

# K.H GOVERNMENT DEGREE COLLEGE : DHARMAVARAM



DISABLED FRIENDLY, BARRIER FREE ENVIRONMENT

ALTERNATE SOURCES OF ENERGY AND ENERGY CONSERVATION  
MEASURES

SOLID WASTE MANAGEMENT

### **The Institution has disabled-friendly, barrier free environment**

1 .Built environment with ramps/lifts for easy access to classrooms.

Although lift is not available, ramps are provided for the use of differently challenged students and staff members.

1. **Divyangjan friendly wash rooms** :Friendly wash rooms for the use by differently challenged persons are available.

2. **Signage including tactile path, lights, display boards and sign posts :**

3. **Assistive technology and facilities for Divyangjan accessible website, screen-reading software, mechanized equipment** :It has to be explored.

4. **Provision for enquiry and information** :Human assistance, reader, scribe, soft copies of reading material, screen reading

Human assistance in the form of **reader and scribe** is provided on demand for visually handicapped during the academic year and examinations.



Wheel chair for disabled



Commode for disabled



Readable Screen



Ramps for disabled

### **Degradable and Non-degradable waste**

Various initiatives are taken by the institution to keep the campus green and eco-friendly. These include energy conservation, waste management, plantation. Electronic wastes are also disposed in the proper manner. Faculty members have visited the waste management centre to get the inputs related to the waste disposal. A session on the disposal hospital wastes was organized as the Paramedical Course is offered by the college.

### **Solid waste management**

Campus does not generate any sort of hazardous solid waste. Non hazardous wastes like garbage and food waste in the campus is dumped in the large pit and it is being disposed by the municipal authorities after segregating the degradable and non-degradable wastes.

10 Dust bins are donated by municipal authorities for collecting the wastes for careful disposal.

**E-waste management:** Computer peripherals, obsolete electronic equipment and parts are the e wastes that are normally generated in the campus. Non-working computer peripherals are repaired and reused. Other computer parts are disposed off by the Departments of Computer Application and Physics as per the protocol.

A committee is constituted for e waste management under the supervision of Smt.S.Pavani. This has identified the e wastes to the tune of 50kg and these include CRT monitors, key boards, batteries, UPS and printers.

**Radioactive waste management:** No radioactive waste is generated in the campus.

# THE RIGHTS OF PERSONS WITH DISABILITIES ACT, 2016

-

## ARRANGEMENT OF SECTIONS

-

### ER I

#### SECTIONS

#### PRELIMINARY

1. Short title and commencement.
2. Definitions.

C  
H  
A  
P  
T

### CHAPTER II

#### RIGHTS AND ENTITLEMENTS

3. Equality and non-discrimination.
4. Women and children with disabilities.
5. Community life.
6. Protection from cruelty and inhuman treatment.
7. Protection from abuse, violence and exploitation.
8. Protection and safety.
9. Home and family.
10. Reproductive rights.
11. Accessibility in voting.
12. Access to justice.
13. Legal capacity.
14. Provision for guardianship.
15. Designation of authorities to support.

### TER III

#### EDUCATION

16. Duty of educational institutions.

C  
H  
A  
P

17. Specific measures to promote and facilitate inclusive education.
18. Adult education.

### CHAPTER IV

#### SKILL DEVELOPMENT AND EMPLOYMENT

19. Vocational training and self-employment.
20. Non-discrimination in employment.
21. Equal opportunity policy.
22. Maintenance of records.
23. Appointment of Grievance Redressal Officer.

## CHAPTER V

### SOCIAL SECURITY, HEALTH, REHABILITATION AND RECREATION

- 24. Social security.
- 25. Healthcare.
- 26. Insurance schemes.

## SECTIONS

27. Rehabilitation.
28. Research and development.
29. Culture and recreation.
30. Sporting activities.

## CHAPTER VI

### SPECIAL PROVISIONS FOR PERSONS WITH BENCHMARK DISABILITIES

31. Free education for children with benchmark disabilities.
32. Reservation in higher educational institutions.
33. Identification of posts for reservation.
34. Reservation.
35. Incentives to employers in private sector.
36. Special employment exchange.
37. Special schemes and development programmes.

## CHAPTER VII

### SPECIAL PROVISIONS FOR PERSONS WITH DISABILITIES WITH HIGH SUPPORT NEEDS

38. Special provisions for persons with disabilities with high support.

## CHAPTER VIII

### DUTIES AND RESPONSIBILITIES OF APPROPRIATE GOVERNMENTS

39. Awareness campaigns.
40. Accessibility.
41. Access to transport.
42. Access to information and communication technology.
43. Consumer goods.
44. Mandatory observance of accessibility norms.
45. Time limit for making existing infrastructure and premises accessible and action for that purpose.
46. Time limit for accessibility by service providers.
47. Human resource development.
48. Social audit.

## CHAPTER IX

### REGISTRATION OF INSTITUTIONS FOR PERSONS WITH DISABILITIES AND GRANTS TO SUCH INSTITUTIONS

49. Competent authority.
50. Registration.
51. Application and grant of certificate of registration.
52. Revocation of registration.
53. Appeal.
54. Act not to apply to institutions established or maintained by Central or State Government.
55. Assistance to registered institutions.

## CHAPTER X

### CERTIFICATION OF SPECIFIED DISABILITIES

56. Guidelines for assessment of specified disabilities.

## SECTIONS

- 57. Designation of certifying authorities.
- 58. Procedure for certification.
- 59. Appeal against a decision of certifying authority.

## CHAPTER XI

### CENTRAL AND STATE ADVISORY BOARDS ON DISABILITY AND DISTRICT LEVEL COMMITTEE

- 60. Constitution of Central Advisory Board on Disability.
- 61. Terms and conditions of service of members.
- 62. Disqualifications.
- 63. Vacation of seats by Members.
- 64. Meetings of the Central Advisory Board on disability.
- 65. Functions of Central Advisory Board on disability.
- 66. State Advisory Board on disability.
- 67. Terms and conditions of service of Members.
- 68. Disqualification.
- 69. Vacation of seats.
- 70. Meetings of State Advisory Board on disability.
- 71. Functions of State Advisory Board on disability.
- 72. District-level Committee on disability.
- 73. Vacancies not to invalidate proceedings.

## CHAPTER XII

### CHIEF COMMISSIONER AND STATE COMMISSIONER FOR PERSONS WITH DISABILITIES

- 74. Appointment of Chief Commissioner and Commissioners.
- 75. Functions of Chief Commissioner.
- 76. Action of appropriate authorities on recommendation of Chief Commissioner.
- 77. Powers of Chief Commissioner.
- 78. Annual and special reports by Chief Commissioner.
- 79. Appointment of State Commissioner in States.
- 80. Functions of State Commissioner.
- 81. Action by appropriate authorities on recommendation of State Commissioner.
- 82. Powers of State Commissioner.
- 83. Annual and special reports by State Commissioner.

## CHAPTER XIII

### SPECIAL COURT

- 84. Special Court.
- 85. Special Public Prosecutor.

## CHAPTER XIV

### NATIONAL FUND FOR PERSONS WITH DISABILITIES

- 86. National Fund for persons with disabilities.
- 87. Accounts and audit.

## CHAPTER XV

### STATE FUND FOR PERSONS WITH DISABILITIES

- 88. State Fund for persons with disabilities.

CHAPTER XVI  
OFFENCES AND PENALTIES

SECTIONS

- 89. Punishment for contravention of provisions of Act or rules or regulations made thereunder.
- 90. Offences by companies.
- 91. Punishment for fraudulently availing any benefit meant for persons with benchmark disabilities.
- 92. Punishment for offences of atrocities.
- 93. Punishment for failure to furnish information.
- 94. Previous sanction of appropriate Government.
- 95. Alternative punishments.

CHAPTER XVII  
MISCELLANEOUS

- 96. Application of other laws not barred.
- 97. Protection of action taken in good faith.
- 98. Power to remove difficulties.
- 99. Power to amend Schedule.
- 100. Power of Central Government to make rules.
- 101. Power of State Government to make rules.
- 102. Repeal and savings.

THE SCHEDULE.

THE RIGHTS OF PERSONS WITH DISABILITIES ACT, 2016

ACT NO. 49 OF 2016

[27th December, 2016]

An Act to give effect to the United Nations Convention on the Rights of Persons with Disabilities and for matters connected therewith or incidental thereto.

WHEREAS the United Nations General Assembly adopted its Convention on the Rights of Persons with Disabilities on the 13th day of December, 2006.

AND WHEREAS the aforesaid Convention lays down the following principles for empowerment of persons with disabilities,—

(a) respect for inherent dignity, individual autonomy including the freedom to make one's own choices, and independence of persons;

(b) non-discrimination;

(c) full and effective participation and inclusion in society;

(d) respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;

(e) equality of opportunity;

(f) accessibility;

(g) equality between men and women;

(h) respect for the evolving capacities of children with disabilities and respect for the right of children with disabilities to preserve their identities;

AND WHEREAS India is a signatory to the said Convention;

AND WHEREAS India ratified the said Convention on the 1st day of October, 2007;

AND WHEREAS it is considered necessary to implement the Convention aforesaid.

BE it enacted by Parliament in the Sixty-seventh Year of the Republic of India as follows:—

CHAPTER I

PRELIMINARY

**1. Short title and commencement.**—(1) This Act may be called the Rights of Persons with Disabilities Act, 2016.

(2) It shall come into force on such <sup>1</sup>date as the Central Government may, by notification in the Official Gazette, appoint.

**2. Definitions.**—In this Act, unless the context otherwise requires,—

(a) “appellate authority” means an authority notified under sub-section (3) of section 14 or sub-section (1) of section 53 or designated under sub-section (1) of section 59, as the case may be;

(b) “appropriate Government” means,—

(i) in relation to the Central Government or any establishment wholly or substantially financed by that Government, or a Cantonment Board constituted under the Cantonments Act, 2006 (41 of 2006), the Central Government;

(ii) in relation to a State Government or any establishment, wholly or substantially financed by that Government, or any local authority, other than a Cantonment Board, the State Government.

(c) “barrier” means any factor including communicational, cultural, economic, environmental, institutional, political, social, attitudinal or structural factors which hampers the full and effective participation of persons with disabilities in society;

---

1. 19th April, 2017, *vide* notification no. S.O. 1215 (E) dated 19th April, 2017, *see* Gazette of India, Extraordinary, Part II, Section 3 (ii).

(d) “care-giver” means any person including parents and other family Members who with or without payment provides care, support or assistance to a person with disability;

(e) “certifying authority” means an authority designated under sub-section (1) of section 57;

(f) “communication” includes means and formats of communication, languages, display of text, Braille, tactile communication, signs, large print, accessible multimedia, written, audio, video, visual displays, sign language, plain-language, human-reader, augmentative and alternative modes and accessible information and communication technology;

(g) “competent authority” means an authority appointed under section 49;

(h) “discrimination” in relation to disability, means any distinction, exclusion, restriction on the basis of disability which is the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise on an equal basis with others of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field and includes all forms of discrimination and denial of reasonable accommodation;

(i) “establishment” includes a Government establishment and private establishment;

(j) “Fund” means the National Fund constituted under section 86;

(k) “Government establishment” means a corporation established by or under a Central Act or State Act or an authority or a body owned or controlled or aided by the Government or a local authority or a Government company as defined in section 2 of the Companies Act, 2013 (18 of 2013) and includes a Department of the Government;

(l) “high support” means an intensive support, physical, psychological and otherwise, which may be required by a person with benchmark disability for daily activities, to take independent and informed decision to access facilities and participating in all areas of life including education, employment, family and community life and treatment and therapy;

(m) “inclusive education” means a system of education wherein students with and without disability learn together and the system of teaching and learning is suitably adapted to meet the learning needs of different types of students with disabilities;

(n) “information and communication technology” includes all services and innovations relating to information and communication, including telecom services, web based services, electronic and print services, digital and virtual services;

(o) “institution” means an institution for the reception, care, protection, education, training, rehabilitation and any other activities for persons with disabilities;

(p) “local authority” means a Municipality or a Panchayat, as defined in clause (e) and clause (f) of article 243P of the Constitution; a Cantonment Board constituted under the Cantonments Act, 2006 (41 of 2006); and any other authority established under an Act of Parliament or a State Legislature to administer the civic affairs;

(q) “notification” means a notification published in the Official Gazette and the expression “notify” or “notified” shall be construed accordingly;

(r) “person with benchmark disability” means a person with not less than forty per cent. of a specified disability where specified disability has not been defined in measurable terms and includes a person with disability where specified disability has been defined in measurable terms, as certified by the certifying authority;

(s) “person with disability” means a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others;

(t) “person with disability having high support needs” means a person with benchmark disability certified under clause (a) of sub-section (2) of section 58 who needs high support;

(u) “prescribed” means prescribed by rules made under this Act;

(v) “private establishment” means a company, firm, cooperative or other society, associations, trust, agency, institution, organisation, union, factory or such other establishment as the appropriate Government may, by notification, specify;

(w) “public building” means a Government or private building, used or accessed by the public at large, including a building used for educational or vocational purposes, workplace, commercial activities, public utilities, religious, cultural, leisure or recreational activities, medical or health services, law enforcement agencies, reformatories or judicial foras, railway stations or platforms, roadways bus stands or terminus, airports or waterways;

(x) “public facilities and services” includes all forms of delivery of services to the public at large, including housing, educational and vocational trainings, employment and career advancement, shopping or marketing, religious, cultural, leisure or recreational, medical, health and rehabilitation, banking, finance and insurance, communication, postal and information, access to justice, public utilities, transportation;

(y) “reasonable accommodation” means necessary and appropriate modification and adjustments, without imposing a disproportionate or undue burden in a particular case, to ensure to persons with disabilities the enjoyment or exercise of rights equally with others;

(z) “registered organisation” means an association of persons with disabilities or a disabled person organisation, association of parents of persons with disabilities, association of persons with disabilities and family members, or a voluntary or non-governmental or charitable organisation or trust, society, or non-profit company working for the welfare of the persons with disabilities, duly registered under an Act of Parliament or a State Legislature;

(za) “rehabilitation” refers to a process aimed at enabling persons with disabilities to attain and maintain optimal, physical, sensory, intellectual, psychological environmental or social function levels;

(zb) “Special Employment Exchange” means any office or place established and maintained by the Government for the collection and furnishing of information, either by keeping of registers or otherwise, regarding—

(i) persons who seek to engage employees from amongst the persons with disabilities;

(ii) persons with benchmark disability who seek employment;

(iii) vacancies to which persons with benchmark disabilities seeking employment may be appointed;

(zc) “specified disability” means the disabilities as specified in the Schedule;

(zd) “transportation systems” includes road transport, rail transport, air transport, water transport, para transit systems for the last mile connectivity, road and street infrastructure, etc;

(ze) “universal design” means the design of products, environments, programmes and services to be usable by all people to the greatest extent possible, without the need for adaptation or specialised design and shall apply to assistive devices including advanced technologies for particular group of persons with disabilities.

## CHAPTER II

### RIGHTS AND ENTITLEMENTS

**3. Equality and non-discrimination.**—(1) The appropriate Government shall ensure that the persons with disabilities enjoy the right to equality, life with dignity and respect for his or her integrity equally with others.

(2) The appropriate Government shall take steps to utilise the capacity of persons with disabilities by providing appropriate environment.

(3) No person with disability shall be discriminated on the ground of disability, unless it is shown that the impugned act or omission is a proportionate means of achieving a legitimate aim.

(4) No person shall be deprived of his or her personal liberty only on the ground of disability.

(5)The appropriate Government shall take necessary steps to ensure reasonable accommodation for persons with disabilities.

**4. Women and children with disabilities.**—(1) The appropriate Government and the local authorities shall take measures to ensure that the women and children with disabilities enjoy their rights equally with others.

(2) The appropriate Government and local authorities shall ensure that all children with disabilities shall have right on an equal basis to freely express their views on all matters affecting them and provide them appropriate support keeping in view their age and disability.”.

**5. Community life.**—(1) The persons with disabilities shall have the right to live in the community.

(2)The appropriate Government shall endeavour that the persons with disabilities are,—

(a) not obliged to live in any particular living arrangement; and

(b) given access to a range of in-house, residential and other community support services, including personal assistance necessary to support living with due regard to age and gender.

**6. Protection from cruelty and inhuman treatment.**—(1) The appropriate Government shall take measures to protect persons with disabilities from being subjected to torture, cruel, inhuman or degrading treatment.

(2) No person with disability shall be a subject of any research without,—

(i) his or her free and informed consent obtained through accessible modes, means and formats of communication; and

(ii) prior permission of a Committee for Research on Disability constituted in the prescribed manner for the purpose by the appropriate Government in which not less than half of the Members shall themselves be either persons with disabilities or Members of the registered organisation as defined under clause (z) of section 2.

**7. Protection from abuse, violence and exploitation.**—(1) The appropriate Government shall take measures to protect persons with disabilities from all forms of abuse, violence and exploitation and to prevent the same, shall—

(a) take cognizance of incidents of abuse, violence and exploitation and provide legal remedies available against such incidents;

(b) take steps for avoiding such incidents and prescribe the procedure for its reporting;

(c) take steps to rescue, protect and rehabilitate victims of such incidents; and

(d) create awareness and make available information among the public.

(2)Any person or registered organisation who or which has reason to believe that an act of abuse, violence or exploitation has been, or is being, or is likely to be committed against any person with disability, may give information about it to the Executive Magistrate within the local limits of whose jurisdiction such incidents occur.

(3)The Executive Magistrate on receipt of such information, shall take immediate steps to stop or prevent its occurrence, as the case may be, or pass such order as he deems fit for the protection of such person with disability including an order—

(a) to rescue the victim of such act, authorising the police or any organisation working for persons with disabilities to provide for the safe custody or rehabilitation of such person, or both, as the case may be;

(b) for providing protective custody to the person with disability, if such person so desires;

(c) to provide maintenance to such person with disability.

(4) Any police officer who receives a complaint or otherwise comes to know of abuse, violence or exploitation towards any person with disability shall inform the aggrieved person of—

(a) his or her right to apply for protection under sub-section (2) and the particulars of the Executive Magistrate having jurisdiction to provide assistance;

(b) the particulars of the nearest organisation or institution working for the rehabilitation of persons with disabilities;

(c) the right to free legal aid; and

(d) the right to file a complaint under the provisions of this Act or any other law dealing with such offence:

Provided that nothing in this section shall be construed in any manner as to relieve the police officer from his duty to proceed in accordance with law upon receipt of information as to the commission of a cognizable offence.

(5) If the Executive Magistrate finds that the alleged act or behaviour constitutes an offence under the Indian Penal Code (45 of 1860), or under any other law for the time being in force, he may forward the complaint to that effect to the Judicial or Metropolitan Magistrate, as the case may be, having jurisdiction in the matter.

**8. Protection and safety.**—(1) The persons with disabilities shall have equal protection and safety in situations of risk, armed conflict, humanitarian emergencies and natural disasters.

(2) The National Disaster Management Authority and the State Disaster Management Authority shall take appropriate measures to ensure inclusion of persons with disabilities in its disaster management activities as defined under clause (e) of section 2 of the Disaster Management Act, 2005 (53 of 2005) for the safety and protection of persons with disabilities.

(3) The District Disaster Management Authority constituted under section 25 of the Disaster Management Act, 2005 (53 of 2005) shall maintain record of details of persons with disabilities in the district and take suitable measures to inform such persons of any situations of risk so as to enhance disaster preparedness.

(4) The authorities engaged in reconstruction activities subsequent to any situation of risk, armed conflict or natural disasters shall undertake such activities, in consultation with the concerned State Commissioner, in accordance with the accessibility requirements of persons with disabilities.

**9. Home and family.**—(1) No child with disability shall be separated from his or her parents on the ground of disability except on an order of competent court, if required, in the best interest of the child.

(2) Where the parents are unable to take care of a child with disability, the competent court shall place such child with his or her near relations, and failing that within the community in a family setting or in exceptional cases in shelter home run by the appropriate Government or non-governmental organisation, as may be required.

**10. Reproductive rights.**—(1) The appropriate Government shall ensure that persons with disabilities have access to appropriate information regarding reproductive and family planning.

(2) No person with disability shall be subject to any medical procedure which leads to infertility without his or her free and informed consent.

**11. Accessibility in voting.**—The Election Commission of India and the State Election Commissions shall ensure that all polling stations are accessible to persons with disabilities and all materials related to the electoral process are easily understandable by and accessible to them.

**12. Access to justice.**—(1) The appropriate Government shall ensure that persons with disabilities are able to exercise the right to access any court, tribunal, authority, commission or any other body having judicial or quasi-judicial or investigative powers without discrimination on the basis of disability.

(2)The appropriate Government shall take steps to put in place suitable support measures for persons with disabilities specially those living outside family and those disabled requiring high support for exercising legal rights.

(3)The National Legal Services Authority and the State Legal Services Authorities constituted under the Legal Services Authorities Act, 1987 (39 of 1987) shall make provisions including reasonable accommodation to ensure that persons with disabilities have access to any scheme, programme, facility or service offered by them equally with others.

(4)The appropriate Government shall take steps to—

(a) ensure that all their public documents are in accessible formats;

(b) ensure that the filing departments, registry or any other office of records are supplied with necessary equipment to enable filing, storing and referring to the documents and evidence in accessible formats; and

(c) make available all necessary facilities and equipment to facilitate recording of testimonies, arguments or opinion given by persons with disabilities in their preferred language and means of communication.

**13. Legal capacity.**—(1) The appropriate Government shall ensure that the persons with disabilities have right, equally with others, to own or inherit property, movable or immovable, control their financial affairs and have access to bank loans, mortgages and other forms of financial credit.

(2)The appropriate Government shall ensure that the persons with disabilities enjoy legal capacity on an equal basis with others in all aspects of life and have the right to equal recognition everywhere as any other person before the law.

(3)When a conflict of interest arises between a person providing support and a person with disability in a particular financial, property or other economic transaction, then such supporting person shall abstain from providing support to the person with disability in that transaction:

Provided that there shall not be a presumption of conflict of interest just on the basis that the supporting person is related to the person with disability by blood, affinity or adoption.

(4)A person with disability may alter, modify or dismantle any support arrangement and seek the support of another:

Provided that such alteration, modification or dismantling shall be prospective in nature and shall not nullify any third party transaction entered into by the person with disability with the aforesaid support arrangement.

(5)Any person providing support to the person with disability shall not exercise undue influence and shall respect his or her autonomy, dignity and privacy.

**14. Provision for guardianship.**—(1) Notwithstanding anything contained in any other law for the time being in force, on and from the date of commencement of this Act, where a district court or any designated authority, as notified by the State Government, finds that a person with disability, who had been provided adequate and appropriate support but is unable to take legally binding decisions, may be provided further support of a limited guardian to take legally binding decisions on his behalf in consultation with such person, in such manner, as may be prescribed by the State Government:

Provided that the District Court or the designated authority, as the case may be, may grant total support to the person with disability requiring such support or where the limited guardianship is to be granted repeatedly, in which case, the decision regarding the support to be provided shall be reviewed by the Court or the designated authority, as the case may be, to determine the nature and manner of support to be provided.

*Explanation.*—For the purposes of this sub-section, “limited guardianship” means a system of joint decision which operates on mutual understanding and trust between the guardian and the person with disability, which shall be limited to a specific period and for specific decision and situation and shall operate in accordance to the will of the person with disability.

(2) On and from the date of commencement of this Act, every guardian appointed under any provision of any other law for the time being in force, for a person with disability shall be deemed to function as a limited guardian.

(3) Any person with disability aggrieved by the decision of the designated authority appointing a legal guardian may prefer an appeal to such appellate authority, as may be notified by the State Government for the purpose.

**15. Designation of authorities to support.**—(1) The appropriate Government shall designate one or more authorities to mobilise the community and create social awareness to support persons with disabilities in exercise of their legal capacity.

(2) The authority designated under sub-section (1) shall take measures for setting up suitable support arrangements to exercise legal capacity by persons with disabilities living in institutions and those with high support needs and any other measures as may be required.

### CHAPTER III EDUCATION

**16. Duty of educational institutions.**—The appropriate Government and the local authorities shall endeavour that all educational institutions funded or recognised by them provide inclusive education to the children with disabilities and towards that end shall—

- (i) admit them without discrimination and provide education and opportunities for sports and recreation activities equally with others;
- (ii) make building, campus and various facilities accessible;
- (iii) provide reasonable accommodation according to the individual's requirements;
- (iv) provide necessary support individualised or otherwise in environments that maximise academic and social development consistent with the goal of full inclusion;
- (v) ensure that the education to persons who are blind or deaf or both is imparted in the most appropriate languages and modes and means of communication;
- (vi) detect specific learning disabilities in children at the earliest and take suitable pedagogical and other measures to overcome them;
- (vii) monitor participation, progress in terms of attainment levels and completion of education in respect of every student with disability;
- (viii) provide transportation facilities to the children with disabilities and also the attendant of the children with disabilities having high support needs.

**17. Specific measures to promote and facilitate inclusive education.**—The appropriate Government and the local authorities shall take the following measures for the purpose of section 16, namely:—

- (a) to conduct survey of school going children in every five years for identifying children with disabilities, ascertaining their special needs and the extent to which these are being met:

Provided that the first survey shall be conducted within a period of two years from the date of commencement of this Act;

- (b) to establish adequate number of teacher training institutions;
- (c) to train and employ teachers, including teachers with disability who are qualified in sign language and Braille and also teachers who are trained in teaching children with intellectual disability;
- (d) to train professionals and staff to support inclusive education at all levels of school education;
- (e) to establish adequate number of resource centres to support educational institutions at all levels of school education;
- (f) to promote the use of appropriate augmentative and alternative modes including means and formats of communication, Braille and sign language to supplement the use of one's own speech to

fulfil the daily communication needs of persons with speech, communication or language disabilities and enables them to participate and contribute to their community and society;

(g) to provide books, other learning materials and appropriate assistive devices to students with benchmark disabilities free of cost up to the age of eighteen years;

(h) to provide scholarships in appropriate cases to students with benchmark disability;

(i) to make suitable modifications in the curriculum and examination system to meet the needs of students with disabilities such as extra time for completion of examination paper, facility of scribe or amanuensis, exemption from second and third language courses;

(j) to promote research to improve learning; and

(k) any other measures, as may be required.

**18. Adult education.**—The appropriate Government and the local authorities shall take measures to promote, protect and ensure participation of persons with disabilities in adult education and continuing education programmes equally with others.

## CHAPTER IV

### SKILL DEVELOPMENT AND EMPLOYMENT

**19. Vocational training and self-employment.**—(1) The appropriate Government shall formulate schemes and programmes including provision of loans at concessional rates to facilitate and support employment of persons with disabilities especially for their vocational training and self-employment.

(2) The schemes and programmes referred to in sub-section (1) shall provide for—

(a) inclusion of person with disability in all mainstream formal and non-formal vocational and skill training schemes and programmes;

(b) to ensure that a person with disability has adequate support and facilities to avail specific training;

(c) exclusive skill training programmes for persons with disabilities with active links with the market, for those with developmental, intellectual, multiple disabilities and autism;

(d) loans at concessional rates including that of microcredit;

(e) marketing the products made by persons with disabilities; and

(f) maintenance of disaggregated data on the progress made in the skill training and self-employment, including persons with disabilities.

**20. Non-discrimination in employment.**—(1) No Government establishment shall discriminate against any person with disability in any matter relating to employment:

Provided that the appropriate Government may, having regard to the type of work carried on in any establishment, by notification and subject to such conditions, if any, exempt any establishment from the provisions of this section.

(2) Every Government establishment shall provide reasonable accommodation and appropriate barrier free and conducive environment to employees with disability.

(3) No promotion shall be denied to a person merely on the ground of disability.

(4) No Government establishment shall dispense with or reduce in rank, an employee who acquires a disability during his or her service:

Provided that, if an employee after acquiring disability is not suitable for the post he was holding, shall be shifted to some other post with the same pay scale and service benefits:

Provided further that if it is not possible to adjust the employee against any post, he may be kept on a supernumerary post until a suitable post is available or he attains the age of superannuation, whichever is earlier.

(5) The appropriate Government may frame policies for posting and transfer of employees with disabilities.

**21. Equal opportunity policy.**—(1) Every establishment shall notify equal opportunity policy detailing measures proposed to be taken by it in pursuance of the provisions of this Chapter in the manner as may be prescribed by the Central Government.

(2) Every establishment shall register a copy of the said policy with the Chief Commissioner or the State Commissioner, as the case may be.

**22. Maintenance of records.**—(1) Every establishment shall maintain records of the persons with disabilities in relation to the matter of employment, facilities provided and other necessary information in compliance with the provisions of this Chapter in such form and manner as may be prescribed by the Central Government.

(2) Every employment exchange shall maintain records of persons with disabilities seeking employment.

(3) The records maintained under sub-section (1) shall be open to inspection at all reasonable hours by such persons as may be authorised in their behalf by the appropriate Government.

**23. Appointment of Grievance Redressal Officer.**—(1) Every Government establishment shall appoint a Grievance Redressal Officer for the purpose of section 19 and shall inform the Chief Commissioner or the State Commissioner, as the case may be, about the appointment of such officer.

(2) Any person aggrieved with the non-compliance of the provisions of section 20, may file a complaint with the Grievance Redressal Officer, who shall investigate it and shall take up the matter with the establishment for corrective action.

(3) The Grievance Redressal Officer shall maintain a register of complaints in the manner as may be prescribed by the Central Government, and every complaint shall be inquired within two weeks of its registration.

(4) If the aggrieved person is not satisfied with the action taken on his or her complaint, he or she may approach the District-Level Committee on disability.

## CHAPTER V

### SOCIAL SECURITY, HEALTH, REHABILITATION AND RECREATION

**24. Social security.**—(1) The appropriate Government shall within the limit of its economic capacity and development formulate necessary schemes and programmes to safeguard and promote the right of persons with disabilities for adequate standard of living to enable them to live independently or in the community:

Provided that the quantum of assistance to the persons with disabilities under such schemes and programmes shall be at least twenty-five per cent. higher than the similar schemes applicable to others.

(2) The appropriate Government while devising these schemes and programmes shall give due consideration to the diversity of disability, gender, age, and socio-economic status.

(3) The schemes under sub-section (1) shall provide for,—

(a) community centres with good living conditions in terms of safety, sanitation, health care and counselling;

(b) facilities for persons including children with disabilities who have no family or have been abandoned, or are without shelter or livelihood;

(c) support during natural or man-made disasters and in areas of conflict;

(d) support to women with disability for livelihood and for upbringing of their children;

(e) access to safe drinking water and appropriate and accessible sanitation facilities especially in urban slums and rural areas;

(f) provisions of aids and appliances, medicine and diagnostic services and corrective surgery free of cost to persons with disabilities with such income ceiling as may be notified;

(g) disability pension to persons with disabilities subject to such income ceiling as may be notified;

(h) unemployment allowance to persons with disabilities registered with Special Employment Exchange for more than two years and who could not be placed in any gainful occupation;

(i) care-giver allowance to persons with disabilities with high support needs;

(j) comprehensive insurance scheme for persons with disability, not covered under the Employees State Insurance Schemes, or any other statutory or Government-sponsored insurance schemes;

(k) any other matter which the appropriate Government may think fit.

**25. Healthcare.**—(1) The appropriate Government and the local authorities shall take necessary measures for the persons with disabilities to provide,—

(a) free healthcare in the vicinity specially in rural area subject to such family income as may be notified;

(b) barrier-free access in all parts of Government and private hospitals and other healthcare institutions and centres;

(c) priority in attendance and treatment.

(2) The appropriate Government and the local authorities shall take measures and make schemes or programmes to promote healthcare and prevent the occurrence of disabilities and for the said purpose shall—

(a) undertake or cause to be undertaken surveys, investigations and research concerning the cause of occurrence of disabilities;

(b) promote various methods for preventing disabilities;

(c) screen all the children at least once in a year for the purpose of identifying “at-risk” cases;

(d) provide facilities for training to the staff at the primary health centres;

(e) sponsor or cause to be sponsored awareness campaigns and disseminate or cause to be disseminated information for general hygiene, health and sanitation;

(f) take measures for pre-natal, perinatal and post-natal care of mother and child;

(g) educate the public through the pre-schools, schools, primary health centres, village level workers and *anganwadi* workers;

(h) create awareness amongst the masses through television, radio and other mass media on the causes of disabilities and the preventive measures to be adopted;

(i) healthcare during the time of natural disasters and other situations of risk;

(j) essential medical facilities for life saving emergency treatment and procedures; and

(k) sexual and reproductive healthcare especially for women with disability.

**26. Insurance schemes.**—The appropriate Government shall, by notification, make insurance schemes for their employees with disabilities.

**27. Rehabilitation.**—(1) The appropriate Government and the local authorities shall within their economic capacity and development, undertake or cause to be undertaken services and programmes of rehabilitation, particularly in the areas of health, education and employment for all persons with disabilities.

(2) For the purposes of sub-section (1), the appropriate Government and the local authorities may grant financial assistance to non-Governmental Organisations.

(3)The appropriate Government and the local authorities, while formulating rehabilitation policies shall consult the non-Governmental Organisations working for the cause of persons with disabilities.

**28. Research and development.**—The appropriate Government shall initiate or cause to be initiated research and development through individuals and institutions on issues which shall enhance habilitation and rehabilitation and on such other issues which are necessary for the empowerment of persons with disabilities.

**29. Culture and recreation.**—The appropriate Government and the local authorities shall take measures to promote and protect the rights of all persons with disabilities to have a cultural life and to participate in recreational activities equally with others which include,—

(a) facilities, support and sponsorships to artists and writers with disability to pursue their interests and talents;

(b) establishment of a disability history museum which chronicles and interprets the historical experiences of persons with disabilities;

(c) making art accessible to persons with disabilities;

(d) promoting recreation centres, and other associational activities;

(e) facilitating participation in scouting, dancing, art classes, outdoor camps and adventure activities;

(f) redesigning courses in cultural and arts subjects to enable participation and access for persons with disabilities;

(g) developing technology, assistive devices and equipments to facilitate access and inclusion for persons with disabilities in recreational activities; and

(h) ensuring that persons with hearing impairment can have access to television programmes with sign language interpretation or sub-titles.

**30. Sporting activities.**—(1) The appropriate Government shall take measures to ensure effective participation in sporting activities of the persons with disabilities.

(2)The sports authorities shall accord due recognition to the right of persons with disabilities to participate in sports and shall make due provisions for the inclusion of persons with disabilities in their schemes and programmes for the promotion and development of sporting talents.

(3)Without prejudice to the provisions contained in sub-sections (1) and (2), the appropriate Government and the sports authorities shall take measures to,—

(a) restructure courses and programmes to ensure access, inclusion and participation of persons with disabilities in all sporting activities;

(b) redesign and support infrastructure facilities of all sporting activities for persons with disabilities;

(c) develop technology to enhance potential, talent, capacity and ability in sporting activities of all persons with disabilities;

(d) provide multi-sensory essentials and features in all sporting activities to ensure effective participation of all persons with disabilities;

(e) allocate funds for development of state of art sport facilities for training of persons with disabilities;

(f) promote and organise disability specific sporting events for persons with disabilities and also facilitate awards to the winners and other participants of such sporting events.

CHAPTER VI  
SPECIAL PROVISIONS FOR PERSONS WITH BENCHMARK DISABILITIES

**31. Free education for children with benchmark disabilities.**—(1) Notwithstanding anything contained in the Rights of Children to Free and Compulsory Education Act, 2009 (35 of 2009), every child with benchmark disability between the age of six to eighteen years shall have the right to free education in a neighbourhood school, or in a special school, of his choice.

(2) The appropriate Government and local authorities shall ensure that every child with benchmark disability has access to free education in an appropriate environment till he attains the age of eighteen years.

**32. Reservation in higher educational institutions.**—(1) All Government institutions of higher education and other higher education institutions receiving aid from the Government shall reserve not less than five per cent. seats for persons with benchmark disabilities.

(2) The persons with benchmark disabilities shall be given an upper age relaxation of five years for admission in institutions of higher education.

**33. Identification of posts for reservation.**—The appropriate Government shall—

(i) identify posts in the establishments which can be held by respective category of persons with benchmark disabilities in respect of the vacancies reserved in accordance with the provisions of section 34;

(ii) constitute an expert committee with representation of persons with benchmark disabilities for identification of such posts; and

(iii) undertake periodic review of the identified posts at an interval not exceeding three years.

**34. Reservation.**—(1) Every appropriate Government shall appoint in every Government establishment, not less than four per cent. of the total number of vacancies in the cadre strength in each group of posts meant to be filled with persons with benchmark disabilities of which, one per cent. each shall be reserved for persons with benchmark disabilities under clauses (a), (b) and (c) and one per cent. for persons with benchmark disabilities under clauses (d) and (e), namely:—

(a) blindness and low vision;

(b) deaf and hard of hearing;

(c) locomotor disability including cerebral palsy, leprosy cured, dwarfism, acid attack victims and muscular dystrophy;

(d) autism, intellectual disability, specific learning disability and mental illness;

(e) multiple disabilities from amongst persons under clauses (a) to (d) including deaf-blindness in the posts identified for each disabilities:

Provided that the reservation in promotion shall be in accordance with such instructions as are issued by the appropriate Government from time to time:

Provided further that the appropriate Government, in consultation with the Chief Commissioner or the State Commissioner, as the case may be, may, having regard to the type of work carried out in any Government establishment, by notification and subject to such conditions, if any, as may be specified in such notifications exempt any Government establishment from the provisions of this section.

(2) Where in any recruitment year any vacancy cannot be filled up due to non-availability of a suitable person with benchmark disability or for any other sufficient reasons, such vacancy shall be carried forward in the succeeding recruitment year and if in the succeeding recruitment year also suitable person with benchmark disability is not available, it may first be filled by interchange among the five categories and only when there is no person with disability available for the post in that year, the employer shall fill up the vacancy by appointment of a person, other than a person with disability:

Provided that if the nature of vacancies in an establishment is such that a given category of person cannot be employed, the vacancies may be interchanged among the five categories with the prior approval of the appropriate Government.

(3)The appropriate Government may, by notification, provide for such relaxation of upper age limit for employment of persons with benchmark disability, as it thinks fit.

**35. Incentives to employers in private sector.**—The appropriate Government and the local authorities shall, within the limit of their economic capacity and development, provide incentives to employer in private sector to ensure that at least five per cent. of their work force is composed of persons with benchmark disability.

**36. Special employment exchange.**—The appropriate Government may, by notification, require that from such date, the employer in every establishment shall furnish such information or return as may be prescribed by the Central Government in relation to vacancies appointed for persons with benchmark disability that have occurred or are about to occur in that establishment to such special employment exchange as may be notified by the Central Government and the establishment shall thereupon comply with such requisition.

**37. Special schemes and development programmes.**—The appropriate Government and the local authorities shall, by notification, make schemes in favour of persons with benchmark disabilities, to provide,—

(a) five per cent. reservation in allotment of agricultural land and housing in all relevant schemes and development programmes, with appropriate priority to women with benchmark disabilities;

(b) five per cent. reservation in all poverty alleviation and various developmental schemes with priority to women with benchmark disabilities;

(c) five per cent. reservation in allotment of land on concessional rate, where such land is to be used for the purpose of promoting housing, shelter, setting up of occupation, business, enterprise, recreation centres and production centres.

## CHAPTER VII

### SPECIAL PROVISIONS FOR PERSONS WITH DISABILITIES WITH HIGH SUPPORT NEEDS

**38. Special provisions for persons with disabilities with high support.**—(1) Any person with benchmark disability, who considers himself to be in need of high support, or any person or organisation on his or her behalf, may apply to an authority, to be notified by the appropriate Government, requesting to provide high support.

(2)On receipt of an application under sub-section (1), the authority shall refer it to an Assessment Board consisting of such Members as may be prescribed by the Central Government.

(3)The Assessment Board shall assess the case referred to it under sub-section (1) in such manner as may be prescribed by the Central Government, and shall send a report to the authority certifying the need of high support and its nature.

(4)On receipt of a report under sub-section (3), the authority shall take steps to provide support in accordance with the report and subject to relevant schemes and orders of the appropriate Government in this behalf.

## CHAPTER VIII

### DUTIES AND RESPONSIBILITIES OF APPROPRIATE GOVERNMENTS

**39. Awareness campaigns.**—(1) The appropriate Government, in consultation with the Chief Commissioner or the State Commissioner, as the case may be, shall conduct, encourage, support or promote awareness campaigns and sensitisation programmes to ensure that the rights of the persons with disabilities provided under this Act are protected.

(2)The programmes and campaigns specified under sub-section (1) shall also,—

(a) promote values of inclusion, tolerance, empathy and respect for diversity;

(b) advance recognition of the skills, merits and abilities of persons with disabilities and of their contributions to the workforce, labour market and professional fee;

(c) foster respect for the decisions made by persons with disabilities on all matters related to family life, relationships, bearing and raising children;

(d) provide orientation and sensitisation at the school, college, University and professional training level on the human condition of disability and the rights of persons with disabilities;

(e) provide orientation and sensitisation on disabling conditions and rights of persons with disabilities to employers, administrators and co-workers;

(f) ensure that the rights of persons with disabilities are included in the curriculum in Universities, colleges and schools.

**40. Accessibility.**—The Central Government shall, in consultation with the Chief Commissioner, formulate rules for persons with disabilities laying down the standards of accessibility for the physical environment, transportation, information and communications, including appropriate technologies and systems, and other facilities and services provided to the public in urban and rural areas.

**41. Access to transport.**—(1) The appropriate Government shall take suitable measures to provide,—

(a) facilities for persons with disabilities at bus stops, railway stations and airports conforming to the accessibility standards relating to parking spaces, toilets, ticketing counters and ticketing machines;

(b) access to all modes of transport that conform the design standards, including retrofitting old modes of transport, wherever technically feasible and safe for persons with disabilities, economically viable and without entailing major structural changes in design;

(c) accessible roads to address mobility necessary for persons with disabilities.

(2) The appropriate Government shall develop schemes programmes to promote the personal mobility of persons with disabilities at affordable cost to provide for,—

(a) incentives and concessions;

(b) retrofitting of vehicles; and

(c) personal mobility assistance.

**42. Access to information and communication technology.**—The appropriate Government shall take measures to ensure that,—

(i) all contents available in audio, print and electronic media are in accessible format;

(ii) persons with disabilities have access to electronic media by providing audio description, sign language interpretation and close captioning;

(iii) electronic goods and equipment which are meant for every day use are available in universal design.

**43. Consumer goods.**—The appropriate Government shall take measures to promote development, production and distribution of universally designed consumer products and accessories for general use for persons with disabilities.

**44. Mandatory observance of accessibility norms.**—(1) No establishment shall be granted permission to build any structure if the building plan does not adhere to the rules formulated by the Central Government under section 40.

(2) No establishment shall be issued a certificate of completion or allowed to take occupation of a building unless it has adhered to the rules formulated by the Central Government.

**45. Time limit for making existing infrastructure and premises accessible and action for that purpose.**—(1) All existing public buildings shall be made accessible in accordance with the rules formulated by the Central Government within a period not exceeding five years from the date of notification of such rules:

Provided that the Central Government may grant extension of time to the States on a case to case basis for adherence to this provision depending on their state of preparedness and other related parameters.

(2) The appropriate Government and the local authorities shall formulate and publish an action plan based on prioritisation, for providing accessibility in all their buildings and spaces providing essential services such as all primary health centres, civil hospitals, schools, railway stations and bus stops.

**46. Time limit for accessibility by service providers.**—The service providers whether Government or private shall provide services in accordance with the rules on accessibility formulated by the Central Government under section 40 within a period of two years from the date of notification of such rules:

Provided that the Central Government in consultation with the Chief Commissioner may grant extension of time for providing certain category of services in accordance with the said rules.

**47. Human resource development.**—(1) Without prejudice to any function and power of Rehabilitation Council of India constituted under the Rehabilitation Council of India Act, 1992 (34 of 1992), the appropriate Government shall endeavour to develop human resource for the purposes of this Act and to that end shall,—

(a) mandate training on disability rights in all courses for the training of Panchayati Raj Members, legislators, administrators, police officials, judges and lawyers;

(b) induct disability as a component for all education courses for schools, colleges and University teachers, doctors, nurses, para-medical personnel, social welfare officers, rural development officers, asha workers, *anganwadi* workers, engineers, architects, other professionals and community workers;

(c) initiate capacity building programmes including training in independent living and community relationships for families, members of community and other stakeholders and care providers on care giving and support;

(d) ensure independence training for persons with disabilities to build community relationships on mutual contribution and respect;

(e) conduct training programmes for sports teachers with focus on sports, games, adventure activities;

(f) any other capacity development measures as may be required.

(2) All Universities shall promote teaching and research in disability studies including establishment of study centres for such studies.

(3) In order to fulfil the obligation stated in sub-section (1), the appropriate Government shall in every five years undertake a need based analysis and formulate plans for the recruitment, induction, sensitisation, orientation and training of suitable personnel to undertake the various responsibilities under this Act.

**48. Social audit.**—The appropriate Government shall undertake social audit of all general schemes and programmes involving the persons with disabilities to ensure that the scheme and programmes do not have an adverse impact upon the persons with disabilities and need the requirements and concerns of persons with disabilities.

## CHAPTER IX

### REGISTRATION OF INSTITUTIONS FOR PERSONS WITH DISABILITIES AND GRANTS TO SUCH INSTITUTIONS

**49. Competent authority.**—The State Government shall appoint an authority as it deems fit to be a competent authority for the purposes of this Chapter.

**50. Registration.**—Save as otherwise provided under this Act, no person shall establish or maintain any institution for persons with disabilities except in accordance with a certificate of registration issued in this behalf by the competent authority:

Provided that an institution for care of mentally ill persons, which holds a valid licence under section 8 of the Mental Health Act, 1987 (14 of 1987) or any other Act for the time being in force, shall not be required to be registered under this Act.

**51. Application and grant of certificate of registration.**—(1) Every application for a certificate of registration shall be made to the competent authority in such form and in such manner as may be prescribed by the State Government.

(2) On receipt of an application under sub-section (1), the competent authority shall make such enquiries as it may deem fit and on being satisfied that the applicant has complied with the requirements of this Act and the rules made thereunder, it shall grant a certificate of registration to the applicant within a period of ninety days of receipt of application and if not satisfied, the competent authority shall, by order, refuse to grant the certificate applied for:

Provided that before making any order refusing to grant a certificate, the competent authority shall give the applicant a reasonable opportunity of being heard and every order of refusal to grant a certificate shall be communicated to the applicant in writing.

(3) No certificate of registration shall be granted under sub-section (2) unless the institution with respect to which an application has been made is in a position to provide such facilities and meet such standards as may be prescribed by the State Government.

(4) The certificate of registration granted under sub-section (2),—

(a) shall, unless revoked under section 52 remain in force for such period as may be prescribed by the State Government;

(b) may be renewed from time to time for a like period; and

(c) shall be in such form and shall be subject to such conditions as may be prescribed by the State Government.

(5) An application for renewal of a certificate of registration shall be made not less than sixty days before the expiry of the period of validity.

(6) A copy of the certificate of registration shall be displayed by the institution in a conspicuous place.

(7) Every application made under sub-section (1) or sub-section (5) shall be disposed of by the competent authority within such period as may be prescribed by the State Government.

**52. Revocation of registration.**—(1) The competent authority may, if it has reason to believe that the holder of a certificate of registration granted under sub-section (2) of section 51 has,—

(a) made a statement in relation to any application for the issue or renewal of the certificate which is incorrect or false in material particulars; or

(b) committed or has caused to be committed any breach of rules or any conditions subject to which the certificate was granted,

it may, after making such inquiry, as it deems fit, by order, revoke the certificate:

Provided that no such order shall be made until an opportunity is given to the holder of the certificate to show cause as to why the certificate of registration shall not be revoked.

(2) Where a certificate of registration in respect of an institution has been revoked under sub-section (1), such institution shall cease to function from the date of such revocation:

Provided that where an appeal lies under section 53 against the order of revocation, such institution shall cease to function,—

(a) where no appeal has been preferred immediately on the expiry of the period prescribed for the filing of such appeal; or

(b) where such appeal has been preferred, but the order of revocation has been upheld, from the date of the order of appeal.

(3) On the revocation of a certificate of registration in respect of an institution, the competent authority may direct that any person with disability who is an inmate of such institution on the date of such revocation, shall be—

(a) restored to the custody of his or her parent, spouse or lawful guardian, as the case may be; or

(b) transferred to any other institution specified by the competent authority.

(4) Every institution which holds a certificate of registration which is revoked under this section shall, immediately after such revocation, surrender such certificate to the competent authority.

**53. Appeal.**—(1) Any person aggrieved by the order of the competent authority refusing to grant a certificate of registration or revoking a certificate of registration may, within such period as may be prescribed by the State Government, prefer an appeal to such appellate authority, as may be notified by the State Government against such refusal or revocation.

(2) The order of the appellate authority on such appeal shall be final.

**54. Act not to apply to institutions established or maintained by Central or State Government.**—Nothing contained in this Chapter shall apply to an institution for persons with disabilities established or maintained by the Central Government or a State Government.

**55. Assistance to registered institutions.**—The appropriate Government may within the limits of their economic capacity and development, grant financial assistance to registered institutions to provide services and to implement the schemes and programmes in pursuance of the provisions of this Act.

## CHAPTER X

### CERTIFICATION OF SPECIFIED DISABILITIES

**56. Guidelines for assessment of specified disabilities.**—The Central Government shall notify guidelines for the purpose of assessing the extent of specified disability in a person.

**57. Designation of certifying authorities.**—(1) The appropriate Government shall designate persons, having requisite qualifications and experience, as certifying authorities, who shall be competent to issue the certificate of disability.

(2) The appropriate Government shall also notify the jurisdiction within which and the terms and conditions subject to which, the certifying authority shall perform its certification functions.

**58. Procedure for certification.**—(1) Any person with specified disability, may apply, in such manner as may be prescribed by the Central Government, to a certifying authority having jurisdiction, for issuing of a certificate of disability.

(2) On receipt of an application under sub-section (1), the certifying authority shall assess the disability of the concerned person in accordance with relevant guidelines notified under section 56, and shall, after such assessment, as the case may be,—

(a) issue a certificate of disability to such person, in such form as may be prescribed by the Central Government;

(b) inform him in writing that he has no specified disability.

(3) The certificate of disability issued under this section shall be valid across the country.

**59. Appeal against a decision of certifying authority.**—(1) Any person aggrieved with decision of the certifying authority, may appeal against such decision, within such time and in such manner as may be prescribed by the State Government, to such appellate authority as the State Government may designate for the purpose.

(2) On receipt of an appeal, the appellate authority shall decide the appeal in such manner as may be prescribed by the State Government.

## CHAPTER XI

### CENTRAL AND STATE ADVISORY BOARDS ON DISABILITY AND DISTRICT LEVEL COMMITTEE

**60. Constitution of Central Advisory Board on Disability.**—(1) The Central Government shall, by notification, constitute a body to be known as the Central Advisory Board on Disability to exercise the powers conferred on, and to perform the functions assigned to it, under this Act.

(2) The Central Advisory Board shall consist of,—

(a) the Minister in charge of Department of Disability Affairs in the Central Government, Chairperson, *ex officio*;

(b) the Minister of State in charge dealing with Department of Disability Affairs in the Ministry in the Central Government, Vice Chairperson, *ex officio*;

(c) three Members of Parliament, of whom two shall be elected by Lok Sabha and one by the Rajya Sabha, Members, *ex officio*;

(d) the Ministers in charge of Disability Affairs of all States and Administrators or Lieutenant Governors of the Union territories, Members, *ex officio*;

(e) Secretaries to the Government of India in charge of the Ministries or Departments of Disability Affairs, Social Justice and Empowerment, School Education and Literacy, and Higher Education, Women and Child Development, Expenditure, Personnel and Training, Administrative Reforms and Public Grievances, Health and Family Welfare, Rural Development, Panchayati Raj, Industrial Policy and Promotion, Urban Development, Housing and Urban Poverty Alleviation, Science and Technology, Communications and Information Technology, Legal Affairs, Public Enterprises, Youth Affairs and Sports, Road Transport and Highways and Civil Aviation, Members, *ex officio*;

(f) Secretary, National Institute of Transforming India (NITI) Aayog, Member, *ex officio*;

(g) Chairperson, Rehabilitation Council of India, Member, *ex officio*;

(h) Chairperson, National Trust for the Welfare of Persons with Autism, Cerebral Palsy, Mental Retardation and Multiple Disabilities, Member, *ex officio*;

(i) Chairman-cum-Managing Director, National Handicapped Finance Development Corporation, Member, *ex officio*;

(j) Chairman-cum-Managing Director, Artificial Limbs Manufacturing Corporation, Member, *ex officio*;

(k) Chairman, Railway Board, Member, *ex officio*;

(l) Director-General, Employment and Training, Ministry of Labour and Employment, Member, *ex officio*;

(m) Director, National Council for Educational Research and Training, Member, *ex officio*;

(n) Chairperson, National Council of Teacher Education, Member, *ex officio*;

(o) Chairperson, University Grants Commission, Member, *ex officio*;

(p) Chairperson, Medical Council of India, Member, *ex officio*;

(q) Directors of the following Institutes:—

(i) National Institute for the Visually Handicapped, Dehradun;

(ii) National Institute for the Mentally Handicapped, Secunderabad;

(iii) Pandit Deen Dayal Upadhyay Institute for the Physically Handicapped, New Delhi;

(iv) Ali Yavar Jung National Institute for the Hearing Handicapped, Mumbai;

(v) National Institute for the Orthopaedically Handicapped, Kolkata;

(vi) National Institute of Rehabilitation Training and Research, Cuttack;

(vii) National Institute for Empowerment of Persons with Multiple Disabilities, Chennai;

(viii) National Institute for Mental Health and Sciences, Bangalore;

(ix) Indian Sign Language Research and Training Centre, New Delhi, Members, *ex officio*;

(r) Members to be nominated by the Central Government,—

(i) five Members who are experts in the field of disability and rehabilitation;

(ii) ten Members, as far as practicable, being persons with disabilities, to represent non-Governmental Organisations concerned with disabilities or disabled persons organisations:

Provided that out of the ten Members nominated, at least, five Members shall be women and at least one person each shall be from the Scheduled Castes and the Scheduled Tribes;

(iii) up to three representatives of national level chambers of commerce and industry;

(s) Joint Secretary to the Government of India dealing with the subject of disability policy, Member-Secretary, *ex officio*.

**61. Terms and conditions of Service of members.**—(1) Save as otherwise provided under this Act, a Member of the Central Advisory Board nominated under clause (r) of sub-section (2) of section 60 shall hold office for a term of three years from the date of his nomination:

Provided that such a Member shall, notwithstanding the expiration of his term, continue to hold office until his successor enters upon his office.

(2) The Central Government may, if it thinks fit, remove any Member nominated under clause (r) of sub-section (2) of section 60, before the expiry of his term of office after giving him a reasonable opportunity of showing cause against the same.

(3) A Member nominated under clause (r) of sub-section (2) of section 60 may at any time resign his office by writing under his hand addressed to the Central Government and the seat of the said Member shall thereupon become vacant.

(4) A casual vacancy in the Central Advisory Board shall be filled by a fresh nomination and the person nominated to fill the vacancy shall hold office only for the remainder of the term for which the Member in whose place he was so nominated.

(5) A Member nominated under sub-clause (i) or sub-clause (iii) of clause (r) of sub-section (2) of section 60 shall be eligible for renomination.

(6) The Members nominated under sub-clause (i) and sub-clause (ii) of clause (r) of sub-section (2) of section 60 shall receive such allowances as may be prescribed by the Central Government.

**62. Disqualifications.**—(1) No person shall be a Member of the Central Advisory Board, who—

(a) is, or at any time has been, adjudged insolvent or has suspended payment of his debts or has compounded with his creditors, or

(b) is of unsound mind and stands so declared by a competent court, or

(c) is, or has been, convicted of an offence which, in the opinion of the Central Government, involves moral turpitude, or

(d) is, or at any time has been, convicted of an offence under this Act, or

(e) has so abused his position in the opinion of the Central Government as a Member so as to render his continuance in the office prejudicial to the interests of the general public.

(2) No order of removal shall be made by the Central Government under this section unless the Member concerned has been given a reasonable opportunity of showing cause against the same.

(3) Notwithstanding anything contained in sub-section (1) or sub-section (5) of section 61, a Member who has been removed under this section shall not be eligible for renomination as a Member.

**63. Vacation of seats by Members.**—If a Member of the Central Advisory Board becomes subject to any of the disqualifications specified in section 62, his seat shall become vacant.

**64. Meetings of the Central Advisory Board on disability.**—The Central Advisory Board shall meet at least once in every six months and shall observe such rules of procedure in regard to the transaction of business at its meetings as may be prescribed.

**65. Functions of Central Advisory Board on disability.**—(1) Subject to the provisions of this Act, the Central Advisory Board on disability shall be the national-level consultative and advisory body on disability matters, and shall facilitate the continuous evolution of a comprehensive policy for the empowerment of persons with disabilities and the full enjoyment of rights.

(2) In particular and without prejudice to the generality of the foregoing provisions, the Central Advisory Board on disability shall perform the following functions, namely:—

- (a) advise the Central Government and the State Governments on policies, programmes, legislation and projects with respect to disability;
- (b) develop a national policy to address issues concerning persons with disabilities;
- (c) review and coordinate the activities of all Departments of the Government and other Governmental and non-Governmental Organisations which are dealing with matters relating to persons with disabilities;
- (d) take up the cause of persons with disabilities with the concerned authorities and the international organisations with a view to provide for schemes and projects for the persons with disabilities in the national plans;
- (e) recommend steps to ensure accessibility, reasonable accommodation, non-discrimination for persons with disabilities vis-a-vis information, services and the built environment and their participation in social life;
- (f) monitor and evaluate the impact of laws, policies and programmes to achieve full participation of persons with disabilities; and
- (g) such other functions as may be assigned from time to time by the Central Government.

**66. State Advisory Board on disability.**—(1) Every State Government shall, by notification, constitute a body to be known as the State Advisory Board on disability to exercise the powers conferred on, and to perform the function assigned to it, under this Act.

(2) The State Advisory Board shall consist of—

- (a) the Minister in charge of the Department in the State Government dealing with disability matters, Chairperson, *ex officio*;
- (b) the Minister of State or the Deputy Minister in charge of the Department in the State Government dealing with disability matters, if any, Vice-Chairperson, *ex officio*;
- (c) secretaries to the State Government in charge of the Departments of Disability Affairs, School Education, Literacy and Higher Education, Women and Child Development, Finance, Personnel and Training, Health and Family Welfare, Rural Development, Panchayati Raj, Industrial Policy and Promotion, Labour and Employment, Urban Development, Housing and Urban Poverty Alleviation, Science and Technology, Information Technology, Public Enterprises, Youth Affairs and Sports, Road Transport and any other Department, which the State Government considers necessary, Members, *ex officio*;
- (d) three Members of the State Legislature of whom two shall be elected by the Legislative Assembly and one by the Legislative Council, if any, and where there is no Legislative Council, three Members shall be elected by the Legislative Assembly, Members, *ex officio*;
- (e) Members to be nominated by the State Government:—

- (i) five Members who are experts in the field of disability and rehabilitation;
- (ii) five Members to be nominated by the State Government by rotation to represent the districts in such manner as may be prescribed:

Provided that no nomination under this sub-clause shall be made except on the recommendation of the district administration concerned;

- (iii) ten persons as far as practicable, being persons with disabilities, to represent non-Governmental Organisations or associations which are concerned with disabilities:

Provided that out of the ten persons nominated under this clause, at least, five shall be women and at least one person each shall be from the Scheduled Castes and the Scheduled Tribes;

(iv) not more than three representatives of the State Chamber of Commerce and Industry;

(f) officer not below the rank of Joint Secretary in the Department dealing with disability matters in the State Government, Member-Secretary, *ex officio*.

**67. Terms and conditions of service of Members.**—(1) Save as otherwise provided under this Act, a Member of the State Advisory Board nominated under clause (e) of sub-section (2) of section 66, shall hold office for a term of three years from the date of his nomination:

Provided that such a Member shall, notwithstanding the expiration of his term, continue to hold office until his successor enters upon his office.

(2) The State Government may, if it thinks fit, remove any Member nominated under clause (e) of sub-section (2) of section 66, before the expiry of his term of office after giving him a reasonable opportunity of showing cause against the same.

(3) A Member nominated under clause (e) of sub-section (2) of section 66 may at any time resign his office by writing under his hand addressed to the State Government and the seat of the said Member shall thereupon become vacant.

(4) A casual vacancy in the State Advisory Board shall be filled by a fresh nomination and the person nominated to fill the vacancy shall hold office only for the remainder of the term for which the Member in whose place he was so nominated.

(5) A Member nominated under sub-clause (i) or sub-clause (iii) of clause (e) of sub-section (2) of section 66 shall be eligible for renomination.

(6) The Members nominated under sub-clause (i) and sub-clause (ii) of clause (e) of sub-section (2) of section 66 shall receive such allowances as may be prescribed by the State Government.

**68. Disqualification.**—(1) No person shall be a Member of the State Advisory Board, who—

(a) is, or at any time has been, adjudged insolvent or has suspended payment of his debts or has compounded with his creditors, or

(b) is of unsound mind and stands so declared by a competent court, or

(c) is, or has been, convicted of an offence which, in the opinion of the State Government, involves moral turpitude, or

(d) is, or at any time has been, convicted of an offence under this Act, or

(e) has so abused in the opinion of the State Government his position as a Member as to render his continuance in the State Advisory Board detrimental to the interests of the general public.

(2) No order of removal shall be made by the State Government under this section unless the Member concerned has been given a reasonable opportunity of showing cause against the same.

(3) Notwithstanding anything contained in sub-section (1) or sub-section (5) of section 67, a Member who has been removed under this section shall not be eligible for renomination as a Member.

**69. Vacation of seats.**—If a Member of the State Advisory Board becomes subject to any of the disqualifications specified in section 68 his seat shall become vacant.

**70. Meetings of State Advisory Board on disability.**—The State Advisory Board shall meet at least once in every six months and shall observe such rules or procedure in regard to the transaction of business at its meetings as may be prescribed by the State Government.

**71. Functions of State Advisory Board on disability.**—(1) Subject to the provisions of this Act, the State Advisory Board shall be the State-level consultative and advisory body on disability matters, and shall facilitate the continuous evolution of a comprehensive policy for the empowerment of persons with disabilities and the full enjoyment of rights.

(2) In particular and without prejudice to the generality of the foregoing provisions, the State Advisory Board on disability shall perform the following functions, namely:—

- (a) advise the State Government on policies, programmes, legislation and projects with respect to disability;
- (b) develop a State policy to address issues concerning persons with disabilities;
- (c) review and coordinate the activities of all Departments of the State Government and other Governmental and non-Governmental Organisations in the State which are dealing with matters relating to persons with disabilities;
- (d) take up the cause of persons with disabilities with the concerned authorities and the international organisations with a view to provide for schemes and projects for the persons with disabilities in the State plans;
- (e) recommend steps to ensure accessibility, reasonable accommodation, non-discrimination for persons with disabilities, services and the built environment and their participation in social life on an equal basis with others;
- (f) monitor and evaluate the impact of laws, policies and programmes designed to achieve full participation of persons with disabilities; and
- (g) such other functions as may be assigned from time to time by the State Government.

**72. District-level Committee on disability.**—The State Government shall constitute District-level Committee on disability to perform such functions as may be prescribed by it.

**73. Vacancies not to invalidate proceedings.**—No act or proceeding of the Central Advisory Board on disability, a State Advisory Board on disability, or a District-level Committee on disability shall be called in question on the ground merely of the existence of any vacancy in or any defect in the constitution of such Board or Committee, as the case may be.

## CHAPTER XII

### CHIEF COMMISSIONER AND STATE COMMISSIONER FOR PERSONS WITH DISABILITIES

**74. Appointment of Chief Commissioner and Commissioners.**—(1) The Central Government may, by notification, appoint a Chief Commissioner for Persons with Disabilities (hereinafter referred to as the “Chief Commissioner”) for the purposes of this Act.

(2) The Central Government may, by notification appoint two Commissioners to assist the Chief Commissioner, of which one Commissioner shall be a persons with disability.

(3) A person shall not be qualified for appointment as the Chief Commissioner or Commissioner unless he has special knowledge or practical experience in respect of matters relating to rehabilitation.

(4) The salary and allowances payable to and other terms and conditions of service (including pension, gratuity and other retirement benefits) of the Chief Commissioner and Commissioners shall be such as may be prescribed by the Central Government.

(5) The Central Government shall determine the nature and categories of officers and other employees required to assist the Chief Commissioner in the discharge of his functions and provide the Chief Commissioner with such officers and other employees as it thinks fit.

(6) The officers and employees provided to the Chief Commissioner shall discharge their functions under the general superintendence and control of the Chief Commissioner.

(7) The salaries and allowances and other conditions of service of officers and employees shall be such as may be prescribed by the Central Government.

(8) The Chief Commissioner shall be assisted by an advisory committee comprising of not more than eleven members drawn from the experts from different disabilities in such manner as may be prescribed by the Central Government.

**75. Functions of Chief Commissioner.**—(1) The Chief Commissioner shall—

(a) identify, *suo motu* or otherwise, the provisions of any law or policy, programme and procedures, which are inconsistent with this Act and recommend necessary corrective steps;

(b) inquire, *suo motu* or otherwise, deprivation of rights of persons with disabilities and safeguards available to them in respect of matters for which the Central Government is the appropriate Government and take up the matter with appropriate authorities for corrective action;

(c) review the safeguards provided by or under this Act or any other law for the time being in force for the protection of rights of persons with disabilities and recommend measures for their effective implementation;

(d) review the factors that inhibit the enjoyment of rights of persons with disabilities and recommend appropriate remedial measures;

(e) study treaties and other international instruments on the rights of persons with disabilities and make recommendations for their effective implementation;

(f) undertake and promote research in the field of the rights of persons with disabilities;

(g) promote awareness of the rights of persons with disabilities and the safeguards available for their protection;

(h) monitor implementation of the provisions of this Act and schemes, programmes meant for persons with disabilities;

(i) monitor utilisation of funds disbursed by the Central Government for the benefit of persons with disabilities; and

(j) perform such other functions as the Central Government may assign.

(2) The Chief Commissioner shall consult the Commissioners on any matter while discharging its functions under this Act.

**76. Action of appropriate authorities on recommendation of Chief Commissioner.**—Whenever the Chief Commissioner makes a recommendation to an authority in pursuance of clause (b) <sup>1</sup>[of subsection (1)] of section 75, that authority shall take necessary action on it, and inform the Chief Commissioner of the action taken within three months from the date of receipt of the recommendation:

Provided that where an authority does not accept a recommendation, it shall convey reasons for non-acceptance to the Chief Commissioner within a period of three months, and shall also inform the aggrieved person.

**77. Powers of Chief Commissioner.**—(1) The Chief Commissioner shall, for the purpose of discharging his functions under this Act, have the same powers of a civil court as are vested in a court under the Code of Civil Procedure, 1908 (5 of 1908) while trying a suit, in respect of the following matters, namely:—

(a) summoning and enforcing the attendance of witnesses;

(b) requiring the discovery and production of any documents;

(c) requisitioning any public record or copy thereof from any court or office;

(d) receiving evidence on affidavits; and

(e) issuing commissions for the examination of witnesses or documents.

(2) Every proceeding before the Chief Commissioner shall be a judicial proceeding within the meaning of sections 193 and 228 of the Indian Penal Code (45 of 1860) and the Chief Commissioner shall be deemed to be a civil court for the purposes of section 195 and Chapter XXVI of the Code of Criminal Procedure, 1973 (2 of 1974).

**78. Annual and special reports by Chief Commissioner.**—(1) The Chief Commissioner shall submit an annual report to the Central Government and may at any time submit special reports on any matter, which, in his opinion, is of such urgency or importance that it shall not be deferred till submission of the annual report.

(2) The Central Government shall cause the annual and the special reports of the Chief Commissioner to be laid before each House of Parliament, along with a memorandum of action taken or proposed to be taken on his recommendations and the reasons for non-acceptance the recommendations, if any.

(3) The annual and special reports shall be prepared in such form, manner and contain such details as may be prescribed by the Central Government.

**79. Appointment of State Commissioner in States.**—(1) The State Government may, by notification, appoint a State Commissioner for Persons with Disabilities (hereinafter referred to as the “State Commissioner”) for the purposes of this Act.

(2) A person shall not be qualified for appointment as the State Commissioner unless he has special knowledge or practical experience in respect of matters relating to rehabilitation.

(3) The salary and allowances payable to and other terms and conditions of service (including pension, gratuity and other retirement benefits) of the State Commissioner shall be such as may be prescribed by the State Government.

(4) The State Government shall determine the nature and categories of officers and other employees required to assist the State Commissioner in the discharge of his functions and provide the State Commissioner with such officers and other employees as it thinks fit.

(5) The officers and employees provided to the State Commissioner shall discharge his functions under the general superintendence and control of the State Commissioner.

(6) The salaries and allowances and other conditions of service of officers and employees shall be such as may be prescribed by the State Government.

(7) The State Commissioner shall be assisted by an advisory committee comprising of not more than five members drawn from the experts in the disability sector in such manner as may be prescribed by the State Government.

**80. Functions of State Commissioner.**—The State Commissioner shall—

(a) identify, *suo motu* or otherwise, provision of any law or policy, programme and procedures, which are in consistent with this Act, and recommend necessary corrective steps;

(b) inquire, *suo motu* or otherwise deprivation of rights of persons with disabilities and safeguards available to them in respect of matters for which the State Government is the appropriate Government and take up the matter with appropriate authorities for corrective action;

(c) review the safeguards provided by or under this Act or any other law for the time being in force for the protection of rights of persons with disabilities and recommend measures for their effective implementation;

(d) review the factors that inhibit the enjoyment of rights of persons with disabilities and recommend appropriate remedial measures;

(e) undertake and promote research in the field of the rights of persons with disabilities;

(f) promote awareness of the rights of persons with disabilities and the safeguards available for their protection;

(g) monitor implementation of the provisions of this Act and schemes, programmes meant for persons with disabilities;

(h) monitor utilisation of funds disbursed by the State Government for the benefits of persons with disabilities; and

- (i) perform such other functions as the State Government may assign.

**81. Action by appropriate authorities on recommendation of State Commissioner.**—Whenever the State Commissioner makes a recommendation to an authority in pursuance of clause (b) of section 80, that authority shall take necessary action on it, and inform the State Commissioner of the action taken within three months from the date of receipt of the recommendation:

Provided that where an authority does not accept a recommendation, it shall convey reasons for non-acceptance to the State Commissioner for Persons with Disabilities within the period of three months, and shall also inform the aggrieved person.

**82. Powers of State Commissioner.**—(1) The State Commissioner shall, for the purpose of discharging their functions under this Act, have the same powers of a civil court as are vested in a court under the Code of Civil Procedure, 1908 (5 of 1908) while trying a suit, in respect of the following matters, namely:—

- (a) summoning and enforcing the attendance of witnesses;
- (b) requiring the discovery and production of any documents;
- (c) requisitioning any public record or copy thereof from any court or office;
- (d) receiving evidence on affidavits; and
- (e) issuing commissions for the examination of witnesses or documents.

(2) Every proceeding before the State Commissioner shall be a judicial proceeding within the meaning of sections 193 and 228 of the Indian Penal Code (45 of 1860) and the State Commissioners shall be deemed to be a civil court for the purposes of section 195 and Chapter XXVI of the Code of Criminal Procedure, 1973 (2 of 1974).

**83. Annual and special reports by State Commissioner.**—(1) The State Commissioner shall submit an annual report to the State Government and may at any time submit special reports on any matter, which, in its opinion, is of such urgency or importance that it shall not be deferred till submission of the annual report.

(2) The State Government shall cause the annual and the special reports of the State Commissioner for persons with disabilities to be laid before each House of State Legislature where it consists of two Houses or where such Legislature consist of one House, before that House along with a memorandum of action taken or proposed to be taken on the recommendation of the State Commissioner and the reasons for non-acceptance the recommendations, if any.

(3) The annual and special reports shall be prepared in such form, manner and contain such details as may be prescribed by the State Government.

## CHAPTER XIII

### SPECIAL COURT

**84. Special Court.**—For the purpose of providing speedy trial, the State Government shall, with the concurrence of the Chief Justice of the High Court, by notification, specify for each district, a Court of Session to be a Special Court to try the offences under this Act.

**85. Special Public Prosecutor.**—(1) For every Special Court, the State Government may, by notification, specify a Public Prosecutor or appoint an advocate, who has been in practice as an advocate for not less than seven years, as a Special Public Prosecutor for the purpose of conducting cases in that Court.

(2) The Special Public Prosecutor appointed under sub-section (1) shall be entitled to receive such fees or remuneration as may be prescribed by the State Government.

CHAPTER XIV  
NATIONAL FUND FOR PERSONS WITH DISABILITIES

**86. National Fund for persons with disabilities.**—(1) There shall be constituted a Fund to be called the National Fund for persons with disabilities and there shall be credited thereto—

(a) all sums available under the Fund for people with disabilities, constituted *vide* notification No. S.O. 573 (E), dated the 11th August, 1983 and the Trust Fund for Empowerment of Persons with Disabilities, constituted *vide* notification No. 30-03/2004-DDII, dated the 21st November, 2006, under the Charitable Endowment Act, 1890 (6 of 1890).

(b) all sums payable by banks, corporations, financial institutions in pursuance of judgment dated the 16th April, 2004 of the Hon'ble Supreme Court in Civil Appeal Nos. 4655 and 5218 of 2000;

(c) all sums received by way of grant, gifts, donations, benefactions, bequests or transfers;

(d) all sums received from the Central Government including grants-in-aid;

(e) all sums from such other sources as may be decided by the Central Government.

(2) The Fund for persons with disabilities shall be utilised and managed in such manner as may be prescribed.

**87. Accounts and audit.**—(1) The Central Government shall maintain proper accounts and other relevant records and prepare an annual statement of accounts of the Fund including the income and expenditure accounts in such form as may be prescribed in consultation with the Comptroller and Auditor-General of India.

(2) The accounts of the Fund shall be audited by the Comptroller and Auditor-General of India at such intervals as may be specified by him and any expenditure incurred by him in connection with such audit shall be payable from the Fund to the Comptroller and Auditor-General of India.

(3) The Comptroller and Auditor-General of India and any other person appointed by him in connection with the audit of the accounts of the Fund shall have the same rights, privileges and authority in connection with such audit as the Comptroller and Auditor-General of India generally has in connection with the audit of the Government accounts, and in particular, shall have the right to demand production of books of account, connected vouchers and other documents and papers and to inspect any of the offices of the Fund.

(4) The accounts of the Fund as certified by the Comptroller and Auditor-General of India or any other person appointed by him in this behalf, together with the audit report thereon, shall be laid before each House of Parliament by the Central Government.

CHAPTER XV  
STATE FUND FOR PERSONS WITH DISABILITIES

**88. State Fund for persons with disabilities.**—(1) There shall be constituted a Fund to be called the State Fund for persons with disabilities by a State Government in such manner as may be prescribed by the State Government.

(2) The State Fund for persons with disabilities shall be utilised and managed in such manner as may be prescribed by the State Government.

(3) Every State Government shall maintain proper accounts and other relevant records of the State Fund for persons with disabilities including the income and expenditure accounts in such form as may be prescribed by the State Government in consultation with the Comptroller and Auditor-General of India.

(4) The accounts of the State Fund for persons with disabilities shall be audited by the Comptroller and Auditor-General of India at such intervals as may be specified by him and any expenditure incurred by him in connection with such audit shall be payable from the State Fund to the Comptroller and Auditor-General of India.

(5) The Comptroller and Auditor-General of India and any person appointed by him in connection with the audit of the accounts of the State Fund for persons with disabilities shall have the same rights, privileges and authority in connection with such audit as the Comptroller and Auditor-General of India generally has in connection with the audit of the Government accounts, and in particular, shall have right to demand production of books of accounts, connected vouchers and other documents and papers and to inspect any of the offices of the State Fund.

(6)The accounts of the State Fund for persons with disabilities as certified by the Comptroller and Auditor-General of India or any other person appointed by him in this behalf together with the audit report thereon shall be laid before each House of the State Legislature where it consists of two Houses or where such Legislature consists of one House before that House.

## CHAPTER XVI OFFENCES AND PENALTIES

**89. Punishment for contravention of provisions of Act or rules or regulations made thereunder.**—Any person who contravenes any of the provisions of this Act, or of any rule made thereunder shall for first contravention be punishable with fine which may extend to ten thousand rupees and for any subsequent contravention with fine which shall not be less than fifty thousand rupees but which may extend to five lakh rupees.

**90. Offences by companies.**—(1) Where an offence under this Act has been committed by a company, every person who at the time the offence was committed, was in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he had exercised all due diligence to prevent the commission of such offence.

(2)Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

*Explanation.*—For the purposes of this section,—

- (a) “company” means any body corporate and includes a firm or other association of individuals;
- an
- d (b) “director”, in relation to a firm, means a partner in the firm.

**91. Punishment for fraudulently availing any benefit meant for persons with benchmark disabilities.**—Whoever, fraudulently avails or attempts to avail any benefit meant for persons with benchmark disabilities, shall be punishable with imprisonment for a term which may extend to two years or with fine which may extend to one lakh rupees or with both.

**92. Punishment for offences of atrocities.**—Whoever,—

(a) intentionally insults or intimidates with intent to humiliate a person with disability in any place within public view;

(b) assaults or uses force to any person with disability with intent to dishonour him or outrage the modesty of a woman with disability;

(c) having the actual charge or control over a person with disability voluntarily or knowingly denies food or fluids to him or her;

(d) being in a position to dominate the will of a child or woman with disability and uses that position to exploit her sexually;

(e) voluntarily injures, damages or interferes with the use of any limb or sense or any supporting device of a person with disability;

(f) performs, conducts or directs any medical procedure to be performed on a woman with disability which leads to or is likely to lead to termination of pregnancy without her express consent except in cases where medical procedure for termination of pregnancy is done in severe cases of disability and with the opinion of a registered medical practitioner and also with the consent of the guardian of the woman with disability,

shall be punishable with imprisonment for a term which shall not be less than six months but which may extend to five years and with fine.

**93. Punishment for failure to furnish information.**—Whoever, fails to produce any book, account or other documents or to furnish any statement, information or particulars which, under this Act or any order, or direction made or given there under, is duty bound to produce or furnish or to answer any question put in pursuance of the provisions of this Act or of any order, or direction made or given thereunder, shall be punishable with fine which may extend to twenty-five thousand rupees in respect of each offence, and in case of continued failure or refusal, with further fine which may extend to one thousand rupees for each day, of continued failure or refusal after the date of original order imposing punishment of fine.

**94. Previous sanction of appropriate Government.**—No Court shall take cognizance of an offence alleged to have been committed by an employee of the appropriate Government under this Chapter, except with the previous sanction of the appropriate Government or a complaint is filed by an officer authorised by it in this behalf.

**95. Alternative punishments.**—Where an act or omission constitutes an offence punishable under this Act and also under any other Central or State Act, then, notwithstanding anything contained in any other law for the time being in force, the offender found guilty of such offence shall be liable to punishment only under such Act as provides for punishment which is greater in degree.

## CHAPTER XVII MISCELLANEOUS

**96. Application of other laws not barred.**—The provisions of this Act shall be in addition to, and not in derogation of, the provisions of any other law for the time being in force.

**97. Protection of action taken in good faith.**—No suit, prosecution or other legal proceeding shall lie against the appropriate Government or any officer of the appropriate Government or any officer or employee of the Chief Commissioner or the State Commissioner for anything which is in good faith done or intended to be done under this Act or the rules made thereunder.

**98. Power to remove difficulties.**—(1) If any difficulty arises in giving effect to the provisions of this Act, the Central Government may, by order, published in the Official Gazette, make such provisions or give such directions, not inconsistent with the provisions of this Act, as may appear to it to be necessary or expedient for removing the difficulty:

Provided that no such order shall be made under this section after the expiry of the period of two years from the date of commencement of this Act.

(2) Every order made under this section shall be laid as soon as may be, after it is made, before each House of Parliament.

**99. Power to amend Schedule.**—(1) On the recommendations made by the appropriate Government or otherwise, if the Central Government is satisfied that it is necessary or expedient so to do, it may, by notification, amend the Schedule and any such notification being issued, the Schedule shall be deemed to have been amended accordingly.

(2) Every such notification shall, as soon as possible after it is issued, shall be laid before each House of Parliament.

**100. Power of Central Government to make rules.**—(1) The Central Government may, subject to the condition of previous publication, by notification, make rules for carrying out the provisions of this Act.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:—

(a) the manner of constituting the Committee for Research on Disability under sub-section (2) of section 6;

(b) the manner of notifying the equal opportunity policy under sub-section (1) of section 21;

(c) the form and manner of maintaining records by every establishment under sub-section (1) of section 22;

(d) the manner of maintenance of register of complaints by grievance redressal officer under sub-section (3) of section 23;

(e) the manner of furnishing information and return by establishment to the Special Employment Exchange under section 36;

(f) the composition of the Assessment Board under sub-section (2) and manner of assessment to be made by the Assessment Board under sub-section (3) of section 38;

(g) rules for person with disabilities laying down the standards of accessibility under section 40;

(h) the manner of application for issuance of certificate of disability under sub-section (1) and form of certificate of disability under sub-section (2) of section 58;

(i) the allowances to be paid to nominated Members of the Central Advisory Board under sub-section (6) of section 61;

(j) the rules of procedure for transaction of business in the meetings of the Central Advisory Board under section 64;

(k) the salaries and allowances and other conditions of services of Chief Commissioner and Commissioners under sub-section (4) of section 74;

(l) the salaries and allowances and conditions of services of officers and staff of the Chief Commissioner under sub-section (7) of section 74;

(m) the composition and manner of appointment of experts in the advisory committee under sub-section (8) of section 74;

(n) the form, manner and content of annual report to be prepared and submitted by the Chief Commissioner under sub-section (3) of section 78;

(o) the procedure, manner of utilisation and management of the Fund under sub-section (2) of section 86; and

(p) the form for preparation of accounts of Fund under sub-section (1) of section 87.

(3) Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

**101. Power of State Government to make rules.**—(1) The State Government may, subject to the condition of previous publication, by notification, make rules for carrying out the provisions of this Act, not later than six months from the date of commencement of this Act.

(2) In particular, and without prejudice to the generality of foregoing powers, such rules may provide for all or any of the following matters, namely:—

(a) the manner of constituting the Committee for Research on Disability under sub-section (2) of section 5;

(b) the manner of providing support of a limited guardian under sub-section (1) of section 14;

(c) the form and manner of making an application for certificate of registration under sub-section (1) of section 51;

(d) the facilities to be provided and standards to be met by institutions for grant of certificate of registration under sub-section (3) of section 51;

(e) the validity of certificate of registration, the form of, and conditions attached to, certificate of registration under sub-section (4) of section 51;

(f) the period of disposal of application for certificate of registration under sub-section (7) of section 51;

(g) the period within which an appeal to be made under sub-section (1) of section 53;

(h) the time and manner of appealing against the order of certifying authority under sub-section (1) and manner of disposal of such appeal under sub-section (2) of section 59;

(i) the allowances to be paid to nominated Members of the State Advisory Board under sub-section (6) of section 67;

(j) the rules of procedure for transaction of business in the meetings of the State Advisory Board under section 70;

(k) the composition and functions of District Level Committee under section 72;

(l) salaries, allowances and other conditions of services of the State Commissioner under sub-section (3) of section 79;

(m) the salaries, allowances and conditions of services of officers and staff of the State Commissioner under sub-section (3) of section 79;

(n) the composition and manner of appointment of experts in the advisory committee under sub-section (7) of section 79;

(o) the form, manner and content of annual and special reports to be prepared and submitted by the State Commissioner under sub-section (3) of section 83;

(p) the fee or remuneration to be paid to the Special Public Prosecutor under sub-section (2) of section 85;

(q) the manner of constitution of State Fund for persons with disabilities under sub-section (1), and the manner of utilisation and management of State Fund under sub-section (2) of section 88;

(r) the form for preparation of accounts of the State Fund for persons with disabilities under sub-section (3) of section 88.

(3) Every rule made by the State Government under this Act shall be laid, as soon as may be after it is made, before each House of the State Legislature where it consists of two Houses, or where such State Legislature consists of one House, before that House.

**102. Repeal and savings.**—(1) The Persons with Disabilities (Equal Opportunity Protection of Rights and Full Participation) Act, 1995 (1 of 1996) is hereby repealed.

(2) Notwithstanding the repeal of the said Act, anything done or any action taken under the said Act, shall be deemed to have been done or taken under the corresponding provisions of this Act.

## THE SCHEDULE

[See clause (zc) of section 2]

### SPECIFIED DISABILITY

#### 1. Physical disability.—

A. Locomotor disability (a person's inability to execute distinctive activities associated with movement of self and objects resulting from affliction of musculoskeletal or nervous system or both), including—

(a) “leprosy cured person” means a person who has been cured of leprosy but is suffering from—

(i) loss of sensation in hands or feet as well as loss of sensation and paresis in the eye and eye-lid but with no manifest deformity;

(ii) manifest deformity and paresis but having sufficient mobility in their hands and feet to enable them to engage in normal economic activity;

(iii) extreme physical deformity as well as advanced age which prevents him/her from undertaking any gainful occupation, and the expression “leprosy cured” shall construed accordingly;

(b) “cerebral palsy” means a Group of non-progressive neurological condition affecting body movements and muscle coordination, caused by damage to one or more specific areas of the brain, usually occurring before, during or shortly after birth;

(c) “dwarfism” means a medical or genetic condition resulting in an adult height of 4 feet 10 inches (147 centimeters) or less;

(d) “muscular dystrophy” means a group of hereditary genetic muscle disease that weakens the muscles that move the human body and persons with multiple dystrophy have incorrect and missing information in their genes, which prevents them from making the proteins they need for healthy muscles. It is characterised by progressive skeletal muscle weakness, defects in muscle proteins, and the death of muscle cells and tissue;

(e) “acid attack victims” means a person disfigured due to violent assaults by throwing of acid or similar corrosive substance.

#### B. Visual impairment—

(a) “blindness” means a condition where a person has any of the following conditions, after best correction—

(i) total absence of sight; or

(ii) visual acuity less than 3/60 or less than 10/200 (Snellen) in the better eye with best possible correction; or

(iii) limitation of the field of vision subtending an angle of less than 10 degree.

(b) “low-vision” means a condition where a person has any of the following conditons, namely:—

(i) visual acuity not exceeding 6/18 or less than 20/60 upto 3/60 or upto 10/200 (Snellen) in the better eye with best possible corrections; or

(ii) limitation of the field of vision subtending an angle of less than 40 degree up to 10 degree.

#### C. Hearing impairment—

(a) “deaf” means persons having 70 DB hearing loss in speech frequencies in both ears;

(b) “hard of hearing” means person having 60 DB to 70 DB hearing loss in speech frequencies in both ears;

D. “speech and language disability” means a permanent disability arising out of conditions such as laryngectomy or aphasia affecting one or more components of speech and language due to organic or neurological causes.

2. Intellectual disability, a condition characterised by significant limitation both in intellectual functioning (reasoning, learning, problem solving) and in adaptive behaviour which covers a range of every day, social and practical skills, including—

(a) “specific learning disabilities” means a heterogeneous group of conditions wherein there is a deficit in processing language, spoken or written, that may manifest itself as a difficulty to comprehend, speak, read, write, spell, or to do mathematical calculations and includes such conditions as perceptual disabilities, dyslexia, dysgraphia, dyscalculia, dyspraxia and developmental aphasia;

(b) “autism spectrum disorder” means a neuro-developmental condition typically appearing in the first three years of life that significantly affects a person's ability to communicate, understand relationships and relate to others, and is frequently associated with unusual or stereotypical rituals or behaviours.

3. Mental behaviour,—

“mental illness” means a substantial disorder of thinking, mood, perception, orientation or memory that grossly impairs judgment, behaviour, capacity to recognise reality or ability to meet the ordinary demands of life, but does not include retardation which is a condition of arrested or incomplete development of mind of a person, specially characterised by subnormality of intelligence.

4. Disability caused due to—

(a) chronic neurological conditions, such as—

(i) “multiple sclerosis” means an inflammatory, nervous system disease in which the myelin sheaths around the axons of nerve cells of the brain and spinal cord are damaged, leading to demyelination and affecting the ability of nerve cells in the brain and spinal cord to communicate with each other;

(ii) “parkinson's disease” means a progressive disease of the nervous system marked by tremor, muscular rigidity, and slow, imprecise movement, chiefly affecting middle-aged and elderly people associated with degeneration of the basal ganglia of the brain and a deficiency of the neurotransmitter dopamine.

(b) Blood disorder—

(i) “haemophilia” means an inheritable disease, usually affecting only male but transmitted by women to their male children, characterised by loss or impairment of the normal clotting ability of blood so that a minor wound may result in fatal bleeding;

(ii) “thalassemia” means a group of inherited disorders characterised by reduced or absent amounts of haemoglobin.

(iii) “sickle cell disease” means a hemolytic disorder characterised by chronic anemia, painful events, and various complications due to associated tissue and organ damage; “hemolytic” refers to the destruction of the cell membrane of red blood cells resulting in the release of hemoglobin.

5. Multiple Disabilities (more than one of the above specified disabilities) including deaf blindness which means a condition in which a person may have combination of hearing and visual impairments causing severe communication, developmental, and educational problems.

6. Any other category as may be notified by the Central Government.

OUR  
Clean Air • MOTTO • Clean Soil



Waste  
Management &  
Monitoring

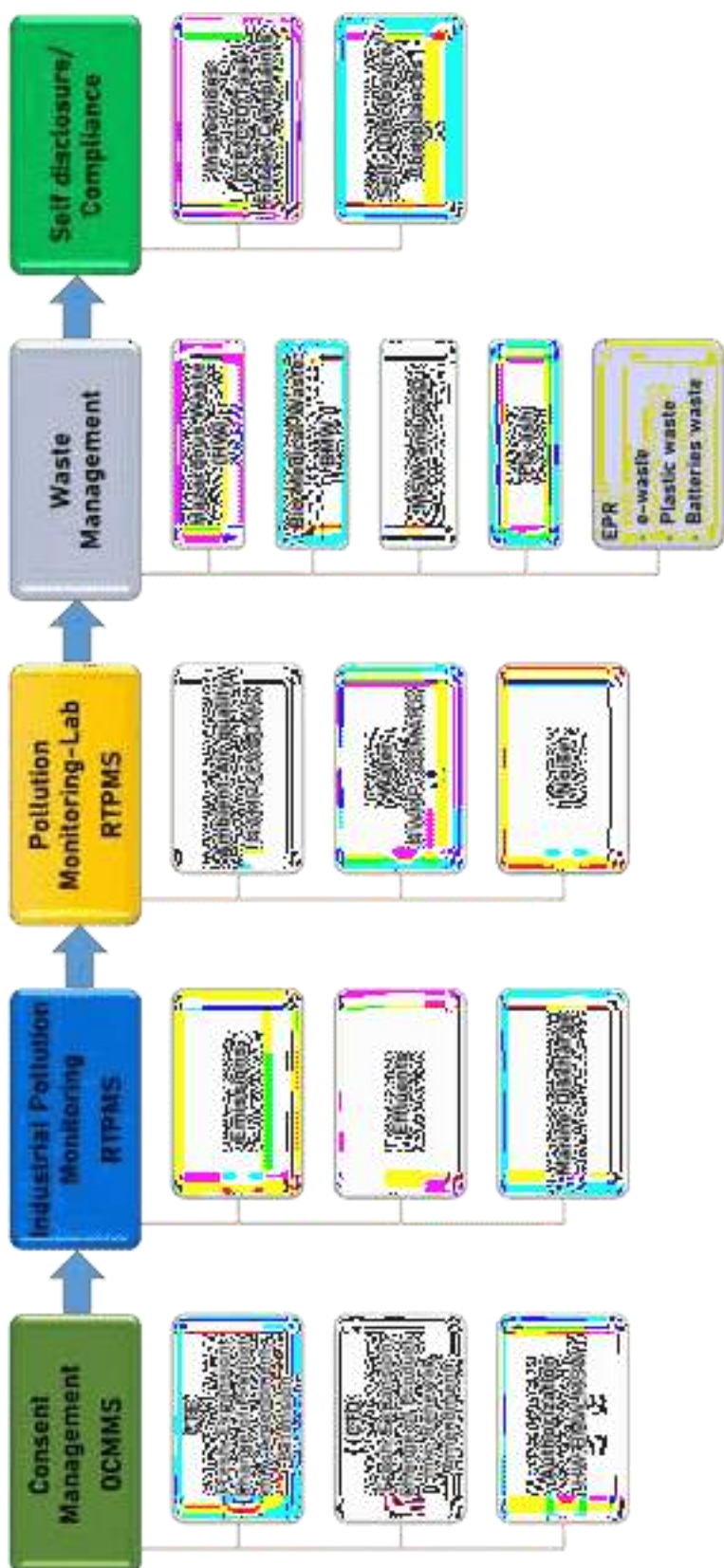
SOP

Standard Operating Procedures



Andhra Pradesh Pollution Control Board  
VIJAYAWADA

# systems Approach



## Contents

|                                                                   |           |
|-------------------------------------------------------------------|-----------|
| A. <u>Hazardous Waste .....</u>                                   | <u>3</u>  |
| 1. <u>Standard Operating Procedure (SoP) .....</u>                | <u>4</u>  |
| 2. <u>Workflow.....</u>                                           | <u>6</u>  |
| 3. <u>Checklist for HW monitoring.....</u>                        | <u>6</u>  |
| B. <u>Biomedical Waste .....</u>                                  | <u>8</u>  |
| 1. <u>Standard Operating Procedure (SOP) .....</u>                | <u>9</u>  |
| 2. <u>Biomedical Waste Management and Monitoring system .....</u> | <u>11</u> |
| 3. <u>Workflow .....</u>                                          | <u>13</u> |
| 4. <u>Colour CODED label.....</u>                                 | <u>13</u> |
| 5. <u>QR Code as per CPCB Guidelines .....</u>                    | <u>14</u> |
| 6. <u>Format for daily Report of BMW Management .....</u>         | <u>15</u> |

# Hazardous Waste

1. Standard Operating Procedure
2. Workflow
3. Checklists

# 1. Standard Operating Procedure (SoP)

## Industrial Hazardous Waste Monitoring

### Activity

Hazardous waste Monitoring

### Source

Industries & Common Hazardous waste Treatment Storage & disposal facility (TSDF).

### Surveillance

1. The officials of the ROs/ZOs will inspect the facility /industry to verify the compliance of the provisions of the HWM Rules by the industry/ facility (Inspection -(Rule no:6(2) of H & OW (M&TM) Rules 2016).
2. Verification of the hazardous wastes generation, Handling, Storage, and method of disposal.
3. The Hazardous waste manifest system shall be maintained for procuring, transporting of Hazardous wastes.

### Information

1. The industry shall furnish the information of quantity of Hazardous wastes generated and practices being followed regarding collection, Storage, and disposal in Form-3 (Rule no:20 of H & OW (M&TM) Rules 2016).
2. The industry / Facility shall produce the logbooks of quantities of HWM waste generated and its disposal.
3. Pre- processing / Recycling / Co-processing industries which handle Hazardous waste shall maintain quantity of hazardous wastes procured and disposed in Form-3 (Rule no:20 of H & OW (M&TM) Rules 2016).
4. Produce the manifest copies for hazardous wastes procured /transported (Rule no:18&19 of H & OW (M&TM) Rules 2016).

5. The industry shall send annual returns of the Hazardous wastes handled and disposed in Form -4 (Rule no:6(5) &20 of H & OW (M&TM) Rules 2016).

## Response

1. The Regional office/Zonal office/Head office issues combined CTO & HWM authorization to the industries as per the delegated powers (Rule no:6(2) of H & OW (M&TM) Rules 2016).
2. The Head office issues co processing authorization to the cement plants and also issues authorization to the pre-processing units. (Rule no:6(2) of H & OW (M&TM) Rules 2016).
3. The RO shall ensure the disposal of the Hazardous waste through APEMCL platform and track the vehicle movement which carrying the Hazardous waste to cross check at random.
4. Annual Inventorization by PCB for submission to CPCB-Rule 20(3) of H &OW (M&TM) Rules, 2016)
5. Verification of the compliance with the SOPs developed by CPCB.

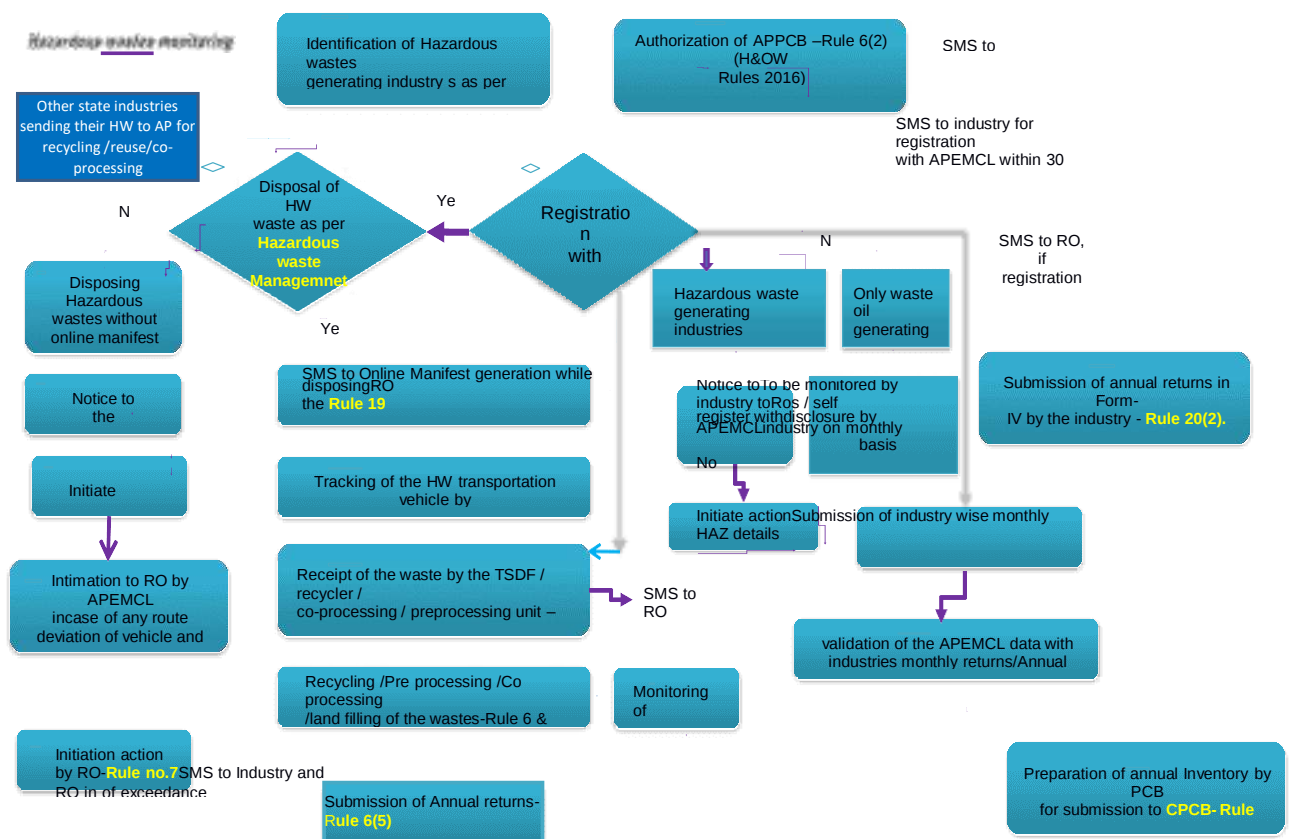
## Analysis

1. The industry /Facility shall comply with the conditions of the CTO and HWM authorization and shall submit the compliance report every 6 months. (Self-disclosure).
2.
  - a. During regular inspection, the officials of the Regional Office verify the compliance of the Board CTO and HW authorization conditions and issue notices in case of noncompliance.
  - b. Verify the mode of Hazardous wastes collection, handling, and its disposal.
  - c. Verify the storage facilities of the Hazardous wastes (Rule no:8 of H & OW (M&TM) Rules 2016).
3. The Board will initiate action in case of any noncompliance of the HWM Rules and violation of the consent and authorization conditions through Task force and in case of any illegal disposals.

4. Online Tracking the Hazardous wastes disposal through APEMCL web site.

5. In case of continuous non- compliance of the HWM Rules, Board will levy Environmental Compensation depending on the gravity of situation.

## 2. Workflow



## 3. Checklist for HW monitoring

- Authorization & CTO status of the Industry and TSDF/ Reprocessor /Preprocessor/Co processing.
- Compliance of the Hazardous waste authorization conditions
- Verify the quantity of waste generation with production details
- Segregation of the Hazardous wastes (Land fill, Utilizable, Recyclable wastes) and its storage in secured place.

- Transportation of the Haz wastes to TSDF/ Reprocessor /Preprocessor/Co processing by generating Online manifest system through APEMCL.
- Maintenance of the records in Form-3.
- GPS tracking of the transportation of vehicle by APEMCL.
- Verify the industry manifest details and APEMCL monthly data whether the industry is disposing the wastes as per the Authorization conditions.
- Compliance with SOPs prescribed by CPCB for recycling of the hazardous wastes by the industry.
- Verification of Annual returns.
- Online emissions monitoring and data verification for exceedance of the stipulated standards.
- Initiate action in case of any noncompliance.

# Biomedical Waste

1. Standard Operating Procedure
2. Biomedical Waste Management and Monitoring system
3. Workflow
4. Guidelines
5. Format

# 1. Standard Operating Procedure (SOP)

## Biomedical Waste Monitoring

### Activity

Bio medical waste monitoring

### Source

Health Care Facilities (HCFs) and Common Bio Medical Waste Treatment and Disposal Facilities (CBWTFs).

### Surveillance

1. ROs/ZOs
2. Bar coding system- Rule 4(i) & Rule 5( c )of BMW Rules, 2016).
3. GPS Tracking system to the vehicle collecting the Bio medical waste from the HCFs. -Rule 5(C)
4. Online OCEMS data of the CBWTFs. (Rule 7(1) of BMW Rules, 2016).
5. Periodical inspection & monitoring (air& water) of CBWTFs. - Rule6- -6(iv) Schedule III - List of prescribed authorities and corresponding duties.

### Information

1. The HCF shall furnish the information of quantity of waste generation category wise such as Red, Yellow, Blue, White, and also shall show the practices being followed regarding segregation. Storage in specified colour code bins and final BMW waste storage site in the premises-Rule4 and colour coding as per Schedule1 of part 1
2. The HCF shall produce DMHO registration certificate, membership of common Bio medical waste treatment and disposal facility.
3. The HCF shall produce the logbooks of quantities of BMW waste generated and its disposal -Rule 4(n).

4. The HCF shall produce logbooks being maintained for wastewater treatment facility (STP/ETP).
5. The quantity of Bio medical waste collected and disposed by the CBWTFs- Rule 4&5.
6. Maintaining the Annual Reports & furnish at the time of inspection - Rule 4(r).

## Response

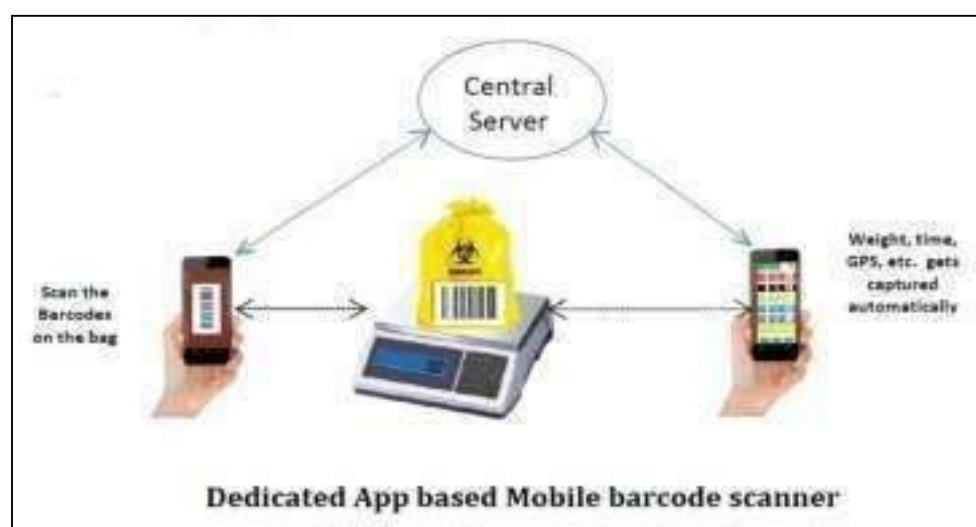
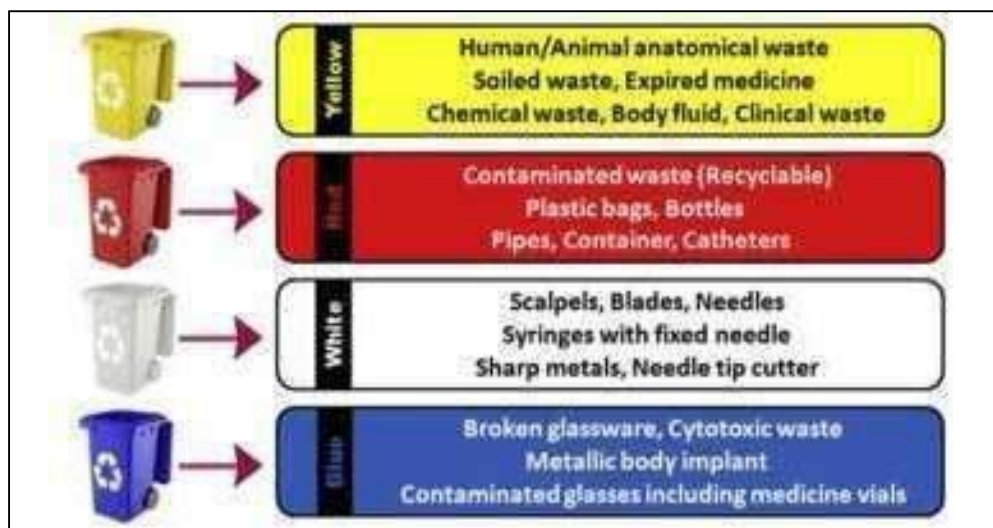
1. Verification of the data by ROs. - Rule 6(1) (Schedule III)
2. Issue of Authorizations to the non-bedded HCFs, Clinics, Blood bank, Diagnostic centres etc., by RO. -Rule 10
3. Issue of combined CTO & BMW authorization to the hospitals with 25 to less than 200 beds. -Rule 10
4. The Head office issues combined CTO & BMW authorization to all hospitals with 200 beds and above. -Rule 10
5. Verification of adequacy of CBWTFs to treat the waste generated by the HCFs.
6. Conduct of Gap Analysis study.
7. Verify the mode of Bio medical waste segregation, handling, and its disposal. - Rule 6(1).
8. Validation of HCF Bio medical waste generation with CBWTF.

## Analysis

1. The HCF and CBWTFs shall comply with the conditions of the CTO and BMW authorization and shall submit the compliance report every 6 months. -Rule 4&5.
2. During regular inspection, the officials of the Regional Office verify the compliance of the Board's consent and authorization conditions and issue of notices to the non-complying HCFs and CBWTFs. -Rule 6
3. The Board will initiate action in case of any noncompliance of the BMW Rules and violation of the consent and authorization conditions.
4. The Board will levy environmental compensation in case of continuous non-compliance.

5. The Board shall compile, review and analyse the annual reports received from HCFs and send the compiled report to CPCB on or before 31st July of Every year. -Rule 13 (2) of BMW Rules, 2016).
6. Development of Mobile & Web based application in co-ordination with IT cell for effective Bio medical waste management. -Rule5

## Biomedical Waste Management and Monitoring system

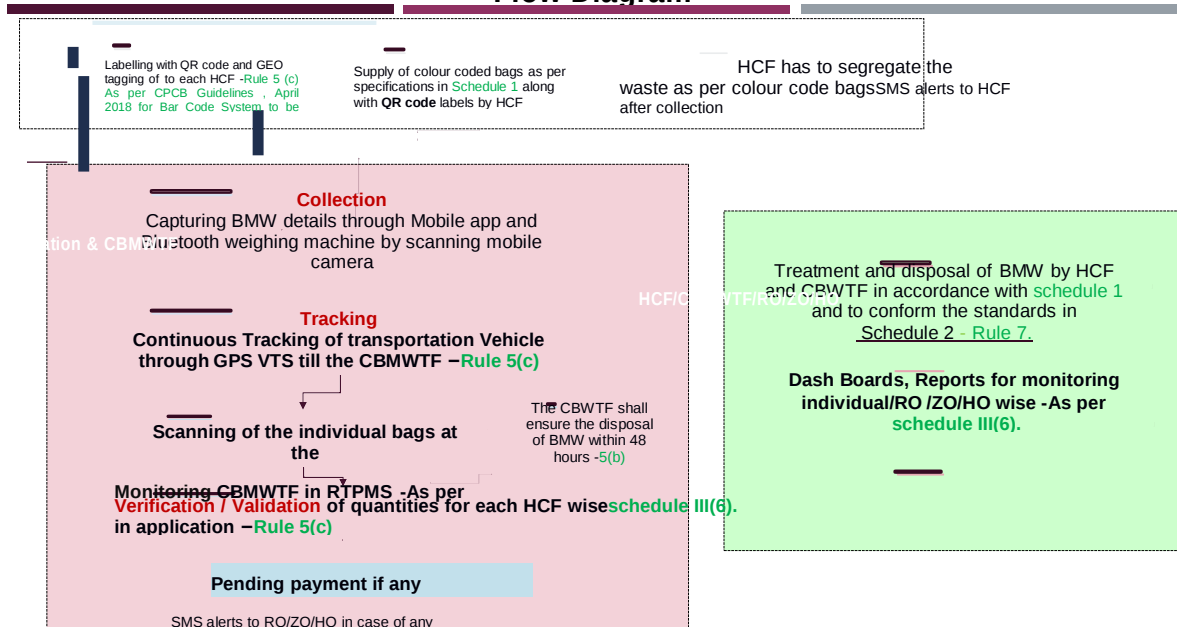


## Objective

- ☐ Tracking of biomedical waste from source of generation to intended destination for final treatment and disposal
- ☐ Daily check on the Occupier, transporter (involved in transportation of bio-medical waste within HCF as well as transportation of bio-medical waste from HCF to the CBWTF premises) and Operator of a CBWTF
- ☐ Preventing pilferage of bio-medical waste at HCFs as well as during transportation of waste from HCF to the CBWTF
- ☐ Keeping record of visits made by CBWTF to the member HCFs for collection of waste
- ☐ Identification of source of generation of bio-medical waste in case illegal dispose
- ☐ Creates real time online monitoring of waste generation, transportation, treatment and disposal
- ☐ Quantification of bio-medical waste generated, color coding-wise waste handed over to the CBWTF -operator by the Occupier and waste collected daily by the Operator of a CBMWTF from the member HCFs for further treatment and disposal.

## Workflow

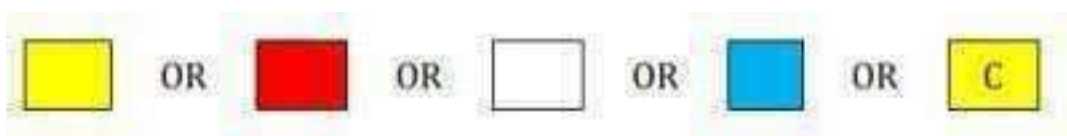
### Flow Diagram



## Colour CODED label

- **Colour mark on the label**

A colour mark or text is required on bar code label for easy identification of the bar code (by the workers handling bio-medical waste) with designated colour coded bag or container. The bar code should have a colour mark (in Yellow/Red/White/Blue) in the form of block of size at least 7 mm X 7 mm or Text of font size 12 specifying the colour of the BMW in the bags or containers. The colour mark or Text shall be placed at the top left corner of the bar code label.



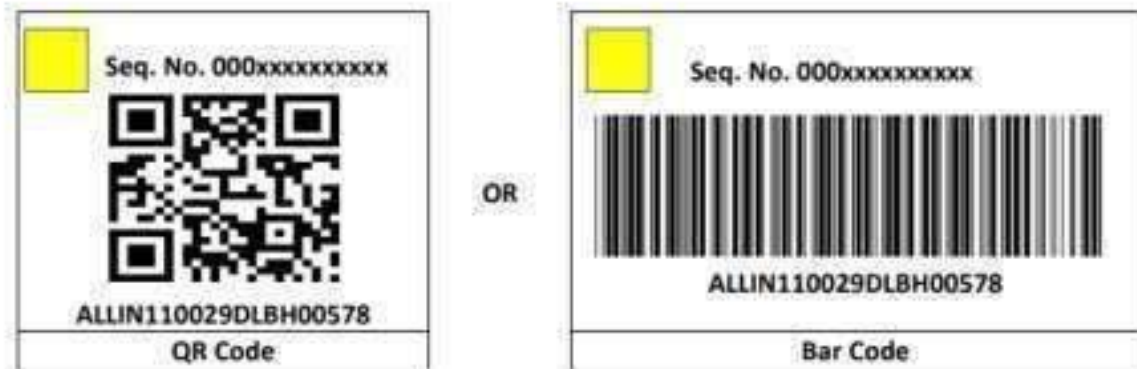
- **In case of B/W label**

Colour mark can be specified in the form of 'Text' specifying the colour of BMW waste as "YELLOW" / "RED" / "WHITE" / "BLUE" printed on top left side of the bar code label.



## QR Code as per CPCB Guidelines

**Eg.** For handling of yellow colour bio-medical waste bag by a bedded hospital viz., All India Institute of Medical Sciences (ALLI) located at New Delhi, Delhi State (DH) and having unique number (say 00578), in such a case, the bar code or QR code label shall be as given in **Figure 1** below



**Figure 1. Typical Bar code or QR Code label**

## Format for daily Report of BMW Management

[illegible]

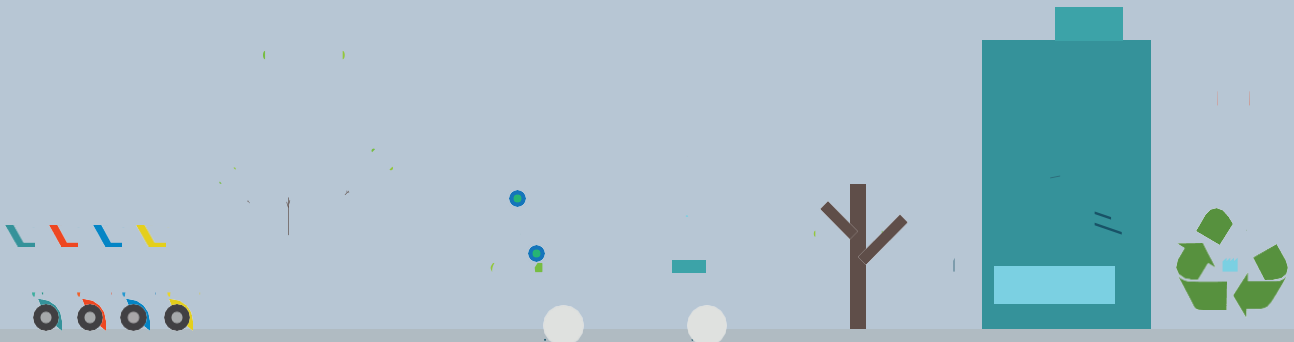
# Waste Management & Monitoring



## Andhra Pradesh Pollution Control Board

సంఖ్య: ఆంధ్రప్రదేశ్ పరిశ్రమల శాఖ 98/2019/ఆంధ్రప్రదేశ్

Paryavaran Bhavan, APIIC Colony Road  
Gurunanak Colony, Autonagar  
VIJAYAWADA- 520007





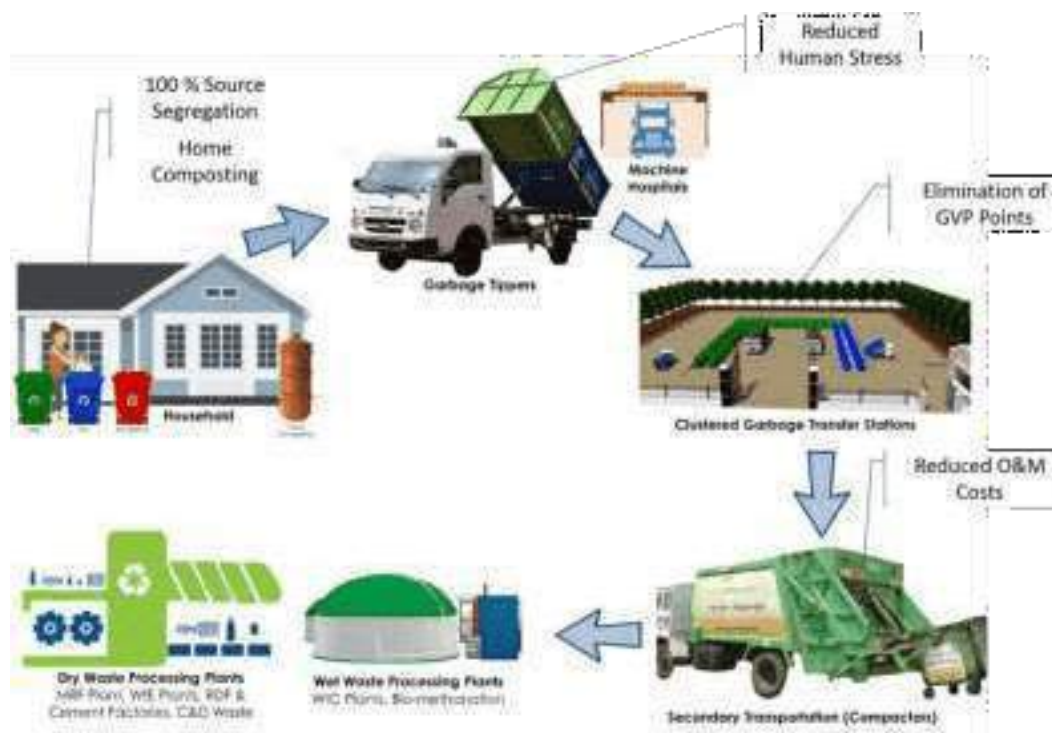
## Standard Operating Procedure for

## CLEAN ANDHRA PRADESH

Cleanliness and sanitation for the State of Andhra Pradesh has been a story of steady progress under Swachha Bharat Mission. While policy measures can play a key role in ensuring universal sanitation, nothing can replicate the impact of a behavioral change.

In cognizance of this fact and to initiate a state-wide movement to build a Clean Andhra Pradesh, the Clean Andhra Pradesh Program is envisioned. The core objective of the Mission is to “create Bin free – Litter free – Garbage free cities”.

- Visual Cleanliness of the Cities
- 100 % Segregation of Waste at Source with Community Participation
- Encouraging Home Composting and Onsite waste treatment
- 100 % Door to Door Collection
- Scientific Treatment of 100 % Solid Waste Generated
- Comprehensive Sewerage and fecal sludge treatment
- Legacy Waste management



## Solid Waste Management Chain in CLAP

- Waste segregation at source ensures that waste does not get contaminated and it can be collected and transported separately for further processing.
- Segregation of waste optimizes waste processing and treatment technologies.
- It results in high proportion of segregated material that could be reused and recycled, leading to less consumption of virgin material.
- Proper segregation of waste thus leads to a 'Circular Economy' creating green jobs, reducing consumption of virgin resources and promoting investments and innovations.

Collection of solid waste from the door step of households, apartments, housing societies, shops, commercial establishments, offices, institutional or any other nonresidential premises, including collection of such waste from entry gate or a designated location on the ground floor in a housing society, multi storied building or apartments, large residential, commercial or institutional complex or premises.

### Transportation of Collected Waste

Transportation of the segregated waste collected from source premises in specially designed, partitioned and covered transport vehicles, to the respective processing facilities.

#### 1. Primary Collection & Transportation

Primary Collection refers to the process of collection of segregated solid waste from source of its generation including households, shops, offices,

hotels, institutions, and residential or non-residential premises and taking the waste to transfer stations or directly to the disposal site. It is accomplished using garbage auto tippers in plain areas. In hilly areas, many of the houses are accessible only by footpaths or steps, in these areas segregated waste from households should be collected using backpacks having small leakproof containers, wheeler bags, etc.

## **2. Secondary Collection and Transportation**

Secondary collection includes picking waste from intermediary points or garbage transfer stations and transporting it to waste processing plants.

### **Garbage Transfer Stations:**

A Garbage transfer station is a secondary collection point where the waste from primary collection vehicles is temporarily stored and transported to processing plants using large vehicles to improve the collection efficiency of primary vehicle, save transportation time and fuel.

In compliance with the rules and to achieve the vision of Bin Free, Litter Free and Garbage Free Cities GoAP started the program of Clean Andhra Pradesh (CLAP). To replacing the existing Pushcart system with Garbage Auto Tippers is introduced to reduce the physical stress on sanitation workers and improve the Door-to-Door collection services.

**Primary Collection:** 2525 (Petrol/CNG) Auto Tippers and 1123 E-Autos are being provided to 123 ULBs.

**Garbage Transfer stations:** Proposed to construct 243 Garbage Transfer Stations and they are at various stages and 481 compactors provided for secondary Transportation

## **Waste Processing**

**Swachha Andhra Corporation** on behalf of Government of AP and all the Urban Local bodies, is acting as nodal agency for implementation of Swachh Bharat Mission Urban and also in selecting the agencies under competitive bidding methods for establishing Solid Waste Management and processing projects in the above regard.

The current status in the State is of Solid waste Management processing in the State is as follows:

- 2 Waste to Energy Projects at Guntur and Visakhapatnam covering 42 ULBs within a radius of 100 KMs are commissioned.
- 32 Wet Waste Projects covering 34 ULBs are functional
- 17 Wet Waste Projects covering 17 ULBs are in progress
- Tenders were called for selection of agencies to establish ISWM (Integrated Solid Waste Management) projects in balance 72 ULBs under PPP mode.
  - o 37 ULBs Received Bids, Work Award Issued
  - o 35 ULBs Bids not received and 19 ULBs can send their wet waste to the nearest ULBs

**ISWM: Integrated solid waste management refers to the strategic approach to sustainable management of all categories solid wastes in one location or under one project.**

## Source Segregation of Municipal Solid Waste & Collection

### Standard Operating Procedure for Door-to-Door Waste Collection

#### Roles and Responsibilities of Municipal Commissioner

- Arrange for door-to-door collection Vehicles to collect segregated waste from households.
- Formation of Self-Help Groups, provide identity cards and thereafter encourage door to door collection of waste.
- Create public awareness through information, education and communication campaign and educate the waste generators through Ward Volunteers, NGOs, MEPMA and SHGs.

#### Roles and Responsibilities of Sanitation Secretary

- Ensure that allocation of 2 PH workers to each vehicle for effective D2D collection of segregated waste.
- Ensure that vehicle is collecting waste as per designated route plan.
- Ensuring that driver & helper who operate and maintain the vehicles.
- Record that data logs are prepared which shall cover attendance, GPS reports, duty slips, and repair and maintenance, etc.
- Direct waste generators not to litter i.e., throw or dispose of any waste.
- Educate workers, including contract workers and supervisors for door-to-door collection of segregated waste and transporting the unmixed waste during primary and secondary transportation to processing or disposal facilities.
- Create various awareness activities through volunteers and MEPMA and SHGs to sanitation workers.

### Standard Operating Procedure for Segregated Waste

#### Roles and Responsibilities of Municipal Commissioner

- Supply 3 colored Household bins to Households to segregate the waste.
- Once door-to-door collection of segregated waste begins, keep regular track of the percentage of segregation in each ward.
- Depending on the type of stakeholders, use appropriate IEC strategy and awareness creation through Volunteers, SHGs and MEPMA staff.

- Conducting workshop/meetings with Sanitation secretaries on Source Segregation and collection.
- Conducting weekly meeting with Volunteers, SHG women, associations and NGO's on status of activities and solution to improve the situation.
- Citizen awareness campaigns on segregation of waste, Home composting.
- Conducting competitions to sensitize students, citizens etc,

#### **Roles and Responsibilities of Sanitation Secretaries**

- Ensure that 3 colored HH bins are supplied to Households.
- Ensure that citizens are using Household bins for segregation of waste.
- Make sure that sanitation worker is collecting segregated waste from households.
- Once door-to-door collection of segregated waste begins, keep regular track of the percentage of segregation in each ward.
- To spread awareness for segregation at source in every ward and sensitize people through IEC with help of Volunteers and MEPMA staff.

#### **Roles and Responsibilities of Ward Volunteers**

- After distribution of bins to households educate households with pamphlet explain the importance of segregation and its uses.
- Once door-to-door collection of segregated waste begins, keep regular track of the percentage of segregation in each ward.
- Assist households in case they face any issues or challenges with regard to segregation.

#### **Roles and Responsibilities of MEPMA**

- Spread awareness for segregation at source in every household and sensitize people through IEC.
- Develop an individual action plan to households for implementation source segregation.
- Conducting mini meetings with households on Source Segregation and collection.
- Conducting of competitions on source segregation, home composting, art & crafts with recycled items, kitchen garden etc.,
- Participating in awareness rallies conducted by ULB in achieving the 100% segregation.
- Check and keep regular track of the percentage of segregation in each ward after sensitization of the households.

## Standard Operating Procedure for Collection and Transportation

| Component                 | Action to be taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Responsibility                              |                                             |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|---------------------------------------------|
|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Corporation                                 | Municipalities                              |
| <b>Primary Collection</b> | <ul style="list-style-type: none"> <li>The primary collection plan consists of time schedule, number of trips required for 100% service coverage, optimum utilization of vehicle and allocating nearest dumping location (GTS/Processing Plant) in that area.</li> <li>Route plan for every trip consists of start point (household /commercial), end point (household/commercial) and dumping location for that trip (GTS/Processing Plant).</li> <li>After preparation of plan collection activity shall be monitored and if any changes required it should be updated in the plan and final plan need to be stick on vehicle.</li> <li>Ensure that driver is aware about the plan and vehicle is traveling as per the plan.</li> <li>Ensure that vehicles are equipped with functional GPS Device, Camera and Audio System</li> <li>Street sweeping and drain cleaning waste are to be collected in separate vehicles it should not be mixed with household waste.</li> </ul> | Sanitation Secretary/<br>Sanitary Inspector | Sanitation Secretary/<br>Sanitary Inspector |
|                           | <ul style="list-style-type: none"> <li>Allocation of sanitation workers for door-to-door collection activities</li> <li>Daily monitoring of primary collection activities ensure that 100% vehicles are in working</li> <li>Ensure that all the route plans are prepared and stuck on vehicles</li> <li>Identification of intermediary transfer points and arranging compactor bins at this location till the completion of GTS</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CMOH/MOH                                    | Commissioner                                |
|                           | <ul style="list-style-type: none"> <li>Driver shall follow the time schedule of collection and travel as per the route plan provided</li> <li>Sanitation Worker is responsible for collection of waste from every establishment in the allocated area</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sanitation Worker/Driver                    | Sanitation Worker/Driver                    |

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                      |                                                     |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------|
|                                 | <ul style="list-style-type: none"> <li>The waste collected shall be deposited in respective compartments provided in the vehicle: <ul style="list-style-type: none"> <li>Green Compartment for Wet Waste</li> <li>Blue Compartment for Dry Waste</li> <li>Red Bin for Hazardous Waste</li> <li>Black Bin for E-Waste</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                     |
| <b>Garbage Transfer station</b> | <ul style="list-style-type: none"> <li>Ensure the construction is completed in intime daily monitor the construction activity</li> <li>Identification of intermediary transfer points and arranging compactor bins at this location till the completion of GTS</li> <li>All the bins should be covered and there is no spillage of waste from the bins</li> <li>Ensure that waste is dumped in separate bins placed for different types of waste</li> <li>Periodic inspection of GTS if any damage caused to floor, walls, bins, ramp etc should be repaired.</li> <li>Secondary storage bins capacity should be at least double the expected daily flow of waste</li> <li>Ensure that secondary storage bins are cleaned at least once in a month and painted once in a year</li> <li>GTS Not completed <ul style="list-style-type: none"> <li>Construction of intermediary and temporary transfer points for ensuring the transfer of waste from Primary collection vehicles to secondary transport</li> <li>Ensure the ramp has enough elevation and width</li> <li>Ensure the temporary transfer point is maintained very clean</li> <li>Permanent GTS Construction to be expedited</li> </ul> </li> </ul> | MHO (or)<br>Assistant Engineer (Env) | Assistant Engineer (Env) (or)<br>Sanitary Inspector |
| <b>Secondary transportation</b> | <ul style="list-style-type: none"> <li>Routing of secondary transportation vehicle should be planned to ensure synchronization of primary collection</li> <li>Ensure that waste is transported daily and it cannot be stored more than 24 hours</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | MHO (or)<br>Assistant Engineer (Env) | Assistant Engineer (Env) (or)<br>Sanitary Inspector |

|                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                      |                                                     |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------------------------------|
|                                               | <ul style="list-style-type: none"> <li>• Ensure separate vehicles or separate trips should be planned for wet and dry waste</li> <li>• Collection times should be effectively planned to minimize the transport distance</li> <li>• Transportation of waste at night may be done in areas prone to traffic congestion</li> <li>• All the vehicles may be utilized in at least two shifts, depending on waste generation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                      |                                                     |
|                                               | <ul style="list-style-type: none"> <li>• In case of transportation of waste to cluster plan in other ULBs separate plan should be prepared</li> <li>• All the vehicles shall be utilized in two shifts <ul style="list-style-type: none"> <li>o day shift for collection of waste from commercial and bulk waste generators</li> <li>o Night shift for transporting waste to the processing plant</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | MHO (or)<br>Assistant Engineer (Env) | Assistant Engineer (Env) (or)<br>Sanitary Inspector |
| <b>Capacity Building &amp; IEC Activities</b> | <ul style="list-style-type: none"> <li>• CB shall be carried out to sanitation workers on characterisation of waste and storage in separate compartments assigned in vehicle</li> <li>• Community participation in waste management activities is critical for ensuring a well-functioning collection system</li> <li>• Involvement of the community in the primary collection system, specifically in determining the timing for waste collection is important for the effective planning and implementation of the primary waste collection system</li> <li>• Involvement of community leaders, community associations, SHGs and local members who represent the interest of the community at large must be adopted</li> <li>• Involving Self Help Groups, in solid waste management activities creating awareness in citizen on source segregation, home composting and handing the waste to sanitation worker.</li> <li>• The collection vehicle shall be equipped with announcement system to announce their arrival for waste collection, creating awareness on segregation etc.,</li> </ul> | CMOH /<br>MHO (or)<br>MEPMA          | Commissioner (or) MEPMA                             |

## Standard Operating Procedure for Waste Processing

| Category of Waste | Status                   | Action to be taken                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Responsibility                      |                                            |
|-------------------|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------|
|                   |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Corporation                         | Municipalities                             |
| Wet Waste         | Existing Plant           | <ul style="list-style-type: none"> <li>All the necessary infrastructure provided for the project to be maintained such as roads, power, and water facilities</li> <li>Provision of adequate Segregated Wet Waste</li> <li>Ensure the project are completely operational and working at full capacity</li> <li>Ensure all the workers at the project are working under safe conditions</li> <li>Deployment of ULB staff at the projects for Knowledge transfer</li> <li>Testing the quality of all the parameters of the plant regularly</li> <li>Sale or use of the compost / biogas generated has to be continually monitored</li> </ul> | Additional (or) Deputy Commissioner | Commissioner (or) Assistant Engineers      |
|                   | Clustered with Other ULB | <ul style="list-style-type: none"> <li>Provision of adequate Segregated Wet Waste</li> <li>Arrangements for storing and transfer yards for wet waste</li> <li>Ensure dedicated Vehicles along with the Staff are deployed for transportation of waste</li> <li>Ensure the vehicle transporting the waste should be closed</li> </ul>                                                                                                                                                                                                                                                                                                      | Additional (or) Deputy Commissioner | Assistant Engineers (or) Nominated officer |
|                   | Project Awarded          | <ul style="list-style-type: none"> <li>Land has to be identified as per the CPCB Norms</li> <li>Identified land to be provided with basic infrastructure such as Leveled Land, Water, Electricity, and Approach roads.</li> <li>The agencies which have been awarded the projects will approach the ULBs and Land may be handed over to the developer after completing the concessioner agreement procedures</li> </ul>                                                                                                                                                                                                                   | Commissioner                        | Commissioner                               |

|                                |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                     |                                       |
|--------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------|
|                                |                           | <ul style="list-style-type: none"> <li>Support the agencies in acquiring the Consent to Establish and Consent to Operate from the Pollution Control Board</li> <li>Push the agencies to complete the project within the stipulated time</li> <li>In the due time windrow composting can be taken up in the available land at the project site</li> </ul>                                                                                                                                                                       |                                     |                                       |
|                                | Project yet to be awarded | <ul style="list-style-type: none"> <li>Land has to be identified as per the CPCB Norms</li> <li>In the due time windrow composting can be taken up in the available land at the project site and Local NGOs and CSOs may be made responsible for the operation of the</li> </ul>                                                                                                                                                                                                                                               | Commissioner                        | Commissioner                          |
| <b>Dry Waste – Recyclables</b> | MRF Available             | <ul style="list-style-type: none"> <li>All the necessary infrastructure provided for the project to be maintained such as roads, and power</li> <li>Provision of adequate Segregated Dry Waste</li> <li>Ensure the project are completely operational and working at full capacity</li> <li>Ensure all the workers at the project are working under safe conditions</li> <li>Integration of informal waste pickers in to the projects and ensuring</li> <li>Sale or use of the recyclables to monitored continually</li> </ul> | Additional (or) Deputy Commissioner | Commissioner (or) Assistant Engineers |
|                                | No MRF                    | <ul style="list-style-type: none"> <li>ULBs with the ISWM projects can handover the segregated dry waste to the agencies</li> <li>Formalizing the informal sector of the dry waste by <ul style="list-style-type: none"> <li>Registering the Khabadiwalas in to the system</li> <li>Registering the informal waste pickers in to the system</li> <li>Establishing a monitoring system</li> <li>Providing dedicated vehicles for the Dry waste</li> </ul> </li> </ul>                                                           | Commissioner                        | Commissioner                          |

|                                   |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                     |                                            |
|-----------------------------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|--------------------------------------------|
|                                   |                                                   | o Establishing a chain between the Recyclables purchasers, Khabadiwalas and formalized waste pickers.                                                                                                                                                                                                                                                                                                                                                                    |                                     |                                            |
| <b>Dry Waste – Non-Recyclable</b> | WtE Cluster                                       | <ul style="list-style-type: none"> <li>• Provision of adequate Segregated No recyclable dry Waste</li> <li>• Arrangements for storing and transfer yards for non-recyclable dry waste</li> <li>• Ensure dedicated Vehicles along with the Staff are deployed for transportation of waste</li> <li>• Ensure the vehicle transporting the waste should be closed</li> </ul>                                                                                                | Additional (or) Deputy Commissioner | Assistant Engineers (or) Nominated officer |
|                                   | Cement Factories                                  | <ul style="list-style-type: none"> <li>• Meeting with the nearest cement factory officials for acceptance of non-recyclable dry waste</li> <li>• Provision of Segregated No recyclable dry Waste</li> <li>• Arrangements for storing and transfer yards for non-recyclable dry waste</li> <li>• Ensure dedicated Vehicles along with the Staff are deployed for transportation of waste</li> <li>• Ensure the vehicle transporting the waste should be closed</li> </ul> | Additional (or) Deputy Commissioner | Assistant Engineers (or) Nominated officer |
|                                   | ULBs not in the WtE Cluster / No Cement factories | <ul style="list-style-type: none"> <li>• Maintaning store yards for non-recyclable dry waste and may be transported to the WtE/ Cement factories when the quantiles are large enough</li> <li>• Provision of Segregated No recyclable dry Waste</li> <li>• State Govt will provide decentralized solutions to these ULBs</li> </ul>                                                                                                                                      | Commissioner                        | Commissioner                               |

## Standard Operating Procedure for Visual Cleanliness

| Strategy                                                        | Action to be taken                                                                                                                                                                                                                                                                                                                                                                                                                                 | Responsibility                      |                                       |
|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------|
|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Corporation                         | Municipalities                        |
| <b>Prosecution &amp; penalties on Garbage littering</b>         | <ul style="list-style-type: none"> <li>Ensuring 100 % segregated waste collection</li> <li>Sanitation rules/bye laws to prosecute and penalize garbage littering</li> <li>User charges collection to induce sense of responsibility towards handing over waste to sanitation workers</li> </ul>                                                                                                                                                    | Additional (or) Deputy Commissioner | Commissioner (or) Assistant Engineers |
| <b>Transformation of Garbage Vulnerable Points (GVPs)</b>       | <ul style="list-style-type: none"> <li>Elimination of secondary storage bins and transportation of waste to Garbage Transfer Stations (GTS)</li> <li>Transformation of Garbage Vulnerable Points to Green spots</li> <li>Monitoring of GVPs after transforming them into green spots</li> <li>Promoting beautification through plantation, wall paintings etc after transformation of GVPs</li> <li>Community involvement to clear GVPs</li> </ul> | Additional (or) Deputy Commissioner | Sanitary Inspectors                   |
| <b>Elimination of Open Urination and Open Defecation spots</b>  | <ul style="list-style-type: none"> <li>Provision of IHHL/Community &amp; Public toilets</li> <li>Ensuring operational CT/PT, maintaining the aspirational standards</li> <li>Periodical inspection of CT/PTs and conducting structural audit</li> <li>Sensitizing public towards use of toilet</li> <li>Bye laws to penalize the offenders</li> <li>Monitoring of OU and OD spots</li> </ul>                                                       | Commissioner                        | Commissioner                          |
| <b>Animal policy where animals cannot be allowed on streets</b> | <ul style="list-style-type: none"> <li>Tourist places, markets/mandis and commercial areas to be free from stray animals</li> <li>Ensuring implementation of Andhra Pradesh Municipalities Act, 1965</li> </ul>                                                                                                                                                                                                                                    | Commissioner/CMOH                   | Commissioner/MHO                      |

|                                           |                                                                                                                                                                                                                                                                                                                                                                                                            |                                          |                                            |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|--------------------------------------------|
| <b>Visual Beautification</b>              | <ul style="list-style-type: none"> <li>• Development and maintenance of parks and promotion of composting in parks</li> <li>• Maintenance of dividers, footpaths and promotion of greenery along roads</li> <li>• Streets beautification through wall paintings</li> <li>• Retrofitting of slums</li> </ul>                                                                                                | Additional (or) Deputy Commissioner      | Commissioner (or) Assistant Engineers      |
| <b>Mechanized sweeping</b>                | <ul style="list-style-type: none"> <li>• Opting for mechanized sweeping on 4 lane and main roads</li> <li>• Monitoring of mechanized vehicles through vehicle tracking system</li> <li>• Water sprinkling to suppress dust</li> <li>• Procurement of vehicles under NCAP</li> </ul>                                                                                                                        | Commissioner/Chief Engineer              | Commissioner /Deputy Engineer              |
| <b>Promotion of composting</b>            | <ul style="list-style-type: none"> <li>• Promotion of source segregation and home composting</li> <li>• Promotion of community composting by Residential Welfare Associations</li> <li>• Mandating Onsite composting by Bulk Waste Generators</li> <li>• Procuring composting equipment under CSR funds</li> <li>• Incentivizing the home composters, community composters by procuring compost</li> </ul> | Additional (or) Deputy Commissioner/CMOH | Assistant Engineers (or) Nominated officer |
| <b>Elimination of water logging areas</b> | <ul style="list-style-type: none"> <li>• Identification of water logging areas and reasons behind water logging</li> <li>• Maintenance of drains by clearing silt, blockages ensuring free flow of water</li> <li>• Filling and leveling up the potholes and water logging areas</li> </ul>                                                                                                                | Chief Engineer                           | Deputy Engineer                            |
| <b>Clean water bodies</b>                 | <ul style="list-style-type: none"> <li>• Ensuring water bodies are free from visible floating solid waste through regular cleaning</li> <li>• No drain should lead sewage/fecal matter into water bodies. Identification of such cases and taking necessary actions</li> <li>• Elimination of OU and OD spots</li> <li>• Conducting cleanliness drives with NGOs/communities etc</li> </ul>                | Commissioner                             | Commissioner                               |

# Andhra Pradesh State Water Policy

Irrigation & CAD Department  
Government of Andhra Pradesh

## Contents

|                                                             |    |
|-------------------------------------------------------------|----|
| 1. Need for the State Water Policy                          | 1  |
| 2. Objective of the Andhra Pradesh State Water Policy       | 4  |
| 3. Strategies for accomplishing the Objective of the policy | 6  |
| 4. Governance & Institutional Arrangements                  | 13 |
| 5. Implementation of the Policy                             | 14 |
| 6. Conclusion                                               | 15 |
| Acronyms & Abbreviations                                    | 16 |

## 1. Need for the State Water Policy

Water security is intimately tied with food security, livelihood, health, environment, economic development and overall well-being of the society. Water is a finite resource and managing water in days of rapid socio-economic growth and change is challenging. The water challenges for the state are, therefore, manifold – improving and safeguarding the existing drinking water supplies, managing water for irrigation, industry, power supply and environmental and prevention of pollution.

The total water resources (surface water and groundwater) of Andhra Pradesh are estimated to be about 108 BCM (about 78 BCM from surface water, primarily from the Godavari and Krishna rivers), of which nearly 65 BCM are currently utilized (0.6 BCM for drinking, 64 BCM for irrigation, 0.3 BCM for industry and 0.3 BCM for power generation). Most of the water (about 98%) is currently supplied for irrigation, although other needs are expected to grow in the future. The current trends of increase in water supply from all users will outstrip available supplies significantly by 2025.

In addition, there are a number of challenges related to the development of new infrastructure, maintenance and operation of existing infrastructure, and increasing threats to the resource base from pollution, over-abstraction and unplanned development that exacerbate existing climate risks such as droughts and floods.

Water logging, salinization and increased levels of toxic elements in water are serious concerns for the agriculture sector. The water sector planning & management also have opportunity costs of action or inaction. A lasting solution has to come from ushering in major reforms, financial and institutional, to ensure that system is put on a sustainable track.

Groundwater development has played a crucial role, in meeting the rising demands for water resulting from the onset of the green revolution, as well as drinking water & droughts. Nevertheless, groundwater exploitation has major drawbacks and limitations.

The Inter-Ministerial Task group established for mid-term appraisal of the 10<sup>th</sup> Plan made recommendation to the states to have water policies that work towards the efficient use of water resource. The Government of A.P, have enacted two legislations viz., Andhra Pradesh Water, Land and Tree Act 2002 for regulating water use and Andhra Pradesh Farmers Management of Irrigation System Act 1997 to make community as partners in water and irrigation system management.

The Government of A.P has already initiated a massive program of creation of irrigation infrastructure for augmenting the food production and livelihood security. The government is committed to

- (a) Provide hygienic, affordable and secure drinking water supplies to the entire population
- (b) Improve the performance and financial viability of irrigation systems
- (c) Make groundwater use sustainable in economic and environmental terms and
- (d) Make systematic transition from the water resource development mode to an integrated water resource management mode, with appropriate reforms in water sector through a water policy.

The policy in a dynamic sector with rapid changes cannot remain a static statement and will be subjected to regular reviews and changes.

The State Water Policy focuses on key areas of water management, which include:

1. Building an enabling environment
2. Implementing a range of institutional tools, including local capacity building and participatory approaches.
3. Integrating new management tools and systems such as the integrated data systems, water demand management and a new communication system.

First, Water demand and utilization is multi sectoral and governed at various levels. Adverse impacts of rapid population and industrial growth, unsustainable exploitation of water resources consequent to haphazard urbanization and unchecked pollution are some of the issues to be addressed adequately and substantially to meet the challenges of the water sector.

Secondly, vulnerability of the drought prone areas in the State should be reduced to safeguard against drought associated problems through soil moisture conservation measures, water harvesting practices, minimization of evaporation losses and the sustainable development of the ground water potential. This would also entail the need to improve management of the basic natural resources of the State such as land, water and forests through improved land management, water harvesting, soil moisture conservation and dry land farming practices, as considerable areas will continue to rely on rainfed agriculture.

Thirdly, there is need to plan for flood control and management. Physical flood protection works like embankments and dykes, extensive soil conservation in the catchments, preservation of forest and increase in forest coverage, adequate flood cushioning in water storage projects wherever feasible to facilitate better flood management and an extensive network for flood forecasting to establish a system of timely warning to the settlements in the flood plains, along with the regulation of settlements and economic activity in the flood plain zones would be required to be adequately continued to be supported or initiated to minimize the loss of life and property on account of floods.

Finally, the prime requisite for effective water resource planning is a well developed decision support system linked to a dynamic database of water resources comprising of demand and utilization pattern in the state. Existing distributed database required to be networked while improving the quality of data collection, processing and analysis.

Therefore guiding principles of water management need to be coherent across the various sector and institutions through statement of intent of government as a state water policy specifically to address the future increases in demand and recognizing the present inadequacies and gaps in water management. The water policy is in consonance of the National Water Policy and would be a dynamic document to keep on evolving to address the new challenges effectively and adequately.

## Objective of the Andhra Pradesh State Water Policy

The objective of the Andhra Pradesh State Water Policy, 2008 is to ensure the comprehensive multi-sectoral planning, development and management of the State's water resources, and effective, efficient, equitable and sustainable service deliveries for various water uses. In particular, the Policy aims the following:

### To ensure water security to the entire population by

Supplying adequate clean, hygienic, accessible, affordable and safe water to all citizens for drinking

Ensuring appropriate institutional and legal framework, in the water sector for supply of water to various users / users.

### To improve water management and efficiency by

Integrated and coordinated efforts by all concerned institutions/organizations in developing a policy framework for planning water resources, augmenting them and putting them to productive use.

Effective participation of users in development and management of the State's water resources.

Mandating development and management of water resources with involvement of primary stakeholders for efficient and optimal utilization of water through progressive re-engineering and reorientation of institutions, practices and processes. Traditional and common-law user rights shall be respected in such an arrangement.

Evolving institutional systems for service charges for water provided for various uses such as drinking and sanitation, irrigation, industries, recreation and energy.

Effective use of modern technology, tools, and approaches in water resources planning, development, and management, including the development and effective use of an appropriate modern knowledge base, monitoring and communication systems, applied research, improved information flow and access to relevant agencies and the general public, and awareness raising on key water-related issues.

Increasing the productivity of water by fixing standards of infrastructure, services and utilization efficiency.

Holistic and optimal development, management, and operation of water infrastructure with appropriate attention to technical, social, environmental, economic, and institutional aspects and to ensure financial sustainability of the water sector.

Reducing risks to climate risks and improvement of rain fed agriculture productivity.

To improve availability and efficiency of irrigation water by

Improving the productivity of the State's water resources to achieve economic, social, and environmental objectives through an outcome-orientated approach for institutional and investment activities. Ensure water security to the State's population to maximize the benefits to various users of water while minimizing vulnerability to droughts, floods, and pollution.

Realizing optimum irrigation potential under major, medium and minor irrigation projects.

Promoting sustainable use of groundwater.

Improving the performance of irrigation projects by narrowing the gap between potential created and the utilization.

Involving primary stakeholders in operation and maintenance of irrigation systems.

To maintain and sustain ecological balance by

Conserving and protecting water bodies and wetlands, through regulation and enforcement of standards for water infrastructure, usage and waste disposal.

Regulating the use of the land around water bodies.

Enforcing the recycling of industrial effluents and wastewater for secondary uses.

Strategies for accomplishing the Objectives of the policy

Water-use priority

1. Drinking water
2. Irrigation
3. Hydro-power
4. Ecology
5. Agro-industries and non-agricultural industries
6. Navigation and other uses

Prioritization impacts water-resource management and therefore demands careful balancing with a perspective for the future. Therefore, these priorities could be modified or added, if necessary. These priorities for the State are consistent with the National Water Policy 2002.

### Water Resources Planning

Water resources planning for development and management of water resources projects in the state would be done, as far as possible, for multi-purpose uses. The provision for drinking water would be the primary consideration.

Planning water resources projects involve a number of socio- economic and environmental sustainability aspects, appropriate resettlement and rehabilitation of project-affected people and livestock, public health concerns, dam safety and other technical issues, which need to be conceived in a holistic context.

### Water Resources Development

The State recognizes the need to develop its water resources on priority to ensure water and food security and to promote and sustain overall growth.

**Resettlement and Rehabilitation Aspects:** Optimal use of water resources, including for storage and irrigation systems development, can involve resettlement and/or rehabilitation of the population. This is to be done in a planned and systematic manner to ensure that project affected persons are compensated and that construction and rehabilitation activities proceed smoothly. This should be consistent with the Andhra Pradesh State R&R Policy, 2005 and the National Policy for R&R, 2007. Cultural assets should also be adequately protected in project development.

**Environmental Aspects:** The development of projects should take into account environmental aspects, including catchment area treatment and management, mitigation of environmental and ecological impacts, and groundwater and

surface water sustainability. Effective screening procedures should be in place to adequately factor environmental and social opportunities and concerns during all stages of projects.

## Water-resource Management

The State recognizes the need for optimal management of existing water and irrigation infrastructure to ensure effective service delivery and sustainability of the resource base

**Service Delivery:** The State will take appropriate measures to ensure effective, timely, and cost-effective delivery of water-related services, including drinking water, irrigation, hydropower, industrial, environmental, fisheries, and community services.

**Rehabilitation and Modernization of Existing Water Resources and Irrigation Infrastructure:** The State will ensure that existing water infrastructure is appropriately rehabilitated and modernized to ensure that it performs to its optimal level and recognizes multi-purpose dimensions of the assets.

**Operation and maintenance of water resources and irrigation infrastructure:** The State will ensure provisions for full operations and maintenance requirements of water resources and irrigation infrastructure projects, through an appropriate combination of rationalization of water charges and budgetary subsidy support, to ensure that the quality of the service delivery is not allowed to suffer for want of system's O&M needs.

**Users participation of irrigation system management:** The state has already enacted an enabling legislation, namely, APFMIS Act, 1997 (amended in 2002), to provide a legal framework for the formation of legally empowered Water Users Associations (WUAs) at various levels of the irrigation systems and to promote their involvement in the irrigation

system management. The state would continue to promote and further strengthen these WUAs to ensure their meaningful and effective involvement in a given irrigation command and that the quality of irrigation service deliveries are maintained and sustained.

**Asset Management:** Project level Asset management will be ensured through the creation and updating of asset inventories, functional specifications, and asset management frameworks.

**Promoting Modern Management Practices:** Modern management practices will be ensured in the development of appropriate information, analysis, and communication systems and soliciting feedback from service delivery clients to improve performance. Appropriate benchmarking and auditing systems should be developed to monitor and improve service delivery efficiency through the use of modern management instruments. Particular attention will be paid to professional development of staff to effectively use modern technical and management practices.

**Environmental Aspects:** In the operation of water resources infrastructure, appropriate measures will be taken to ensure adequate provision of water to maintain ecosystem services and manage water quality in sensitive stretches. Adequate measures should be taken to address the substantial waterlogged areas that are present in many irrigation commands as well as to regulate over-abstraction of groundwater.

## Special Focus Areas

**Use of Appropriate Modern Technology in Water Resources Development and Management:** The State would ensure that appropriate modern technology is utilized in the pursuit of the mandate of the water-related agencies. This includes the deployment of modern computer hardware

and software, development of a modern knowledge base (using GIS, Remote Sensing, and MIS tools), interactive decision support systems and other analytical tools, modern data and voice communication systems, improved use of the internet, improved information flow arrangements, effective targeted research, and knowledge partnerships. These should be targeted to improve water-related agencies to improve performance, reduce overall costs, and reduce redundancies.

**Urban and Rural Water Supply:** Priority will be made to move towards 24x7 safe water supply in adequate amounts to meet the growing needs in urban and rural areas for domestic and industrial use. Drinking water and sanitation will be accorded high priority in water resources development, allocation, and management with adequate resilience to climate risks.

**Water Quality and Ecological Aspects:** There should be due consideration to maintain and enhance the environmental functions of the State's water resources. Adequate measures must be taken to ensure the prevention of pollution of the State's surface and ground waters, water bodies and coastal zones. Efforts should be undertaken to control point and non-point source pollution from industrial, domestic, agricultural, and other sources that pose that threat to public health and ecosystems. Integrated Pest Management and Integrated Nutrient Management practices and organic farming should be encouraged where appropriate to ensure sustainable agricultural practices are undertaken without compromising public and ecosystem health.

**Conservation of Water:** Efforts should be taken to ensure effective water conservation, including promotion of demand-side management, reducing losses in evaporation, conveyance, and distribution, and promotion of water saving technologies and practices. As agriculture represents the

major user of water in Andhra Pradesh, special attention should be given to agricultural water conservation, including promotion of drip/sprinkler systems, SRI, cropping pattern changes to less water-intensive crops, etc. as appropriate.

**Flood Management:** Effective steps will be taken for flood management using an appropriate combination of non- structural and structural measures. This includes provision of appropriate flood cushion in water storage infrastructure, flood risk identification, zoning, and regulation, modern flood forecasting and communications systems, and flood preparedness planning in vulnerable communities.

**Drought Management:** The State is highly vulnerable to droughts. The risks of drought will be better managed through improved forecasting and communication, drought preparedness planning, appropriate watershed management and water harvesting, improved consideration of management instruments such as insurance, and diversification of livelihoods to improve climate resilience.

**Land Erosion Management:** Land degradation issues adversely impact water quality and productivity. There is a need to improve land erosion management both for local livelihood improvement as well as natural resource management benefits. In addition, coastal erosion needs to be managed with appropriate measures to protect coastal zone assets.

**Safety of Water Infrastructure:** Appropriate measures based on periodic inspection should be taken to ensure the safety of the water assets created. In particular, dam safety will be adequately monitored and enhanced in dams of all sizes. The recommendations of the State Dam Safety Panels should be fully funded and implemented.

## Governance and Institutional Arrangements

### Institutional and Legal Aspects

The State recognizes the need to have appropriate regulatory institutional and legal framework in the water sector, and also of restructuring and capacity building of the existing institutions in the water sector in the state, and to achieve the above needs, the state would take the following actions.

**Establishment of Regulatory Institutions in the Water Sector:** An Andhra Pradesh Water Resources Regulatory Commission (APWRRC) will be established, under a state legislation to provide the regulatory institutional frame work at the state level.

**Strengthening of Water User Organizations:** Water User Associations will be strengthened to assume greater responsibility in the management of water and irrigation infrastructure.

**Restructuring and capacity-building of the existing I&CAD Department and other Water Sector Institutions:** The existing Irrigation and Command Area Development Department and other water sector institutions (including WALMTARI) would be suitably restructured to ensure effective water resources stewardship and effective service delivery. Appropriate legal and administration actions should be taken to build their capacity, and encourage a shared-vision approach to help them achieve mandates.

## Implementation of the Policy

The Mid Term Appraisal of Tenth Plan has made certain recommendation for respective states to have water policy and work on the recommendation of the Inter Ministerial Task Group on

efficient utilization of water resources. The Government of India has further formed subgroups of National Development Council as part of the planning process for the 11<sup>th</sup> Five Year Plan. The subgroup on Agriculture and Irrigation has made certain recommendations on various issues concerning water use efficiency, related institutional restructuring, realization of the potential of water among others. The implementation of the A P Water Resources Policy will broadly coincide with the 11<sup>th</sup> Five Year Plan (2007-12). The Government of Andhra Pradesh will formulate programmes and projects based on the provisions of the Policy to incorporate the recommendations during the implementation of the 11<sup>th</sup> Plan. Towards this the Government of Andhra Pradesh will notify the schedule for implementation of the following provisions of the Policy.

### Institutional Instruments

Establishment of Water Management Committee

Reorganising the Irrigation & CAD Department.

Establishment of the Andhra Pradesh Water Resources Regulatory Commission

### State Water Policy Review

The state water policy would be a dynamic policy document, and would be periodically reviewed, as and when needed, to meet the future water sector development and management challenges.

## 6.0 Conclusion

Water is critical for Andhra Pradesh. The gulf between water supply and demand is rapidly growing due to the ever-increasing demand for water and its limited supply. The State Government has launched several innovative initiatives to augment water supply through conservation and people's participation. Huge infrastructure support has been provided for irrigation and power, in order to benefit the agriculture sector.

A mass awareness programme supplemented by appropriate technologies, policies, institutional arrangements and stakeholders' participation would increase water productivity, accelerate economic growth and assure safe and secure water in the present and in future. This would require an integrated approach at different levels in the Government and in the various regions. Micro-level water development, need-based priorities and planning will go a long way in enhancing water supply in a sustainable manner.

A.P. Water Policy is only a starting point. The challenge for the administration and the people is to build a secure water future for A.P. The water policy aims to improve overall water productivity by removing constraints and providing institutional mechanisms. Water Policy suggests that effectiveness of the policy will be achieved through sectoral and cross-sectoral co-ordination and collaboration.

The provisions of present policy would be implemented following step-by-step approach with existing policy law and organisation. Mid term review of the process would enable the implementation of Policy and achievement of its objectives. However the challenge remains!

\*\*\*\*\*

## Acronyms & Abbreviations

|             |                                                           |
|-------------|-----------------------------------------------------------|
| AP          | Andhra Pradesh                                            |
| AD          | Agricultural Department                                   |
| A.P.F.M.I.S | Andhra Pradesh Farmers management of Irrigation Systems   |
| APGENCO     | Andhra Pradesh Power Generation Corporation               |
| A.P.WALTA   | Andhra Pradesh Water, Land and Trees Act.                 |
| C.A.D       | Command Area Development                                  |
| G.o.A.P     | Government of Andhra Pradesh                              |
| G.O.I       | Government of India                                       |
| G.W.D       | Ground water department                                   |
| I&CAD       | Irrigation & Command area development                     |
| I.W.R.M     | Integrated water resource management                      |
| NRM         | Natural resource management                               |
| O & M       | Operation and management                                  |
| PIM         | Participatory irrigation management                       |
| S.P.V       | Special Purpose Vehicle                                   |
| S.T.P       | Sewage treatment plant                                    |
| WALAMTARI   | Water and Land Management Training and Research Institute |
| WUA         | Water Users Association.                                  |

**Example of a Micro Plan**  
**Mission Support Unit**  
**Andhra Pradesh Water Conservation Mission**

**Water Management Plan of Damaragidda Village**  
**Water Year 20042005**

**Index**

Introduction

Data collection,

Method

Village acquaintance work

Change over time

Need assessment

Social resources map of village

Water availability water budget

Water management plan

Panchayat resolution

**Note:**

This plan was prepared by the Natural Resource Committee of Damaragidda Village, Andhra Pradesh, India as a result of a twoday training in micro water management planning.

The training was organized under the Water Conservation Mission, convened by the Commissioner Rural Development of the Government of Andhra Pradesh. As part of a capacity building program in 800 such villages capacity building plans were made, facilitated by local nongovernment organizations.

## **Water Management Plan of Damaragidda Village**

### **Water Year 20042005**

#### **Introduction**

Water is must for the survival of human beings. Our village has been water problem for the last few years. Decreasing rainfall has been depleting ground water resource thus causing a number of problems for us. In the past say about 40 years ago, we used to have abundant water resources. We had green hillocks over flowing wells, fertile lands and supportive livestock. Why the situation deteriorated gradually? Now we are facing severe crisis. Scarcity of drinking and irrigation water is haunting us. We are almost experiencing drought conditions dried wells and barren lands are starring at us. Then we had resolved to go into the causes of this situation and changes over lives for better by protecting the god given natural resources.

Taking a cue from some villages, which have succeeded in conserving and increasing ground water we also had decided to lay down some rules and regulations in order to protect our water resources with this determination, a meeting was convened on 16.09.2004 at panchayat office to take some collective decisions in order to preserve the depleting ground water levels.

### Data Collection for the plan

We have taken some data from our village secretary to prepare a water management plan for our village. The details given by him are as follows:

Area of village: 2380

Average rainfall: 813 mm

| Wetland | Dryland | Barren land | Habitations | Reserve forest | Area under cultivation |
|---------|---------|-------------|-------------|----------------|------------------------|
|         | 2380    |             | 19          |                | 1600                   |

Population of village : 1510

Cattle : 428

Goats / Sheep : 1000

#### Drinking water sources: working

#### Working

#### Not

|                             |   |       |                                                     |     |
|-----------------------------|---|-------|-----------------------------------------------------|-----|
| 1. Water tanks              | : | (1)   | (1)                                                 |     |
| 2. Mini tanks               | : | (1)   | (1)                                                 |     |
| 3. Hand pumps               | : | (4)   | (1)                                                 | (3) |
| 4. Domestic taps            | : | (300) | (300)                                               |     |
| 5. Street taps              | : | (4)   | (4)                                                 |     |
| 6. Drinking water wells     | : | (3)   | (3)                                                 |     |
| 7. Drinking water borewells | : | (1)   | In rainy season<br>(1)<br>Water supply<br>from well |     |

#### Irrigation water resources

Agricultural wells working : (62) (32) not

Agricultural bore wells : (6) (4) (2)

#### Tanks and ponds

| S.NO | Details | Area of tank | Area of ayacut |
|------|---------|--------------|----------------|
|------|---------|--------------|----------------|

|   |                                 |        |        |
|---|---------------------------------|--------|--------|
| 1 | Percolation tanks of Rallagadda | ½ acre | 5 acre |
|---|---------------------------------|--------|--------|

Streams: Eedullavagu, Rallakattavagu

## **Method**

Having resolved to preserve and protect the water resources in our village, all of us have set out on the task of going into the present conditions of water resources in the village and know the changes they have undergone over time. For this purpose we divided ourselves into four groups and it was decided each group would follow a particular method to assess the condition of water bodies and resources. As part of the process, the first group will walk through the village and make an assessment. The second group was asked to assess the situation in and around the village on the basis of social map of the village. The third group was entrusted with the task of assessing the changes that took place in the village over a period of 40 years. The task given to the fourth group is to assess the inflow of water into the village and the quantum being utilized.

## **Village walk**

Our group has set out from the village panchayat office and went over the house of Manneguda Beerappa on the way to Mangalgadda. We passed besides Mangalgadda stream via Begari Mallaiah's well and through the fields of Tenugu Ramachandraiah and over the fields of Seelam Narsimha Reddy. On the way, we passed through the agricultural borewells of Seelam Srinivas Reddy and Tondapalli Narsimhulu and the fields of Gangada Mallaiah before entering village. And then we reached OHSR Tank in the village via the village panchayat bore. We have observed the following things during our exploratory walk.

The village has a drinking water tank of 40,000 liter capacity. However, the water from this tank is not sufficient for the people of village.

An open well is situated adjacent to Telugu Kishtaiah near Manneguda Beerappa's house. With the depth of 18 yards, the well serves only during rainy season. As it was not in usage for a long time, the water has turned saline.

There was a hand pump beside the house of Tenugu Kishtaiah. It was sunk 200 ft deep. There are four bores of this type out of which only one is working.

A list well (Mota Bavi) was there at the house of Srinivas Rao. Its depth is 12 yards. But it has accumulated silt up to 5 yards.

Mangalgadda stream is located at short distance from lift well. The stream flows only during rainy season. The stream flows for four months if there was adequate rainfall.

Beside the stream, there was agricultural well belonging to Begani Mallaiah. It is of 12 yards depth. It contains water only in rainy season. Five acre land is cultivated under this well.

An old time check dam (Katura) was there in Mangalgadda stream. Of 8 meter length, it has its sidewalls collapsed and the water is leaking.

There was an agricultural well in the property of Chilkur Mallaiah. Its depth is 8 yards and present water level is 2 yards.

There is village panchayat bore at the field of Gangada Mallaiah. Depth of this bore is 260 ft. Presently it is not working because of loss of washer.

| Sl. No |                 | Tank              | Well              | Bore              | Well              | Stream            | well             | Check dam                 | Well         | Well                      | Bore               |
|--------|-----------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------------|---------------------------|--------------|---------------------------|--------------------|
| 1      | Quantity        | 40,000 ft         | 18 yards          | 200 ft            | 12 yards          |                   | 12 yards         | 8 mts                     | 8 yards      | 8 yards                   | 260 ft             |
| 2      | Quality         | Safe              | Unsafe            | Safe              | Unsafe            |                   |                  | Safe                      | Unsafe       | 2 mts water level         | safe               |
| 3      | Time of working | Always            | Rainy season      | Always            |                   | Rainy season      | Rainy season     | Get water in rainy season | Rainy season | Work only in rainy season | Always             |
| 4      | Use             | Yes               | No                | Yes               | No use            |                   | Currently in use |                           | No use       |                           | Village panchayat  |
| 5      | Ownership       | Village panchayat | Village panchayat | Village Panchayat | Village Panchayat | Farmers           | Farmers          | Farmers                   | Farmers      | Farmers                   | No washer          |
| 6      | Problem         |                   | Silted            |                   | Silted            | Filled with trees |                  | Side walls collapsed      |              | Silting                   | Washer to be fixed |
| 7      | Suggestion      |                   | Desilting         |                   | Desilting         | Clearing trees    |                  | Walls to be built         |              |                           |                    |

**Village:** Dammarigadda

**Mandal:** Chevella

### Changes over time

All members of our group went into the village and discussed the use of water resources and changes in the patterns taken place in the last 50 years.

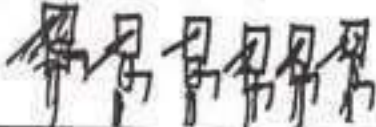
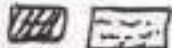
| Sl. No | Details       | 60 years ago                                                                                                                                                          | 40 years ago                                                                                                                    | Present situation                                                                                                                            |
|--------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1      | Wells         | There used to be wells numbering 20 to 30. Water used to be at 910 yards. Water filled up after one round of lifting (Mota). Ten acre was cultivated under each well. | There used to be 4050 wells. There arrived oil engines. Twenty acre was cultivated using one engine.                            | Sixtytwo wells are in existence. Electric motors are being used. A well is not able to wet 2 acres adequately. Water level is down in wells. |
| 2      | Rain          | During the four months season soil used to be fully wet making even walking difficult. Small furrows were made to drain water.                                        | Gradually, rainfall began to decrease. Even the available rain too has erratic. No trace of water just two days after the rain. | Rain occurs occasionally during the end of May and June. But there is no water despite occasional down pour                                  |
| 3      | Tanks / Ponds |                                                                                                                                                                       |                                                                                                                                 | Peddapollavagu (stream) has 10 check dams and Cherilavagu has 10 dams. A farm pond was built in Somalonivanka                                |
| 4      | Bores         | No bores in the period                                                                                                                                                | One or two bores were sunk after 1992                                                                                           | There are six bores out of which only 4 are working. The remaining struck rock.                                                              |
| 5      | Crops         | Onions, Millets, sugar cane, turmeric were cultivated. Cultivation down by lift system (Mota) of water supply. Use of chemicals at                                    | Millet, wheat, Chilly, onion were cultivated. Oil engines became vogue. Usage of chemical                                       | Sorghum, wheat, rice, vegetables are being cultivated. Cash crops like turmeric and cotton are being cultivated                              |

|   |            |                                                               |                                                    |                                                            |
|---|------------|---------------------------------------------------------------|----------------------------------------------------|------------------------------------------------------------|
|   |            | minimum.                                                      | fertilizers began to rise.                         | in large areas.                                            |
| 6 | Population | There used to be 5060 houses with a population of 300 to 400. | 100 to 150 houses with a population of about 1000. | Around 250 houses with the population reaching up to 1500. |



# Analysis of changes over time

Mandal : Chevella  
Village : Damarigadda

| Subject                                                                                       | 50 years ago                                                                        | 20 years ago                                                                          | Now                                                                                   |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <br>Wells    |    |    |    |
| <br>Bores    |    |    |    |
| <br>Ponds    |    |    |    |
| <br>Rains    |    |    |    |
| <br>Crops   |   |   |  |
| <br>Cattle |  |  |  |

## Need assessment

We the members of all four groups came together and arrived at the estimation of the total water inflows of the village and the quantum of water being used for different purposes. The primary data collected by us has served as a basis for our estimates.

Total area of village : 2380 (A)  
 Total population of village : 1510  
 Total number of cattle : 428  
 Total number of goats / sheet : 1000

| <b>Needs</b>      | <b>Number</b> | <b>Per head /<br/>Per 1000</b> | <b>Required water<br/>(A.M)</b> |
|-------------------|---------------|--------------------------------|---------------------------------|
| For humans        | 1510          | 4.0 / 1000                     | 6.04                            |
| For cattle        | 428           | 6.0 / 1000                     | 2.60                            |
| For sheep / Goats | 1000          | 1.0 / 1000                     | 1.0                             |
| <b>Total:</b>     |               |                                | <b>10.0 (A.M)</b>               |

| Sl. No | Crops        | Kharif       |                             |                         |                         | Rabi         |                             |                         |                         |
|--------|--------------|--------------|-----------------------------|-------------------------|-------------------------|--------------|-----------------------------|-------------------------|-------------------------|
|        |              | Area (acres) | Irrigated crop area (acres) | Water requirement (A.M) | Total requirement (A.M) | Area (acres) | Irrigated crop area (acres) | Water requirement (A.M) | Total requirement (A.M) |
| 1      | Rice         | 10           | 5                           | 1.0                     | 5                       | 28           | 28                          | 1.0                     | 28                      |
| 2      | Cotton       | 200          |                             |                         |                         | 50           | 50                          | 0.5                     | 25                      |
| 3      | Onions       | 15           | 5                           | 0.5                     | 3                       | 40           | 40                          | 0.5                     | 20                      |
| 4      | Maize        | 350          |                             |                         |                         | 70           | 70                          | 0.6                     | 42                      |
| 5      | Sunflower    | 25           |                             |                         |                         | 15           | 15                          | 0.5                     | 8                       |
| 6      | Flowers      | 20           | 10                          | 0.7                     | 0.7                     | 25           | 25                          | 0.7                     | 18                      |
| 7      | Vegetables   | 100          | 30                          | 0.6                     | 18                      | 55           | 55                          | 0.6                     | 33                      |
| 8      | Sorghum      | 115          |                             |                         |                         |              |                             |                         |                         |
| 9      | Turmeric     | 5            |                             |                         |                         | 5            | 5                           | 0.5                     | 3                       |
| 10     | Black gram   | 10           |                             |                         |                         |              |                             |                         |                         |
| 11     | Red gram     | 100          |                             |                         |                         |              |                             |                         |                         |
| 12     | Green gram   | 20           |                             |                         |                         |              |                             |                         |                         |
| 13     | Wheat        |              |                             |                         |                         | 10           | 10                          | 0.6                     | 6                       |
|        | <b>Total</b> | <b>955</b>   |                             |                         | <b>33</b>               |              | <b>298</b>                  |                         | <b>183</b>              |

### **Map of village community resources**

All of our group members marked roads, houses, government buildings, street taps, tanks, ponds, streams, rivulets and fields with lime, sand, colors, stones and tree branches. At the time of mapping members of other three groups too joined the effort by marking their observations in the village map. We marked the village water resources and community assets in the map. We observed the following things through the map.

First we marked school buildings, roads, and government office in the village. Next street taps were identified. There are four taps and are working out of them.

Water tank was marked. There is one water tank in the village with a capacity of 40,000 liters.

There are four hand pumps out of which only one is working. Other three are not in use.

There are 300 domestic taps. All of them are working.

There are about 65 agricultural wells. Of them, around 40 would work in rainy season.

There are 6 agricultural borewells. Out of them only 4 are presently working.

Recently constructed Rallagadda percolation tank was marked in the map. Its area is half an acre. Bund of the tank was breached when it rained heavily.

Rallakatta Vagu (stream) and Mangalgadda Vagu (stream) were marked in the map. About 10 to 15 check dams were also marked.



# Village community map

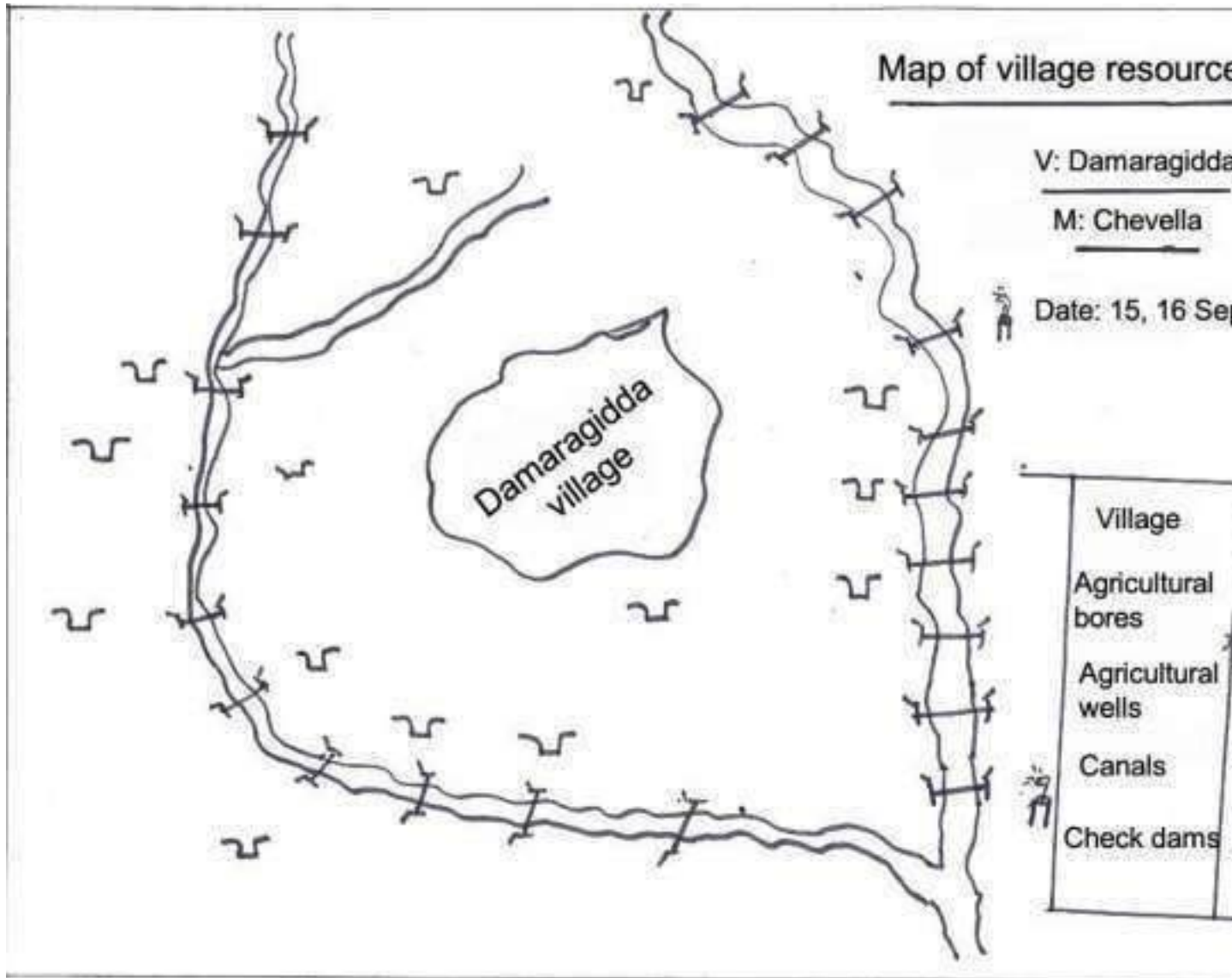
V: Damarigidda

M: Chevella

Date: 15, 16 September 04



|                 |  |
|-----------------|--|
| Wells           |  |
| Hand pumps      |  |
| Taps            |  |
| Over head tanks |  |
| Small tank      |  |
| Temples         |  |
| Schools         |  |
| Mosque          |  |



### Water budget of village

Water inflow to the village by rain = Area x Normal rainfall (A.M)

We found that 70% of rain water is lost by way of evaporation and humidity

Ten percent of total rainwater received by village is lost by run off.

Ten percent of total rainwater received by village adds to under ground water.

The following are the details of water retained in tanks / ponds in the village:

| Sl. No | Name of pond / tank | Area | Depth | Water stored (A.M) |
|--------|---------------------|------|-------|--------------------|
| 1      |                     |      |       |                    |
| 2      |                     |      |       |                    |
| 3      |                     |      |       |                    |

|   |               |  |  |  |
|---|---------------|--|--|--|
| 4 |               |  |  |  |
| 5 |               |  |  |  |
|   | <b>Total:</b> |  |  |  |

Total quantity available to village = 190 A.M

Addition to ground water + Water retained through tanks, ponds

Water budget = Available water + Water consumption = 190226 = 26 A.M

Going by the above formula to arrive at the quantity of water required for our needs, it was found that our village is receiving 190 A.M annually. But our annual consumption is 226 A.M which means more than 36 A.M than we are getting. This addition usage is from ground water reserves. In other words, we are profligate in using the water, which was preserved by our forefather. Having realized our folly, we had decided to protect the existing resources for our grand children and prepare the following water management plan accordingly.



### Village water management plan

| Sl. No | Problem                                                       | Reasons          | Solutions                                                                  | Who                        | Outlay  |                     | Time      |            |
|--------|---------------------------------------------------------------|------------------|----------------------------------------------------------------------------|----------------------------|---------|---------------------|-----------|------------|
|        |                                                               |                  |                                                                            |                            | Total   | Public contribution | Designing | Completion |
| 1      | Tank is not getting adequate water                            | Lack of pipeline | New extra pipeline should be laid from bore well.                          | Village panchayat          | 50,000  | Maintenance         | 16/9/2004 | 20/12/2004 |
| 2      | Rice is cultivated in 28 acres                                |                  | In current year, irrigated dry (ID) crops are being cultivated in 18 acres | Farmer                     |         |                     |           |            |
| 3      | Vegetable are cultivated in 100 acres                         |                  | We will cultivate 50 acres under drip irrigation.                          | DWMA, Farmers (Government) | 5 lakhs | Maintenance         | 17/9/2004 | 18/01/2004 |
| 4      | Percolation pond need to be constructed on Mangalgadda stream |                  | Percolation pond is to be constructed                                      | Government , DWMA          | 3 lakhs | Maintenance         | 18/9/2004 | 20/11/2004 |

## Resolution

**Village:** Damaragidda **Mandal:** Chevella

**District:** Ranga Reddy

| Date       | Name of member                                                                                                                                                                                                                                                                     | Subject                                                                        | Discussions, Resolutions                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16.09.2004 | 1. Ch. Venkatesham, Sarpanch<br>2. M. Venkataiah (Ex Sarpanch)<br>3. T. Anjaiah, Member<br>4. Challam Pratap Reddy, Member<br>5. Gudikadi Venkataiah, Member<br>6. Mannegudem Anjaiah, Member<br>7. Begari Manemma, Member<br>8. Boda Anantaiah, Member<br>9. Boda Damaiah, Member | Training programme for natural resources committee on village level micro plan | The meeting on 16.09.2004 was held under the chairmanship of village headman (sarpanch). Venkatesam and was attended by all the members. The condition of different natural resources in the village was reviewed and discussed with members of natural resources committee members from various villages in the training programme. A micro plan (water management plan) was prepared and passed unanimously in the meeting. |



NITI Aayog







# COMPENDIUM OF BEST

---

## PRACTICES IN WATER MANAGEMENT 2.0

---



**NI Aayog**

SEPTEMBER 2021

## **COMPENDIUM OF BEST PRACTICES IN WATER MANAGEMENT - 2.0**

**Publisher:** National Institution For Transforming India (NITI) Aayog, New Delhi

**Research Team:** Avinash Mishra, Namrata Singh Panwar, Aakanksha Sharma, Arunima Chandra, Arunlal K, Priyanka Anand

**Date of Publication:** September 2021

**Copyright © NITI Aayog (2021)**

**Year of Publishing:** 2021

### **Disclaimer:**

This document is intended as a Compendium of Best Practices of Water Management across the country. While every effort has been made to ensure the correctness of data/information used in this Compendium, NITI Aayog does not accept any legal liability for the accuracy or inferences drawn from the material contained therein or for any consequences arising from the use of this material. All data/information in this Compendium has been self-certified by the respective implementing agency of the best practice. NITI Aayog does not claim copyright for any images produced in the Compendium. No part of this report may be reproduced in any form (electronic or mechanical) without prior permission from or intimation to NITI Aayog.

The full Compendium should be referenced as follows:

NITI Aayog (2021) "COMPENDIUM OF BEST PRACTICES IN WATER MANAGEMENT - 2.0, 2021"

Text from this Compendium can be quoted provided the source is acknowledged.

### **Contact:**

NITI Aayog

NITI Aayog Bhawan

Parliament Street, New Delhi - 110001, India

Website: [www.niti.gov.in](http://www.niti.gov.in)

Write to us: [amishra-pc@gov.in](mailto:amishra-pc@gov.in)

डॉ. राजीव कुमार

उपाध्यक्ष

DR. RAJIV KUMAR  
VICE CHAIRMAN

Phones : 23096677, 23096688

Fax : 23096699

E-mail : vch-niti@gov.in



सत्यमेव जयते

भारत सरकार  
नीति आयोग, संसद मार्ग

नई दिल्ली-110 001

Government of India

NATIONAL INSTITUTION FOR TRANSFORMING INDIA

NITI Aayog, Parliament Street

New Delhi-110 001

3<sup>rd</sup> August, 2021

## MESSAGE

Water and its sustainable management are of immense importance in all walks of human life and have substantial reliance on the existence and sustenance of life on earth. As it is evident, water is the pivotal resource for all kinds of development activities and also plays vital role in health, food security and livelihood. Accelerated pace of consumerism coupled with climate change have adversely impacted the water sector leading to drying up and contamination of fresh water sources.

In India, the annual available water after evapotranspiration is 1999 Billion Cubic Metres (BCM), out of which the utilizable water potential of the country is estimated to be 1122 BCM. We are the largest groundwater user in the world, with an estimated usage of around 251 BCM per year, more than a quarter of the global total. With more than 60% of irrigated agriculture and 85% of drinking water supplies dependent on it, groundwater is a vital resource for rural areas in India. Reliance of urban and industrial water supplies on groundwater is also becoming increasingly significant.

Access to clean and safe drinking water forms the integral part of right to life enshrined in the Constitution and the Government of India is committed to provide functional household tap connection to every household by 2024 under Jal Jeevan Mission. This is also a part of the Sustainable Development Goal-6, ensuring access to water and sanitation for all. Nevertheless, there is an acute stress on freshwater availability as it is projected that the per capita water availability will dip to around 1400 cum in 2025 and further down to 1250 cum by 2050.

Water management is the way out to facilitate the multifaceted development of the country and to ensure the wellbeing of its citizens. However, this responsibility needs to be shared between the states, NGOs, civil society organizations and citizens. Through this compendium, NITI Aayog endeavours to acknowledge all unique and ingenious efforts which could combat water scarcity and boost water management successfully.

I hope the best practices depicted in this compendium encourage everyone to think innovatively towards sustainable water management practices in India.

(Rajiv Kumar)



एक कदम स्वच्छता की ओर



### MESSAGE

Significance of water for existence of all sort of life is well known and its judicious management is the key to sustainable future. India has a very rich and long experience of treating water as a valuable resource, and its conservation and management were always placed at a higher pedestal. Harnessing of water for agriculture and irrigation helped India to overcome famine, food scarcity and widespread hunger of 1960s and turned the country from severe food shortage to a food surplus nation. Sadly, the use of water became indiscriminate and gradually turned to over-exploitation due to excessive use and unsustainable practices. As a result, water is getting over-exploited and the stress on water resources is rising. There is a common belief in the society that water is an absolutely free and never-ending resource and its management is the responsibility of State, but the fact is, water is a limited public good and its conservation is best done with the active involvement of all stakeholders.

There are good number of success stories of water conservation and efficient water management from different parts of the country and most of them are replicable and can be easily upscaled. The challenging task of fighting water scarcity and promoting sustainable use of water was taken up by groups of citizens, civil society organisations, urban and rural local bodies, NGOs and private entrepreneurs. The transformational impacts of such initiatives are tremendous at local levels because of the active involvement of beneficiaries throughout the phases of planning, implementation and operation & maintenance. Moreover, the activities are customized to suit the local needs taking into account all geographic, social and economic peculiarities.

Through this exercise of compiling the best practices, NITI Aayog intends to serve the objective of maintaining repository of research on good governance and best practices in sustainable and equitable development as well as help their dissemination to stakeholders. I am optimistic that the compendium will emerge as a reference source to the policy makers, decision makers and many more who aspire to contribute towards water conservation efforts for the well-being of the nation.

August 19, 2021

(Ramesh Chand)





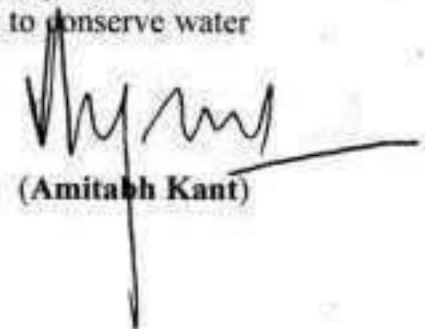
## Preface

Promoting and disembarking sustainable economic growth is paramount in India's transition towards five Trillion dollar economy. Water is one such vital resource in this endeavour. As per the UN report on Water and Jobs, it has been estimated that half of the world's workforce i.e., about 1.5 billion people are dependent and employed in one of the eight water and natural resources dependent industries. Yet, the world is suffering from the water crisis, and millions of lives and livelihoods are under threat. Moreover, this situation has also been aggravated by changing climatic trends, frequent natural disasters and sudden quake of pandemics. The Fifth Assessment Report of Intergovernmental Panel on Climate Change (IPCC) while assessing hydrological impacts of climate change also projected that global warming can have huge implications on water resources.

This calls for urgent and comprehensive water management approach to conserve and use every drop of water through pro-active engagement of all stakeholders. Through the stalwart missions of Jal Jeevan Mission, Swachh Bharat Abhiyaan etc. India has strived to augment the infrastructure for piped water supply while strengthening solid and liquid waste management systems. States, NGOs, and civil society organizations have undertaken several unique efforts that are worth sharing and replicating in the rest of the nation.

The Compendium of Best Practices is an exceptional collection of various unique and effective strategies applied in water management across different geographies in the country. Most of these areas were highly water scarce and belongs to economically weaker strata of the society. The compendium comprises of success stories from versatile fields such as Groundwater Management, Watershed Management, Climate Change impact mitigation, Agriculture etc. Since we are witnessing erratic rainfall pattern and heavy downpours these days, and expecting this trend to be continued or even worsened, it is highly essential to go for water conservation practices suitable to the local conditions.

Through this compendium, NITI Aayog has tried to bring the best practices to the fore which shall serve as an inspiration and guide for those who aspire to conserve water for better future.



(Amitabh Kant)





## Foreword

National vision of development and self-reliance is invariably associated with water security of the country and its realization is only possible through the active engagement of all stakeholders. Further, the importance of conserving and managing water accentuates rapidly on account of the persistent issues of resource scarcity, climate change impacts and adverse anthropogenic factors. Through the "Compendium of Best Practices in Water Management 2.0", NITI Aayog seeks to disseminate best practices in the area of water conservation and management. The first edition of the compendium was published in 2018 and was well received. The second edition discusses groundwater conservation, increasing water-use efficiency, flood management, climate change control and technological advancement in the water sector.

Crucial to this exercise was the contribution of a number of people. I would like to acknowledge the continuous support and guidance provided by Dr. Rajiv Kumar, Hon'ble Vice Chairman, NITI Aayog, Prof. Ramesh Chand, Hon'ble Member, NITI Aayog and Mr. Amitabh Kant, CEO, NITI Aayog.

I would also like to acknowledge the efforts of Dr. Fawzia Tarannum, Assistant Professor, TERI School of Advanced Studies and her team in preparing this report.

I appreciate the efforts put in by Mr. Arunlal K., Associate; Dr. Namrata Singh Panwar, Consultant; Ms. Aakanksha Sharma, Ms. Arunima Chandra and Ms. Priyanka Anand, Young Professionals working under Water & Land Resources vertical of NITI Aayog in coordinating with various states, NGOs, and civil society organizations for compiling and designing this document.

Equally noteworthy is the commendable job done by various state governments, NGOs, and civil society organizations in innovating such practices and sharing it with us for further dissemination.

Management and conservation of water are our combined responsibilities. In the spirit of cooperative and competitive federalism, which are main pillars of NITI Aayog, we will keep on encouraging states and other organizations in endeavor that result in the overall development of the nation.

19<sup>th</sup> Aug 2021



(Avinash Mishra)



# EXECUTIVE SUMMARY

Increasing urbanization and changing climatic trends exert immense pressure on water resources. In a country where 51% of rural households do not have access to individual piped water and about a billion people live with water scarcity for at least one part of the year, water management plays an undisputedly critical role. In addition to this, water—being a multifaceted resource and supplied by various sources for different purposes—needs to be managed at different levels of consumption by different stakeholders.

Several individuals, organizations and government departments have come up with successful water management solutions. Giving due importance to such innovations and successful practices on the field, NITI Aayog, as an yearly exercise, collects and lists down some water conservation and management practices that can be replicated in other regions. The current edition of the compendium lists out best practices on the following themes: agriculture; groundwater management; watershed development; water infrastructure; and climate risk and resilience.

The compendium gives prime importance to the role of the community in water management. Considering the bottom-up approach of planning, it encourages states and non-profit organizations to highlight the practices of participatory governance. Water management has always been seen as part and parcel of the rural community in the country. Therefore, prominence of renovation and rejuvenation of the traditional water bodies can also be witnessed in the document.

Furthermore, water conservation has the potential to support and enhance livelihoods. Construction of water conservation structures not only creates jobs in rural areas but also enhances the natural resource base to support the prime livelihood option of a community. The compendium tries to capture this complex relationship between water and livelihood patterns.

Finally, the integration of technology with water management is the need of the hour.



# CONTENTS

|                                                                                         |             |
|-----------------------------------------------------------------------------------------|-------------|
| <i>Message Ramesh Chand</i>                                                             | <i>lii</i>  |
| <i>Message Amitabh Kant</i>                                                             | <i>lv</i>   |
| <i>Preface</i>                                                                          | <i>v</i>    |
| <i>Foreword</i>                                                                         | <i>vi</i>   |
| <i>Executive Summary</i>                                                                | <i>vii</i>  |
| <i>Acknowledgement</i>                                                                  | <i>viii</i> |
| <i>List of Abbreviations</i>                                                            | <i>xi</i>   |
| <b>1. Agriculture.....</b>                                                              | <b>1</b>    |
| Vidarbha Farmers Livelihood Project                                                     | 3           |
| Participatory Irrigation Management in Uttar Pradesh                                    | 5           |
| Drought Proofing in Maharashtra                                                         | 7           |
| Low Cost Irrigation in Andhra Pradesh                                                   | 9           |
| Irrigation Support and Farm Ponds                                                       | 11          |
| <b>2. Groundwater Management.....</b>                                                   | <b>13</b>   |
| AquiferBased Groundwater Management                                                     | 15          |
| Community Led Springshed Management                                                     | 17          |
| Participatory Springshed Management                                                     | 19          |
| Water Security and Participatory Groundwater Management                                 | 21          |
| Springs Wetlands and Groundwater Connect in the Nilgiris                                | 23          |
| Bore-Well Pooling by Farmers to Address Water Security                                  | 27          |
| <b>3. Watershed Development .....</b>                                                   | <b>29</b>   |
| Water Conservation through Integrated Community Based Approach                          | 31          |
| Multi-Layered Water Management in River Sub-basins with Integrated Development Approach | 33          |
| Convergence of Water Management & Farm-Based Livelihood                                 | 35          |
| Community Approach to Water Conservation                                                | 37          |
| Use of Solar Energy for Decentralized Watershed Development                             | 39          |
| Rejuvenation of Khentawas and Mojamabad Ponds                                           | 41          |

## CONTENTS

|                                                                                               |           |
|-----------------------------------------------------------------------------------------------|-----------|
| Revival of Water Bodies in Bundelkhand                                                        | 43        |
| Rajokri Pond Rejuvenation                                                                     | 45        |
| <b>4. Water Infrastructure.....</b>                                                           | <b>47</b> |
| Panam Reservoir Project                                                                       | 49        |
| Installation of Solar PV Panel with Net Metering System                                       | 51        |
| Up-gradation of Dibrugarh Town Protection Dyke                                                | 53        |
| Construction Of Sub-Surface Dams With “Z” Sheet Piling Technology                             | 55        |
| Palasbari Sub-Project under Assam Integrated River Erosion Risk Management Investment Program | 57        |
| Hub-&-Spokes Model to Affordable Potable Water beyond the Piped Urban Areas                   | 59        |
| Construction of Revetment, Geo Bags Apron along the Brahmaputra River                         | 61        |
| Rohini Dam System of Irrigation in Bundelkhand                                                | 63        |
| Pirul Leaves Check Dam in Uttarakhand                                                         | 65        |
| Redefining Urban Water Space using FBTec® – DEWATS                                            | 67        |
| Reducing Domestic Water Wastage in Gurugram                                                   | 69        |
| <b>5. Climate Risk &amp; Resilience.....</b>                                                  | <b>71</b> |
| Flood Livelihood Restoration                                                                  | 73        |
| Risk Reduction and Livelihood Promotion                                                       | 75        |
| Sustainable Livelihood & Fair Climate Initiatives                                             | 77        |
| <b>6. Miscellaneous.....</b>                                                                  | <b>79</b> |
| Making Gurugram ‘Water Conscious’ through Community Mobilization                              | 81        |
| Andhra Pradesh Water Resources Information and Management System                              | 83        |
| Wastewater Reuse Certificates and Water Entitlement Transfer Trading                          | 85        |
| Gurugram District Enforcement Drive                                                           | 87        |
| <b>Nuts &amp; Bolts: Key Takeaways from Compendium .....</b>                                  | <b>89</b> |

|             |                                                |
|-------------|------------------------------------------------|
| <b>CFW</b>  | Cash for Work                                  |
| WUA         | Water User Association                         |
| <b>GDGS</b> | Gaalmukt Dharan and Gaalyukt Shivar            |
| CSR         | Corporate Social Responsibility                |
| <b>CEC</b>  | Centre for Environmental Concerns              |
| SWAR        | System of Water for Agriculture Rejuvenation   |
| <b>NGO</b>  | Non-Governmental Organization                  |
| PRADAN      | Professional Assistance for Development Action |
| <b>SST</b>  | Srinivasan Service Trust                       |
| CRP         | Community Resource Person                      |
| <b>HSM</b>  | Hub and Spoke Model                            |
| ADP         | Area Development Programme                     |
| <b>WMC</b>  | Water Management Committee                     |
| BPL         | Below Poverty Line                             |
| <b>INRM</b> | Integrated Natural Resource Management         |
| CSO         | Civil Society Organization                     |
| <b>GIS</b>  | Geographic Information System                  |
| LDPE        | Low-density polyethylene                       |
| <b>HDPE</b> | High-density polyethylene                      |
| WTP         | Water Treatment Plants                         |

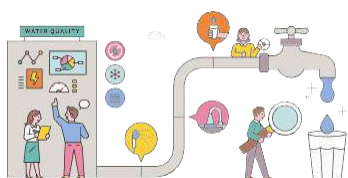


## List of Abbreviations

|               |                                                                  |
|---------------|------------------------------------------------------------------|
| <b>STP</b>    | Sewage Treatment Plants                                          |
| BOD           | Biological Oxygen Demand                                         |
| <b>COD</b>    | Chemical Oxygen Demand                                           |
| TSS           | Total Suspended Solids                                           |
| <b>PPM</b>    | Parts Per Million                                                |
| MCM           | Million Cubic Metre                                              |
| <b>DTP</b>    | Dibrugarh Town Protection                                        |
| FREMAA        | Flood and River Erosion Management Agency of Assam               |
| <b>SSD</b>    | Sub Surface Dam                                                  |
| TMC           | Thousand Million Cubic                                           |
| <b>ID</b>     | Irrigable Dry                                                    |
| ERP           | Enterprise Resource Planning                                     |
| <b>PLC</b>    | Programmable Logic Controller                                    |
| RWA           | Resident Welfare Associations                                    |
| <b>OAP</b>    | Old Age Pensioner                                                |
| NTFP          | Non Timber Forest Produce                                        |
| <b>MDM</b>    | Mid-day Meal                                                     |
| APWRIMS       | Andhra Pradesh Water Resources Information and Management System |
| <b>LI</b>     | Lift Irrigation                                                  |
| MWRRA         | Maharashtra Water Resources Regulatory Authority                 |
| <b>VDC</b>    | Village Development Committee                                    |
| SHG           | Self Help Group                                                  |
| <b>SRI</b>    | System of Rice Intensification                                   |
| SSA           | Samagra Shiksha Abhiyan                                          |
| <b>CRP</b>    | Community Resource Person                                        |
| NABARD        | National Bank for Agriculture and Rural Development              |
| <b>IDE</b>    | International Development Enterprise                             |
| ACWADAM       | Advanced Center for Water Resources Development and Management   |
| <b>SST</b>    | Srinivasan Service Trust                                         |
| PGWM          | Participatory Groundwater Management                             |
| <b>CHIRAG</b> | Central Himalayan Rural Action Group                             |



|                |                                                   |
|----------------|---------------------------------------------------|
| <b>O&amp;M</b> | Operation and Maintenance                         |
| SCI            | System of Crop Intensification                    |
| <b>PSI</b>     | People's Science Institute                        |
| NREGS          | National Rural Employment Guarantee Scheme        |
| <b>WASSAN</b>  | Watershed Support Services and Activities Network |
| WET            | Water Entitlement Transfer                        |
| <b>WRC</b>     | Wastewater Reuse Certificates                     |
| IOT            | Internet of Things                                |
| <b>RWH</b>     | Rain water harvesting                             |
| ITI            | Industrial Training Institutes                    |

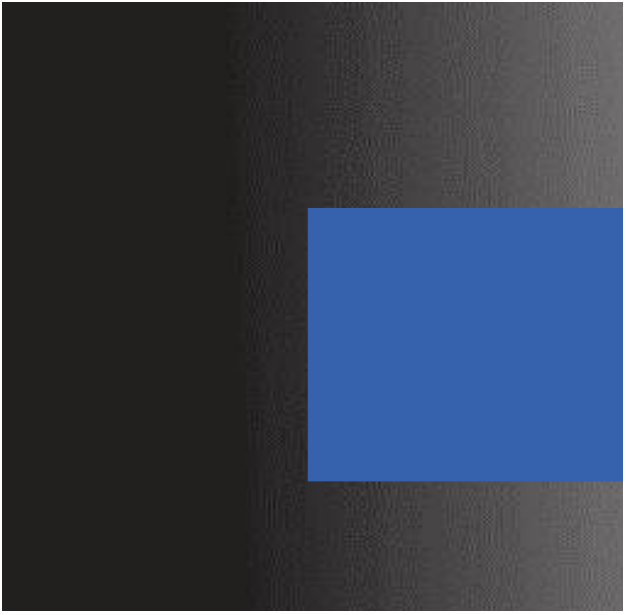




**“Where there was water, humanity thrived and survived. In the present times, we humans search for water as distant as the moon. At the same time, we have been negligent in preserving water resources on our own planet.”**







## Agriculture

**Place of Implementation:** Yavatmal District, Vidarbha Region, Maharashtra

**Agency:** World Vision India

**Year of Implementation:** 2007

### Background

Initially started in five villages, 10 more were added to the project in 2009 following its success. The Yavatmal block holds the dubious record of the maximum number of farmers' suicides in India. The main reason was rising indebtedness among farmers. With the interventions taken under the watershed management project between 2007 and 2016 helped farmers to have alternate livelihood options while strengthening agriculture.

### Objectives

Sustaining farmers' livelihoods through integrated watershed management and conservation of natural resources.

### Interventions

The following activities were performed in the three phases:

- ❑ Cash for work through implementation of soil and water conservation.
- ❑ Support for irrigation, agricultural inputs, and intercultural operations.
- ❑ Income-generating activities and capacity building of the community.
- ❑ Infrastructural support in schools and for educational and vocational trainings.
- ❑ Distribution of seeds.
- ❑ Deepening of wells and farm ponds, distribution of horticultural plants, smokeless stoves, and the construction of toilets.

### Outcomes

- ❑ Many farmers are now practising soil and moisture conservation in the operational villages.
- ❑ With the rise of rainwater harvesting on farmlands to enhance the groundwater table, farmers now

have access to improved irrigation facilities. Women Self-Help Group (SHG) members have been empowered through sensitization, exposure and trainings.

- ❑ Increased water flow and soil water retention.
- ❑ Improved productivity.
- ❑ Change in asset base and living conditions.
- ❑ Change in outflow of produce from watershed villages.

### For further details contact:

E-mail: [newton\\_issac@wvi.org](mailto:newton_issac@wvi.org)

Phone: +91-9840616524



Sunken Pond



Gabion Structure



Nala Diversion

# PARTICIPATORY IRRIGATION MANAGEMENT IN UTTAR PRADESH





## Agriculture

**Place of Implementation:** Tarapur, Amethi, Uttar Pradesh

**Agency:** Tarapur Alpika Committee (Water User Association [WUA])

**Year of Implementation:** 2009

### Background

Post the enforcement of the Uttar Pradesh Participatory Irrigation Management Act, 2009, WUAs started managing the irrigation of agricultural fields.

### Objective

To produce more crop per drop using judicious water irrigation practices.

### Interventions

- ❑ Discussion with farmers, by the WUA, led to a gradual reduction of malpractices such as illegal water-lifting and canal formation.
- ❑ Monetary contributions by farmers for silt removal from canals.
- ❑ Under MGNREGA, widening of service roads along canals was done.

- ❑ In collaboration with the Uttar Pradesh groundwater department, canals were created to improve irrigation
- ❑ OutcomesIrrigation area increased from 123 ha in 2011 to 386 ha to date.
- ❑ The problem of tail feeding was solved through water provision.
- ❑ Silt removal, canal cutting and cleaning resulted in improved water provision.
- ❑ Reduction of malpractices of illicit irrigation, water-lifting and canal formation.
- ❑ Sale of silt is a revenue-generation avenue.

### For further details contact:

Tarapur Alpika Samiti, Sharda Sahayak, Khand – 41, Amethi, Uttar Pradesh



## Agriculture

**Place of Implementation:** Maharashtra

**Agency:** Soil and Water Conservation Department, Government of Maharashtra

**Year of Implementation:** 2017

### Background

Maharashtra has the greatest number of dams and waterbodies in India. However, every year many villages in the state are hit by drought—with varied levels of severity—due to an insufficient and irregular rainfall pattern and poor rainwater harvesting of waterbodies due to silt deposit. Removal of silt, from these waterbodies, helps in restoring the water storage capacity and improves the percolation potential, which in turn recharges groundwater. Also, the silt removed from these waterbodies can be used to improve soil fertility.

### Objectives

The Government of Maharashtra rolled out the “Gaalmukt Dharan and Gaalyukt Shivar” (GDGS) scheme, under which waterbodies were de-silted using excavating machines. The resultant silt was given to farmers free of cost.

### Interventions

- ❑ Farmers can cart the silt from the waterbodies to their respective farms at their own expense. The government pays for the fuel required for running the excavating machines.
- ❑ The excavating equipment can be hired through community contribution or through sources

such as CSR and philanthropic funding.

- ❑ GDGS leverages about 10–15% of the total project cost through government support (for fuel supply); another 10–15% through philanthropic funding sources; and the remaining 70–80% is borne by the farmers to cart away the silt.

### Outcomes

- ❑ So far, 5270 waterbodies have been de-silted, resulting in the excavation of about 32.3 million m<sup>3</sup> of silt.
- ❑ This has benefitted more than 4,600 villages and over 6.5 million villagers.
- ❑ Removal of silt has increased the water-storage capacity of waterbodies to the tune of about 32,300 thousand m<sup>3</sup>, which is equivalent to the supply of about 3.2 million water tankers. The excavated silt has been spread across more than 54,000 acres of farmland.
- ❑ This has helped increase farm productivity by two to four times, which has further resulted in improvement in agricultural incomes by 50% to 100%. The scheme has actively helped in making villages drought-resilient.

### For further details contact:

Deepti Kommera

E-mail: [deeptikommera@gmail.com](mailto:deeptikommera@gmail.com)

Phone no. +91–9833476437



© thewaterchannel.tv



## Agriculture

**Place of Implementation:** Anantpur District, Andhra Pradesh

**Agency:** Centre for Environment Concerns (CEC)

**Year of Implementation:** 2011

### Background

Anantpur district is one of the driest regions of Andhra Pradesh. With lack of water harvesting and irrigation facilities, the region was considered as 'desert' in the region.

### Objective

Produce more crop per drop using judicious water irrigation practices.

### Intervention

- ❑ A unique sub-surface, plant-root-zone-measured moisture system called System of Water for Agriculture Rejuvenation (SWAR) was introduced. SWAR shifts irrigation from the surface to measure the moisture at the plant root zone. The root zone also serves as an ecosystem to foster microorganisms, besides rationing plant water requirements.
- ❑ The system involves storing water in overhead tanks and sending it through a small diameter pipe to a customized locally made clay pot, which is buried near the root area. The clay pot contains micro-tubes that transmit water through a sand pouch, to prevent the roots from invading the pipes and the pot. The slow oozing out of water provides moisture for a prolonged period, the level of which is calculated based on the soil type, plant species and their age.

### Outcomes

- ❑ Compared to drip irrigation,

SWAR uses only one third of the water, with zero wastage. The irrigation architecture and its wide capillary spread suits low rainfall and lowwater availability and heat-wave- prone areas. The system is also suitable for massive tree plantation programmes.

- ❑ In 2015, this technique was also used to grow vegetables and flowers. This produced immediate results in terms of both soil and plant health and farmers' incomes. For vegetables and fruits, where close planting was done, it was discovered that one eighth of the water suffices, compared to drip irrigation.
- ❑ In 2017, SWAR was piloted under the Ministry of Rural Development and GIZ Environmental Benefit Project in MGNREGS, Andhra Pradesh. It was successfully scaled up in 2018 with the involvement of government agencies, institutions, NGOs, and farmers.

### For further details contact:

E-mail: [ksgopal1952@gmail.com](mailto:ksgopal1952@gmail.com)

Phone No.: +91-9848127794



Measuring moisture to plan irrigation schedule



## Agriculture

### Place of Implementation:

Bhanupratappur Block, Uttar Bastar Kanker District

**Agency:** Gram panchayat, with facilitation by Professional Assistance for Development Action (PRADAN)

**Year of Implementation:** 2018

### Background

South Chhattisgarh, including Uttar Bastar Kanker district, is plagued with low water availability and uncertain rainfall, which results in low agricultural productivity. Climatic variability disproportionately affects smallholder farmers and makes their livelihoods even more unpredictable. In this respect, water conservation and land development projects, along with the creation of small water harvesting structures, proved to be a boon.

### Objectives

- ❑ The major objective was to make gram panchayats water sufficient and poverty-free while increasing the water-harvesting capacity of the village.
- ❑ Ensuring participatory planning and educating women on watershed management.

### Interventions

Involvement and active participation of village organizations and SHG members.

- ❑ Training and exposure visits.
- ❑ Livelihood-focused planning and preparation of resource and social maps.
- ❑ Linking communities with govern-

ment schemes

### Outcomes

- ❑ Farm ponds were made deeper than usual to conserve more rainwater and to ensure its availability for a longer duration.
- ❑ Changes in cropping pattern led to increased incomes.
- ❑ Higher yield and improved production of paddy.
- ❑ Emergence of fishery as a new livelihood activity, due to availability of sufficient water in farm ponds.
- ❑ Better yield in the lowlands due to water storage and seepage.
- ❑ Increased confidence of community members on farm ponds for irrigation
- ❑ Vegetable farming using trellis proved profitable and many farmers now plan to grow more vegetables using water stored in the farm ponds.

### For further details contact:

E-mail—[preetamgupta@pradan.net](mailto:preetamgupta@pradan.net)

Phone: +91-9098826438



Community members participating in meeting



© Namrata Singh P





**Place of Implementation:** Gadakwadi Village, Khed Tehsil, Pune District, Maharashtra

**Agency:** Advanced Centre for Water Resources Development and Management (ACWADAM), Srinivasan Service Trust (SST) and Arghyam Trust

**Year of Implementation:** 2015–16

## Background

Gadakwadi village faces severe water crisis in the summers, rendering agriculture unviable and forcing people to migrate in search of work. The people of Gadakwadi embarked on a participatory groundwater management journey with the Advanced Centre for Water Resources Development and Management, and Srinivasan Service Trust.

## Objectives

To enable water security, enhance groundwater recharge, promote the efficient use of water through farmers' groups and develop a water-security plan for the village.

### Interventions

- ② Awareness generation and sensitization of the community on groundwater management.
- ② Primary data such as water level and quality, rainfall, socio-hydrological data, etc., collected through community resource persons.



Mahila Sarpanch with the village infographics

- ② The ACWADAM team, along with the community, prepared a groundwater management plan for the village,

which was presented in the gram sabha.

- ② The ACWADAM team also tried convergence with various government programmes such as the Jalyukta Shivar, Jalswarajya II, etc.

## Outcomes

- ② The community accepted the following recommendations given under the groundwater management plan:
  - Ban on drilling of borewells in the village
  - Selection of groundwater recharge sites based on hydrogeological study
  - Protocols for drinking water security
  - Efficient use of water through the use of drips and sprinklers
  - Crop planning based on water availability
- ② Water conservation structures helped enhance the recharging capability of aquifers.
- ② From being tanker-fed, the village became completely tanker-free in 2017–18.
- ② A significant change in the cropping pattern and income of the community was observed.



Shramadaan activities in the village

## For further details contact:

E-mail ID: [acwadam@gmail.com](mailto:acwadam@gmail.com)

Phone No: +91–9172246959



**Place of Implementation:** Kumaon Region, Uttarakhand

**Agency:** Central Himalayan Rural Action Group (CHIRAG), ACWADAM, Arghyam

**Year of Implementation:** 2013–17

## Background

Traditionally, Uttarakhand has been water secure due to the existence of several springs and small streams in the state. These springs are of special importance for the local communities as people are dependent on them for a variety of needs. However, fluctuations in weather patterns over time have led to a significant decline in spring flows. Perennial springs have turned seasonal and in some unfortunate instances dried up completely. Changes in land use patterns and improper sanitation have also contributed to the deteriorating quality of spring water.

CHIRAG implemented a participatory groundwater management (PGWM) approach for springshed management in the Kumaon region, with support of Arghyam.

## Objectives

To revive and protect springs, thereby ensuring water security in two villages, Kulgarh and Basgaon.

## Interventions

- ☐ Community mobilization and awareness
- ☐ Hydrogeological mapping

- ☐ Hardware intervention
- ☐ Promoting efficient water use through protocols and conflict resolution

## Outcomes

- ☐ With the intervention, Spring water was available even in the lean season despite low rainfall, indicating better revival of springs
- ☐ The creation of Jal Samitis has empowered women and developed a core group of women leaders, with the ability to conduct trainings.
- ☐ The community enforces protocols, takes up Operation & Maintenance of structures, monitors and evaluates the status of springs regularly.

## For further details contact:

Phone No: +91- 5942-285738 /  
+91- 9412085732



Jal Samiti Members-Kulgarh Village



©PSI, ACWADAM and Ar

**Place of Implementation:** Thanakkasoga Gram Panchayat, Himachal Pradesh

**Agency:** People's Science Institute, ACWADAM, Arghyam

**Year of Implementation:** 2012

## Background

Lives and livelihoods of people in the Indian Himalayan Region are mostly dependent on springs and streams, instead of on big rivers. However, of late most of these perennial springs and streams are becoming seasonal or have dried up, leading to severe drinking water shortages. The discharge of springs and baoris has reduced due to mostly anthropogenic factors. Moreover, spring water also gets contaminated with the infiltration of pathogens.

## Objectives

- ❑ Demonstrate an approach of community-centric spring rejuvenation, using the principles of common pool resources and PGWM in the Himalayan region.
- ❑ Build a community understanding of aquifers and basic hydrogeology; and demonstrate an equitable and sustainable water-sharing mechanism at the village level.
- ❑ Create a pool of trained resource persons at the village level, with knowledge on groundwater hydrogeology and PGWM principles.
- ❑ Establish governance and institutional mechanisms in the village to embed principles of equity, equality and common pool resources.

## Interventions

- ❑ Awareness and capacity-building efforts were undertaken to identify the problem faced by the community and the willingness to resolve it.
- ❑ A hydrogeological mapping of the area was done to identify the recharge area of the critical springs

- ❑ A water budget for the village was designed based on the estimated amount available for use and demanded by the community.
- ❑ For demand management, protocols were established in the village to ensure the sustained impact of the interventions. Some of the protocols included recharge area protection, social fencing, crop-water analysis-based farming, crop diversification, etc.

## Outcomes

- ❑ Enhanced spring discharge led to a more equitable water-sharing system amongst the communities, and increased the availability of water for irrigation. Villagers were motivated to try out the SCI (System of Crop Intensification) technique of farming for crops, such as maize and wheat.
- ❑ The protection of the vadose zone and plantation helped in improving filtration, thereby reducing faecal coliform contamination.
- ❑ Due to capacity building, water sharing from the two baoris has become a norm. It was observed that the discharge in the baori increased.

## For further details contact:

People's Science Institute

E-mail: [psiddoon@gmail.com](mailto:psiddoon@gmail.com)



# WATER SECURITY AND PARTICIPATORY GROUNDWATER MANAGEMENT



**Place of Implementation:** Kutch District, Gujarat

**Agency:** Samerth, Arghyam

**Year of Implementation:** 2001

## Background

The Kutch region in Gujarat has been experiencing a steady decline in the groundwater level. This, along with salinity and persistent droughts, has made the region extremely water-stressed. Traditionally, local communities relied on talabs (ponds) and wells, along with dependence on rainfall, to meet their water requirements. Recently, the village grew heavily dependent on the Narmada to meet their growing demands. However, the frequency of the water supplied through the Narmada was insufficient and unreliable.

## Objectives

Arghyam supported Samerth in designing and implementing the participatory groundwater management framework in the region.

## Interventions

- ❑ Community resource persons (or jal doots) were identified to anchor the initiative in villages and for conducting a baseline survey for parameters such as socio-economic, demographics, geology and water sources.
- ❑ Based on the survey, a water security

plan was designed.

- ❑ The trends in water levels and quality are regularly monitored and discussed with the community.
- ❑ Activities such as de-silting of existing ponds, building storage wells and check dams, assigning recharge zones in alluvial areas, and reviving old ponds are done by the community, with the support of Samerth. NREGS is leveraged to incentivize community members to contribute their labour for these activities.

## Outcomes

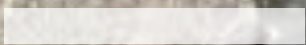
- ❑ The project has ensured security of drinking water in the region. Also, efficient management of water now ensures its sufficient availability throughout the year. The villages are longer dependent on tankers.
- ❑ With Samerth's intervention, the Koli community renovated two nearby talabs, which were also connected to the Narmada.
- ❑ The drudgery of water collection has now been reduced to 3–4 hours per day, giving women sufficient time for other activities.

## For further details contact:

E-mail: [info@arghyam.org](mailto:info@arghyam.org)



**SPRINGS  
WETLANDS AND  
GROUNDWATER  
CONNECT IN  
THE NILGIRIS**



**Place of Implementation:** Happy Valley

**Agency:** Keystone Foundation

**Year of Implementation:** 2006

## Background

The Nilgiris are known for their significant biological and cultural diversity. The region relies heavily on state water supply systems and on a network of springs and wells in the discharge areas. However, issues of falling water levels and wells running dry have become common in the region. Water quality tests revealed coliform presence across the Coonoor area. To protect these spring sources, it is important to understand their behaviour, identify and conserve them.

## Objectives

To revive and conserve springs and for springshed management in the region.

## Interventions

- ❑ Community involvement and convergence: wetlands that were the primary source of drinking

water and were under threat were identified.

- ❑ A nursery was raised and saplings planted with the participation of the community, panchayat and a local school.
- ❑ OutcomesThe springs that used to dry up in the summers has now become perennial. A small shola forest has ensured sustained water levels in the wells.
- ❑ The community has responded positively to the intervention and is happy with the water availability in its springs and wells even during the lean season.

## For further details contact:

Keystone Foundation

E-mail: [keystone-kf@keystone-foundation.org](mailto:keystone-kf@keystone-foundation.org)

Phone no.: +91 4266-272277 / 272977



**Place of Implementation:** 11 districts of Nagaland

**Agency:** People's Science Institute (PSI), Dehradun, and Department of Land Resources, Nagaland

**Year of Implementation:** 2016

## Background

There has been a drastic decline in groundwater availability, leading to reduced discharge of water in spring sheds across the Himalayas. A user association came up in 2016, along with the Department of Land Resources, Nagaland, to restore and regenerate springs.

## Objectives

- ❑ Regeneration of 11 springs (1 spring each in 11 districts) based on local hydrogeology.
- ❑ Involvement of local communities, especially women, in planning and recharge works, maintaining and sharing of water sources.
- ❑ Knowledge dissemination and communication to ensure sustainability of the programme.

## Interventions

- ❑ Spring inventory: A recce visit to 50 water-scarce villages was undertaken by the Department of Land Resources to collect baseline information. This was followed by the preparation of an inventory of springs.
- ❑ Capacity Building and

Trainings: Focused on identification of springs, discharge measurements, estimation of water demand and supply gaps, and hydrogeological studies.

- ❑ Criteria for selection of springs and treatment measures.

## Outcomes

- ❑ Increased spring discharge during the lean season in 10 out of the 11 pilots were carried out.
- ❑ Reduced demand and supply gap: The spring discharge increased from 3 (litres per minute) lpm in January 2017 (pre-implementation period) to 5 lpm in June 2018 (post implementation).

## For further details contact:

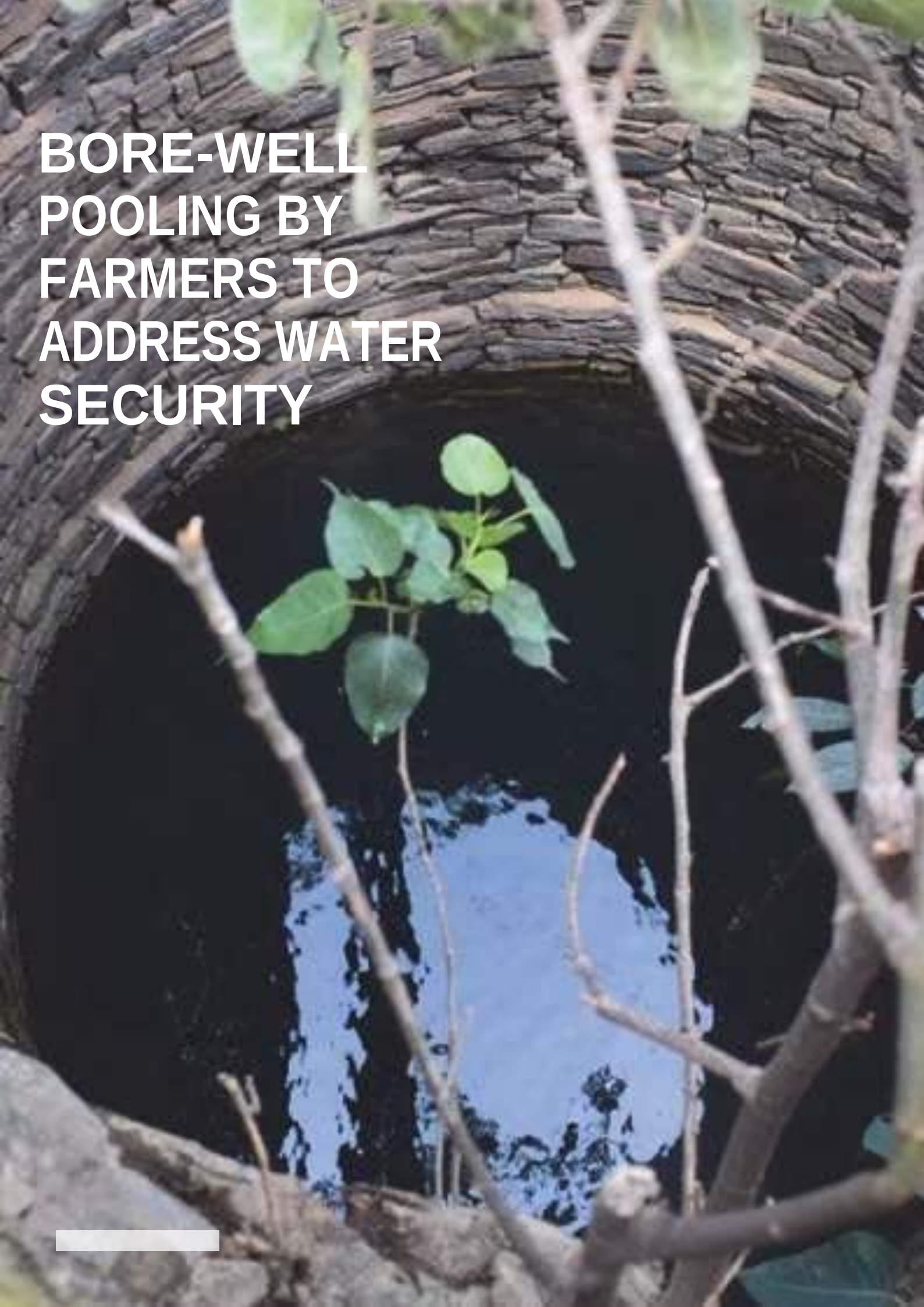
E-mail: [egmgpsi@gmail.com](mailto:egmgpsi@gmail.com)

Phone No.: +91 135-2971955



Monitoring of discharge and water quality

# BORE-WELL POOLING BY FARMERS TO ADDRESS WATER SECURITY



**Place of Implementation:** Andhra Pradesh and Telangana

**Agency:** WASSAN (Watershed Support Services and Activities Network), Arghyam

**Year of Implementation:** 2011–13

### Background

Andhra Pradesh suffers from water scarcity as the permissible level for drawing groundwater is 40%, but the state draws about 58%. Changes in rainfall distribution have led to frequent crop losses in low rainfall areas of the state. To combat this, WASSAN and Arghyam engaged with farmers in three districts of Telangana and Andhra Pradesh to create a sustainable model for resource sharing and groundwater management.

### Objectives

To bring the farmers together through a system of voluntary compliance and by using a shared network of borewell pooling.

### Interventions

- ❑ Identifying farmers with borewells and creating a collective of well-owners and non-owners.

- ❑ Hydrogeology training, establishment of norms and capacity building to map borewells, aquifers and rainfed areas.
- ❑ Groundwater-sharing norms devised, along with a system for their maintenance and enforcement.
- ❑ Promotion of soil conservation practices, including crop-residue management, green manure composting, and drip and micro-irrigation systems.
- ❑ Borewell network designed by mapping agricultural land and connecting borewells.

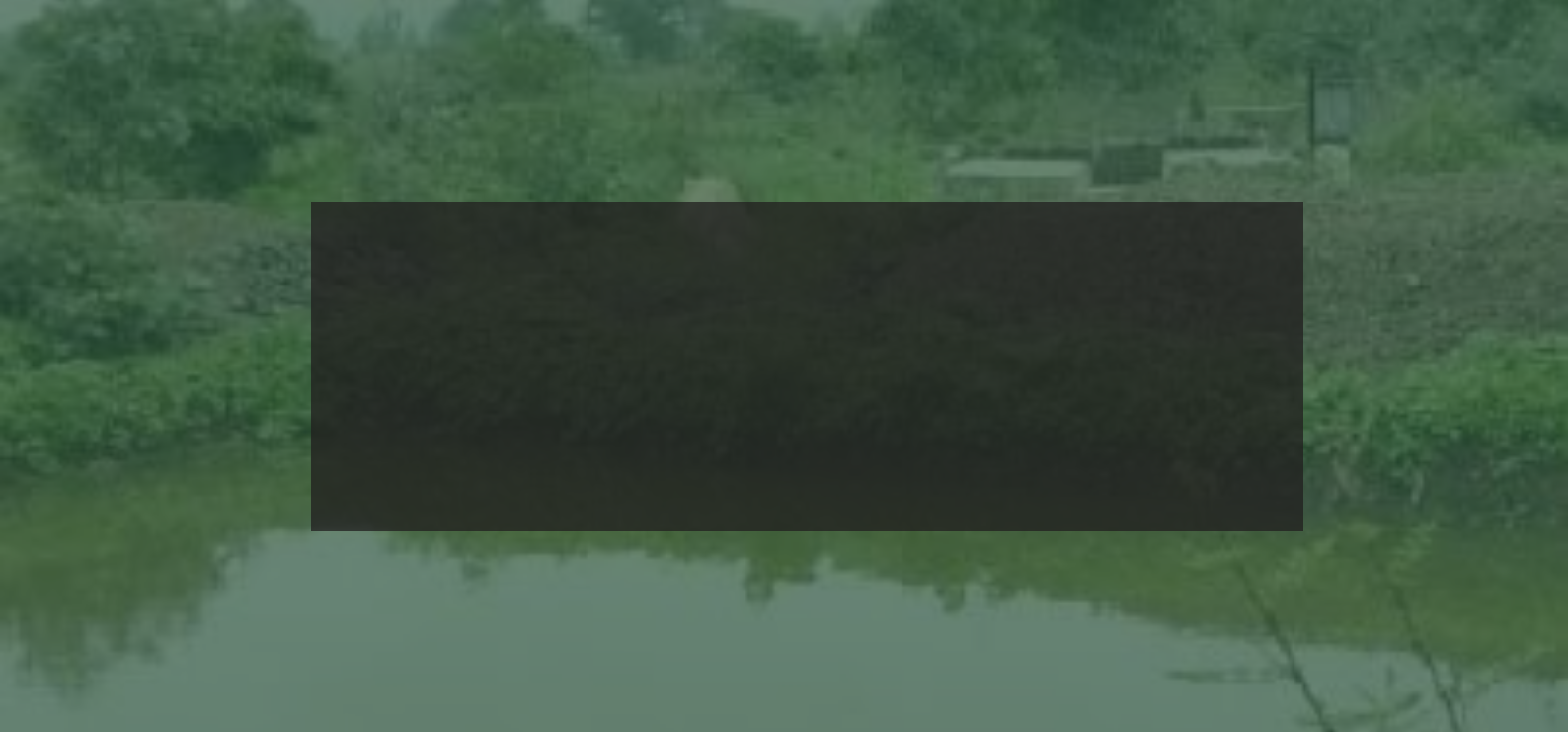
### Outcomes

- ❑ Reduced pumping time
- ❑ Improved water availability
- ❑ Increased crop productivity
- ❑ Rise in groundwater levels
- ❑ Assured livelihoods and reduced migration

### For further details contact:

E-mail: [info@arghyam.org](mailto:info@arghyam.org)









**Place of Implementation:** Andhra Pradesh, Bihar, Chhattisgarh, Maharashtra, Odisha

**Agency:** World Vision India

**Year of Implementation:** 2015

## Background

An integrated community-based approach was undertaken to improve access to safe water for drinking, handwashing and toilet use. This was done by deepening ponds, rehabilitating wells and other water sources, and improving water sources at the household level through an innovative hub-and-spoke model (introduced in 2018).

## Objectives

To provide universal access to safe water sources at the community and household levels in nine Area Development Programmes across four states in 48 ponds/open wells.

## Interventions

- ② Deepening and rejuvenation of waterbodies through de-silting and deepening, strengthening of embankments, pitching of revetments with boulders, retrenching of drains, planting trees on embankments, providing open well platforms, covering open wells, etc.
- ② The hub-and-spoke model involves identifying the best local source of water and distributing water as close to the household premises as

possible through solar and electrical submersible pumps.

- ② Water is stored in overhead tanks to supply to the community later.
- ② The community is educated and trained on WASH skills to assist in income generation; the model is sustained through WMC.

| Indicator                                         | Numbers |
|---------------------------------------------------|---------|
| # taps installed from water supply in communities | 364     |
| # of households benefitted                        | 4356    |
| # women benefitted                                | 4356    |
| # men benefitted                                  | 4792    |
| # children under 5 – girls                        | 2940    |
| # children under 5 – boys                         | 2983    |

## Outcomes

- ② Increased availability of water for irrigation and access to safe water for drinking, handwashing, and toilet use at the household level.
- ② Improved sanitation and hygiene, and reduction in the number of diarrheal incidences.

## For further details contact:

Mahesh Nathan

E-mail: [mahesh\\_nathan@wvi.org](mailto:mahesh_nathan@wvi.org)

Phone: +91-9831147934



**Place of Implementation:** Bijawar Block, Chhatarpur District, Madhya Pradesh, and Jaitpur Block, Mahoba District, Uttar Pradesh

**Agency:** Haritika

**Year of Implementation:** 2010–18

## Background

To combat droughts, food and water crises, Haritika proposed a project for implementation in 12 villages of the Bijawar block on Banne river basin, and 14 villages of the Jaitpur block on Karpia river basin, under the support of the Coca-Cola Foundation between 2010–18.

## Objectives

- ❑ To augment groundwater and increase the productivity of dry lands through water conservation.
- ❑ To empower women in the decision-making process.
- ❑ To bring about significant improvement in the quality of life of rural families by adopting an integrated development approach.

## Interventions

- ❑ Construction of check dams and

stop dams for restraining the waterflow.

- ❑ Ensuring a participatory approach and community mobilization by forming village water user committees and training them.

## Outcomes

- ❑ In the Bijawar block, water conservation structures, with storage capacity of up to 2,981,576,460 litres, have been constructed.
- ❑ In the villages of Jaitpur block, water conservation structures, with storage capacity of up to 472,931,000 litres, have been built.
- ❑ Increased groundwater levels.
- ❑ Area under rabi cultivation increased approximately by 36%.
- ❑ Reduced migration and improvement in the health standards of the villagers.

## For further details contact:

Avani Mohan Singh

© Haritika

E-mail: [haritika97@rediffmail.com](mailto:haritika97@rediffmail.com)

Phone: +91–7566923870





**Place of Implementation:** Chhindbharri Village, Dhamtari District, Chhattisgarh

**Agency:** PRADAN

**Year of Implementation:** 2009

## Background

Chhindbharri village is near Madamsilli dam, around 30 km from Dhamtari. Predominantly, a village for Poor and marginal farmers largely depends on agricultural labor activities for livelihood and source of income wherein only small number of people depends on other livelihood options such as NTFP collection and trading.

## Objectives

To enhance the productivity of resources (land and water) by following the integrated natural resource management (INRM) approach through the convergence of various government programmes.

## Interventions

- ❑ Development of irrigation facilities
- ❑ Provision of agriculture implements and other inputs.
- ❑ Infrastructure developed to harvest 56,380 m<sup>3</sup> of rainwater in the fields of 31 families.
- ❑ Soil erosion checked in 91 acres of land of 31 families and an additional 40 acres covered by irrigation.
- ❑ Social mapping, resource mapping, transect visit, finalization of plan and activity mapping

and documentation.

- ❑ Harvesting rainwater and soil and water conservation:
- ❑ Farm pond and seepage tanks in convergence with MGNREGA; land husbandry, plantations and irrigation system in convergence with the Department of Agriculture and NABARD.

## Outcomes

- ❑ Participatory planning and monitoring enhanced the confidence of the community.
- ❑ Farmers and SHG members can now access government schemes from 15 departments.
- ❑ The village saw a huge increase in the production of vegetables, fish and poultry. Families are earning an additional income of Rs. 40,000 per annum through vegetable cultivation.
- ❑ Enhancement of agriculture income—more than 60% of the families earn an income of Rs. 15,000 and above.
- ❑ Distress migration stopped.

## For further details contact:

E-mail: [headoffice@pradan.net](mailto:headoffice@pradan.net)

[sumitakasana@pradan.net](mailto:sumitakasana@pradan.net)

Phone No.: 0120-4800800



**Place of Implementation:** Masulpani Gram Panchayat, Narharpur Block, Uttar Bastar Kanker district

**Agency:** Gram Panchayat, with PRADAN as facilitating agency

**Year of Implementation:** 2018

## Background

Masulpani Gram Panchayat has evolved as a model, because of intensive work done under MGNREGA for water conservation. Also, the continuous involvement of community members has ensured high quality output. The panchayat is under a high-impact mega-watershed project, a joint initiative by the Chhattisgarh government and civil society organizations, to treat 694,500 acres of land in 26 blocks of 13 districts in the state.

## Objectives

To generate livelihood opportunities within villages throughout the year, through MGNREGA and farm-based activities, and to convert the village from being water deficit to water sufficient.

## Interventions

- ❑ Construction of 250 water harvesting structures under MGNREGA.
- ❑ MGNREGA planning done in a participatory manner, with a focus on land use pattern and water requirement for the same.
- ❑ Capacity building of women SHGs through training on the technical aspects of watershed planning.
- ❑ Identification of Community Resource Persons (CRPs) in the village with technical knowhow of various structures under MGNREGA.
- ❑ Water budgeting taken on as the base for planning of structures.

- ❑ Integration of GIS tools and maps while planning for the treatment of drainage lines
- ❑ Employment generation in the village.
- ❑ Preparation of detailed plans—with dimensions and GIS coordinates—for all the structures, and their submission to the MGNREGA cell at the block.

## Outcomes

- ❑ Over 50% of the families saw an increase in their incomes by 30–40%.
- ❑ Regular employment generation in the village led to a reduction in migration.
- ❑ Creation of a village-based cadre that is technically sound in watershed principles.
- ❑ Opening of allied agricultural livelihood options, such as fisheries, goat and bird rearing.

## For further details contact:

E-mail: [ashutoshnanda@pradan.net](mailto:ashutoshnanda@pradan.net)

Phone: +91–8327740731



SHG women participating in discussions

# USE OF SOLAR ENERGY FOR DECENTRALIZED WATERSHED DEVELOPMENT





**Place of Implementation:** Almora, Dehradun, and Pauri Garhwal

**Agency:** Watershed Management Directorate, Uttarakhand

**Year of Implementation:** 2014

## Background

Ladholi village in Almora district is a case in point for building climate resilience. As the farming was not considered to be very fruitful with barren lands and lack of irrigation facilities, villagers used to migrate to towns more sustainable income.

## Objectives

To overcome the situation of water availability for irrigation, discussions with farmers led to the idea of impounding water from the river flowing down stream (through construction of check dam and collection in sedimentation tank) and using solar energy to pump water to the overhead tank in the village situated at an elevation of 180 metres and to the agriculture fields up-stream.

## Interventions

- ❑ An irrigation tank with capacity of up to 15,000 litres was constructed by the villagers.
- ❑ Scientists and technicians from Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora, provided on-farm training to villagers on how to dig the LDPE tanks.
- ❑ Through project support, 10 solar panels with 3000-watt capacity were established and 21 LDPE tanks (each with capacity of 15000-18000 cubic litres) were connected through HDPE pipes from the overhead irrigation tank.
- ❑ An underground sedimentation tank was constructed along the river and a submersible pump of 3.2 HP was

installed, which could be operated through solar power generated from the 10 panels.

- ❑ Nearly 4,35,000 litres of water can be harnessed in all the tanks, enough to water the crops.
- ❑ Similarly, six solar panels, with a capacity of 300 watt each, along with a pump and controller, were installed at Dharkot, Dehradun. Through them, a 20,000-litre-capacity irrigation tank could be filled.
- ❑ In Kagthun Gram Panchyat, Pauri Garhwal district, 9 ha plantation, along with the 1200 contour trenches and 500 recharge pits, were dug up to improve the water regime in the catchment area of the natural water source.

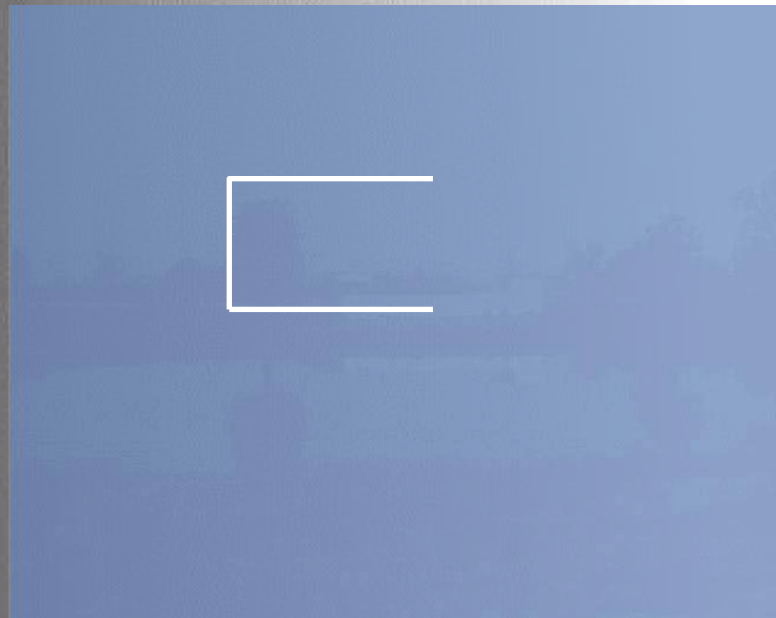
## Outcomes

- ❑ The farmers in the project villages now have the capacity for irrigating 50.80 ha gross rainfed area. These farmers have shifted to the cultivation of cash crops and vegetables. This has increased their incomes substantially and improved the standard of living.
- ❑ A considerable increase in the water level at the source situated in the lower end of the village was observed.
- ❑ Reverse migration has been reduced.
- ❑ Solar energy is a much more convenient and cheaper alternative to diesel. It is also climate resilient and leaves a low carbon footprint.

## For further details contact:

E-mail: [wmd-ua@nic.in](mailto:wmd-ua@nic.in)

Phone No.: +91 135-2760170



**Place of Implementation:** Khentawas and Mojamabad Villages, Gurugram, Haryana

**Agency:** GuruJal Society, Gurugram

**Year of Implementation:** 2019

## Background

Several traditional waterbodies in Gurugram, which were once used to collect rainwater from catchment areas, now gather wastewater along with rainwater due to urbanization and poor infrastructure. As a result of this, there are fewer number of clean water sources, the ecology of ponds has been destroyed, groundwater has been polluted—all of which have further exacerbated water scarcity in Gurugram.

## Objective

Treatment of the accumulated wastewater in the pond, which can be further used for irrigation, horticulture, construction of infrastructure and other purposes, which would reduce reliance on groundwater, replenish water table and improve the biodiversity of the area.

## Intervention

- ❑ Dewatering of ponds to increase the recharge capacity.
- ❑ Cleaning of peripheral areas of ponds and levelling of landscape for setting up wastewater treatment plants (WTPs). Aggregates and

natural filter media were laid down in the constructed WTPs.

- ❑ The WTPs/STPs use phytoid technology, which is a kind of subsurface flow in which water is applied to beds filled with gravel and stones.
- ❑ Creation of biodiversity zones at project sites to prevent the ponds from future encroachment.
- ❑ Creation of pathways and recreational areas.
- ❑ Various technologies have been implemented in the 13 project sites and 17 more are in the pipeline.

## Outcomes

- ❑ Treated water from ponds is used in biodiversity zones.
- ❑ BOD level of 23 mg/L reduces to 10 mg/L, with the help of the Waste Treatment Plants, thereby improving the quality of water, which can be used for agriculture and horticulture, as well as other activities.
- ❑ The phytoid technology has five stages, which can be adapted at low cost in several other regions.

## For further details contact:

E-mail: [gurujaal.gurugram@gmail.com](mailto:gurujaal.gurugram@gmail.com)

Phone No.: +91-124-2331003



**Place of Implementation:** Jakhni, Banda, Bundelkhand Region, Uttar Pradesh

**Agency:** Sarvodaya Adarsh Jal Gram Swaraj Abhiyaan Samiti, Jakhni

**Year of Implementation:** 2007

## Background

Located in infamous region of Bundelkhand, Jakhni village was facing water scarcity for a long time.

## Objectives

To revive water bodies through traditional water conservation techniques, improve agricultural productivity, and reduce migration.

## Interventions

- ❑ Intensive plantation of trees on the ridges of agricultural fields
- ❑ Construction of farm ponds
- ❑ Raising of farm bunds
- ❑ A rainwater harvesting committee formed: Sarvodaya Adarsh Jal Gram Abhiyaan Samiti.
- ❑ Trenching around wells and plantations

## Outcomes

- ❑ Jakhni was declared a model 'jalgram' (water village) by NITI Aayog. Over 1000 other villages have also been proposed to be developed as jalgrams.
- ❑ Summers are less harsh in

Jakhni now compared to the other surrounding areas of drought-prone Bundelkhand.

- ❑ Ponds and wells remain full throughout the year.
- ❑ Soil remains fertile as mineral and salts do not wash away.
- ❑ There has been noted increase in the groundwater level.
- ❑ Exponential rise in agricultural produce—a formerly dry village now grows a highly water intensive crop such as Basmati rice.
- ❑ There has been noted increase in crop diversification.
- ❑ Incoming migration observed with increase in livelihood opportunities.

## Takeaways

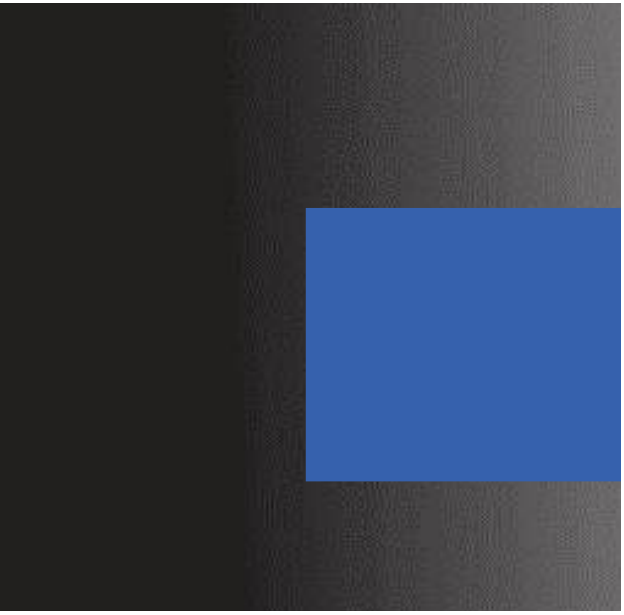
- ❑ Jakhni farmers undertook the entire work without any external funding, machinery, or resources.
- ❑ Village water-budgeting modelled around the collection and storage of rainwater within the boundaries of Jakhni and consequently utilizing it for economic development.

## For further details contact:

Umashankar Pandey

E-Mail [uspandey40@gmail.com](mailto:uspandey40@gmail.com)

Phone No.: +91–9450514844





**Place of Implementation:** Rajokri Village, Delhi

**Agency:** Delhi Jal Board

**Year of Implementation:** 2018

## Background

Rajokri village is located on the outskirts of Delhi. Earlier, the wastewater from the village was directly discharged into the Rajokri pond, which led to its deterioration. This resulted in several other problems such as the breeding of mosquitoes, sinking of sewage, etc. In 2018, Delhi Jal Board decided to rejuvenate the pond

## Objectives

To convert the turbid pond fed by sewage into a clean waterbody for recharging the groundwater and providing a recreational spot for the villagers.

## Interventions

- ❑ Construction of artificial wetlands, floating wetlands, grassland, rain gardens, parks, chhath ghat, amphitheatre, and gravel walkways.
- ❑ Construction of Sewage Treatment Plant, with capacity of 600 kilolitres per day
- ❑ Scientific wetland systems with active biodigesters technology used.
- ❑ Interception of drains, from which sewage is fed into an underground

sedimentation tank equipped with biodigester. This coupled with filtration through aggregated stones reduce the BOD levels to half. Solar pumps push the water to an artificial wetland, where it passes through 2.5 deep gravel lined with water treating plants such as Umbrella and Canna Indica which absorb toxins. The effluent then passes through three terrace gardens. It then gently passes from the slope of the grassland to the pond. A solar power-enabled pump installed in the middle of the pond recirculates the water.

- ❑ Carbon/sand filters and floating rafters to be installed.

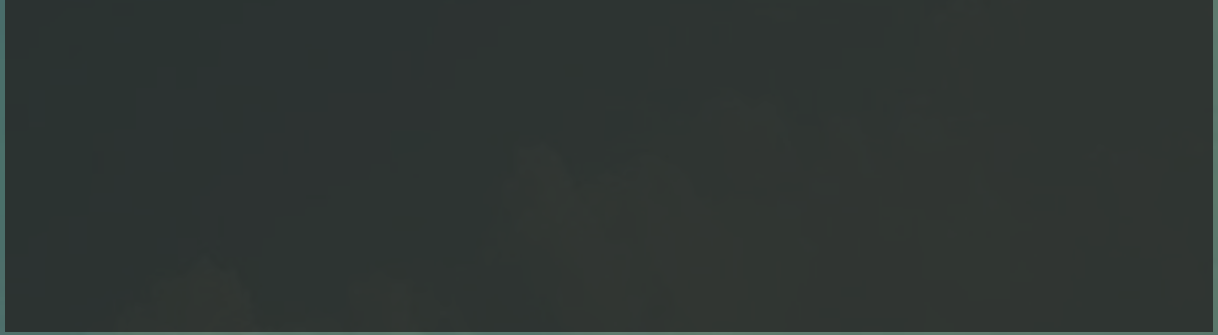
## Outcomes

- ❑ As much as 9500 sq. metres of area redeveloped, with a 2000 sq. metre waterbody. Sewage is now treated before being discharged into the pond.
- ❑ Chhath ghat serves as a public space.
- ❑ Migratory birds have been spotted in the area surrounding the pond.
- ❑ Treated wastewater is used to recharge the pond.

## For further details contact:

Delhi Jal Board





© Namrata Singh Panw





A photograph of a large concrete dam with a red-painted control building on the left. Water is cascading down the right side of the dam. The background shows a forested hillside, and the foreground is filled with green trees and foliage.

# PANAM RESERVOIR PROJECT

**Place of Implementation:** Gujarat

**Agency:** Government of Gujarat

**Year of Implementation:** NA

## Background

The Panam project has 510 MCM of water allocation for 32,800 hectare of command area as per the original plan. Panam is a part of the Mahi River basin, which is shared by the states of Rajasthan, Madhya Pradesh, and Gujarat.

## Objectives

To provide water for irrigation, apart from flood protection, fisheries, and hydropower generation.

## Interventions

- ❑ To ensure higher efficiency of the canal distribution network, vulnerable stretches were identified using advanced technologies such as tomography.
- ❑ Canals were restored using materials like geo-synthetics so that seepage losses could be minimized.
- ❑ To provide permeability of the surface and shear and bending resistance to the lining, welded wire mesh was used as reinforcement in the concrete lining.
- ❑ Tunnel on the initial stretch of the Panam high level canal demand management was also properly implemented through participatory irrigation management and rotational water supply in the canal system.
- ❑ A 30-km-long, high level canal was constructed, having some initial stretch in the form of a tunnel,

and made functional recently for a nearby area deprived of water.

- ❑ Outcomes With all such efforts, the net result was that the entire command area of 32,800 hectare was served with only 300 MCM of water, and 210 MCM of water was saved.
- ❑ Conserve the water while allowing better distribution of water resource

## For further details contact:

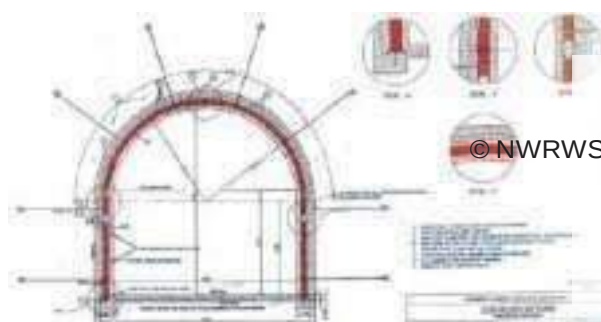
Vivek P. Kapadia

E-mail: [vivekpkapadia@gmail.com](mailto:vivekpkapadia@gmail.com)

Phone: +91-9909028626



© NWRWS, Gujarat



© NWRWS, Gujarat

Tunnel in the Initial Stretch of Panam High Level Canal

# INSTALLATION OF SOLAR PV PANEL WITH NET METERING SYSTEM



**Place of Implementation:** Nakraunda, Dehradun, Uttarakhand

**Agency:** Tubewell Division, Dehradun

**Year of Implementation:** 2018

### Background

To reduce the cost of running tubewells and to promote clean energy, the Tubewell Division in Dehradun initiated the installation of solar panels for energy production.

### Objectives

To save the operation costs of tubewells by solar power generation.

### Interventions

Installed solar PV panels in 200 m<sup>2</sup> area, with a net metering system connected to 11 KV electric line.

### Outcomes

- ☑ Generation of an average 55 units per day
- ☑ Generation of green energy
- ☑ Saving operation costs of tubewells i.e., Rs 92,345 per year per tubewell.

### For further details contact:

Executive Engineer, Tubewell Division

E-mail: [cemechanical2016@gmail.com](mailto:cemechanical2016@gmail.com)

Phone No: 91-9412608030



© Tubewell Division, Dehradun

Solar panels used for power generation



Resources Department, Assam

**Place of Implementation:** Dibrugarh, Assam

**Agency:** Water Resources Department, Assam, and FREMAA as Special Purpose Vehicle

**Year of Implementation:** 2013

### Background

The old embankment constructed in Dibrugarh after the massive earthquake of 1952 was susceptible to breach and overtopping at certain reaches. This necessitated its upgradation, which was started in 2013 and successfully completed by 2017.

### Objectives

To raise the height and strengthen the Dibrugarh Town Protection Dyke, the lifeline of the town, to provide a higher level of water proofing and protection from overtopping.

### Interventions

Upgradation of the dyke with earthwork, including the construction of a toe wall at the

most critical sections where land constraints are maximum, construction of open drain at toe wall section, construction stairs at different locations and construction of a black topping road over the DTP Dyke from Maijan to Mohanaghat.

- ❑ Outcomes Increased protection of life and property from floods.
- ❑ The dyke has evolved to be a major walking zone.
- ❑ Antisocial activities across the dyke has been checked and curbed.
- ❑ The dyke has added vibrancy to the urban landscape of Dibrugarh with its open spaces, walkways, and adjacent gardens.

### For further details contact:

Chief Engineer, WRD, Assam

E-mail: [wrд.assam@hotmail.com](mailto:wrд.assam@hotmail.com)

Phone No.: 91- 9954022661



Walking Path built on the Dyke



**Place of Implementation:** Y.S.R. District, Andhra Pradesh

**Implementation Agency:** Water Resources Department, Andhra Pradesh

**Year of Implementation:** 2017

## Background

Owing to Kapada district's complex geology, the rate of water infiltration into the ground is not very beneficial to restore groundwater. Despite constructing numerous water-harvesting structures, the groundwater table is rapidly declining. The situation demands the recharging of freshwater zones, in declining water table areas, with artificial means to maintain the groundwater table at optimum levels.

## Objectives

The district administration, after examining different options, decided to construct Sub-Surface Dams by using innovative, low-cost technology. The government's intention is to increase the water table up to 3 metres during the monsoons and 8 metres during the summers.

## Interventions

As a pilot model project, the construction of sub-surface dams, with an innovative concept of "Z" sheet piling technology, was taken up at six locations on the Papagni.

## Outcomes

- ❑ The surface water runoff got percolated to the sand layers and also in the adjoining alluvium along the river thereby increasing the water table.
- ❑ By construction of sub surface dams with Rs.26.36 Crores covering 4

Mandals in six locations, OAP have been arrested for which 7,795 Acres of Paddy irrigated through Ground Water for which 16,563 MTs of Paddy produced, which costs Rs.25.67 Crores in a year. About 8,000 Acres of area comes under irrigation in subsequent years.

- ❑ Paddy has been stabilized in these mandals during the Kharif season and unclear.
- ❑ The water level in agriculture borewells have been augmented. The sustainability of borewells have been increased.
- ❑ The increased water level has facilitated the functioning of centrifugal pumps, which is an indication of shallow water levels, particularly in and around Sugali Tanda SSD.

## For further details contact:

District Magistrate, YSR District

E-mail: [collector\\_kadapa@gmail.com](mailto:collector_kadapa@gmail.com)

Phone No.: 91-9849904109



© WRD, AA.P.

Construction of Sub Surface dam through Z sheet piling



**Place of Implementation:** Palasbari, Kamrup District, Assam

**Agency:** Water Resources Department, Assam, and FREMAA as Special Purpose Vehicle

**Year of Implementation:** 2013

### Background

The project was envisioned as the Brahmaputra River front development venture at Palasbari town. It aimed at the rejuvenation of the town and its development as a nodal tourist centre.

### Objective

To construct flood and erosion control mitigation structures based on the latest technologies with cost-effective and sustainable structural and non-structural measures.

### Interventions

The following were constructed:

- ② The length of embankment cum black topped road—5.02 km.
- ② Length of Bank revetment with

loose boulder for a thickness of 0.60 m over geo-textile fabric sheet—4.90 Km.

- ② Toe-key at lowest water level with boulder filled in wire netting cages for thickness 0.9m for the entire reach.
- ② Top Key along anchorage at bank level of size 4.0m x 0.6m over geo fabric sheet.

### Outcomes

- ② This road cum embankment also acts as an alternative route linking many interior villages. It has also evolved to be a major walking zone.
- ② The Brahmaputra dyke at Palasbari is a major tourist attraction; it is also a picnic spot.

### For further details contact:

Chief Engineer, WRD, Assam

E-mail: [wrd.assam@hotmail.com](mailto:wrd.assam@hotmail.com)

Phone No: +91-9954022661



© WRD, As

Embankment cum Black Topped Road



**Place of Implementation:** Bhubaneswar, Delhi, Laxmangarh, Pune

**Agency:** Piramal Sarvajal

**Year of Implementation:** 2013

## Background

Piramal Sarvajal has devised a hub-and-spoke model of safe water delivery to various resettlement colonies and slums across the country. This comprises locally installed remote-sensing enabled, state-of-the-art water purification plants for in-situ purification of raw water and a network of automated water vending units for distribution of drinking water.

## Objectives

To create reliable access to 24x7 safe drinking water services to underserved areas of urban centres in a decentralized manner.

## Interventions

- ❑ Centralized water purification system at the community level and dispensing units, where water is transferred through a no-touch transfer mechanism.
- ❑ A Programmable Logic Controller (PLC)-based remote tracking device, called the Soochak controller, is installed on the purification plant to

track the quality and volume of water, monitor the plant's operational status and capture vital machine health parameters to provide preventive maintenance.

- ❑ SEMS is an online Enterprise Resource Planning (ERP) tool, developed in-house by a team of software experts, which captures and processes data sent across by all the water purification and dispensing units.

## Outcomes

- ❑ To date, Piramal Sarvajal serves around 6 lakh people daily. Specifically in urban areas, it serves over 50,000 people daily through 148 touchpoints.
- ❑ Real-time monitoring of water quality and consumption pattern.
- ❑ Increased efficiency in water distribution system.
- ❑ Time-saving and better health outcomes for beneficiaries.

## For further details contact:

E-mail: [info@sarvajal.com](mailto:info@sarvajal.com)

Phone No: +91-07940502100



Hubs and Spokes Model



**Place of Implementation:** Mothola, Assam

**Agency:** Water Resources Department, Assam, and FREMAA as Special Purpose Vehicle

**Year of Implementation:** 2013

### Background

The Mothola-Oakland dyke had been suffering from continuous erosion by the Brahmaputra and required immediate protection. Therefore, to tackle the situation, protection works with geo-bags apron and CC block revetment were proposed.

### Objectives

To ensure the safety of life and security of property of the people of Dibrugarh and adjoining areas.

### Interventions

Geo-bags apron and CC block revetment at eroded reaches were used for 2.4 km. This gave a new lease of life to the dyke.

### Outcomes

- ☐ The Mothola-Oakland Bank Protection Work has provided safety to about 25,000 ha of land.
- ☐ It also protects several public and private properties.
- ☐ It has also evolved as a tourist attraction.

### For further details contact:

Chief Engineer, WRD, Assam

E-mail: [wrд.assam@hotmail.com](mailto:wrд.assam@hotmail.com)

Phone No.: +91–9954022661



Use of CC block revetment on dyke



# ROHINI DAM SYSTEM OF IRRIGATION IN BUNDELKHAND

**Place of Implementation:** Lalitpur, Bundelkhand, Uttar Pradesh

**Agency:** Irrigation Department of Lalitpur, Uttar Pradesh, and Water User Association

**Year of Implementation:** 2016

## Background

The Uttar Pradesh Participatory Irrigation Management Act, 2009, has been implemented in the Rohini Dam of I.D. Lalitpur of Bundelkhand region (UPWSRP) for Water User Association (WUA) on Chhaprauni Minor, Tisgana Minor, Chauka Minor and Garauli Minor which has been formed in October, 2016. The system was handed over to the respective WUA on 24 February 2018

## Objectives

To save water and increase the area of irrigation in Lalitpur.

## Interventions

- ❑ Water User Associations (WUAs) distribute water from the tail end of

canals.

- ❑ Training to the WUA members
- ❑ Rehabilitation of minor outlets
- ❑ A management committee supervises the activities.

## Outcomes

- ❑ Irrigation was completed seven days before the date mentioned in the roaster.
- ❑ 1.13 TMC water was saved.
- ❑ No dispute in canal operation.
- ❑ Tails of Chauka and Garauli minors were fed after 27 years.
- ❑ Farmers now able to water the crops 4 times in a year as compared to two times in a year.

## For further details contact:

Chief Engineer, ISO, U.P

E-mail: [ceisoiduplu-up@nic.in](mailto:ceisoiduplu-up@nic.in)

Phone No.: +91-0522-2625811



Handing over Garauli Minor to WUA in the presence of World Bank Team



© ISO, UP

WUA meetings to make joint rosters



**Place of Implementation:** Almora, Ranikhet, Someshwar, Dwarahat in Uttarakhand

**Implementation Agency:** Forest Department of Uttarakhand

**Year of Implementation:** 2014

### Background

Under the Kosi River Rejuvenation Project, rainwater conservation-related works are being done in different recharge zones. These works include the construction of check dams to store the surface run-off.

### Objectives

Groundwater recharging through rainwater harvesting.

### Interventions

- ❑ Creation of check dams using pirul leaves. This was mainly done in first order streams.
- ❑ Pirul leaves are woven with iron wires.
- ❑ After this, three quintals of pirul are filled in the net, which is firmly

tied with a rope of coconut.

- ❑ Plants like Jatropha, Sinwali are used in the drains
- ❑ Nearly 2000 such check dams were made.

### Outcomes

- ❑ These check dams are stronger and less expensive than their cement counterparts.
- ❑ Plantation around the dam provides protection from damage and soil erosion.
- ❑ These dams are effective for big drains and can absorb the flowing debris.
- ❑ Nearly 1,00,605 trees have been planted in 105.50 hectares of land.

### For further details contact:

Chief Conservator of Forests, Forest Department, Uttarakhand

E-mail: [pccfvanpanchayat@gmail.com](mailto:pccfvanpanchayat@gmail.com)

Phone No.: +91-0135-2740926

# REDEFINING URBAN WATER SPACE USING FBTEC® – DEWATS



**Place of Implementation:** Sangamner, Maharashtra

**Agency:** Nixie Engineers Private Limited

**Year of Implementation:** 2007

## Background

Over the years, improper wastewater treatment and discharge from residential areas contaminated the surface in Sangamner. It led to the breeding of mosquitoes and other insects, and deterioration of the soil. Also, the wastewater coming from different points would drain into a common drainage system.

## Objectives

After conducting a survey, Nixie Engineers found that the wastewater could be efficiently recycled through decentralization at the source by installing FBTec®, a trademark registered

technology developed in Singapore, in line with UN guidelines.

## Interventions

- FBTec® were installed.

## Outcomes

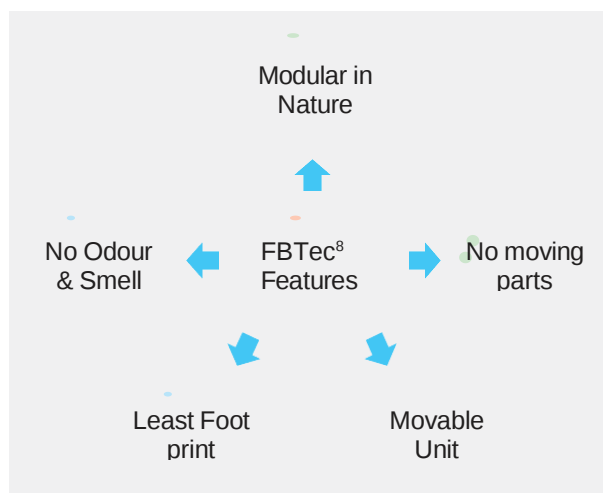
- About 20,000 litres of wastewater is recycled every day. The recycled water is reused for sanitation, gardening, etc.
- It is a step towards ensuring a swachh Bharat.

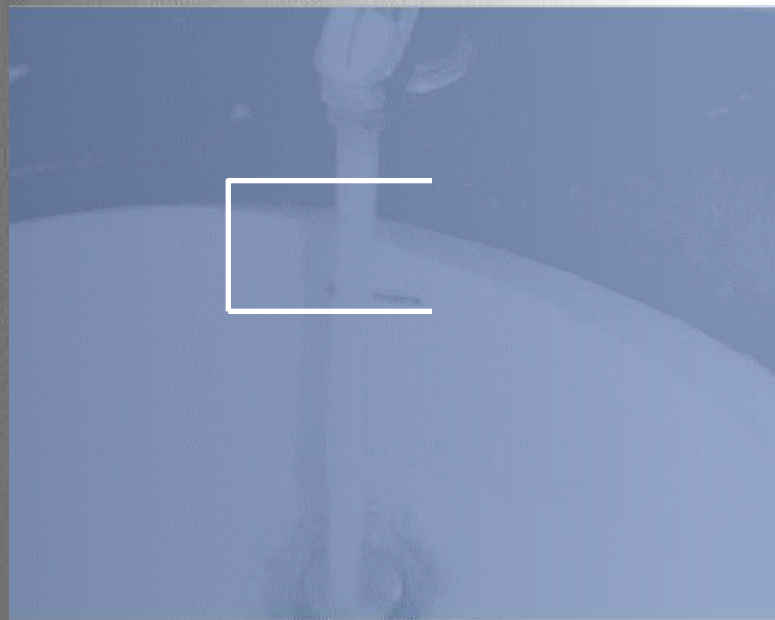
## For further details contact:

Mr Lalit Bajare

E-mail: [lalitbajare@nixiewater.com](mailto:lalitbajare@nixiewater.com)

Phone No.: +91-020 2543 5800





**Place of Implementation:** Gurugram,  
Haryana

**Agency:** GuruJal Society, Gurugram

**Year of Implementation:** 2019

## Background

Residential societies have an important role to play in water conservation—by reducing their daily consumption of water, fixing leakages and infrastructure-related issues, discouraging the plantation of ornamental plants and encouraging the plantation of native trees and plants.

Use of aerators is one of the few water-conservation measures that could be retrofitted into existing infrastructure. This step reduces water consumption at any tap by 40%, without any difference to the user.

## Objective

Leak-proofing of campuses, public spaces and institutions, and installation of aerators in resident welfare associations (RWA).

## Intervention

- ② Identifying all possible sources of water leakages and fixing them.
- ② Providing innovative, cost-

effective design solutions.

- ② Assisting institutions in drawing up water budgets.
- ② Checks done on rainwater harvesting structures in 572 government schools. The survey revealed that only 128 schools had functional rainwater harvesting structures. However, at full capacity, nearly 304 ML/year can be saved.
- ② Education of RWA members regarding the importance of installing aerators in kitchens or washbasins to reduce water consumption by 3–4 L/minute.

## Outcomes

- ② Installation of 8500 aerators in 15 RWAs of Gurugram saves approximately 230 kilolitres/day.

## For further details contact:

E-mail: [guruja1.gurugram@gmail.com](mailto:guruja1.gurugram@gmail.com)

Phone No.: 91–124–233100







**Place of Implementation:** Balenga Gram Panchayat of Kosagumuda Block in Nabarangpur District

**Agency:** UDYAMA

**Year of Implementation:** 2011

## Background

The region was prone to flash floods. From Koshagumuda Block, Balenga was one of Panchayats which was worst affected by the devastating flood. Nearly 90% of the standing crops and 70% of houses were damaged by the flash flood. Importantly, one of the most backward districts of Odisha, Nabarangpur is also plagued by flash floods, which is one of the major causes for sluggish growth and poverty in the region.

## Objectives

To restore livelihoods, address food and nutrition security and build community institutions.

## Interventions

- ☐ Formation of Village Development Committee
- ☐ Formation of Self Help Groups
- ☐ Formation of Farmers' Club
- ☐ Community pond renovation
- ☐ Sand reclamation from individual agricultural land
- ☐ Kharif paddy seeds
- ☐ Training on SRI rabi seeds
- ☐ Grain bank
- ☐ Seed bank
- ☐ Farmers' training
- ☐ SHGs' training

- ☐ Income-generating support
- ☐ Pisciculture programme

## Outcomes

- ☐ Institution strengthening
- ☐ Land-based livelihood promotion
- ☐ Capacity building
- ☐ Leveraging resources

## For further details contact:

E-mail: [udyama.pradeep@gmail.com](mailto:udyama.pradeep@gmail.com) / [info.udyama@gmail.com](mailto:info.udyama@gmail.com)



Sand Reclamation

© Udyama



Community Tank Renovation

© Udyama



# RISK REDUCTION AND LIVELIHOOD PROMOTION

**Place of Implementation:** Western Odisha

**Agency:** Sramika Shakti Sangha, Anchalik Jana Seva Anustan, Bolangir Gramodyog Samitee, Agency for Social Action, UDYAMA, Samaja Pragati Sahayog

**Year of Implementation:** 2006

## Background

The area prone to floods was vulnerable to hunger, starvation, child sale and women trafficking leading to rampant social, mental and physical abuse. This has also led to skewed land distribution, low productivity high debt traps/credits, livelihood displacement and more

## Objectives

To generate sustainable livelihood practices based on existing natural resources, to significantly reduce distress migration.

## Interventions

- ❑ Drought-resistant varieties of crops promoted based on land classification.
- ❑ The growth of cereals, pulses, vegetables requiring less water prioritised.
- ❑ Animal Husbandry as the

better option for crop diversity and appropriate land management was also promoted.

- ❑ Promotion of crop insurance as a part of drought proofing plan.

## Outcomes

- ❑ Diverse livelihood options explored and income-generation activities scaled up.
- ❑ Revival of growth of drought-resistant crops to cover risks of crop failure.
- ❑ Micro water harvesting structures provides protective irrigation to 20 acres of agricultural land during critical periods.
- ❑ Watertable in wells has risen, along with availability of water for longer durations.
- ❑ Women's groups and VDC play an important role.
- ❑ Emergence of 485 SHGs engaged in livelihood-strengthening activities.

## For further details contact:

E-mail: [udyama.pradeep@gmail.com](mailto:udyama.pradeep@gmail.com) / [info.udyama@gmail.com](mailto:info.udyama@gmail.com)



**SUSTAINABLE  
LIVELIHOOD &  
FAIR CLIMATE  
INITIATIVES**

**Place of Implementation:** Nayagarh and Bolangir Districts, Odisha

**Agency:** UDYAMA

**Year of Implementation:** 2014

## Background

Erratic weather conditions put at risk crop output, production and yield, which contribute to the growing distress among the rainfed farmers, thereby resulting in distress migration.

## Objectives

Various community-based institutions, such as VDCs, SHGs and user groups, have either been newly formed or revamped in the districts' villages.

## Interventions

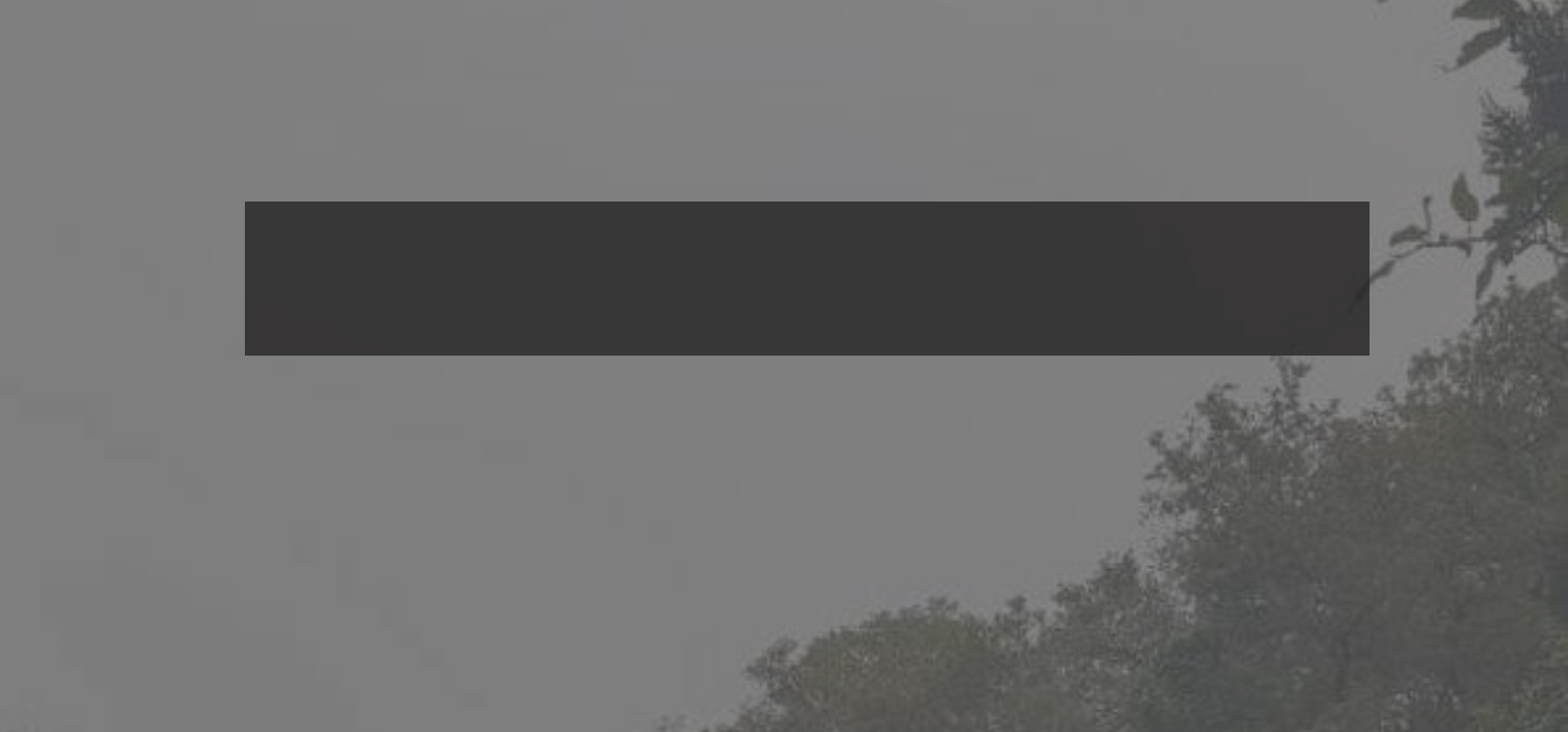
- ❑ Institutional development: exposure visit, promotion of CRP, village development and assessment plan, nutrition.
- ❑ Sustainable agriculture: training on sustainable agriculture, seed support, farmer field school, nutrition garden, organic farming practices, compost pit, grain bank
- ❑ Value addition and marketing: leaf plate processing, inland fish cultivation, ultra poor women support.
- ❑ Biodiversity conservation: forest conservation and plantation.
- ❑ Sanitation: training and campaign
- ❑ Soil and water conservation: rainwater management, dug well/ shallow ponds, water harvesting structures, land development and gully control.
- ❑ Life skills training: market-led vocational training.
- ❑ Green energy: energy audit, biogas, biomass training, solar

dryer, solar home lighting system, integrated energy centre, fuel efficient stove, treadle pump.

- ❑ Outcomes As many as 28 VDCs and SHGs were instituted, which are now functioning regularly.
- ❑ Convergence with mainstream programmes initiated such as NABARD and Odisha Renewable Energy Development Agency.
- ❑ Demonstration of Green Energy
- ❑ Integrated cropping, integration of farmers clubs in to intensive farming, appropriate technology on soils and water conservation demonstrated
- ❑ Building platform for producers' organization at community level to accelerate farm products in a business model
- ❑ International Development Enterprise (IDE) is collaborate in both the district on technical support on Agricultural planning and demonstration
- ❑ Several community assets created, institution created with good partnership
- ❑ The process of community resilience has opened a new vista to work further on micro-initiatives in harmony with local culture, nature, environment with. It would be brought under agro-ecological tourism on revenue model

## For further details contact:

E-mail: [udyama.pradeep@gmail.com](mailto:udyama.pradeep@gmail.com) / [info.udyama@gmail.com](mailto:info.udyama@gmail.com)



© Namrata Singh Panv





## Miscellaneous

**Place of Implementation:** Gurugram, Haryana

**Agency:** GuruJal Society, Gurugram

**Year of Implementation:** 2019

### Background

Community sensitization and behavioural changes are at the centre of water conservation.

### Objectives

Connect with all stakeholders to gauge the current level of understanding of water-related issues—what water means for different people, create awareness on the availability of water and water quality, and communicate measures to be incorporated—to promote the judicious use of water.

### Intervention

- ❑ Krishi Vigyan Kendra Mela: Interacting with farmers and conducting workshops on water conservation measures. Workshops in 50 Gram panchayat centres organized to promote drip and micro irrigation. Promotion of organic farming and introduction of community radios to allow the spread of information easily and readily.
- ❑ Connect the Drop: A planned module to sensitize various stakeholders to make Gurugram a water-conscious district. Community meetings are an essential tool to reduce possible resistance amongst locals and educate them on proper measures for water conservation. Jal Sansad, a mock parliamentary structure, comprising school students representing and holding the posts

of the Indian Cabinet. Each post is designed to address water issues in schools. This is an ongoing process in currently 42 schools with 1,050 students. The annual Jal Pe Charcha trains over 100 volunteers through a four-hour-long session, to enable them to spread awareness in their respective localities. The Jal Sabha campaign ran in 133 gram panchayats, with the participation of 3,165 women, men and school students. It raised awareness on various practices of water conservation.

- ❑ Outcome Krishi Vigyan Kendra Mela led to the conversion of 150 dried tubewells into recharge pits.
- ❑ After community mobilisation efforts and activities in villages, people stopped throwing solid waste in waterbodies; a vehicle would come to the village daily and collect the solid waste.
- ❑ Communities in certain villages grew active and volunteered their services in the restoration of their village's waterbodies.
- ❑ Workshops for community mobilization organized in 319 different locations, with 12,892 participants. As many as 156 schools have conducted workshops for their teachers, principals and students.

### For further details contact:

E-mail: [gurujaal.gurugram@gmail.com](mailto:gurujaal.gurugram@gmail.com)

Phone No.: +91-124-2331003



## Miscellaneous

**Place of Implementation:** Andhra Pradesh

**Agency:** Water Resources Department, Government of Andhra Pradesh, with Vassar Labs

**Year of Implementation:** 2017

### Background

APWRIMS is a smart water solution platform, targeting the overarching objective of sustainable water management in the state. The idea is to have one authoritative system for all water supply, demand and environmental factors, with a vision of making water related data accessible transparently on near real-time basis to different stakeholder through an online GIS/MIS web-portal as well as seamlessly available through mobile, tablets et

### Objectives

To implement the state's vision of taking a data-driven and scientific approach towards drought-proofing the state and providing water security to all.

### Interventions

To ingest all kinds of data related to water resources in the state and bring in the latest technologies, such as sensors, satellites, AI and ML, to reduce human interventions. The APWRIMS collects data from 1,254 piezometers on real-time basis across 13 districts of the state and correlates the information with all 15,00,000 borewells used for agricultural purposes in the state. Soil moisture data is also collected from over 900 locations across the state. The platform has data related to more than 100 reservoirs, over 40,000 Minor Irrigation tanks, 15 lakh agriculture borewells and more than 10 lakh

water conservation structures.

### Outcomes

- ❑ APWRIMS is ~~helping more than~~ helping more than 60% of the population that is agriculture dependent in the state either directly or indirectly.
- ❑ Crop-planning activities resulted in an increase of about 1.85 lakh ha of horticulture crops.
- ❑ Groundwater levels improved by 2 meters across the state, despite receiving 14% less rainfall.
- ❑ Helped to optimize inter-basin transfer of water, which provided the critical and necessary water to the entire Krishna Delta region, impacting 1.1 million acres.
- ❑ Due to interventions, about 4,540 farmers benefitted; groundnut farmers increased their yield by 23%.
- ❑ Saved 970 MW hour of energy for pumping groundwater for irrigation purpose, which costs about Rs 4,850 million.
- ❑ Stabilizing an ayacut of 7.11 lakh acres
- ❑ Lift scheme management: After the revival of the LI schemes, the ayacut irrigated is increased substantially from 3.81 lakh acres to 6.15 lakh acres.

### For further details contact:

Vassar Labs

E-mail: [amit@vassarlabs.com](mailto:amit@vassarlabs.com)

Phone: 91 – 8897701243



## Miscellaneous

**Place of Implementation:** Maharashtra

**Agency:** Maharashtra Water Resource Regulatory Authority

**Year of Implementation:** 2019

### Background

Maharashtra Water Resources Regulatory Authority (MWRRA) is entrusted with the responsibility to determine the criteria, regulate and enforce the distribution of entitlements for the various categories of use and the distribution of entitlements, within each category of use, to establish a water tariff system for levying water charges on various categories of water users with a view to establishing a stable and self-sustainable management of service delivery to such users and provide clearances to water sector projects.

### Objectives

- ❑ To encourage wastewater recycling and reuse in water-guzzling industrial and urban centres, which go beyond the stipulated water reuse targets mentioned in the State Water Policy.
- ❑ Creation of a transparent water accounting process.

### Interventions

Launch of the Draft Maharashtra Water Resources Regulatory Authority Water Entitlement Transfer (WET) and Wastewater Reuse Certificates (WRC) Platform

Regulations, 2019. The Regulations are yet to be notified for implementation.

### Outcomes

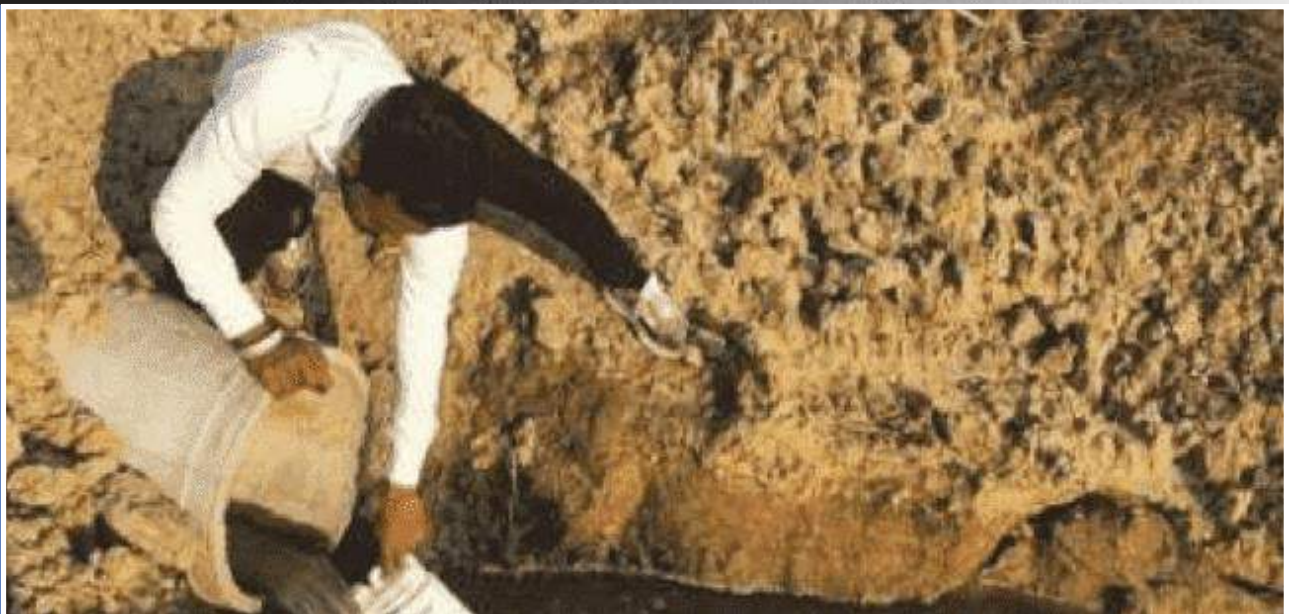
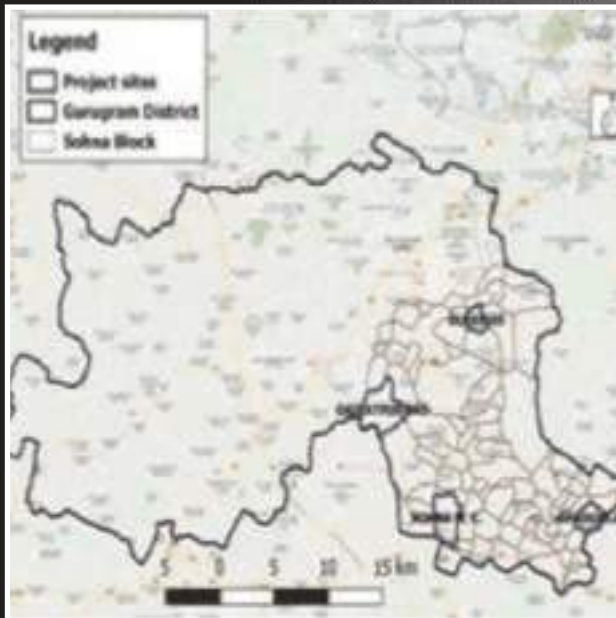
- ❑ A benign policy to encourage wastewater recycling and reuse for industrial and urban centres that consume more water than what has been stipulated in the State Water Policy.
- ❑ Creation of a transparent water accounting process, with the use of IOT metering at the water consumption, reuse and environmental discharge points.
- ❑ Creation of immutable distributed ledger-based repository of wastewater reuse certificates created through a crowd-sourcing/hackathon process involving practitioners and academia.
- ❑ Involvement of industry bodies, stakeholders, and IT experts, with knowhow in wastewater reuse processes to create a knowledge base for possible replication in other states.

### For further details contact:

Chairman, MWRRA

E-mail: [chairman@mwrra.in](mailto:chairman@mwrra.in)

Phone: 91 – 22-22152019



## Miscellaneous

**Place of Implementation:** Gurugram, Haryana

**Agency:** GuruJal Society, Gurugram

**Year of Implementation:** 2019

### Background

Several pieces of legislation and by-laws have laid down mechanisms for taking care of different aspects of our ecosystem. In Haryana, the Haryana Pond and Wastewater Management Authority Act, 2018, directs the constitution of a District Consultation and Monitoring Committee, or a District Pond and Wastewater Management Authority. Similarly, according to the Biodiversity Act, 2002, and its Rules, biodiversity management committees are to function at the district, sub-division, block, and panchayat levels. However, effective and regular enforcement of statutory provisions are sometimes limited. In this light, the GuruJal Society initiated a drive to gauge the difference that the implementation of existing provisions and mechanisms can make.

### Objective

To map out the entire district, conduct due diligence, pin illegal water activities and non-functional rainwater harvesting systems and strict enforcement of statutory and non-statutory provisions to prevent water wastage and improve water management practices.

### Intervention

- ❑ As many as 57 different teams comprising volunteers, government officers, police personnel and engineers were involved in the drive.
- ❑ Training over 100 police personnel and 10 plumbing apprentices of Industrial Training Institutes (ITIs) prior to the enforcement drive to check the functionality of rainwater harvesting structures.
- ❑ Launch of a helpline to report water issues, receive feedback and suggestions.
- ❑ ~~have~~ ~~reopened~~ coordination and revive defunct committees formed under the statutes.

### Outcomes

- ❑ A total of 290 illegal borewells/tube wells were sealed.
- ❑ Currently, there are 320 identified sites that require active intervention from various departments for water conservation and restoration of traditional waterbodies across the district.
- ❑ As many as 520 government schools have been identified across the district where functionality checks of RWH structures have been identified and through department coordination, the non-functional/semi-functional RWH structures are being repaired.
- ❑ Through coordination, mandates of various departments are being aligned and forces are being used to empower the local community with the formation of committees.
- ❑ Development of standard operating procedures for better water management practices in the district that can easily translate to block-level implementation.

### For further details contact:

E-mail: [guruja1.gurugram@gmail.com](mailto:guruja1.gurugram@gmail.com)

Phone No.: 91-124 – 2331003

# NUTS & BOLTS: KEY TAKEAWAYS FROM COMPENDIUM

A number of community organizations, along with participation from local and state governments, in India has adopted water conservation practices over the years, which have immensely benefitted farmers and resulted in optimal allocation of water resources. A brief description of some of these best practices has been provided below:

## Agriculture

1. Water User Associations, Tarapur, Uttar Pradesh, have played an important role in improving irrigation practices by spreading awareness among farmers. This also helped in curbing incidences of illegal water lifting in the area. Also, under MGNREGA, service roads along canals were widened and farmers were engaged in the process of removal of silt from these canals. This helped in improving water distribution efficiency.

Participatory irrigation management and convergence of schemes are effectively implemented here, with active beneficiary involvement and financial contribution. This ensures efficient last mile service delivery and enhances the civic sense for maintenance of minor canals.

2. A unique, sub-surface plant root zone measured moisture system/irrigation technology called System of Water for Agriculture Rejuvenation (SWAR) was introduced in Anantpur district of Andhra Pradesh. SWAR shifts irrigation from surface to measure moisture at

the plant root zone and uses only one-third amount of water compared to drip irrigation, leading to zero wastage. This technology is a prime example of low cost irrigation and can be emulated in other regions of India.

This is a scalable model across the country, particularly in areas where water is scarcely available. In addition to the significant saving in irrigation water, this could be further developed to precision farming by combining with fertigation. Improved crop yield, better soil health and use of only the required quantity of fertilizers make this method very attractive.

3. The problem of low water availability in South Chhattisgarh was addressed through participatory planning, involvement of village organizations and self-help groups in the construction of small water harvesting structures and in spreading awareness about different types of cropping systems.

Farmers were encouraged to actively engage in planning and exploring options for additional income-generating activities such as fisheries. Beneficiaries gained confidence by successfully practicing a scientific cropping pattern and water conservation measures. This shows how capacity building and knowledge dissemination among locals can put an end to irrigation woes in an area.

## Miscellaneous

4. The Government of Maharashtra rolled out “Gaalmukt Dharan and Gaalyukt Shivar” (GDGS) scheme, under which waterbodies were de-silted using excavating machines. This is a programme where the cost is borne jointly by the government, farmers and trusts. This is a prime example where money is pooled in from different sources and a common goal is achieved. The scheme can be replicated in other regions to prevent droughts.

This initiative has several benefits, such as increased water storage, improved fertility by way of depositing silt, and community participation. Farmers can recover the financial contribution made for desilting by way of improved crop yield and assured irrigation.

5. Yavatmal District, Vidarbha Region, Maharashtra, holds the record of the maximum number of farmer suicides in India. To reduce the pressures of debt on farmers, three phases of developmental interventions were carried out in the area between 2007 and 2016.

- ☐ Cash for Work (CFW) through implementation of soil and water conservation.
- ☐ Support for irrigation, agricultural inputs, intercultural operations.
- ☐ Other works such as the deepening of wells and farm ponds, distribution of horticulture plants, smokeless stoves, and construction of toilets.

There has been an increase in the number of farmers practicing soil and moisture conservation. This model can be adopted in areas that are severely drought hit and economically backward.

on water levels, rainfall, water quality and other socio-hydrological data, etc., was collected by community resource persons in the village. Accordingly, a number of recommendations was made, such as a ban on drilling of borewells, crop planning on the basis of availability of water and the efficient use of water through drips and sprinklers.

Scientifically backed recommendations and their due acceptance by the community made a significant difference to the water availability of the area by making it self-sufficient, which was once tanker-fed. In addition to hydro- geological benefits, individuals also benefited through increased incomes.

7. A participatory approach for springshed management in Uttarakhand, Himachal Pradesh, Nagaland and the Nilgiris led to the revival of springs and natural streams in these regions and assured a continuous supply of water to locals. This shows how the involvement of people in groundwater management can go a long way in the preservation of natural aquifers. Conservation of springs and springshed management are crucial in groundwater management. Activities such as the preparation of an inventory of springs, training and knowledge dissemination, afforestation measures, hydro-geological mapping, demand management, protection of recharge area and water budgeting can contribute heavily to springshed management.
8. A shared network of borewell-pooling among farmers was introduced in Andhra Pradesh and Telangana to address the problems of inadequate access to critical irrigation water, uncertainties in agriculture, and seasonal migration. This is a good example of how resource-sharing can be used to accomplish a common goal of groundwater management.

This also led to energy and water saving through reduced pumping time. Moreover, by sharing groundwater equitably, it also

## Groundwater Management

6. The problem of water scarcity in Gadakwadi village of Pune district in Maharashtra was addressed by sensitizing the local community on groundwater management. Primary data

conveyed the message of public trust doctrine on water resources.

## Watershed development

9. An integrated community-based approach was used to improve access to safe water for drinking, handwashing and toilet use by deepening of ponds, rehabilitation of wells and other water sources in communities, and improvement of water sources at the household level through a hub-and-spoke model (introduced in 2018) in the states of Andhra Pradesh, Bihar, Chhattisgarh, Maharashtra, Odisha. The hub-and-spoke should be replicated in areas that don't have access to water at all.

This model has successfully integrated source rejuvenation, drinking water access to people away from the source through pipelines, solar energy and improved sanitation. Water management committees also play a crucial role here. Since the rejuvenated waterbodies are now transcends to drinking water source, it could be expected that its continued maintenance and conservation will be handled by the community with priority.

10. Village water user committees were formed in the states of Madhya Pradesh and Uttar Pradesh to prevent food and water crises. Members of these committees were involved in the construction of check dams and water conservation structures and trained about their responsibilities for management of these assets, thus entailing a participatory approach. This shows how collective work by locals can boost irrigation prospects in an area.

Construction of check dams, with storage of around 3 to 4 million cubic metres, enhanced the groundwater level, increased the cultivated area and reduced migration.

11. Irrigation woes in Chhindharri village, Chhattisgarh, were addressed through

## Miscellaneous

the efficient management of natural resources such as land and water. Farm ponds and seepage tanks were constructed in line with the MGNREGA programme and focus was laid on plantations and irrigation systems. This shows how increased productivity of land and water resources can promote the growth of the beneficiary community.

An approach of integrated natural resource management was practiced through the convergence of relevant schemes, with the active involvement of the beneficiary community. As a result, income of farmers increased by 60%, distress migration stopped and the confidence of the community was boosted. This is an ideal example that can be replicated in areas where natural resources are poorly managed and experience social distress.

12. Masulpani Gram Panchayat in Chhattisgarh evolved as a model for nearby villages because of the intensive work done under MGNREGA. Water harvesting structures were constructed by involving community members and importance was given to capacity building. The gram panchayat is also under the high impact mega watershed project—a joint initiative of the Chhattisgarh government and various civil society organizations. This is an example of how the MGNREGA programme has been effective in addressing water crises in the area.

The right blend of community involvement, women's participation, dissemination of knowledge on water conservation structures, use of GIS tools and maps, and utilization of MGNREGA funds helped in regular employment generation and in the creation of a village-based cadre technically sound in water management principles. Such practices make the initiative sustainable and result oriented.

## Miscellaneous

13. Solar energy has been used to boost irrigation prospects in three districts of Uttarakhand: Almora, Dehradun and Pauri Garhwal. The river was impounded by constructing check dams and water was collected in sedimentation tank. This was pumped to an overhead tank situated at an elevation of 180 metres and to upstream agriculture fields powered by solar panels.

This shows how two natural resources—water and solar energy—were harnessed to address agrarian distress without leaving any carbon footprint. Use of renewable sources of energy should be promoted in suitable areas to reduce costs and prevent pollution.

14. Wastewater treatment plants were set up to treat wastewater in Khentawas and Mojamabad villages in Gurgaon. Several traditional waterbodies in Gurugram collect rainwater, along with wastewater, thereby reducing the sources of clean water. Wastewater treatment plants have been successful in improving the water quality in the area.

Use of Phytotrid beds for wastewater treatment is a low cost method that could be replicated to generate clean water from wastewater. The treated water is filled in ponds to undergo natural attenuation, which thereby reduces the BOD/COD/TSS levels to produce clean water that percolates into the ground. Water-scarce areas can adopt this technique; the creation of biodiversity zones around the ponds can also prevent encroachment.

15. Traditional water conservation techniques were used to revive waterbodies in Jakhni village, UP. The following works were done by farmers without any external funding, machinery, or resources: intensive plantation of trees on the ridges of agricultural fields; construction of farm ponds; raising of farm bunds; and trenching around wells and plantations.

Jakhni was also declared a model 'Jalgram' by NITI Aayog. This is an epitome of social mobilization and rainwater harvesting at the community level, and has already been planned to be replicated in 1030 more villages.

16. Rajokri is a village located on the outskirts of Delhi. The wastewater from the village was directly discharged into the Rajokri pond, resulting in its deterioration and other problems such as mosquito breeding, sinking of sewage, etc. Scientific Wetland Systems with Active Biodigestors technology was used to clean the pond, along with the installation of sewage treatment plants. Sewage is now treated before being discharged into the pond. Similar technology is used for treating wastewater in other areas.

This is a scalable model for waterbodies polluted by untreated sewerage discharge and thus causing serious hazard to the aquatic system and environment. The area around the Rajokri pond was transformed into a public place and even migratory birds were spotted there.

17. A participatory approach was adopted to address irrigation woes in Kutch district, Gujarat. Community resource persons were identified and activities such as desilting of existing ponds, construction of storage wells and check dams and revival of old ponds were carried out to promote groundwater management in the area with the help of Arghyam.

This endeavour shows how awareness in the local community can go a long way in boosting irrigation prospects of an area.

## Water Infrastructure

18. Solar panels were installed to run tubewells to reduce operational costs and promote clean energy in Dehradun. Dependence on thermal sources should be reduced and use of renewable energy sources should be increased.

## Miscellaneous

This practice can bring down the input cost on irrigation and agriculture where groundwater irrigation is dominant.

19. Piramal Sarvajal devised a hub-and-spoke model of safe water delivery at various resettlement colonies and slums across the country. This project comprises locally installed remote-sensing enabled, state-of-the-art water purification plants for in-situ purification of raw water and a network of automated water vending units or water ATMs installed for distribution of drinking water to the beyond-the-pipe communities in urban areas in Bhubhaneswar, Pune and Delhi. This model can be replicated to provide water supply to far-off regions.

Use of technology in ensuring clean water supply is a laudable initiative and can be replicated. It will improve service delivery efficiency and ensure better health outcome for beneficiaries.

20. The Mothola-Oakland dyke in Assam was suffering from scour and severe continuous erosion by the Brahmaputra for several years and required immediate protection from further erosion. Accordingly, protection works with geo-bags apron and CC block revetment were proposed to secure life and property of inhabitants of Dibrugarh town and adjoining areas.

This intervention saved Dibrugarh and adjoining areas from the dangers of flooding. The damage caused by the flood would have been manifold compared to the expenses incurred for the maintenance work.

21. Under the Kosi River Rejuvenation project in Uttarakhand, rainwater conservation-related works, such as the construction of check dams, were undertaken to store surface run-off. Check dams were constructed using pirul leaves, which were woven into iron wires. Apart from this, plantation around the dams was done to prevent chances of damage and to reduce soil erosion.

This shows wise use of locally

sourced materials for water and soil conservation. The trees planted in the vicinity of the drain supplements the outcomes. This practice could be replicated where such natural materials are available and the area around the drain is relatively devoid of trees.

22. Improper wastewater treatment and discharge from residential area have contaminated the surface in Sangamner town in Maharashtra. Wastewater was recovered by decentralization at the source by installing FB Tec®—a trademark technology developed in Singapore with a focus on DEWAT (decentralized wastewater treatment systems) in line with UN guidelines. The technology has been successful in recycling wastewater and can be replicated in other parts of the country.

Decentralization of wastewater treatment is ideal where drains and sewers are not well connected. Moreover, it can facilitate reuse and recycle at the point of generation itself.

23. GuruJal Society identified all possible sources of water leakages in Gurugram. Rainwater harvesting structure functionality checks were done at government schools and societies. Also, the RWA members were educated about the installation of aerators in kitchens and washbasins to reduce water consumption. Similar work can be done in other metropolitan cities to reduce water wastage.

Prevention of leakages, rainwater harvesting, use of aerators and water budgeting at the institution level are proven water-saving methods. However, these are not practiced widely due to lack of awareness on the quantum of water saved. Here, measures are widely implemented at the community level and the estimated the quantum of savings. This case study could be motivating

## Miscellaneous

to similar communities to adopt and practice.

24. Sub-surface dams with “Z” sheet technology have been constructed to arrest decline in the groundwater table in Kadapa district, Andhra Pradesh.

This method is devoid of all impacts a conventional checkdam or weir causes to a river system. Sub-surface flow will be slowed down and percolated to join ground water table. Similar technology can be used to recharge freshwater zones in other regions of India which is faster and causes very less damage to the ecosystem during construction.

## Climate-Risk Resilience

25. Climate change has wreaked havoc on farmers in Western Odisha in the form of unexpected droughts and floods. Accordingly, the following measures were introduced:

- ❑ Drought-resistant varieties were promoted based on land classification.
- ❑ Low water requirement cereals, pulses and vegetable were prioritized.
- ❑ Selective varieties, such as fruit-root-shoot, were promoted.
- ❑ Sustainable Agriculture: Training on Sustainable Agriculture, Seed Support, Farmer Field School, Nutrition Garden, Organic Farming Practices, Compost Pit, Grain Bank
- ❑ Soil and Water Conservation: Rain Water Management, Dug Well/ Sallow Pond, Water Harvesting Structure, Land Development and Gully Control

Climate change poses unprecedented threats to agriculture. Erratic rainfall affects the growth and yield of crops. To tackle the situation, it is essential to develop drought- and flood-resistant crops, promote biodiversity conservation

and strengthen institutions. Though the practice can't be replicated as such in everywhere else, it could be implemented with modifications to suit local conditions.

26. MiscellaneousA number of measures are being made to make Gurugram water conscious through community mobilization and behavioural change programmes.

- ❑ Krishi vigyan kendra melas are organized to interact with farmers and conduct workshops on water conservation measures.
- ❑ Connectthe Dropisaplannedmodule to sensitize various stakeholders to make Gurugram a water-conscious district.
- ❑ The annual Jal Pe Charcha trains over 100 volunteers through a four-hour-long session to enable them to spread awareness in their respective localities.
- ❑ The Jal Sabha campaign ran in 133 gram panchayats; as many as 3,165 women, men and school students participated. It raised awareness on various practices of water conservation.
- ❑ An enforcement drive was also conducted in Gurugram to spread awareness on water preservation.

These are good examples of how citizens are educated on water conservation. Similar initiatives can be undertaken in other communities in collaboration with government/non-government organizations.

27. APWRIMS is a smart water solution platform to achieve the objective of sustainable water management in Andhra Pradesh and to have a single authoritative system for all water supply, demand and environmental factors, with a vision of making water related data accessible transparently on near

real-time basis to different stakeholders through an online GIS/MIS web-portal as well as through mobile and tablets. This is a good initiative towards data-driven and scientific approach for drought proofing and can be replicated in other States as well.

Lack of information or rather, information scattered across the system is a major hindrance to water resource managers and policymakers. APWRIMS provides all relevant information on a unified dashboard. This can be implemented in every state and could be clubbed at the national level in due course.

28. Wastewater reuse certificate and water entitlement transfer trading, Maharashtra (Maharashtra Water Resources Regulatory Authority) has put forward the idea of creating a transparent water accounting process and published the draft Maharashtra Water Resources

Regulatory Authority Water

## Miscellaneous

Entitlement Transfer (WET) and Wastewater Reuse Certificates (WRC) Platform Regulations, 2019. It is intended to create an immutable repository of water entitlement and wastewater reuse certificates with the help of IOT metering at the points of consumption, reuse and discharge.

As per the draft policy, water entitlements to every user will be updated in the system, with permission for transfer of entitlements. Further, a tradable water reuse certificate is issued to users. The idea of a common repository of entitlements and tradable water reuse certificates can be practiced anywhere, which will help bring in more accountability in water consumption and recycle/reuse. Going further, the tradability could be extended to avail incentive/subsidy in power/water tariffs.







**NITI Aayog**



NITI Aayog, Sansad Marg, New Delhi-110001

[www.niti.gov.in](http://www.niti.gov.in)