

***NATIONAL MISSION FOR SUSTAINABLE
AGRICULTURE AND CLIMATE
RESILIENCE OF SMALL AND MARGINAL FARMERS***

New Delhi



BJVJ



In collaboration with



NATIONAL MISSION FOR SUSTAINABLE AGRICULTURE AND CLIMATE RESILIENCE OF SMALL AND MARGINAL FARMERS

Beyond Copenhagen Collective India

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Published By

**Public Advocacy Initiatives for Rights and values in India
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**NATIONAL MISSION FOR SUSTAINABLE
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Agriculture faces insurmountable challenges in times of climate change. While farm production and productivity is threatened due to rise in temperature, carbon dioxide concentration and rising sea level; acidification of soil and water, reduced precipitation and water availability; agricultural production must be sustained to feed the growing population. The challenge is exceptional for developing tropical countries, including South Africa, Latin America and India. Many studies project significant decline in the production of cereals and coarse grains in these countries (IPCC, 2007, Planning Commission, 2010).

Given the large proportion of the population in India dependent on agriculture – directly and indirectly – adverse effects on agriculture would translate in hunger and food insecurity. Study done by MIT in 200 districts of India categorizing climate change impacts into medium term impact and long term impact suggests that the estimated effect of medium term climate change impact (2010-2039) on yield is negative 4.5 to 9 percent which will be negative 20 percent for long term impact (2010-2099). The negative impact of climate change on agriculture is likely to have a serious impact on poverty; recent estimates from across developing countries suggest that one percentage point of agricultural GDP growth increases the consumption of the three poorest deciles by four to six percentage points.¹ Hence, climate change could significantly slow the pace of poverty reduction in India and will be a major threat to those states where poverty level and population dependent upon agriculture for their livelihood is higher. Nelson et al, (2009) have estimated that the daily per-capita calorie availability in South Asia will decline by about 8 percentage points in 2050 due to climate change impacts on cereal crop yields compared to levels in 2000; Kumar and Parikh (2001) and Sanghi and Mendelsohn (2008) have estimated that under moderate climate change scenarios, there could be about 9 percent decline in farm-level net-revenues in India. It is estimated that in the absence of rapid and full adaptation, the consequences of long-run

¹ Ibid.

climate change could be even more severe, up to 25 percent of crop yields².

However, agriculture and climate change is increasingly becoming an area of academic and general interest not for adaptation, but mostly because agriculture is source of 14% of global GHG emission. Along with deforestation and change in land use, it is source of more than 1/3rd to total GHG emission. Majority of these emissions are located in developing countries having high dependence on agriculture. More than 35 developing countries identify agriculture as main sector to focus their emission reduction efforts through NAMAs (PAIRVI, 2011). India owes 17% of its GHG emission to agriculture and allied activities (GOI, 2010). The position of India is not clear on the issue of mitigation and adaptation in agriculture. While GOI supports “no mandatory mitigation in agriculture” (Nitin Sethi, 2012), The National Mission on Sustainable agriculture, which is a part of the NAPCC and lays down the government’s vision on agriculture and climate change and has various references to mitigation of emission in the National Mission on Sustainable Agriculture After more than three years of its being approved, it is once again in the discussion as it has been declared to launch the NMSA during the 12th Five Year Plan (Planning Commission, 2011).

National Mission for Sustainable Agriculture

The NMSA seeks to address issues regarding ‘*Sustainable Agriculture*’ in the context of risks associated with climate change by devising appropriate adaptation and mitigation strategies for ensuring food security, equitable access to food resources, enhancing livelihood opportunities and contributing to economic stability at the national level (DAC, 2010). The NMSA correctly identifies the risk that India agriculture faces from climate change impacts. Parts of western Rajasthan, southern Gujarat, Madhya Pradesh, Maharashtra, Northern Karnataka, Northern Andhra Pradesh, and Southern Bihar are likely to be more vulnerable in times of extreme events. Irrigation requirements

² Ibid.

in arid and semiarid regions are estimated to increase by 10% for every 10 degree centigrade rise in temperature (DAC, 2010)

The NMSA has four thrust areas- dry land agriculture, risk management, access to information and use of biotechnology. It also identifies ten mission interventions based on different dimensions of mitigation and adaptation. Ten mission interventions are laid down as- Improved crop seeds, livestock and fish culture, water use efficiency, pest management, improved farm practices, nutrient management, agriculture insurance, credit support, markets, access to information, and livelihood diversification. These mission interventions are further broken down into a Programme of Action (PoA) focused on (i) research and development, (ii) technology, products and practices, (iii) infrastructure, and (iv) capacity building.

NMSA and for that matter twelfth five year plan approach paper are successful in identifying differential need of different farmers groups based upon their socio-economical and spatial status. Promotion of soil conservation practices and use of bio-fertilizers to increase soil strength, promotion of innovative approach such as developing insect forecasting model to reduce crop loss in changing climate, promotion of weather insurance as a safety net for farmers and providing free, untied and on time credit support to farmers are few of the welcoming steps proposed in the mission which would have been benefitted even small and marginal farmers. However, for last three years unlike other mission NMSA didn't show any movement. Thanks to the Twelfth five year plan paper for putting life into this mission by bringing it back to discussion. Hence, there is a need to relook the mission strategies to build climate change resilience of small and marginal farmers specifically who comprises 85 percent of Indian farming population.

The National Mission for Sustainable Agriculture seeks to *transform* agriculture into an *ecologically sustainable* climate resilient production system while at the same time, exploiting its fullest potential and thereby *ensuring* food security, equitable access to food resources, *enhancing* livelihood opportunities and *contributing* to economic stability at the national level. However, One fails to understand how it will support agricultural adaptation, which is largely autonomous, and

help farmers and livestock bearing the brunt of the changing climate. Till now rainfed farming has been equated with watershed development (GOI, 2012, WG on NRM and Rainfed Ag), and NMSA fails to take it beyond that. Some areas of concern in the NMSA are discussed below:

1. Do mechanization of farming beneficial for small and marginal land holdings ?- Technological solutions to be adopted should be cost effective, easily accessible and relevant for the small and marginal farmers who comprise more than 80% of farming community in India. One time subsidy to purchase big machines might enable small farmers to buy big machines such as tractors, but will lead them to debt trap for arranging the money for maintenance cost. Further, precedence from Punjab suggests that use of machinery boost production only when the soil health is good and there is availability of water.
2. Conserving Genetic Resources and Agricultural Heritage through GM crops?- It is difficult to understand how by promoting genetic-biotechnology and Genetic Modified crops will help to preserve genetic biodiversity of India. The Mission proposes BT as panacea for all problems of agriculture. GE is likely to take care of all crop requirements viz. resilience for drought and submergence, salinity tolerance, improved nitrogen fixation, and water efficiency. This is fraught with serious concerns for loss of potentially useful genetic biodiversity, when this diversity is critically needed for coping strategies. This also carries high risk of farmers' losing control to monopolization by a handful of biotechnology companies, as has already happened with the cotton crop, with genetically modified Bt cotton constituting over 92% of all cotton grown in India. Mission also proposes the dangerous idea of genetic engineering in livestock, fisheries, poultry and microbes.

Further, C4 crops certainly better than C3 crops considering improved photosynthesis, but it will take years to convert a C3 crops into C4 crop; hence, it would be economically and ecologically beneficially to promote available C4 crops such as maize and millets.

3. **Skewed Financial Allocations for Adaptation-** The NMSA lays down requirement of INR 1,08,000 crore up to the end of the 12th FYP. The Mission also declares that a major portion (60%) would be utilized to adopt technology, products and practices. Infrastructure development and R&D together will be allocated 35% of the total resources, whereas about 5% of allocation will be deployed for capacity building. Hence, out of 1,08,000 crore only INR 500 crore will be spent on capacity building. There is hardly any adaptation support for the farmers in the mission. Further, the Working Group on Environment and Climate Change scaled down the financial support to be allocated to the NMSA to 12-15,000 crore every year (GOI, 2011); hence, the financial allocation for building farmers resilience is miniscule.
4. **Mitigation vs. Adaptation in Agriculture Sector-** The Mission document is replete with the references on the “need to reduce emission in agriculture.” It goes on to admit “in accordance with India’s proposed target of reducing GHG intensity by 20-25% till the end of 2020, the mission acknowledges the need to reduce emission from the agricultural sector.” (DAC, 2010). The strategies suggested are mainly through improved crop varieties, use of bio-fertilizers, SRI, and improving dietary practices in livestock. While mitigation in agriculture emissions do not need to be trashed altogether, The current focus on soil carbon sequestration (mainly with the objective of generating finances through private participation) probably will spell the doom for small and marginal farmers in least developed and developing countries. In countries like India, where majority of the farmers (more than 80%) possess a land holding smaller than 2 ha, the rush for sequestration will lead to them losing their lands, sovereignty over their produce, choice and means of production to the greedy private project developers lurking on the horizon (PAIRVI 2012).

Other concerns in the NMSA

While there is an urgent need for scaling up investment in dryland agriculture, the NMSA does not provide much headway into that. There is also inadequate emphasis on livestock management beyond

improving dietary practices to reduce emission from enteric fermentation. Common property resources and development of pastures, which can be a good livestock management strategy is completely unattended. So are millets, which are existing abundant C4 gene pool that the country has. Pest management talks of judicious use of chemical pesticide, only pays a lip service to promotion of bio-pesticides and falls far short of committing NPM. Scant respect is paid to bio-fertilizers. Improved farm practices, lack support to organic farming and commitment to agro-ecological approach, which has been already discussed a lot as most climate efficient farming (IAASTD, 2011) also do not fare better. Access to information is mainly leveraged to support markets, rather than farmers through minimizing information asymmetry and inviting PPP in technology based solution. The three tier institutional structure proposed for management and implementation does not have place for farmers.

Mission on agriculture in SAPCCs

The way, in which SAPCCs have been approached and prepared, given sufficient idea on the intent of the states to promote low carbon development pathways. Manipur Plan talks about “modern scientific agriculture,” MP proposes “modernization of agriculture, increased use of biotechnology.” While West Bengal and Rajasthan both also propose “zero tillage agriculture,” Rajasthan includes “exploring carbon sequestration potential of carbon deficient soil” and “increased use of biotechnology.” Many states talk about agro fuel plantations.

Primarily a Consultant driven process, there is very little ownership of these Plans by the state governments, which see SAPCC as another Centrally Sponsored Scheme (CSS). While devising SAPCC, states did not have the understanding that much of the resources required will have to be provided through existing programmes and schemes and their convergence. The Ministry of Environment and Forest, which the nodal ministry for Climate Change Policies, was late in declaring that states will get only fraction of the amount that they expect from the central government (Planning Commission, 2010). As a result of this uncertain structure and guidelines, Odisha failed to allocate single rupee for climate resilient agriculture under SAPCC. Most of the states do not

have timelines, financial targets, and no information on how these resources would be mobilized.³

What the NMSA must do differently

The aftermath of green revolution and climate change impacts strongly argue in favour of agro-ecological approaches including mixed farming, integrated farming, organic farming etc (IAASTD, 2011). The current input intensive production systems based on single minded pursuit of monoculture and hybrids, biotechnology, and mechanization needs serious overhaul. The approach to sustainability of agriculture must be based on diversified production models including crops, livestock, fisheries, poultry and agro-forestry, Conserving genetic bio-diversity of crops and livestock and knowledge associated it in partnership with communities. The approach needs to put the household agriculture sustainability and food security in the centre rather than making yet another bound to fail efforts to centralize agriculture, production, and distribution and management systems. Some steps which may move us towards sustainable, safe and ecologically sound production system (without being exhaustive) are listed below:

Focus on rain fed farming: The working group on NRM and rain fed agriculture pitched strongly in favor of a National Rain fed Farming Agency (NRFA,) which provides oversight on all programs in rain fed areas and synthesizes learning. The NRAA can be restructured into such an Agency. It also proposed three core programmes including National Rain fed Farming Program: to be taken up in 1000 blocks across different agro-ecological typologies in rain fed areas, Creation of ‘Rain fed Investment Windows’ in all relevant mainstream programs of various ministries, with flexibility to follow different guidelines (as may be detailed by the NRFA) for rain fed areas, and ‘Supportive Policy Action’ – Specific budgetary allocations for the Agency to carry out detailed analysis of the policy changes needed for the new paradigm. This is to facilitate such discussion with state governments, provide

³ Much Ado about Climate Change; State Action Plans are business as usual, PAIRVI, 2011. These are the reflections based on first draft of the SAPCCs or respective states. In some of the revised drafts explicit mention of soil carbon sequestration and promotion to GMOs have been removed.

support in drafting policies (decision about appropriate policy, instruments, policy process and outcome mapping etc.).

Emphasis on decentralized planning: RKVY provided an opportunity to decentralize agricultural planning in the 11th FYP. However, the opportunity was wasted despite substantial expenditure (Rs. 10 lakh per district). The emphasis on decentralized planning should not be allowed to slip through a process of further incentives and disincentives. The working group advocated to take Development ‘Block/Taluk/Mandal’ as a unit for programmatic action as it is a manageable unit for planning-implementation and convergence of various programs and human resources into a new framework. Decentralization in agriculture planning is important to promote food security systems based on local production, procurement and distribution based on local diversity of food grains and specific conditions.

Investing in strengthening local food systems: The WG also asked for a paradigm shift in the approach including promoting “Strengthening diverse *local* production *systems* to contribute substantially to the local food and nutrition, and income security”. Which calls for “Moving away from the present centrally determined approach of single commodity intensification to location specific farming systems intensification approach,” and “moving away from viewing growth as per ha or per animal (single commodity) productivity to system productivity and household income growth, and finally “building food security systems (including decentralized PDS) based on locally adapted food crops.” It is now a travesty of idea to think of a centralized food production system, and high time to invest in moving towards a more sustainable production system based on local circumstances and preferences, and having participation of relevant local groups.

Support to adaptation and timely provision of inputs, information, post harvest management: The achievement in production and productivity is being threatened to be reversed or at least challenged seriously due to climate change impacts. The agricultural research has till now largely neglected the traditional knowledge in agriculture. Traditional knowledge in agriculture has been the source for best practices of adaptation, which has been taking place completely

autonomously. Many of the state governments are also supporting adaptation by promoting organic farming with chemical pesticides and fertilizers (PAIRVI, 2012). There is an urgent need to look out for best practices, their documentation and sharing among the larger farming community. The flexibility under RKVY can be utilized to have a pilot project on best practices in agricultural adaptation bringing out successful crop based, irrigation based, traditional technology based, and livestock based adaptation in public knowledge. The farmers dependant on monsoon are historically starved for quality seeds at appropriate time, weather information, and post harvest facilities. It is advisable that significant investment be made in these critical areas rather than waiting for public private partnership to happen. While private sector seed companies have benefitted immensely from research on new variant, public seed system have failed to capitalize. There is an urgent need to improve research outcomes on new variants and its delivery to farmers. Weather information network and its delivery, especially short range weather information, needs to be lifted substantially with the help of mobile telephony, to be able to benefit the farmer and enable him to adapt to weather conditions. Much of the advantages of diversification in agriculture remain to reach the farmers due to post harvest losses and lack of processing, transportation and marketing facilities. Private investment in infrastructure can be only enhanced with a marked development in critical infrastructure.

Improved credit, risk and insurance: Recent data on agricultural credit show a declining trend in priority sector lending, decreasing number of rural bank branches, and increasing proportion of credit lending to big farmers (Pallavi Chavan, 2010). A strategy needs to be undertaken to reverse these trends, in the coming plan period and provide adequate credit facilities to small farmers. Coverage of risk through insurance strengthens farmers resilience to weather shocks. The coverage must expand to reach larger farming community through developing new user friendly insurance products. The government must take proactive steps in insurance coverage expansion through weather index based insurance, to either take increased responsibility or trigger commensurate private investment.

Commitment to non pesticidal management and promotion to bio-fertilizers: The government must have a clear position on Non pesticidal management and promotion to biofertilizers. A part of the subsidy withdrawn on urea might be utilized to promote biofertilizers and organic farming.

Commitment to non alienation of agricultural land and promotion of Common Property Resources: Agriculture and livestock systems in rainfed areas are integrally linked to common property resources (CPRs), which also help promote biodiversity in many ways. The agriculture policies must commit non-alienation of agricultural land, and support to CPRs, and reversal of encroachment of CPRs as far as possible.

Review of NMSA and improved consideration to agriculture and water in State Action Plans on climate change: In its current form NMSA fails to emphasize appropriate priorities. It is advised to review it to be able to provide an architecture for fundamental changes in agriculture and especially rainfed farming. It should rather have a long term vision to transform agriculture from intensive inputs based production to agro-ecological production systems with a strong willingness to invest in strengthening local food security which is more sustainable and climate resilient.

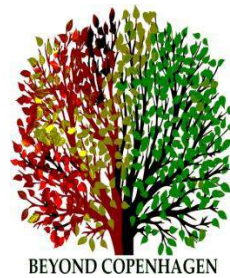
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List of Abbreviations

APMC	Agricultural Produce Market Committee
BT	Biotechnology
CPRs	Common Property Resources
CRIDA	Central Research Institute for Dryland Agriculture
CSS	Centrally Sponsored Schemes
DAC	Department of Agriculture and Cooperation
FAO	Food and Agriculture Organization
FPOs	Farmers Producers Organizations
GDP	Gross Domestic Product
GE	Genetic Engineering
GHG	Green House Gases
GM	Genetically Modified
IAASTD	International Assessment of Agriculture Knowledge, Science and Technology for Development
IATP	Institute for Agriculture and Trade Policy
ICAR	Indian Council of Agricultural Research
IEA	International Energy Agency
IMD	Indian Meteorological Department
IPCC	Intergovernmental Panel on Climate Change
MNREGA	Mahatma Gandhi National Rural Employment Guarantee Act
MSP	Minimum Support Price
NAIS	National Agricultural Insurance Schemes
NAMAs	National Appropriate Mitigation Action
NAPCC	National Action Plan on Climate Change
NICRA	National Initiative on Climate Resilient Agriculture
NMSA	National Mission for Sustainable Agriculture
NRAA	National Rainfed Area Authority
NRFA	National Rainfed Farming Agency
NRM	National Resource Management
NSSO	National Sample Survey Organization
PDS	Public Distribution System
PoA	Programme of Action
R&D	Research & Development
RKVY	Rashtriya Krishi Vikas Yojna
SAPCC	State Action Plan on Climate Change
UIDAI	Unique Identification Authority of India
WBCIS	Weather Based Crop Insurance Schemes



BEYOND COPENHAGEN

Beyond Copenhagen Collective (BCPH) is a coalition of more than 40 organizations and networks working on the issues of sustainable development, environment, sustainable agriculture etc. We have been extensively engaged with India's response to Climate Crisis, Domestic Action and its position in International negotiation process under the United Nations Framework Convention on Climate Change. We have tried to attract global attention on due consideration of agriculture and food security in climate change negotiations, state responsibility and accountability for climate justice.

Organizations and networks part of the BCPH collective bring with them varying experiences and expertise, ranging from grassroots works with farmers and peasant communities to engaging with policy makers and the policy through policy analysis, advocacy, lobbying, engaging with the media through their sensitization and orientation; and undertaken documentation and scientific exploration in climate change, sustainable agriculture and food security. The focus of our work emanates from the understanding that there is an urgency to work in collaborative action on climate change and climate justice issues. The collective proposes to address these issues through a variety of actions at local, state/provincial, national and global level.



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