus areas (States) to the deficit areas (States). ➢ Review and

					Visit by Area Officers in the deficit rainfall States. ➢ Apprising the developments to State Crisis Management Committee (SCMC) ➢ Action Plan for meeting out the shortage of secondary and tertiary sectors
4	Emergency	5-7 Deficit or No rainfall during the sowing period. Midseason withdrawal of monsoon. Dry spell for more than 4 weeks. Deficit rainfall in the range of 20% to -40%. Wilting of Crops due to shortage of water and continuing heat wave conditions. (JUL –SEP) (Rainfall is less than the normal rainfall and below -25% and the deficit continue for more than – 6 weeks & Soil moisture, GW & SW level is alarmingly low).	Severe	• CAP (Crop) • CAP (Water) • CAP (Cattle Care) • CAP (Health) • CAP (EGP) • CAP (Food & Public Distribution)	- Referring the issue to SCMC for taking up with Cabinet for taking certain vital decisions like deferment / rescheduling /fresh loan, movement of water and fodder through railways, additional allocation of food grains, establishing cattle camps, alternative employment generation programmes, enhancing PDS allocations, import of food grains to meet the gap between demand and supply, checking up of inflation etc. **Advisory Note:** In the 'Emergency' period, water may be supplied at 40 lpcd and non-potable water may be supplemented for other uses. - Early release of instalments under State Disaster Response Fund (SDRF) and ensuring that the State Government utilise it for initial emergency measures. - Enabling employment under MGNREGS as a part of supplementarey employment and as a social safety net support. - Monitoring and visit of deficit rainfall States personally by each designated area officer in the Department Apprising the developments to State Crisis Management Committee (SCMC) on regular basis - Measure for meeting the shortage of secondary and tertiary sectors
5	Acute	7-10	EXTREME	• CAP (Water)	➢ Decision by Cabinet for

	(Potential Disaster)	Early withdrawal of monsoon. Midseason withdrawal.. Severe deficit of cumulative annual rainfall. Severe soil moisture deficit. No rainfall for more than 4-6 weeks in sown area, resulting in crop damage Severe shortage in availability of GW and SW. (JUL–OCT) (Rainfall is less than normal and below -25% and the deficit continue for more than – 6 weeks & Soil moisture, GW & SW level is alarmingly low).	(FULL BLOWN DROUGHT)	• CAP (Cattle Care) • CAP (Social Sector) • CAP (Energy Sector) • CAP (Health) • CAP (Food & PD) • CAP (Labour &Employment)	Constitution of GoM / Task Force under the chairmanship of a Minister of Cabinet rank to take decisions during acute crisis ➢ Monitoring of drought affected States individually by each designated area officer in the Department about ongoing relief measures. ➢ Weekly CMG meeting and monitoring of the progress of drought relief measures ➢ Review of visit by Area Officers to the deficit rainfall States. ➢ Strict Water conservation measures and monitoring of the release of canal water for irrigation ➢ Requisition for Central Team to visit drought declared areas ➢ Assessment of damages and estimation of losses for release of funds from State Disaster Response Fund (SDRF) Special assistance to farmers / dairy / poultry / fishery sectors ➢ Enabling employment under MGNREGS as a part of supplementary employment and as a social safety net support ➢ Revitalising the ongoing programmes/schemes for vulnerable sections of society ➢ Preventive measures for loss of human /cattle life on account of potential disaster. ➢ Measures for meeting the shortage of secondary and tertiary sectors and measures for economic revival. ➢ Legislative measures like issue of control orders for maintaining sustained supply of essential commodities. ➢ Video Conferencing with drought affected States.
6	Recovery (Post	>10-0 (OCT–JUN)	Mitigated	•CAP (Water) • CAP (Cattle	- Rescheduling of farm loans

	Disaster)	Normal rainfall in Rabi and subsequent seasons. Easing of soil moisture stress situation Farming /Rural community's livelihood requirements Returning to normal activity		Care) • CAP (Energy Sector) • CAP (Health) • CAP (Employment Guarantee Programmes) • CAP (Food & PD) • CAP (Labour & Employment)	- Early release of input subsidy - Payment of compensation for losses in time to the beneficiaries i.e. agri-insurance, State Disaster Response Fund (SDRF) - Adequate availability of seeds for sowing in the next season - Monitoring of the ongoing relief measures and taking necessary course correction - Simultaneous documentation - Monitoring of the climate and ensuring alternative arrangements against relapse of the drought.

Note: Contingency Action Plans (CAP) (in respect of Crop, Water, Cattle Care, Health, Energy Sector, Food and livelihood Security) – (To be prepared by concerned State Government Departments)

6. Department Specific Actions

The following are the actions to be taken up by the departments/ agencies and the stakeholders during the crisis situation

S. N	Department	Disaster Specific Action
1	Agriculture Department	Pre Drought situation • Prepare crop contingency plan • Identify and assess the requirement for fodder depots. • Fodder supply: Identification of grazing land including forest land. • Promote crop insurance During Drought Situation • Assessment of crop damage • Establish food depots as per requirements • Ensure food security – transport food from FCI/ warehouse and if shortage still persists then import food grains from other states, other countries. • Fodder availability – transportation of fodders to affected areas, identify the areas having availability of excess fodder, appeal to farmers having excess fodder. • Supply of fodder at subsidized rates • Cattle feed subsidy • Issue periodic bulletins Post Drought Measures • Suggest/ implement Change in cropping pattern - Water saving crops like sass flower, castor, Jawar, Bajra and oil seeds to be introduced in drought prone areas. Likewise, in the IGNP area sugarcane, cotton and groundnut and in Kota area rice crop can be replaced by suitable low water consumption crops. • Promote sprinklers and drip irrigation methods. • Promotion of low irrigation requirement crops, drought tolerant seed varieties and other livelihood options in chronic drought prone areas.
2	Animal Husbandry	Pre Drought Situation • Prepare contingency plan • Promote cattle insurance • Constitute veterinary mobile teams with required resources like medicines, doctors, subordinate staff, laboratories, protective gears, antibiotics, vaccines and antitoxins, etc. in abundance. During Drought Situation • Constitute technical groups at state, zone and district levels. • Identification of affected areas. • Disposal of dead carcasses. • Focused attention to veterinary health. • Mass vaccination programme of animals in affected areas Make arrangements for rescue and evacuation of stranded livestock.

		• Pool in sufficient doctors for treatment of sick animals/ poultry. • Control spread of animal disease. • Carry out epidemiological surveillance to evade biological disasters. • Promote awareness through IEC activities.
3	Public Health Engineering Department (PHED)	<u>Pre Drought Situation</u> • Prepare Contingency plan • Enforce ground water legislation • Strict monitoring and vigilance on water for drinking purpose only. • Identify additional sources of water for maintenance of regular supply. <u>During Drought Situation</u> • Ensure supply of sufficient water through tankers for habitats and cattle camps. • Provide household water purification tablets. • Augmentation of existing Resources • Hiring of Private Wells • Hand Pump repair programme • Installation of New Hand Pumps and Tube wells • Revival of traditional water sources like Wells, Bawdis, Tankas, etc. • Transportation of water through road tankers and by Rail • Earmark water for drinking purpose available in the tanks and ensure no illegal pumping takes place. • Provide adequate quantity of bleaching powder to PRI, especially Gram Panchayats to protect spread of water and vector borne diseases. • Promote awareness on safe hygienic practices and sanitation.
4	Department of Medical and Health	<u>Pre Drought Situation</u> • Health and epidemiology surveillance • Constitute mobile teams with required resources like medicines, doctors, subordinate staff, laboratories, protective gears, antibiotics, vaccines, etc. in abundance. <u>During Drought Situation</u> • Mobile clinics for health check ups • Organise regular rural health camps and keep public informed of such camps. • Check the nutritional status especially for women and children and give treatment. • Check samples of food grains, cooked food in community kitchens, etc. • Promote general awareness of health and hygiene.
5	Disaster Management & Relief (DM&R)	• Ensure coordinated movement of all concerned departments, officials and agencies for combating Drought. • Make sufficient funds available for Drought response. • Arrange regular meetings for updating the apex body and issue directions to all concerned departments regularly.

		• Document experiences and best practices.
6	Irrigation/ Water Resource department	• Assess and evaluate the supply and demand of water for crops and ensure rationing of water. • Strict monitoring / vigilance to avoid illegal pumping. • Maintenance and repair of Dams, canals. • Lining of canals and other water structure systems in order to reduce seepage losses in the conveyance system. • Deepening of wells • Identify underground streams/ aquifers. • Make sufficient arrangements for tube wells and new hand pumps and repair. • Making sufficient budget provisions.
7	Soil & Water Conservation Department	• Promote rain water harvesting structures. • Renovation of tanks and tankas – desilting of mud, strengthening of bunds, etc. and integrating the tanks with major canal systems, wherever feasible. • Promote farm ponds, percolation tanks, water retardant mulches and traditional/ indigenous techniques of water conservation.
8	Public Works Department (PWD)	• Listing of works that could be done as relief programmes - pond desilting, excavation of water structures, construction of Government infrastructures, etc. • Carry out sudden checks and supervise the relief works. • Generate employment through cash for work/ food for work relief programmes
9	Civil Supplies and Public Distribution System (PDS)	• Distribution of food packets, dry rations, fuel, oil and lubricants • Take precautionary steps against hoarding and profit mongering and ensure normal prices of commodities in the market. • Adequate supply and reserves of FOL and coordinate with all the State agencies for smooth transportation of food and civil supplies. • Supply daily necessities of food items, stock position and ensure continuous supply, in relief camp too. • Coordination with FCI/ warehouses. • Make public aware through media about food distribution and also about the availability of items at subsidized rates.
10	FCI/ Warehouse	• Keep stock of food grains • In case of shortage inform administration for further procurements • Quick transportation/ distribution of food grains as per demand from administration. • Coordination with transport departments (road, rail and air).
11	Municipal Corporation	• Coordination and supply of safe drinking water using tankers, etc.
12	Railways/ Civil Aviation/ Road Transport	• Assist and give immediate clearance for transportation of relief materials. • Wherever possible, provide temporary storage space for relief materials. • Make arrangements for water trains on demand of the

		administration.
13	RDD	• Evaluate/ analyze the complete details of the drought situation in the state for effective drought management, proper information to higher officials for effective decisions on drought response. • Make provisions for sufficient budget for food products, grains, fodder, water and hand pumps, etc. • Coordinate with neighbouring states for sufficient arrangement for food, fodder, etc. • Regular monitoring of Drought relief works. • Distribution of relief materials to the needy in actual terms. • Ensure compliance of orders issued by Government from time to time. • Support PRI in organising cattle camps • Coordinate with other departments like health, animal husbandry, PHED and Water Resources. • Oversee maintenance of cattle camps and Gaushalas and ensure veterinary services, fodders, etc. are provided as per the norms. • Support price and subsidy to encourage cultivation of green fodder
14	District Administration	<u>Pre Drought Situation</u> • Prepare Drought Contingency Plan. • Issue necessary directions/ instructions to all concerned departments to combat the upcoming situation in an effective and coordinated manner. <u>During Drought Situation</u> • Ensure effective coordination with all departments, agencies, NGOs and stakeholders. • Arrange/mobilize equipment and resources like water tankers, trucks/ vehicles to transport food supply, fodder, mobile medical vehicles, ambulances, etc. • Arrange for disposal of dead carcasses. • Generate daily reports of relief activities and disseminate. • Organise relief camps wherever required; ensure pure drinking water, Sanitation, food, temporary shelters, basic relief materials as per requirements and need. • Update political leaders/ issue periodic bulletins. • Media Management
15	PRI (Zila Parishad, Panchayat Samiti and Gram Panchayat)	• Analyze the complete details of the drought situation in the district for effective drought management and inform the state administration for effective decisions on drought response. • In coordination with District Administration, arrange/mobilize equipment and resources like water tankers, tractors, trucks/ vehicles to transport food grains, fodder, mobile medical vehicles, ambulances, etc. • Appoint labourers for disposal of dead carcasses, distribution of food grains, fodder, etc. • Organise cattle camps wherever required; • Ensure safe drinking water, Sanitation, food, basic relief materials (fuel, oil, etc.) as per requirements and need. • Mass vaccination for domestic animals.

		• Arrange for release of compensation of agriculture losses based on the 'panchnama'.
16	AIR/ DD & other news channels	• Broadcast/ Telecast the current situation on a regular basis. • Issue bulletins on a periodic basis. • Promote general awareness on government programmes, relief measures and health and hygiene messages.
17	Department of Information and Public Relation	• Information dissemination, issue periodic bulletins to media. • Ensure information given to media are facts and true to avoid rumours. Arrange visit for local and foreign journalists in affected areas. • Information dissemination, update public on various relief interventions.
18	UN, International Agencies, Red Cross	• Support Government in all relief and response activities. • Work in collaboration with Government authorities and departments. • Specifically support Administration in the following sectors: water Supply, Sanitation, Hygiene Promotion, Food supply and Nutrition, livelihoods/ income generation activities, general awareness etc.
19	Emergency Operation Centre (EOC)	• Coordinate and issue direction to all concerned stake holders/ departments regularly

"The effective preparedness and prevention of the crisis in agriculture is the foremost important task before the Government at State levels during the paradigm of Drought Management. Preparation and implementation of an effective Crop Contingency Planning would address the mitigation of crisis in agriculture. The Central Research Institute for Dryland Agriculture (CRIDA), Hyderabad under ICAR has been preparing district-wise contingency plans in collaboration with State Agricultural University (SAU) / Indian Council of Agricultural Research (ICAR) Institutes / Krishi Vigyan Kendras (KVKs).

Specific Attention to Water User Groups:

Water User Group	Potential Action
• Public Water Suppliers • Municipal Waste Discharge • Agriculture • Industry (Infrastructure, Food Processing including beverages, other (heavy industry, mining) • Power Production (Hydro electric) • Recreation (Park, fountains etc.)	• Leak Repair • Non-Essential Water use restrictions • Pressure Reduction • Voluntary Water Conservation • Mandatory Water Conservation • Emergency Source Enhancement • Interconnection • Major User Restriction • Emergency Rate Structures • Source Blending

The district-wise contingency plans for 33 districts for the State of Rajasthan are now available in the website of the Department www.agricoop.nic.in

7. Strategic Activity Planner

Activity	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May
Drought Preparedness												
Reviewing CMP												
Monitoring												
Rainfall												
Temperature												
Surface water level												
Normal Area Vs Sown area												
Assessment												
Drinking water availability												
Irrigation water availability												
Soil Moisture												
Fodder availability												
Food grains availability												
Energy Sector requirement												
Inputs and Seed availability												
Water Conservation measures												
Check dams / Water sheds												
Rain Water Harvesting												
Ground Water Recharge												
Protection of aquatic resources for aquaculture												
DROUGHT REPORTING												
Early Warning System (EWS)												
Forecast of Contingency Cropping												
Forecast of Crop Loss												
Forecast of Water Deficiency												
Forecast of Food insecurity												
Forecast of Cattle feed deficit												
Declaration of Drought												
Estimation												
Unsown area												
Crop Loss due to drought												
Potential Water deficit												
For irrigation												
For drinking												

Fodder requirement, availability, additional demand for cattle care												
Loss to AH/ Fisheries												
Loss to Energy Sector (fuel and hydroelectricity)												
DROUGHT RESPONSE												
Propagation of Forecast through Extension Services												
contingency cropping												
Promotion of agro forestry												
Issue of Agro advisories												
Issue of General advisories												
SDRF release												
Alternative employment												
Food Security to vulnerable Sections												
Food grain requirement of farming community												
Processing of request for additional financial assistance												
Water and Fodder movement												
Energy Sector requirement (Import / Indigenous procurement from outside the State)												
Cattle & animal welfare (Vet.)												
Cattle camp												
Encouraging of community welfare organizations for mitigation efforts and monitoring of their activity												

8. Agencies responsible for Identified Activities

Activity	Primary	Secondary	Tertiary
Monitoring			
Reviewing CMP	DMR	SEC	SDMA
Rainfall	IMD	Water Resource (Hydrology)	Agriculture
Temperature	IMD	Water Resource (Hydrology)	Agriculture
Surface Water Level	CWC	Water Resource (Hydrology)	Agriculture
Ground Water Level	CGWB	Water Resource (Hydrology)	Agriculture
Monitoring of Agriculture Drought	District	IMD	Agriculture
Assessment			
Drinking Water availability	District	PHED	DMR
Irrigation Water Availability	District	Water Resources	MoD WR, GoI
Soil Moisture	District	Water Resources	Agriculture
Fodder, Cattle feed and poultry feed availability	District	A H & D	Agriculture
food grains availability	District	Food & PD	Agriculture
Energy sector requirement	District	Energy	
Input and Seed availability	District	Agriculture	National Agencies for Seed and Fertilizers
Water conservation measure			
Check Dams/ Watersheds	District	Water Resources	Agriculture
Deficit irrigation, Sprinkler and drip irrigation, reuse of irrigation water, use of water of suboptimal quality	District	Water Resources	Agriculture
Rain water harvesting & water shed management	District	Water Resources	Agriculture
Ground Water Recharge	District	CGWB	Water Resources
Adjustment in sanction water/ water pricing	District	Water Resources	CWC
Monitoring of water levels in head works such as jack wells and tubewells	PHED	Agriculture	DMR
Judicial use of available water	Water Resources	PHED	SDMA
Planning of naturally drought restraint crops with less water consumption and duration	District	Agriculture	Water Resources
Water supply system for drought prone areas for arranged supply of water to commercial and industrial activities having low water consumption	District	CWC	MoWR
Reduction in conveyance loss, evaporation from	District	CWC	Water Resources

soil surface, renovation and percolation of tanks, water consciousness			
Early Warning System (EWS)			
Forecast of contingency cropping	District	Agriculture	ICAR
Forecast of crop loss	District	ICAR/ DAC	Agriculture
Forecast of water deficiency	District	Water Resources	Agriculture
forecast of food Insecurity	District	Food & PD	Agriculture
forecast of Cattle feed deficit	District	AH & D	Agriculture
Declaration of Drought	District		
Estimation			
Normal Area Vs sown area	District	Agriculture	
unsown area	District	Agriculture	
Crop Loss due to drought	District	Agriculture	
Loss to Animal Husbandry & Fisheries Sector	District	AHD	
Potential Water Deficit			
For irrigation	District	Water Resource	DAC
For Drinking Water	District	PHED	DAC
Fodder/ Cattle Feed/ Poultry feed requirement, availability, additional demand for cattle care	District	AHD	DAC
Loss to energy sector and requirement of energy sector	District	Power/ Petroleum & Natural Gas	DAC
Drought mitigation			
Propagation of forecast through extn. services	KVKs	District	Agriculture
Propagation of contingency cropping	District	ICAR	Agriculture
Intensification of agricultural activities with support from Centrally Sponsored Schemes	Respective Missions/ agencies	District	Agriculture
Additional Availability of seed and other inputs	Respective Missions/ agencies	District	Agriculture
Credit Support	Agriculture Crop Banks/ Nationalised & Scheduled Banks NABARD/ RBI	District	Agriculture
Propagation of agro forestry	District	M/o E&F	Agriculture
Issue of Agro advisories	District	Agriculture	
Issue of General advisories	District	Agriculture	
SDRF release	M/o Finance	DMR	
Alternative employment	District	RD	
Food Security to vulnerable sections	District	WCD/ SJ & E/ RD	DMR
Food grains requirement of farming community	District	F&PD	Agriculture
Request for additional	DM&R	DAC	SEC/SDMA

financial assistance from NDRF etc.			
Water and fodder movement	District	Railways	DAC
Package / Bottled potable water	District	DWS, WCD, SJ&E, RD	PHED
Energy Sector requirement	District		
Cattle & Animal Welfare (Vet.)	District	AHD	
Cattle Camp	District	AHD	DMR
Monitoring and encouraging of NGOs/ VOs	District	RD	
Taking over of the exploratory wells in drought prone areas	District	AHD	DMR
Adoption of traditional methods of water storage and completion of ongoing storage projects	District	CWC	Water Resources
Undertaking Mid/ Long term drought mitigation activities under centrally sponsored programmes for water shed, backward regions, drinking water supply, infrastructure	District	Respective department in State	

9. Monitoring & Reporting of Drought

Government of India has designed and launched an interactive web portal for online reporting of drought related information in prescribed MIS format, which is available at http://dacnet.nic.in/droughtmis. All district shall utilize the web portal and enter all drought related information for monitoring drought and planning for mitigation.

Dissemination of Information and Media Management

Sharing information with print, radio and television media is an important aspect of drought management. The Central and State Governments should provide information on all aspects of drought to the people and media. Designated Spokespersons of Governments should be accessible to media for providing information on drought, for which a communication outreach strategy may be adopted. They should organise periodical briefings for dissemination of information. Additional Director General dealing with Agriculture in the Press Information Bureau, Ministry of Information and Broadcasting, Government of India would interact and disseminate periodical information to the media on the drought related information as made available by the Additional Secretary and Central Drought Relief Commissioner, Department of Agriculture and Cooperation, Government of India.

Crisis Management Group

There shall be a Crisis Management Group (CMG) for Drought Management as is defined in the Crisis Management Plan (State) to deal with various phases of drought. The composition of the CMG for Drought is at Appendix I. Secretary, DM & Relief will be the nodal officer to coordinate with SCMC will be the Member Secretary of CMG. CMG under the Chairmanship of Additional Chief Secretary, Agriculture & would periodically review the drought preparedness, take appropriate decisions and report the developments to the State Crisis Management Committee (SCMC). The issues to be decided by the Cabinet would be referred to SCMC for further necessary action by the Chief Secretary. At District level, the District Magistrate / Collector would be the head of the Crisis Management Group to deal the issue

9. Nodal Officers

Besides State Relief Commissioners and State Additional Chief Secretary, Agriculture, line Departments / offices / agencies of the State Government, responsible for different sets of activity connected with crisis management of drought shall nominate an officer not below the rank of Director or equivalent in the Government of India. The list of nodal officers containing their name, designation, telephone (office / residence), FAX, e-mail, mobile number and address shall be maintained in the Drought Monitoring Cell (Control Room) of the Department of Agriculture, and got updated every month.

At District level, the District Magistrate / Collector would be the nodal officer of the drought affected district, who will be co-opted in the drought management spectrum at the time of acute crisis in their district.

Drought Management Contacts

• Composition of Crisis Management Group (CMG) – Appendix-1

• List of Nodal Officers of Line Ministries / Departments – Appendix-2

11. Conclusion

The aim of the CMP (Drought) is to help all stake holders to be better prepared and less vulnerable to drought. It will also result in a timely and effective response by government agencies to reduce impacts during a drought crisis. The strategic activity planner and identification of agencies responsible for managing the crisis is aimed at demarcation of the duties of respective personnel in the identified activity.

This plan enables the officials who are responsible to focus their efforts on emerging crisis situations, which may require a unique response. As much as decisions are taken in advance of a Crisis, it would make it possible that the remaining decisions are taken easily through the Crisis. However, existence of a State level mechanism and a holistic and integrated drought management plan would reduce the focus of the Crisis Management Plan (CMP) towards relief and rehabilitation in the event of full blown drought.

List of Members of Crisis Management Group

Chairman - Additional Chief Secretary, Agriculture

Secretaries / Nodal Officer of the Departments:

i. Animal Husbandry, Dairying & Fisheries

ii. PHED

iii. Environment & Forests

iv. Food & Public Distribution

v. Health & Family Welfare

vi. Home

vii. India Meteorological Department

viii. Labour & Employment

ix. Panchayati Raj

x. Power

xi. Railways

xii. Rural Development

xiii. Urban Development

xiv. Water Resources

xv. Women & Child Development

Member Secretary - Secretary, Disaster Management & Relief Department

Appendix-2

List of Nodal Officer of Line Departments

S.No	Name & address	Telephone No.
1	Shri Ashok Sampatram Addl. Chief Secretary, Agriculture, Animal Husbandry & Fisheries Room No.2202, Main Building, Government Secretariat, Jaipur-302005	2227112 5103626(F)
2	Shri O.P. Meena, Addl. Chief Secretary, Environment & Forest Department Room No.1139, Main Building, Government Secretariat, Jaipur-302005	2227660 9928924241
3	Shri Sunil Arora, Addl. Chief Secretary, Home Department Room No.3204, Main Building, Government Secretariat, Jaipur-302005	2227063 22277788(F)
4	Shri Ashok Jain, Addl. Chief Secretary, Urban Development & Housing Room No.2207, Main Building, Government Secretariat, Jaipur-302005	2227411 2227200(F)
5	Ms. Gurjot Kaur, Addl. Chief Secretary, Woman & Child Development Room No.2018, Main Building, Government Secretariat, Jaipur-302005	2227633(TF)
6	Shri P.S. Mehra Principal Secretary, PHED & Water Resources Room No.5208, Main Building, Government Secretariat, Jaipur-302005	2227851

7	Dr.Subodh Agarwal Principal Secretary, Food & Civil Supplies Deptt. Room No.8001, SSO Building, Government Secretariat, Jaipur-302005	2227722
8	Shri Deepak Upreti, Principal Secretary, Medical & Health and Family Welfare Room No.1108, Main Building, Government Secretariat, Jaipur-302005	
9	Shri Giriraj Singh, Principal Secretary, Labour & Employment Room No.2020, Main Building, Government Secretariat, Jaipur-302005	2227333 9414083344
10	Shri Srimat Pandey, Principal Secretary, Rural Development & Panchayati Raj, Room No.8041, SSO Building, Government Secretariat, Jaipur-302005	2227004
11	Dr. Ashok Singhvi, Principal Secretary, Mines & Petroleum Room No.1036, Main Building, Government Secretariat, Jaipur-302005	2227210
12	Shri Alok Secretary, Energy Department Room No.8340, SSO Building, Government Secretariat, Jaipur-302005	2385648 2227699(F) 9413311300
13	Shri R.C. Agarwal, GM, Northwestern Railways, GM Office, Near Jawahar Circle,Jaipur	2725800