



Government of India

R F D

(Results-Framework Document)
for

Natural Resource Management

(2014-2015)

Section 1: Vision, Mission, Objectives and Functions

Vision

Sustainable management of natural resources for achieving food, nutritional, environmental and livelihood security in the country

Mission

Developing location specific, cost effective, eco-friendly conservation and management technologies for higher input use efficiency, agricultural productivity & profitability without deteriorating the natural resource base

Objectives

- 1 Improving soil health & nutrient use efficiency in different production systems
- 2 Enhancing water productivity through multiple uses of water, waste water utilization and efficient irrigation practices
- 3 Enhancing productivity, profitability and livelihoods in different ecosystems
- 4 Abiotic stress management including climate resilient agriculture
- 5 Soil resource characterization and mapping for efficient land use planning

Functions

- 1 To plan, coordinate, implement and monitor R & D programmes for sustainable agricultural production and resource conservation
- 2 To serve as knowledge repository in the field of natural resource management

Section 2: Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
[1] Improving soil health & nutrient use efficiency in different production systems	20.00	[1.1] Integrated Nutrient Management (INM)	[1.1.1] Technologies for improving soil health and nutrient use efficiencies	Number	8.00	8	7	6	5	4
			[1.1.2] Developing INM packages for different agro-eco regions of the country	Number	7.00	10	9	8	7	6
			[1.1.3] Training & demonstrations organized	Number	5.00	35	30	27	24	20
[2] Enhancing water productivity through multiple uses of water, waste water utilization and efficient irrigation practices	20.00	[2.1] Integrated Water Management (IWM)	[2.1.1] Technologies for enhancing water /irrigation use efficiencies	Number	5.00	5	4	3	2	1
			[2.1.2] Technologies for water harvesting storage and groundwater recharge	Number	4.00	4	3	2	1	0
			[2.1.3] Technologies for multiple uses of water and waste water utilization in agriculture evaluated/developed	Number	4.00	4	3	2	1	0
			[2.1.4] Watershed area treated	hactare	4.00	600	540	500	420	350
			[2.1.5] Training & demonstration organized	Number	3.00	16	15	14	13	12

Section 2: Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
[3] Enhancing productivity, profitability and livelihoods in different ecosystems	17.00	[3.1] Improved package of practices for farming/cropping system	[3.1.1] Efficient agronomic practices including agroforestry developed	Number	7.00	11	10	9	8	7
			[3.1.2] Integrated farming systems developed	Number	6.00	17	15	13	11	9
			[3.1.3] Training and demonstration organized	Number	4.00	50	45	40	35	30
[4] Abiotic stress management including climate resilient agriculture	15.00	[4.1] Climate resilient agriculture	[4.1.1] Development/identification of varieties/breeds for climate resilience at different locations	Number	4.00	10	9	8	7	6
			[4.1.2] Programs organized for developing trained manpower in research and technology dissemination	Number	3.00	30	25	20	15	10
			[4.1.3] Awareness building on climate change in agriculture, horticulture, livestock, fisheries etc. amongst stakeholders through trainings / demonstrations	Number	3.00	110	100	90	80	70

Section 2: Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
		[4.2] Rehabilitation of acid, salt affected and degraded soils	[4.2.1] Reclamation/amelioration technologies developed for problem soils	Number	3.00	8	7	6	5	4
			[4.2.2] Resource conserving technologies developed for degraded lands	Number	2.00	6	5	4	3	2
[5] Soil resource characterization and mapping for efficient land use planning	15.00	[5.1] Undertaking soil survey, preparation of GIS maps and developing land use plans	[5.1.1] Soil resource maps including thematic maps developed at different scales	Number	5.00	20	18	16	14	12
			[5.1.2] Land use plans developed at different scales	Number	4.00	9	8	7	6	5
			[5.1.3] Benchmark soils identified/ established	Number	3.00	12	11	10	9	8
			[5.1.4] Trainings/workshops conducted	Number	3.00	6	5	4	3	2
* Efficient Functioning of the RFD System	3.00	Timely submission of Draft RFD for 2014-2015 for Approval	On-time submission	Date	2.0	15/05/2014	16/05/2014	19/05/2014	20/05/2014	21/05/2014
		Timely submission of Results for 2013-2014	On-time submission	Date	1.0	01/05/2014	02/05/2014	05/05/2014	06/05/2014	07/05/2014

* Mandatory Objective(s)

Section 2: Inter se Priorities among Key Objectives, Success indicators and Targets

Objective	Weight	Action	Success Indicator	Unit	Weight	Target / Criteria Value				
						Excellent	Very Good	Good	Fair	Poor
						100%	90%	80%	70%	60%
* Enhanced Transparency / Improved Service delivery of Ministry/Department	3.00	Rating from Independent Audit of implementation of Citizens' / Clients' Charter (CCC)	Degree of implementation of commitments in CCC	%	2.0	100	95	90	85	80
		Independent Audit of implementation of Grievance Redress Management (GRM) system	Degree of success in implementing GRM	%	1.0	100	95	90	85	80
* Administrative Reforms	7.00	Update organizational strategy to align with revised priorities	Date	Date	2.0	01/11/2014	02/11/2014	03/11/2014	04/11/2014	05/11/2014
		Implementation of agreed milestones of approved Mitigating Strategies for Reduction of potential risk of corruption (MSC).	% of Implementation	%	1.0	100	90	80	70	60
		Implementation of agreed milestones for ISO 9001	% of implementation	%	2.0	100	95	90	85	80
		Implementation of milestones of approved Innovation Action Plans (IAPs).	% of implementation	%	2.0	100	90	80	70	60

* Mandatory Objective(s)

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
[1] Improving soil health & nutrient use efficiency in different production systems	[1.1] Integrated Nutrient Management (INM)	[1.1.1] Technologies for improving soil health and nutrient use efficiencies	Number	4	8	7	8	8
		[1.1.2] Developing INM packages for different agro-eco regions of the country	Number	9	14	9	9	9
		[1.1.3] Training & demonstrations organized	Number	25	28	30	33	35
[2] Enhancing water productivity through multiple uses of water, waste water utilization and efficient irrigation practices	[2.1] Integrated Water Management (IWM)	[2.1.1] Technologies for enhancing water /irrigation use efficiencies	Number	5	3	4	5	5
		[2.1.2] Technologies for water harvesting storage and groundwater recharge	Number	8	3	3	4	4
		[2.1.3] Technologies for multiple uses of water and waste water utilization in agriculture evaluated/developed	Number	1	2	3	3	3
		[2.1.4] Watershed area treated	hactare	500	500	540	550	600
		[2.1.5] Training & demonstration	Number	15	15	15	16	17

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
		organized						
[3] Enhancing productivity, profitability and livelihoods in different ecosystems	[3.1] Improved package of practices for farming/cropping system	[3.1.1] Efficient agronomic practices including agroforestry developed	Number	10	9	10	10	12
		[3.1.2] Integrated farming systems developed	Number	11	13	15	16	17
		[3.1.3] Training and demonstration organized	Number	35	35	45	45	50
[4] Abiotic stress management including climate resilient agriculture	[4.1] Climate resilient agriculture	[4.1.1] Development/identification of varieties/breeds for climate resilience at different locations	Number	11	9	9	10	10
		[4.1.2] Programs organized for developing trained manpower in research and technology dissemination	Number	0	25	25	27	30
		[4.1.3] Awareness building on climate change in agriculture, horticulture, livestock, fisheries etc. amongst stakeholders through trainings / demonstrations	Number	150	120	100	105	110
	[4.2] Rehabilitation of acid, salt affected and	[4.2.1] Reclamation/amelioration technologies	Number	8	7	7	8	8

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
	degraded soils	developed for problem soils						
		[4.2.2] Resource conserving technologies developed for degraded lands	Number	0	4	5	6	6
[5] Soil resource characterization and mapping for efficient land use planning	[5.1] Undertaking soil survey, preparation of GIS maps and developing land use plans	[5.1.1] Soil resource maps including thematic maps developed at different scales	Number	0	19	18	19	20
		[5.1.2] Land use plans developed at different scales	Number	2	8	8	9	10
		[5.1.3] Benchmark soils identified/ established	Number	10	12	11	12	13
		[5.1.4] Trainings/workshops conducted	Number	4	5	5	5	5
* Efficient Functioning of the RFD System	Timely submission of Draft RFD for 2014-2015 for Approval	On-time submission	Date	--	--	16/05/2014	--	--
	Timely submission of Results for 2013-2014	On-time submission	Date	--	--	02/05/2014	--	--
* Enhanced Transparency / Improved Service delivery of Ministry/Department	Rating from Independent Audit of implementation of Citizens' / Clients' Charter (CCC)	Degree of implementation of commitments in CCC	%	--	--	95	--	--

* Mandatory Objective(s)

Section 3: Trend Values of the Success Indicators

Objective	Action	Success Indicator	Unit	Actual Value for FY 12/13	Actual Value for FY 13/14	Target Value for FY 14/15	Projected Value for FY 15/16	Projected Value for FY 16/17
	Independent Audit of implementation of Grievance Redress Management (GRM) system	Degree of success in implementing GRM	%	--	--	95	--	--
* Administrative Reforms	Update organizational strategy to align with revised priorities	Date	Date	--	--	02/11/2014	--	--
	Implementation of agreed milestones of approved Mitigating Strategies for Reduction of potential risk of corruption (MSC).	% of Implementation	%	--	--	90	--	--
	Implementation of agreed milestones for ISO 9001	% of implementation	%	--	--	95	--	--
	Implementation of milestones of approved Innovation Action Plans (IAPs).	% of implementation	%	--	--	90	--	--

* Mandatory Objective(s)

Section 4: Acronym

Sl.No	Acronym	Description
1	AICRP	All India Co-ordinated Research Project
2	FACE	Free Air Carbon dioxide Enrichment
3	FATE	Free Air Temperature Enrichment
4	GIS	Geographic Information System
5	HRD	Human Resource Development
6	IFS	Integrated Farming System

Section 4: Acronym

Sl.No	Acronym	Description
7	INM	Integrated Nutrient Management
8	IPNS	Integrated Plant Nutrient Supply Systems
9	IWM	Integrated Water Management
10	KVK	Krishi Vigyan Kendra
11	MLRA	Major Land Resource Areas
12	NARS	National Agricultural Research System

Section 4: Acronym

Sl.No	Acronym	Description
13	NBSSLUP	National Bureau of Soil Survey and Land Use Planning
14	NGOs	Non-Governmental Organizations
15	NRSC	National Remote Sensing Centre
16	R and D	Research and Development
17	SAUs	State Agricultural Universities

Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
1	[1.1.1] Technologies for improving soil health and nutrient use efficiencies	The nutrient use efficiency in the country is very low and fertilizer being a costly input, this has to be increased to reduce the use of fertilizer vis-à-vis cost of production.	Nutrient efficiency can be defined in agronomic, economic, or environmental terms with an aim to get maximum yield benefit with reduced rate of application without harming the environment.	Nutrient use efficiency is measured in terms of partial factor productivity (kg crop yield per kg nutrient applied) or agronomic efficiency (kg crop yield increase per kg nutrient applied) or apparent recovery efficiency (kg nutrient taken up per kg nutrient applied); and physiological efficiency (kg yield increase per kg nutrient taken up).	Augmenting nutrient use efficiency will facilitate reduction in use of costly chemical fertilizer, fertilizer subsidy burden and environmental pollution. Several technological interventions like soil test based fertilizer applications, use of organics (enriched composts, efficient biofertilizer strains, crop residue recycling, green manuring), inclusion of legume crops, mulching, resource conservation.
2	[1.1.2] Developing INM packages for different agro-eco regions of the country	Integrated Nutrient Management is practiced encompassing conjunctive use of both chemical and organic nutrient sources for improving soil health & sustaining higher productivity.	Integrated Nutrient Management refers to the maintenance of soil fertility and of plant nutrient supply at an optimum level for sustaining the desired productivity through optimization of the benefits from all possible sources of organic, inorganic and biological components in an integrated manner.	Developing Integrated Plant Nutrient Supply Systems (IPNS) for different crops / croppings.	To ensure balance fertilization and sound soil health

Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
3	[1.1.3] Training & demonstrations organized	Frontline demonstrations are required to be conducted on the technologies / package of practices developed for validation at different agro-ecological regions.	The technologies generated at the institute and through AICRPs need to be demonstrated to create awareness among farmers about soil test based fertiliser recommendations and INM package for maintenance of soil health and higher crop productivity	Conducting demonstration trials, in different agro-eco regions, organizing seminars/workshop/symposia/ summer or winter school/ short course for HRD	It helps farmers understand the reality of the benefits from technology generated.
4	[2.1.1] Technologies for enhancing water /irrigation use efficiencies	Improving irrigation/water use efficiency is aimed to save water bringing more area under irrigation.	Irrigation efficiency is the index of irrigation performance while water use efficiency is defined as yield/unit of crop water use.	To be measured in terms of irrigation water use and evapo-transpiration.	This will increase the crop water productivity. Several technological interventions like water conservation measures, conjunctive use of surface and ground water, multiple use of water, efficient micro-irrigation techniques, land configuration, irrigation scheduling, improved delivery system including nano techniques, mulching, resource conservation technologies, crop diversification and developing/identifying cultivars requiring less water can improve water and

Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
4	[2.1.1] Technologies for enhancing water /irrigation use efficiencies	Improving irrigation/water use efficiency is aimed to save water bringing more area under irrigation.	Irrigation efficiency is the index of irrigation performance while water use efficiency is defined as yield/unit of crop water use.	To be measured in terms of irrigation water use and evapo-transpiration.	irrigation use efficiency to a considerable extent.
5	[2.1.2] Technologies for water harvesting storage and groundwater recharge	Rainwater is harvested through bio engineering measures and used for augmenting ground water level.	Groundwater recharge is a hydrologic process where water moves downward from surface water to groundwater.	Groundwater recharge measurement will be studied through development of location specific filter systems.	Groundwater recharge technique shall help in minimizing surface runoff and augmenting groundwater table.
6	[2.1.3] Technologies for multiple uses of water and waste water utilization in agriculture evaluated/developed	Models shall be conceptualized, developed and evaluated for multiple uses of water. The use of waste water in agriculture shall be addressed to enhance water productivity.	Multiple use of water are low-cost, equitable water use models that provide water for both domestic needs and high-value agricultural production including rearing of livestock. Waste water is the marginally polluted water having potentiality of reusing in agriculture.	Under multiple use managements, total water use against production of various components will be measured. Waste water quality parameters will be measured using standard methods following recommended guidelines.	This system will help in livelihood improvement, assured production in adverse conditions as well as creation of water resources. To reduce dependency on surface and groundwater, use of treated waste water in agriculture can be a viable proposition.
7	[2.1.4] Watershed area treated	Watershed programmes are now considered to be the drivers for conservation of natural resources, improve land production base and livelihood security	Watershed area treated with conservation and production technologies for demonstration for enhancing livelihood security with improvement in natural resource base.	Watershed area treated	These areas will serve as models for replication in other similar areas by implementing agencies

Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
8	[2.1.5] Training & demonstration organized	In order to disseminate the various developed on-farm technologies, the training programmes for the farmers and trainers shall be undertaken.	Transfer of technology through training and demonstration is the process of transferring skills, knowledge, technologies, methods etc to a wider range of users.	Impact assessment of training and demonstration will be measured through systematic questionnaire feedback approach.	Training and demonstration are the effective tools in rapid dissemination of technologies to end user level for enhancing agricultural productivity.
9	[3.1.1] Efficient agronomic practices including agroforestry developed	System-based farm production technologies are being developed, tested and refined under different farming situations for increasing productivity and profitability of farmers.	System-based farm management technologies are those technologies which take into account the interactions taking place when two crops are grown on the same field in succession or simultaneously or two different farming system components co-exist and compete with each other for same resources.	New farm management technologies, identified for higher productivity/ profitability or conservation of natural resources.	--
10	[3.1.2] Integrated farming systems developed	On-station integrated farming system research units are developing IFS models specific to a particular region and appropriate for small and marginal farmers.	Integrated Farming System model is an optimum mix of different components (modules) designed by integrating them by using all the principles of science and in such a manner that overall productivity and	Number of functional IFS models developed.	These IFS research models will be further subjected to evaluation of their efficiencies and refinement in subsequent years.

Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
10	[3.1.2] Integrated farming systems developed	On-station integrated farming system research units are developing IFS models specific to a particular region and appropriate for small and marginal farmers.	income of farm household is enhanced . For this, the available farm resources, prevailing constraints and available agricultural infrastructure is taken into account.	Number of functional IFS models developed.	These IFS research models will be further subjected to evaluation of their efficiencies and refinement in subsequent years.
11	[3.1.3] Training and demonstration organized	The training programmes for the farmers and trainers shall be undertaken in order to disseminate the various developed on-farm technologies.	Transfer of technology through training and demonstration is the process of transferring skills, knowledge, technologies, methods etc to various stakeholders including farmers.	Number of programmes	--
12	[4.1.1] Development/identification of varieties/breeds for climate resilience at different locations	State of art facilities like phenomics, FACE and FATE and other advanced techniques will be employed in identifying the germplasm /varieties/ livestock breeds/ fisheries species tolerant to biotic and abiotic stresses.	Germplasm/ varieties/ livestock breeds / fisheries species that can tolerate biotic and abiotic stresses	Number of germplasm/ varieties/ livestock breeds / fisheries species	With increased frequency of occurrence of weather aberrations have necessitated the need for identifying tolerant germplasm/ varieties/ livestock breeds / fisheries species
13	[4.1.2] Programs organized for developing trained manpower in research and technology dissemination	Staff of NARS and NGOs will be exposed to state-of-art facilities/ techniques /tools developed within the country/abroad for pursuing advance research and technology dissemination	Enhancing the knowledge of scientists and officials in understanding climatic variability and coping strategies	Number of training programmes	Human capital development in coping with changing climatic scenario

Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
14	[4.1.3] Awareness building on climate change in agriculture, horticulture, livestock, fisheries etc. amongst stakeholders through trainings / demonstrations	The knowledge and skills of primary and secondary stakeholders shall be enhanced by organizing exposure visits to on-farm trials/ demonstrations conducted by SAUs and KVKs	Exposure to advanced techniques in understanding and managing climatic risks	Number of programmes	Skill enhancement of primary and secondary stakeholders
15	[4.2.1] Reclamation/amelioration technologies developed for problem soils	Adoption of reclamation technology improves land productivity of sodic and saline soils	Productive utilization of saline, sodic, waterlogged soils and poor quality waters	Number of reclamation technologies developed	--
16	[4.2.2] Resource conserving technologies developed for degraded lands	Soil and water conservation technologies have proven to be effective in checking erodibility and improving land production base of arable & non arable lands	A technology that reduces soil loss and runoff from arable & non-arable land and enhance land production base	The number of such technologies / products / plan / software validated in field situations	Generation of such technologies for adoption by stakeholders will lead to resource conservation, improved biomass and environmental security from arable & non-arable lands of the country.
17	[5.1.1] Soil resource maps including thematic maps developed at different scales	Soil resource inventory & characterization is prerequisite for developing land use planning.	Soil resource maps are the record of soil units delineated on the basis of similar properties in a readable format.	Mapping will be done at different scale using geo reference data.	This will ensure effective monitoring and judicious use of land resources.
18	[5.1.2] Land use plans developed at different scales	Land use planning will be carried out at different levels by integrating bio-physical and socio-economic parameters	Land use planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to	Land use planning will be accomplished at different scales using suitable approaches, such as, land management units and linear programming	This will generate informed land use decisions.

Section 4: Description and Definition of Success Indicators and Proposed Measurement Methodology

Sl.No	Success indicator	Description	Definition	Measurement	General Comments
18	[5.1.2] Land use plans developed at different scales	Land use planning will be carried out at different levels by integrating bio-physical and socio-economic parameters	select and adopt the best land use options.	approach at district level and participatory rural appraisal at watershed /village/farm level	This will generate informed land use decisions.
19	[5.1.3] Benchmark soils identified/ established	Benchmark soil series act as 'management unit' for facilitating transfer of agro-technologies to soils under similar agro-eco environment.	A benchmark soil is one of large extent within one or more major land resource areas (MLRA), one that holds a key position in the soil classification system, one for which there is a large amount of data, one that has special importance to one or more significant land uses, or one that is of significant ecological importance.	Benchmark soil series will be identified and established through soil correlation	They will facilitate transfer of agro-technology to soils under similar agro eco environment.
20	[5.1.4] Trainings/workshops conducted	This will consist of deputing staff of Institute (i.e. NBSS & LUP) in various national and international trainings in its various mandate - related fields. Besides, the Institute will also create awareness and knowledge among stakeholders through imparting trainings in soil survey, land use planning and allied fields.	Training in soil survey, land use planning and allied fields is organised activity aimed at equipping the recipients with a required level of knowledge and improved skills in the said fields.	Creation of awareness and knowledge will be facilitated through trainings conducted to equipping the recipients with latest tools, techniques and knowhow in soil survey, land use planning and allied fields.	This will generate qualified and skilled manpower in soil survey, land use planning and allied fields.

Section 4:
Description and Definition of Success Indicators and Proposed Measurement Methodology

SI.No	Success indicator	Description	Definition	Measurement	General Comments
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Section 5 : Specific Performance Requirements from other Departments

Location Type	State	Organisation Type	Organisation Name	Relevant Success Indicator	What is your requirement from this organisation	Justification for this requirement	Please quantify your requirement from this Organisation	What happens if your requirement is not met.
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Section 6: Outcome/Impact of Department/Ministry

Outcome/Impact of Department/Ministry	Jointly responsible for influencing this outcome / impact with the following department (s) / ministry(ies)	Success Indicator	Unit	FY 12/13	FY 13/14	FY 14/15	FY 15/16	FY 16/17
1 Better utilization of natural resources	National Remote Sensing Centre (NRSC), Hyderabad	Soil resource/thematic maps generated/supplied	Number	0	19	18	19	20
		Technologies developed/ refined for improving soil health, nutrient use efficiencies and water productivity	Number	9	11	11	13	13
		Improved farming practices developed for higher agricultural productivity/profitability	Number	21	22	25	26	29
		Varieties/breeds resilient to climate change developed/identified	Number	11	9	9	10	10