



**STRATEGIC PLAN FOR GREEN REVOLUTION
IN CONTEXT TO ODISHA**

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**STRATEGIC PLAN FOR GREEN REVOLUTION
IN ODISHA**

1. INTRODUCTION:

Presenting the country's 2010–11 budget in parliament on 26 February' 2010, the Finance minister Pranab Mukherjee has revealed that India will plough US\$86 million into extending its green revolution to the eastern drylands. Unlike the first phase of the country's green revolution — which introduced high-yielding wheat varieties that need a lot of irrigation, fertiliser and pesticide — India will now focus on drylands where there is little water available for irrigation.

An additional US\$43 million will be invested in a climate-resilient agriculture initiative. "The gains already made in the green revolution areas have to be sustained through conservation farming, which involves concurrent attention to soil health, water conservation and preservation of biodiversity," said Mukherjee. He said that a draft food security bill addressing these areas would be released "soon".

Agriculturally, Odisha is Complex, Risk-prone & Diversified. Although predominantly being an agrarian state with Agriculture & Animal Husbandry sector contributing 22.63% to the Net State Domestic Product (NSDP) in 2007-08 (Q) at current prices and providing employment directly or indirectly to 70% of the total work force as per census 2001. Evidently, this shows Agriculture plays a pivotal role in the economy & livelihood of majority of its populace,

Agriculture, which includes all economic activities from the provision of farming inputs, farming and value addition, remains an important sector in the Odisha's economy despite its small & direct share of the total gross domestic product (GDP).

2. METHODOLOGY

Earlier investments made in preparing the documents viz, C-DAPs, SREPs and other plans as Perspective 5 Year Plans and PLP (Potential linked Plan) by NABARD etc. have been taken into confidence while preparing this Plan.

3. STRATEGIC GOAL

This strategic goal will guide all the relevant social partners in their quest to deliver a range of strategies and programmes. These programmes will be generated and implemented in accordance with the following *basic premises* and *value statements*:

- Equitable access to resources and production factors
- The sustainable use of natural and biological resources
- Sound research, science, knowledge and technology systems
- Fair reward for effort, risk and innovation
- Security of tenure for present and future participants
- Market forces to direct business activity and resource allocation
- A clear regulatory framework and effective government services
- Policy consistency and predictability
- Responsive partnerships between the private and public sector in policy formulation and service delivery.

4. THE OUTCOMES

The following outcomes are expected to flow from the successful pursuit of the strategic objectives:

- Increased creation of wealth in agriculture and rural areas
- Increased sustainable employment
- Increased incomes and increased foreign exchange earnings
- Reduced poverty and inequalities in land and enterprise ownership
- Improved farming efficiency
- Improved national and household food security
- Stable and safe rural communities, reduced levels of crime and violence, and sustained rural development
- Improved investor confidence leading to increased domestic and foreign investment in agricultural activities and rural areas
- Pride and dignity in agriculture as an occupation and sector.

5. PROPOSED STRATEGIES & INTERVENTIONS

Our strategies of enhancing crop production and productivity would be mostly three pronged-

- Transfer the evolved technologies through extension machinery to reduce the yield gap in primary enterprises (Discussed at length in Chapter 10)
- Enable and assist the resource poor farmers for adoption of modern crop husbandry on a sustainable basis and
- Emphasize post harvest management of produce, value addition and suitable market intervention.

5.1 CROP PRODUCTION

The crop production during the 10th plan period has mostly followed an increasing trend under different crops and continuing to be so during the first part of 11th Plan period. The production programme of different crops by the end of 2014-15 would be as under.

Unit: Lakh tones/ *Lakh bales

Crop	Production at the end of 10 th Plan	Production target to be achieved by the end of 2014-15
Rice	69.28	80.10
Other cereals	5.04	9.71
Pulses	8.66	12.57
Food grains	82.98	102.39
Oilseeds	6.00	9.57
Fibres	3.63*	5.82
Sugarcane	28.36	53.20

It has been envisaged to achieve following growth pattern in food grain production during next five years (2010-11 to 2014-15) in order to match the increased food grain demand of the projected population.

Sl. No.	Crop	Targeted Production growth (%) During
1	Rice	2.23
2	Pulses	13.24
3	Food grains	6.45
4	Oilseeds	3.84

5.2 INPUT MANAGEMENT

The key inputs to supplement crop production and productivity are seed, fertilizer, integrated pest management, credit, irrigation etc. Considering the above aspects, input management plays a vital role for crop production.

5.2.1. Seed

Use of quality seeds alone can improve the productivity of crops to a tune of 15%. Keeping this in view efforts have been put to supply certified/ quality seeds of different crops to farmers. During 2009-10, 493345 quintals of paddy and 136487 quintals of non-paddy seeds have been distributed to the farmers for enhancing the productivity. As a result of this endeavour the SRR in paddy has touched 21.39 % by 2009-10. Steps are being taken to increase supply of certified/ quality seeds & enhance the Seed Replacement Rate (SRR). The achievements in SRR by 10th plan and those targeted by the end of 2014-15 are as follows.

Crops	Seed Replacement Rate in %						
	End of 10 th Plan	2009-10 (Likely)	2010-11	2011-12	2012-13	2013-14	2014-15
Paddy	6.35	18.90	21.82	23.98	24.81	26.17	27.75
Ragi	1.31	0.68	2.86	3.07	3.07	3.40	3.77
Maize	1.39	3.34	2.74	2.99	3.32	3.57	3.78
Wheat	20.66	42.09	34.57	32.53	32.80	33.07	34.13
Moong	2.15	1.11	6.28	6.37	6.53	6.69	7.02
Biri	2.42	3.20	9.54	9.32	9.51	9.71	10.07
Gram	13.05	28.56	21.65	21.70	21.75	21.80	22.00
Field pea	8.44	11.93	8.85	8.90	8.95	9.00	9.10
Arhar	2.68	2.54	1.93	2.50	2.52	2.55	2.60
Groundnut	22.89	30.68	30.92	31.01	31.21	31.35	31.50
Mustard	14.45	26.69	13.56	13.67	13.78	13.89	14.16
Sesamum	0.10	0.87	0.78	0.80	0.83	0.89	1.00
Niger	1.02	0.13	1.11	1.14	1.24	1.33	1.43
Sunflower	60.71	51.18	33.26	33.50	33.75	34.10	34.50
Jute	42.86	39.10	30.40	30.52	30.77	30.80	30.93
Cotton	3.85	61.78	4.09	4.15	4.15	4.23	4.25

Further, steps are also being taken by the state to produce more quality seeds of different crops under Seed Village Programme in collaboration with Seed Producing Organizations of other States, University, CRRI and ICAR Institutions to meet the requirement of quality seeds in the state.

5.2.2 Fertiliser

Consumption of fertilizer in our state is largely dependant on monsoon; drought, flood etc and socio-economic status of the farmers. The *per* hectare consumption of fertilizer of the State at present hovers around 62 kg/ha which is much below the national average i.e. 113 kg/ha. However, it is proposed to consume 81 kg/ha by the end of 2014-15. The proposed target is to be achieved with the help of Gol's assistance by establishing increased number of rake points in the state, sale of fertilizers in small packets and involving farmers interest groups to deal with fertilizers.

Nutrient	Fertilizer (Nutrient) Consumption in 000'tonnes						
	End of 10 th Plan	2009-10 (likely)	2010-11	2011-12	2012-13	2013-14	2014-15
Nitrogen	272.50	292.29	354.63	375.91	394.70	414.44	443.45
Phosphorous	108.32	148.58	180.91	191.77	201.35	211.42	226.22
Potash	53.94	78.46	89.19	95.54	99.27	104.24	111.54
Total (N+P+K)	434.73	519.33	624.73	662.22	695.33	730.10	781.21
Consumption in kg/ hect.	52	58.14	70	74	78	81	83

Soil Health

Soil Health is increasingly becoming an issue in the way of enhancing crop production. Thus our endeavour is for facilitating and promoting Integrated Nutrient Management (INM) through judicious use of chemical fertilizers, including secondary and micro nutrients, in conjunction with organic manures and bio-fertilizers, for improving soil health and its productivity; strengthening soil testing facilities and provide soil test based recommendations to farmers for improving soil fertility and economic return to farmers; improving soil health through green manuring; facilitating and promoting use of soil amendments for reclamation of acidic soils for improving their fertility and crop productivity; promoting use of micro nutrients for improving efficiency of fertilizer use; upgrading the skill and knowledge of STL/ extension staff and farmers and their capacity building through training and demonstration including demonstration on farmers fields regarding benefits of balanced use of fertilizers; ensuring quality control of fertilizers through strengthening of fertilizer quality control facility including training to enforcement officers of State Governments for effective implementation of "Fertilizer Control Order" and upgrading and setting up of STLs/ Fertilizer Testing Laboratories and various activities for promoting balanced use of fertilizers.

Soil Testing

At present 11 nos. of Govt. soil testing laboratories are functioning in the state with an annual capacity of 1,20,000 samples with 90.83% utilization. It has been envisaged to test 3,00,000 samples per year. To achieve the objectives a three-pronged strategy has been chalked out.

- i) Establishment of new STLs.
- ii) Upgradation of existing STL in a phased manner.

5.2.3 Plant Protection

Adoption of integrated pest management (IPM), emphasizing conservation and augmentation of natural enemies of pest such as parasites, predators and pathogens for control of harmful insects and diseases of crops, is being given due thrust for increasing the crop productivity. IPM is organized by the use of pest resistant varieties, seed treatment, crop sanitation, use of bio-control agents and conservation of beneficial insects & pathogens. The nine Bio-control Laboratories in the State, in addition to the one established by Govt. of India, are the centers of rearing, multiplication and supply of locally adopted parasites and pathogens to the farmers. IPM demonstration-cum-training for crops like rice, maize, cotton etc are also taken up to popularize the practice of IPM under Central & Centrally Sponsored schemes. Annually around 4500 lakh bio control agents are produced covering 9500 hectares of different crops under biological control. The increased emphasis on IPM methodologies has lead to a stagnant scenario in case of pesticide consumption in the state.

5.2.4 Agricultural Mechanization

Farm mechanization has become utterly essential for timely operation of agricultural activities leading to increase in production and productivity besides reducing drudgery of labour associated with farm activities. It also enables efficient utilisation of agricultural inputs and reduces the cost of production. The Government has been encouraging the farmers to adopt improved farm machinery & equipments by providing financial assistance in form of subsidies and credit facility. Besides, the Agriculture Directorate is equipped with a proto-type Development Center (Implement Factory, Bhubaneswar) which designs, and manufactures popular implements for supply to farmers. It also indulges in training, testing and modifying the equipments as per the farmers requirement.

Because, of the awareness generation programme taken up by the Department through demonstration and farmers awareness trainings, mechanization has picked up in the State and there is a great demand for tractor, power tiller, paddy reaper, and other power driven/ self propelled equipments. Similarly, small manually operated/ bullock drawn implements are also being increasingly used by the farmers of hilly and tribal areas. The farm power input touched 1.03 KWH/ hect. by the end of 2009-10 and it has been targeted to increase **1.20 KWH/ha** by the end of 2014-15.

5.2.5 Irrigation

Irrigation being the lifeline for crop production massive efforts are on to increase the irrigation potential of the state. This endeavour has resulted in creating a potential of irrigating 26.65 lakh hectares during Kharif season and 12.66 lakh hectares during Rabi

season. Further, It is proposed to exploit the vast ground and surface water potentials, the state is endowed with, by establishment of more number of shallow tube well, bore wells, dug wells and river/ surface lift points. NABARD has been tied up for providing financial assistance to farmers for this purpose. Steps are being taken up for judicious utilization of irrigation water. The number of shallow tube wells, bore wells, dug wells and surface lifts installed since 1996-97 till 2008-09 is indicated below.

Items	Nos. installed	Area brought under irrigation (<i>in ha</i>)
Shallow Tube Well	86260	172560
Bore Well	9521	19042
Dug well	2134	2314
Surface lift	905	4525
Total	98820	198441

5.3 Agriculture Extension

Besides providing extension support to the farmers for adoption of various improved technologies the farmers are being trained in the fields of IPM, INM, farm mechanization, post harvest technology, and other aspects of crop husbandry. In view of the extension machinery being squeezed over time the alternate extension need be strengthened and steps are being taken in this regard.

In our state, rural women constitute a significant part of work-force in Agriculture. There are also numerous socio-economic limitations for women; Illiteracy, ignorance, poor or lack of skills, malnutrition, gender bias, drudgery prone working condition, unfavourable social climate etc. that constrain them from meaningfully participating in Agriculture. Steps are being taken to improve their socio-economic well-being through incorporating productivity enhancing measures broadly focusing on information, knowledge and technology transfer as well as adoption. Farm Women are involved in the activities like crop production, livestock production, horticulture, post harvest operations, agro-forestry, fisheries, bee-keeping etc. Capacity building induces empowerment of these farm women, which contributes substantially towards increase in crop production and family income. To substantiate this objective, training programmes are being organized continuously to sensitize them on different income generating agro-entrepreneurship activities and formation of SHGs/ FIGs/ WIGs/ CIGs. Farmwomen who play a vital role in the field of crop production are also provided with such extension support.

A multipronged strategy has been drawn up to supplement the developmental efforts in the field of Agriculture apart from the regular schematic programmes with the objective to uplift the socio-economic progress in the State.

Besides all these the department facilitates various other aspects viz. flow of credit, crop insurance, marketing of agricultural produce, and establishment of agri-business houses etc., which are pertinent for development of agriculture in the state.

5.4 POSSIBLE STRATEGIES FOR ENHANCING PRODUCTIVITY

- ♣ Selection and adoption of suitable Hybrid / High Yielding varieties (HYV) of crops pertaining to different agro-eco-systems.
- ♣ Increasing irrigation potential through installation of Private lift irrigation points.
- ♣ Judicious use of irrigation water by construction, proper maintenance and repair of field channels and adopting appropriate water management practices.
- ♣ Adequate steps to increase the Seed Replacement Rate (SRR) through Seed Village and Seed Exchange Programme and sale of seeds in each *Panchayat*.
- ♣ Improved production technologies now available for each of the unfavorable ecologies, though limited, need to be properly exploited.
- ♣ More medium and long range weather forecasts should be made available.
- ♣ Increased use of fertilizer, based on soil test reports, well integrated with bio-fertilisers and micronutrients.
- ♣ Increased farm mechanization.
- ♣ Timely, appropriate and adequate plant protection measures, especially in endemic pockets by Integrated Pest Management (IPM) approach.
- ♣ Taking adequate ameliorative measures to reclaim the problem soils.
- ♣ Crop diversification from paddy to non-paddy in rainfed upland conditions.
- ♣ Consolidation of land holdings for effective farm mechanization.
- ♣ Promotion of export oriented Agriculture
- ♣ Establishment of processing and storage units.
- ♣ Ensuring minimum support price and assured market facilities.
- ♣ By providing subsidized electricity to agriculture sector.
- ♣ Adequate coverage of crop loss by crop insurance taking G.P/village as a unit.
- ♣ Providing adequate input subsidy and crop loan at low interest rates.
- ♣ Strengthening research-extension-farmer network.
- ♣ Strengthening Infrastructure on all fronts.
- ♣ Use of Geographic Information System (GIS) in agricultural technology extrapolation to suit a specific region.

6. NEW INITIATIVES THROUGH MISSION MODE PROJECTS UNDER RKVY SUB SCHEME GREEN REVOLUTION 2010 - 11

Based on the above strategies, 9 (nine) number of Projects have been approved by the 5th SLSC Meeting (State Level Sanctioning Committee) for RKVY held on 21.05.2010. The abstracts of the project proposals have been enclosed at ANNEXURE - I.

7. CONCLUSION

Indications are that the Odisha's agricultural sector is responding positively to the challenge for increased competitiveness. However, there is also evidence that some sub sectors of agriculture are uncompetitive. The lack of competitiveness also leads to low profitability and below normal returns in the sector, which is again responsible for low investment. The poor investor confidence in agriculture is caused by the low returns as well as definitive and hard-core economic and social problems impacting on investment and production. Steps would be taken to bring back Investor confidence to achieve a vibrant and growing agricultural sector. Ensuring effective, adequate and efficient support and delivery system coupled with sustainable management of natural resources for agriculture production is likely to bring back the sector into the growth track different constituents of the sector genuinely feel and see themselves as belonging to a single entity.

A second green revolution is urgently needed to raise the growth rate of agricultural GDP at around 4 %. Even most rosy pictures of 10th Plan limits the growth achieved in this sector to below 2 %. Thus it is a challenge before us to double the rate of agricultural growth during the 11th Plan. The partners commit themselves to provide the necessary time and financial and material resources to see to the successful implementation of the strategic plan. There is a clear understanding and appreciation that a new chapter is being opened for agriculture in Odisha. And of course our vision for Odisha lies much ahead of this.

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ANNEXURE - I

ABSTRACT OF PROJECT PROPOSALS UNDER RKVY SUB SCHEME GREEN REVOLUTION 2010 -11 *(Financial in lakh Rs.)*

Sl. No.	PROJECTS	PROJECT COST (in lakh Rupees)				Financial Requirement (in lakh Rupees)			Project Period (Yrs)	Remarks
		Govt. Share	Farmer Share	Private Partner Share	Total	2010-11	2011-12	2012-13		
1	System of Rice Intensification	816.69			816.69	596.44			One	Rs. 60.25 spill over Rkvy-2009-10 Rs.160.00 lakh from State Plan
2	Sugarcane Development Package for Sugar Factory Areas	514.80		57.20	572.00	99.00	163.80	252.00	Three	Govt Share: Factory share-90:10
3	Integrated Technological Approach for Sustainable Sugarcane Cultivation	185.40			185.40	125.70	59.70		Two	
4	Bio-Fertiliser Application for Sustainable Crop Production	266.30	88.77		355.07	111.43	154.87		Two	@ 75 % subsidy
5	Popularisation of Hybrid Maize Cultivation in the State	1210.00		271.50	1481.50	1210.00			One	
6	Management of Acid Soils	234.28	50.10		284.38	234.28			One	
7	Capacity Building of Extension Personnel	198.06			198.06	198.06			One	
8	e-Pest Surveillance	269.50			269.50	269.50			One	
9	Intensification of Hybrid Sunflower Cultivation in Orissa	402.00	400.00		802.00	402.00			One	

ODISHA

A. PROPOSED STRATEGIES & INTERVENTIONS IN ODISHA

The strategies of enhancing crop production and productivity would be mostly three pronged-

- Transfer the evolved technologies through extension machinery to reduce the yield gap in primary enterprises
- Enable and assist the resource poor farmers for adoption of modern crop husbandry on a sustainable basis and
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B. DETAILS OF THE POSSIBLE STRATEGIES FOR ENHANCING PRODUCTIVITY IN ODISHA

- ♣ Selection and adoption of suitable Hybrid / High Yielding varieties (HYV) of crops pertaining to different agro-eco-systems.
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- ♣ Increased farm mechanization.
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