

Government of India
Ministry of Rural Development
Department of Drinking Water Supply
Rajiv Gandhi National Drinking Water Mission

Priority areas for research and development (R&D) initiatives in rural drinking water and sanitation sector during 11th Five Year Plan

Department of Drinking Water Supply, Ministry of Rural Development, Government of India has identified the following priority areas for sponsoring research and development projects in rural drinking water and sanitation sector and seeks R&D proposals from well established R&D institutions, Universities, etc.:

Priority area – I

Water resources exploration, assessment & exploitation related technology development

- i.) Specialized geo-physical interventions for problem areas;
- ii.) Remote sensing applications in specific areas (other than hydro-geo-morphological maps) including temporal changes in land use and interventions on creation of ground water sanctuaries;
- iii.) Improvement of traditional springs/ tanks/ ponds/ surangams including monitoring;
- iv.) Evaporation control in drinking water based surface water courses; and
- v.) Dissemination of efficient technologies through universities and reputed organizations.

Priority area – II

Technology development for improvement in water extraction techniques

- i.) Improvements in hand pump/ attachments like dual pumps energy saving pumps/ windmill/ solar pumps/ hydraulic rams;
- ii.) Improving energy efficiency for reducing O&M costs for projects using conventional power;
- iii.) Improvement in tube-well efficiency (strainer, gravel pack);
- iv.) Improvement on rejuvenation techniques (caving of wells/ clogged strainers/ clogged infiltration gallery).

Priority area – III

Water scarcity reduction and related technology development

- i.) Artificial recharge/ control of salinity ingress/ evaporation reduction techniques/ desalination;
- ii.) Water saving irrigation/ industry/ reuse and recycling/ tap leakage detection and prevention improved storage and distribution inexpensive storage tanks (ferro-cement)/ distribution pipes (PVC, bamboo);
- iii.) Improvements in distribution network of water supply projects for reducing water

losses including unaccounted losses;

iv.) Recovery of pure water from waste-water/ sludge generated from clari-flocculators and improved methods of alum recovery;

v.) Special interventions for providing safe drinking water in drought prone and flood-hit areas; and

vi.) Cost optimization and improvements on types of materials, structure, storage, etc. For rain-water harvesting structures.

Priority area – IV

Technology for water quality enhancement for rural areas

i.) Development of water quality kit;

ii.) Technologies for treatment of excess salinity/ sulphate/ nitrate/ arsenic/ fluoride/ iron, etc.;

iii.) Bacteria/ virus and related micro-biological/ genetic engineering impacts with respect to unsafe drinking water quality;

iv.) Development of water quality enhancement - tablets/ powders/ portable heaters/ traditional herbs and processes;

v.) Various methods of disinfection including newer technologies like ozonation, copper-silver ionization, etc.;

vi.) Environment friendly sludge disposal methodologies from treatment plants; and

vii.) Improving efficiency of RO plants and reduction of O&M cost through use of solar photo-voltaic (PV) cells.

Priority area – V

Watershed management to optimize drinking water supply

i.) Delineation and resource inventory of the micro or mini watersheds;

ii.) Maximization of water conservation and minimization of environmental degradation like erosion, sedimentation, etc.;

iii.) Conjunctive use of water resources – development of effective models; and

iv.) Pilot studies on convergence of various centrally sponsored schemes for achieving drinking water security.

Priority area – VI

Water-health interaction in the socio economic cultural set up

i.) Interface problems between engineers/ geologists/ medical scientists on water and sanitation issues;

ii.) Correlation between water constraints and quality of life, especially for communication and social mobilization strategies;

iii.) Nutritional intervention in Fluoride and Arsenic affected villages;

iv.) Methods of bringing about behavioral changes w.r.t. sanitation, safe water use, etc.;

v.) Improving water and sanitation governance;

vi.) R&D projects based on multi-centric studies;

vii.) Governance and conflict resolutions in water and sanitation sector; and

viii.) Change management of rural water supply sector Engineers/ Scientists.

Priority area – VII

Development of appropriate rural sanitation technology

- i.) Design of improved leach pit;
- ii.) Hygienic rural toilets;
- iii.) Utilization of kitchen waste;
- iv.) Protection of open wells/ ponds and improved methods of sanitary survey;
- v.) Ecological sanitation and methods for enhancing fertilizer value of digested material;
- vi.) Improved methods of solid and liquid waste management;
- vii.) Solid waste management especially with regard to re-use/ recycle/ reduce use of plastics; and
- viii.) Women menstrual hygiene, baby friendly toilets, special toilets for disabled, infant sanitation, etc.

LIST OF FIELDS FOR R&D PROPOSAL ON SANITATION

1. Design & implementation of environment friendly self-sustaining sanitation system - this may include design of improved leach pits, other technical options for IHHL, hygienic rural toilets, ecological sanitation etc.
2. Improved/economical toilet design for children, differently-abled persons, Emergency Situations with suggested cost implications.
3. Improved/Economical Community/Institutional sanitation system including waste management.
4. Effectiveness of models of sanitation in various hydro-geological & geo-physical conditions.
5. Methods of bringing about behavioral changes for sanitation and its use.
6. Zero discharge/waste management system involving communities – this considers utilization of kitchen waste and methods of solid & liquid waste management.
7. Establishing linkages of sanitation with Water, Health, Agriculture and Power generation.

Note: thrust will be given on technology development and demonstration and proving them in the field through trials and transfer of technology for large scale application.