



Supporting Millets in India

Policy Review & Suggestions for Action

Revalorising Small Millets in Rainfed Regions of South Asia (RESMISA)

PREPARED BY



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Supporting Millets in India:
Policy Review and Suggestions for Action

Prepared by



August 2012

Part of
Revalorising Small Millets in Rainfed Regions of South Asia
(RESMISA)

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Acronyms and Abbreviations

AAV	-	Antyodaya Anna Yojana
APL	-	Above Poverty Line
ATMA	-	Agricultural Technology Management Agency
BPL	-	Below Poverty Line
CACP	-	Commission for Agricultural Costs and Prices
CIP	-	Central Issue Price
DAC	-	Department of Agriculture and Cooperation
FAO	-	Food and Agriculture Organisation
FCI	-	Food Corporation of India
FLD	-	Frontline Demonstrations
GOI	-	Government of India
HYVs	-	High Yield Varieties
ICAR	-	Indian Council for Agricultural Research
ICDP – CC	-	Integrated Cereals Development Programmes in Coarse Cereals
ICDS	-	Integrated Child Development Scheme
IFPRI	-	International Food Policy Research Institute
INM	-	Integrated Nutrient Management
INSIMP	-	Initiative for Nutritional Security through Intensive Millets Promotion
IPM	-	Integrated Pest Management
ISOPOM	-	Integrated Scheme of Oilseed, Pulses, Oil palm and Maize
KVK	-	Krishi Vigyan Kendra
MGNREGA	-	Mahatma Gandhi National Rural Employment Guarantee Act
MMA	-	Macro Management of Agriculture
MMS	-	Mandal Mahila Samakyas
MSP	-	Minimum Support Price
NADP	-	National Agriculture Development Programme
NADP	-	National Agriculture Development Programme
NAIS	-	National Agricultural Insurance Scheme
NFSB	-	National Food Security Bill
NFSM	-	National Food Security Mission
NGOs	-	National Government Organisations
NHM	-	National Horticulture Mission
PDS	-	Public Distribution System
PES	-	Payment for Environmental Services
PoPs	-	Package of Practices
PPP	-	Purchasing Power Parity

RADP	-	Rainfed Area Development Programme
RCS	-	Recommended Cropping Systems
RESMISA	-	Revalorising Small Millets in Rainfed Regions of South Asia
RKVY	-	Rashtriya Krishi Vikas Yojana
RRA	-	Revitalizing Rainfed Areas
SAU	-	State Agricultural University
SAY	-	State Average Yield
SC	-	Scheduled Castes
ST	-	Scheduled Tribes
TA	-	Technical Assistant
TEEB	-	The Economics of Ecosystem and Biodiversity
TPDS	-	Targeted Public Distribution System
UNDP	-	United Nations Development Programme
WBCPIS	-	Weather Based Crop Insurance Scheme

Introduction

The present paper is part of the action research project '**Revalorising Small Millets in Rainfed Regions of South Asia**' (RESMISA) which aims to increase production and consumption of nutritious small millets and associated pulse and oil seed crops in rainfed regions of India, Nepal and Sri Lanka. It focuses on overcoming existing constraints related to production, distribution, and consumption of small millets and associated crops, pursuing a multi-pronged research strategy related to conservation, productivity enhancement, value addition, post-harvest processing, promotion, and policy action to raise the profile of small millets.

A visit to the project website will reveal more details on the action and present opportunities for contact and feedback: www.dhan.org/smallmillets/

In this paper the RESMISA project and the 'Revitalizing Rainfed Agriculture' (RRA) Network undertake a review of Government of India (GOI) and selected State Government policies pertaining to millets. Focal states of the research are Andhra Pradesh and Tamil Nadu, although comparative data from Karnataka and Orissa will also be used. While the paper covers all millets, special attention is accorded to 'small millets' wherever possible.

The paper has internal and external objectives. Externally, it aims to contribute to an improved policy design and implementation environment by presenting targeted recommendations to policy-makers and implementers among different public authorities. It also aims to act as an information and opinion-building document for others like civil society organizations and concerned individuals interested in millets and rainfed agriculture.

Internally, insights gained from the policy review will allow RESMISA and the RRA Network to draw-up realistic plans for policy action and advocacy. Likewise, the review will provide input into the design of several policy related studies and pilots previewed under the RESMISA project to contribute to conducive policy environment for millets in India.

The paper's structure runs as follows. **Chapter I** dwells upon the current state of millets in India as well as their social and economic relevance, showing the need for policy intervention. **Chapter II** contains a review of existing policies on millets. **Chapter III** illustrates a policy-relevant best-practice example. **Chapter IV** presents the outline of a comprehensive policy action plan accompanied by policy recommendations to specific government departments. It also comes with suggestions for action for RESMISA project in particular.

Executive Summary

Status of millets in India

Millets, and particularly small millets, are in a situation of crisis in India. The period between 1961 and 2009 saw a dramatic **decrease in cultivated area** under millets (80% for small millets, 46% for finger millet, 59% for sorghum and 23% for pearl millet); a 76% **decrease in total production** of small millets; a significant **decrease in per capita availability** of all millets (despite high productivity gains for some varieties); and a steep **fall in overall millets consumption**. Similar trends can be seen in Tamil Nadu too. At the same time, India is the biggest producer of millets in the world and millets remain a staple crop for numerous households.

Why be concerned about millets?¹

Millets share a set of characteristics which make them unique amongst cereals. Millets grow under dry conditions, can cope with relatively poor soils and require few external inputs. They are a staple food with superior nutritional qualities compared to other cereals. Used as dual-purpose crops—food and fodder—they make strong economic sense in mixed farming systems. In addition, millets sequester carbon, thereby adding to CO₂ abatement opportunities, contribute to improved agro-biodiversity by their rich varietal diversity, allow for mutually beneficial intercropping with other vital crops, and have significant cultural value due to their long history on the Indian subcontinent.

Indicators on poverty and nutritional status in India convey a sense of urgency in addressing these matters. Different sources estimate poverty rates between 37 and 77% of the population with rural areas having more poverty than cities. Similar indicators find dramatic rates of malnutrition in India (around one fifth of the population), which are especially staggering for children (approximately 50% suffer from stunted growth) and women (more than 35% have below normal body mass indexes). Human welfare, nutrition, poverty and economic development are intimately interrelated.

But stalling productivity growth of irrigated rice and wheat, which form the backbone of the food system of India, hinders the attainment of food and nutritional security for the nation. Despite the great strides made in spreading irrigation, at the moment, around 60% of Indian agriculture remains rainfed, contributing to 40% of national food supply. Physical and institutional limits preclude the indefinite proliferation of irrigated systems, necessitating

¹ Refer to Chapter 1 for references

attainment of food security through increasing production in the large tracts of rainfed land in the immediate future, where millets belong to. Increasing the share of millets in the food system will contribute to greater grain availability not only in terms of quantity, but also in terms of nutrition.

Given this context millets being predominantly grown in rainfed conditions and based on the findings that agricultural growth has the greatest poverty reduction potential compared to any other (urban) sector, it makes full sense to make rainfed area development into a priority topic within the national development strategy with special attention to promotion of millets.

But finding ways to achieve promotion of production and consumption of millets, given the negative trends, is not straightforward. Some of the main underlying barriers which have limited—and still are limiting—the production and consumption of millets are (1) Lower or near absence of production support when compared to the support enjoyed by other crops, (2) Near lack of reach of improved methods of production and technologies, (3) Lack of appropriate post-harvest processing technologies for small millets except finger millet, (4) Competition from other market friendly remunerative crops, (5) Changes in preference patterns in consumption moving away from them (Sanskritisation), mainly due to inclusion of only rice and wheat into the Public Distribution System (PDS), (6) Lack of public procurement and marketing support, (7) Absence of public or private funded promotion of millets as a nutritious food category, and (8) Strong industrial demand and consequent attractive farm gate prices crowding out consumption in the area of production.

Amongst the causes for crisis of millets, historical policy neglect of these crops is an important one. It can be seen that many of the barriers listed above emerge from such policy neglect. Without addressing the policy related barriers not much progress can be made in the promotion of production and consumption of millets. Present-day willingness of policy makers to focus on millets is encouraging, but caution is needed in the design and implementation of enabling measures. While an equal-level playing field should be created for millets in all respects, this does not necessarily mean replication of monocropping with improved variety/hybrid and fertilisers promotion strategy as employed for wheat and paddy. As noted earlier, millet cropping systems are part of diverse rainfed ecosystems; they need custom-made location specific approaches. The purpose of this paper is to contribute towards better-informed policy and more effectively designed implementation mechanisms related to millets to achieve greater public welfare.

What are the existing policies that explicitly target millets and millets farmers?

Only limited policies and schemes explicitly include millets. There are no exclusive Government schemes, projects or programs for small millets. Of the available schemes, the most important ones are **Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP)** as part of **Rashtriya Krishi Vikas Yojana” (RKVY)**, **Rainfed Area Development Programme (RADP)** as part of **Rashtriya Krishi Vikas Yojana” (RKVY)**, and **Integrated Cereals Development Programmes in Coarse Cereals based Cropping Systems Areas (ICDP-CC)** under **Macro Management of Agriculture(MMA)**. There is lot of variation across the states on how they utilise these opportunities for promoting millets. Further most of the states usually focus on sorghum, pearl millet and finger millet and leave out many of the small millets while implementing these schemes.

Of the schemes mentioned, INSIMP is the only comprehensive initiative to support millets. Being in its first year, it has faced many starting problems. This scheme is expected to continue in the years to come. It is too early at the moment to draw conclusions about this new scheme, but some preliminary remarks can be made. In a positive light INSIMP can be seen as an expression of the mounting concern over the state of millets and as first attempt to put forward a comprehensive national strategy for millets promotion. While the aims of INSIMP appear to be far reaching, it suffers from lack of causality and balance between its different components, raising doubts about the truly integrated nature of the scheme. Particularly there is poor focus on promotion of millets consumption. In a similar vein, the interventions proposed and implementation modalities appear quite similar to regular agricultural schemes focusing on inputs supply, even though an increasing number of authorities are underlining the importance of new approaches to rainfed farming. The present scheme can be seen as a kind-of pilot programme than as a full-fledged policy, meaning that space exists for elaboration and improvement.

In all the other schemes the state has options to include millets and so there is a lot of difference in implementation across the states. Besides these schemes, there are many state-level schemes on various aspects like crop insurance, supply of micro-nutrients, and seed production, which include millets as one crop category. As mentioned earlier, even if millets are included under these schemes, most of the small millets are passed over.

While there are a countable number of policy initiatives for promoting production of millets, there is almost no scheme or policy initiative in place for promoting consumption. Most of the public food programs do not include millets, except for the inclusion of finger millet in ICDS in a few states. The **National Food Security Bill (NFSB)**, which is pending final adoption

at the time of this writing, is expected to change this scenario by a large measure. The present version of the Bill proposes inclusion of millets into the PDS under the heading of 'coarse grains'. Millets in the PDS is not a new idea: According to the Ministry of Consumer Affairs, Food and Public Distribution website, coarse grains have already been made available under the PDS at 50% of economic cost for BPL families, 70% for above poverty line (APL) families and at Rs 200 per quintal for AAY families in certain states.² Even earlier singular state-level initiatives have been undertaken to include millets into welfare schemes. However they do not appear to have been successful, primarily due to negative social connotations with these grains. Such experiences underline the importance of raising awareness and building a positive image, particularly in areas where millets are perceived as inferior grains. Many details remain to be specified under the NFSB and much regional work will need to be done to achieve feasible models for millets inclusion. Here also there is possibility of unduly side-lining small millets, so necessary design and implementation caution should be taken.

Components for a comprehensive millets development strategy³

While attention for millets is increasing, what they still miss is a comprehensive, integrated development strategy that simultaneously addresses production, demand, and research on an extensive, though location-sensitive scale. Chapter IV proposes components for such strategy and provides specific recommendations to central and state government departments.

To address fully the issues at stake, the aforementioned development strategy should at least contain the following explicit aims:

1. Increasing demand for and consumption of all millets throughout the country.
2. Increasing production and productivity of all millets in a sustainable way, starting by reversing the decline of area under millets and restoring them to year 2000 levels.

The strategy should furthermore take account of a number of nuances that would allow it to produce optimal results. First, substantial focus should go out to small millets and their particular requirements. Second, as rainfed farming tends to depend heavily on natural resource quality, productivity is to be enhanced through methods which improve local agro-ecological conditions. Third, measures should be sensitive to the multiple uses of millets; as home consumption, livestock feed and commercial crop and take care of potentially

² Ministry of Consumer Affairs, Food and Public Distribution, [web](#)

³ Refer to Chapter 4 for references

disruptive effects to any of the uses. Fourth, while addressing demand-side issues, it should differentiate between three types of consumption: welfare-scheme derived consumption, market-based consumption, and harvest-based consumption (for millets cultivating households). Fifth, benefits should be extended to all farmers engaged in millets production regardless of the district. Finally, the strategy should be as decentralized as feasible to ensure maximum adaptation to local conditions.

Particular measures in the strategy could include:

Production side

- **Support for soil health improvement** measures with millets farmers explicitly recognized as group entitled to such support.
- **Evolving, demonstration and support for location specific package of practices (PoPs)** for all millets, with special focus on small millets inclusion.
- **Support for seed** production following a two-pronged approach, one in the lines of large scale organized seed channels for generally established and proven varieties and another involving local seed banks for niche varieties grown in specific areas.
- **Support for selective mechanization** covering various activities, especially for weeding, harvesting, threshing and dehulling. Implements should improve labour productivity mainly at those critical moments in the production process in which labour is scarce.
- **Support for drying and threshing yards:** The need for this is common to various crops and such yards built under existing general agricultural schemes are utilized by millet farmers. One could imagine that priority areas for development of such infrastructure are determined on the basis of millets cultivation. Such infrastructure will improve the effectiveness of dehulling and the quality of dehulled grains by reducing the incorporation of impurities.
- **Financial support for small-scale millets cultivators** (primarily for home consumption) who employ ecologically sound or organic-equivalent farming practices and maintain on-farm biodiversity.
- **Organising procurement** of millets all millets-cultivating districts based on a relevant intervention price (MSP).
- **Support for marketing** initiatives aiming to provide millets farmers with a higher income share for their produce.

Demand side

- Inclusion of all millets into the PDS and menus of various food-based welfare schemes implemented at state level.
- Support for improvement and dissemination of post-harvest processing technology addressing needs at different magnitudes:
 - i. Support for small processing units within a radius of five km from the village
 - ii. Support for production cum processing cluster
 - iii. Support for ready-to-eat millet food entrepreneurs
- Government sponsored awareness raising programs focusing on three elements:
 - i. Consumption promotion campaigns through mass media coverage
 - ii. Integration of information on millets into education curricula
 - iii. Spreading information amongst farmers and other potential beneficiaries of the support offered through the strategy.

Research

In the case of millets and rainfed agriculture as a whole it is of vital importance that research departs from the socio-economic and agro-ecological realities as they exist on the ground by following participatory research approaches, that small millets are systematically included into research efforts, and that clear concepts are elaborated for integrated sustainable farming methods which are replicable, sufficiently adaptable, and manageable (in the sense of knowledge requirements and cost).

Special initiatives for backward and tribal regions

A set of initiatives covering the entire spectrum of production, demand, and research should be designed and launched for each designated backward and tribal region.

Implementation modalities

- Expanding IMSIMP or replacing it with a 'Mission on millets', as suggested by the planning commission working group, for making integrated implementation of the above mentioned strategy across various ministerial departments.
- Innovation on forms of cooperation with civil society organizations (e.g. through public-private partnerships) to implement decentralized elements of the strategy.

Roles for RESMISA project

Based on the above findings, authors of this paper believe that, from a policy perspective, civil society can most valuably contribute to the provision of input into the Food Security Bill, particularly concerning the inclusion of millets into the PDS, and to provide recommendations for the improvement of INSIMP's conceptual framework and implementation practice.

The RESMISA project itself will undertake research on the following topics to contribute its share to the enhancement of millets production and consumption:

- Procurement procedures and infrastructure necessary to ensure smooth and safe millets supply through the PDS and the related cost implications when compared to existing grains.
- Market research on the uptake of millets if provided under the PDS, with differentiation between various categories of consumers.
- Case study for Tamil Nadu about the cost implications of including millets into ICDS schemes.
- Scoping study on the feasibility of introducing millets in the public food programs.

Chapter I - Status of Millets in India

1.1. Millets: General trends

'Millet' is a collective name used to describe a number of different small-grained cereal grasses. Although millets do not derive from one plant species, they do share consistent common features. Millets are usually subdivided into 'large millets' (sorghum and pearl millet) and 'small millets' (finger-, barnyard-, little-, kodo-, foxtail- and proso millet). Finger millet is often mentioned separately from other small millets. While the paper deals with all millets, 'small millets' are of special concern. The main millet crops cultivated in India are listed in Table 1.

Table 1: Main millet crops cultivated in India⁴

Millet crops	Vernacular names	Top 5 states in terms of total production plus Tamil Nadu and all-India (Production in lakh tonnes) ⁵
Pearl millet	<i>Bajra, Bajri, Sajja, Sajje, Cumbu</i>	Rajasthan (42.83), Uttar Pradesh (13.02), Haryana (10.79), Gujarat (9.61), Maharashtra (6.62), <i>Tamil Nadu (0.84), India (88.87)</i>
Sorghum	<i>Jowar, Jondhla, Jola, Jonna, Cholam, Juara, Rotla</i>	Maharashtra (35.87), Karnataka (16.29), Madhya Pradesh (5.74), Andhra Pradesh (4.36), Tamil Nadu (2.14), <i>India (72.46)</i>
Finger millet	<i>Ragi, Mandua, Keppai, Kaelvaragu, Nagli, Nachni, Mandiya, Marwa</i>	Karnataka (13.94), Uttarakhand (1.93), Tamil Nadu (1.70), Maharashtra (1.25), Andhra Pradesh (0.52), <i>India (20.40)</i>
Barnyard millet	<i>Koni dhan, Shyama, Banti, Sanwa, Oodalu, Khira, Swank, Oodalu, Kutdiravali</i>	Uttarakhand (0.91), Arunachal Pradesh (0.16), Nagaland (0.14), Madhya Pradesh (0.12), Uttar Pradesh (0.07), <i>Tamil Nadu (0.03), India (1.65)</i>
Little millet	<i>Gajrao, Kuri Kutki, Sava, Same, Save, Sama, Sava, Suan, Samalu, Swank, Sama</i>	Madhya Pradesh (0.37), Tamil Nadu (0.32), Karnataka (0.20), Chhattisgarh (0.12), Jharkhand (0.11), <i>India (1.42)</i>
Kodo millet	<i>Kodra, Kodon, Harika, Varaku, Kodra, Kodua, Arika, Varagu</i>	Madhya Pradesh (0.50), Chhattisgarh (0.17), Tamil Nadu (0.12), Maharashtra (0.08), Uttar Pradesh (0.07), <i>India (0.98)</i>
Foxtail / Italian millet	<i>Kaon, Kang, Kakun, Kangni, Navane, Thena, Rala, Kangam, Kanghzu, Kangani, Korra, Tenai</i>	Andhra Pradesh (0.17), Karnataka (0.14), Arunachal Pradesh (0.05), Maharashtra (0.05), Rajasthan (0.05), <i>Tamil Nadu (0.01), India (0.58)</i>
Proso millet	<i>Cheena, Cheno, Bari, Baragu, Vari, Bachari, Panivaragu</i>	Maharashtra (0.17), Bihar (0.05), Orissa (0.01), Rajasthan (0.01), Tamil Nadu (0.004), <i>India (0.26)</i>

⁴For more information on millets in India see for instance: Proceedings of the First International Small Millets Workshop, Bangalore, Small Millets in Global Agriculture, 1986 & Millets Network India.

⁵For sorghum, pearl millet and finger millet, production during 2008-09 given; for other small millets, mean production during 2001-06 given.

Trends in area, production and productivity

Over the last decades much has changed with regard to millets. Table 2 presents a snapshot of the trends in area, production, and productivity of sorghum, pearl millet, finger millet, and other small millets between 1961 and 2009.

Table 2: Area, production and productivity of millets⁶

State	Crop	Area (lakh ha)			Production (lakh tonnes)			Productivity (kg/ha)		
		1961-66 <i>mean</i>	2002-07 <i>mean</i>	2008-09 <i>annual</i>	1961-66 <i>mean</i>	2002-07 <i>mean</i>	2008-09 <i>annual</i>	1961-66 <i>mean</i>	2002-07 <i>mean</i>	2008-09 <i>annual</i>
India	<i>Sorghum (kharif)</i>	112.44	40.60	28.92	56.24	41.78	30.52	526	1029	1055
	<i>Sorghum (rabi)</i>	69.11	49.12	46.39	32.24	29.66	41.94	456	604	904
	Sorghum total	181.55	89.72	75.31	88.48	71.44	72.46	487	796	962
	Pearl millet	114.27	93.52	87.53	39.51	81.85	88.87	346	875	1015
	Finger millet	25.48	14.69	13.81	18.88	19.02	20.40	741	1295	1477
	Small millets	46.77	11.13	9.05	18.89	4.90	4.45	404	440	491
Tamil Nadu	Finger millet	3.30	1.11	0.90	3.24	1.69	1.70	981	1529	1887
	Small millets	5.03	0.53	0.32	3.93	0.46	0.29	782	857	918

The following developments appear as most striking:

- For all millets there is a **dramatic decrease in cultivated area**: 80% for small millets, 46% for finger millet, 59% for sorghum, and 23% for pearl millet.
- Dramatic also is the **decrease in total production of small millets**: 76% for India.
- Noteworthy are the significant **productivity increases** for all millets except small millets (excluding finger millet). Productivity of small millets has remained almost stagnant.
- Even though total production has increased for pearl millet, finger millet and Rabi sorghum as compared to 1960s levels, **per capita availability of all millets has suffered heavily** from the decline in cultivated area.⁷
- Interesting is the fall in area and production of Kharif sorghum despite high productivity increases.⁸

⁶ Table adapted from Government of India, Directorate of Millets Development, Status Paper on Millets, 2010

⁷ Indian population in 1960: 435 million and in 2009: 1.17 billion

⁸ ICRISAT mentions that kharif sorghum is produced from hybrids with poor grain quality with lower market prices.

Trend in Tamil Nadu

Table 3 shows the trend in millets cultivation in the last decade. It can be seen that among the small millets, there is considerable presence of finger millet, followed by little millet. The presence of other small millets is meager. While there has been a decline in area of all the millets, there is significant increase in area under maize. This is mainly due to the strong industrial demand and the consequent stable attractive prices. The decline in area was not compensated by increase in productivity among the millets. Here, too, maize is an exception with large increase in productivity.

Table 3: Recent trends in area, production and productivity of millets in Tamil Nadu

Name of the Crop	2001-02			2009-10			Change over one decade		
	Area in lakh ha	Production in lakh MT	Productivity in kg/Ha	Area in lakh ha	Production in lakh MT	Productivity in kg/Ha	Area in lakh ha	Production in lakh MT	Productivity in kg/Ha
Sorghum	3.172	2.748	866	2.385	2.22	931	-0.79	-0.53	64.49
Pearl millet	1.25	1.529	1223	0.544	0.827	1520	-0.71	-0.70	297.02
Maize	0.729	1.184	1624	2.442	11.381	4661	1.71	10.20	3036.38
Finger millet	1.249	2.353	1884	0.823	1.609	1955	-0.43	-0.74	71.14
	In Ha	In MT	In kg/Ha	In Ha	In MT	In kg/Ha	In Ha	In MT	In kg/Ha
Foxtail millet	1411	652	462	1074	517	481	-337	-135	19
Kodo millet	11345	16330	1439	5930	8805	1485	-5415	-7525	45
Little millet	48076	33060	688	22292	19682	883	-25784	-13378	195
Barnyard millet	4382			3514			-868		
Proso millet	695			331			-364		

Source: Department of Agriculture, Tamil Nadu

Trends in consumption

As with cultivated area, a steep decrease in the consumption of all millets can be observed. Tables 4 and 5 provide some trends for sorghum, pearl millet and finger millet.

Table 4: Consumption trend for sorghum and pearl millet 1972 - 2005⁹ in rural and urban areas

	Rural	Urban
Sorghum	Decline by 70%: from 19.1 to 5.2 kg/capita/year	Decline by 68%: from 8.5 to 2.7 kg/capita/year
Pearl millet	Decline by 60%: from 11.5 kg to 4.6 kg/capita/year	Decline by 62%: from 4 kg to 1.5kg/capita/year

Table 5: Comparative consumption trends of selected grains¹⁰ in three states

State	Year	Quantity of grains in Kg per month				
		Rice	Wheat	Sorghum	Pearl millet	Finger millet
Andhra Pradesh	1987-88	11.56	0.15	1.50	0.21	0.55
	1993-94	11.65	0.19	0.99	0.09	0.34
	% change	0.78	26.67	-34.00	-57.14	-38.18
Karnataka	1987-88	5.15	0.82	4.79	0.18	2.75
	1993-94	5.46	0.86	4.03	0.12	2.54
	% change	6.02	4.88	-15.87	-33.33	-7.64
Tamil Nadu	1987-88	9.76	0.25	0.55	0.66	1.14
	1993-94	10.44	0.34	0.15	0.25	0.63
	% change	6.97	36.00	-72.73	-62.12	-44.74

No adequate comparative figures are available for small millets other than finger millet, but considering the enormous decrease in their production, a steep fall in consumption can be presumed. The overall fall in demand is often attributed to factors like changing food habits, growing urbanization, increased incomes, competition from other crops, millets being culturally stigmatized as ‘poor man’s crop’, the time-consuming and back breaking dehulling process, especially for five small millets and the lack of ‘modern’ millet-based foods in the market. Furthermore, with only rice and wheat being supplied through the Public Distribution System (PDS), the imperative and economic rationale of including millets into the food basket is impaired. The latter can be seen as a primary reason for the consumption decline.¹¹

At the same time, the general statistical decline misrepresents the crucial importance of millets as primary food grains for numerous farmers, particularly in the millet cultivating regions. It is not uncommon for millets to constitute 50% of total grain consumption with annual intakes of around 60 kg per capita.¹² Parallel to the falling consumer demand for millets in their traditional form, new kinds of demands are rising, particularly in the baked products sector (biscuits, snacks etc.) and as niche health foods. For sorghum and pearl

⁹ ICRISAT, The Sorghum and Pearl millet economy of India, 2011

¹⁰ Government of India, Directorate of Millets Development, Status Paper on Millets, 2010 – from Directorate of Sorghum Research (DSR) study: “Macro and Micro Level Changes in Consumption of Nutritious Cereals in India”

¹¹ Amongst others: Dr. Seetharam

¹² ICRISAT, The Sorghum and Pearl millet economy of India, 2011

millet new demands are also coming from poultry and cattle feed producers and the potable alcohol industry.¹³

Productivity gaps

Even though sorghum, pearl millet and finger millet have seen significant productivity increases, wide productivity gaps remain when a comparison is made between the state average yield (SAY) and outputs from frontline demonstrations (FLD) organized under the Department of Agriculture and Cooperation (DAC). Yield gaps vary between states and per crop, but apply to ‘large’ and ‘small’ millets alike. These findings shed light on the enormous potential for improvement, as well as the great challenge that lies ahead.

Table 6: Indicative yield gaps for various millets¹⁴

State	Yield gaps <i>SAY mean of 2001-10 (2005-10 for small millets) compared to FLD</i>					
	Finger millet	Kodo millet	Foxtail millet	Little millet	Sorghum (rabi)	Pearl millet
Andhra Pradesh	66%		740%		180%	
Karnataka	64%		482%	30%	40%	119%
Odisha	186%			110%		
Tamil Nadu	53%	170%		100%	318%	69%

1.2. Millets: Socio-economic context

Merely establishing a general downward trend for a crop does not yet justify according it special attention, certainly when a multitude of other socio-economic areas are in need of attention. The question whether millets are relevant for public welfare needs to be answered. In the recent years concern for millets has been on the rise within Indian society and this has, together with substantive work done in the past, yielded a considerable body of evidence consisting of field experiences and academic literature from non-governmental and other sources showing the existence of valid linkages between millets, poverty reduction, malnutrition alleviation and rural development. These linkages are discussed below.

Millets: ‘Miracle grains’

Millets share certain common characteristics which make them socially important crops:

¹³ ICRISAT, The Sorghum and Pearl millet economy of India, 2011

¹⁴ Government of India, Directorate of Millets Development, Status Paper on Millets, 2010

- Millets are **drought resistant** and require **few external inputs**. They can be grown under harsh circumstances in arid and semi-arid environments requiring less water than many other cereals and are often able to cope with poor soils. For this they are sometimes called ‘miracle grains’ or ‘crops of the future’.
- Millets are highly **nutritious** (see following section).
- Millets provide **food and livelihood security** to millions of households, in particular, to small and marginal farmers and inhabitants of rainfed areas, especially in remote tribal areas. Millets are usually cultivated as **dual-purpose crops** providing both food grain for human consumption and straw for animals, contributing to economic efficiency in mixed farming systems. Millets are the staple crops in some rainfed regions.
- Numerous varieties of millets exist with differentiated cultivation and taste characteristics, including hybrids, improved varieties, and local ones. This especially applies to local varieties which are predominantly conserved on-farm. Millets are frequently cultivated with other millet varieties, pulses, beans, oilseeds, etc. as part of the mixed farming system. The rich crop and varietal diversity of millet based cropping systems foster and enrich **agro-biodiversity** of their ecosystems.¹⁵
- Millets are C4 **carbon sequestering crops** contributing to the reduction of CO₂ in the atmosphere, besides being water efficient.¹⁶ For this they deserve to be cherished. They may also become entitled for benefits under (international) climate change mitigation mechanisms like Payment for Environmental Services (PES) schemes. Paddy, on the contrary, is one of the major contributors to climate change through methane emissions¹⁷ and wheat, a thermally sensitive crop, is vulnerable for reduction in its cultivation range if average temperatures increase as part of climate change.
- Millets have been cultivated for around 3,000 years making them an integral part of the **culture and history** of India. References to millets can be found in mythology, poetry, religious practices, ayurvedic recipes, and in numerous dishes. Millets are not only food grains; they are still intricately interwoven in the socio-cultural fabric of numerous regions.

¹⁵ On the importance of biodiversity: see Annexure III.

¹⁶ Osborne, Beerling, University of Sheffield, Nature's green revolution: the remarkable evolutionary rise of C₄ plants, 2005

¹⁷ International Panel on Climate Change (IPCC), Working Group III: Mitigation, Agriculture and energy cropping, [web](#)

Millets vs. nutrition

Poverty and the malnutrition dimension of poverty

Poverty is still a widespread reality in India, even after years of high economic growth. Table 7 compares poverty estimates put forward by different national and international players. They indicate a high incidence of poverty even when various methods of measurement are followed.

Table 7: Comparative poverty estimates for India

Tendulkar Committee method Official approach of the Government of India (GOI) ¹⁸	Share of population below poverty line (BPL) India: 37% (more than 400 million people); rural 42% and urban 26% 2005-2010: poverty decline of 1 percentage point/year ¹⁹ Tamil Nadu: Rural 38% and urban 20%
Saxena Committee ²⁰	50% of Indian population BPL
Arjun Sengupta ²¹	77% of Indian population BPL
World Bank ²²	<ul style="list-style-type: none">* 42% of Indian population below international poverty line of \$1.25/day in Purchasing Power Parity (PPP) (= Rs 21.6/day in urban areas, Rs 14.3 in rural areas for 2005 price levels)* 1981-2005: <i>decrease</i> in poverty share from 60% to 42%, <i>increase</i> of total population below poverty line from 421 million to 456 million* 80% of Indian population lives below the \$2/day line²³
United Nations Development Program (UNDP) ²⁴	54% of the Indian population (or 612 million people) are poor following multi-dimensional poverty Index elaborated by Oxford University

Nutritional status is another indicator of human well-being which has only recently come to the forefront of attention. Nutrition directly affects essential aspects of human development including physical and cognitive growth and susceptibility to disease. Malnutrition, encompassing both under-nourishment and over-nourishment, has profound impacts for the individual and society at large. For India, different sources suggest an alarming prevalence of malnutrition.

¹⁸ Report of the Expert Committee on National Food Security Bill, 2011

¹⁹ Government of India, Planning Commission, An approach to the Twelfth Five Year Plan (2012-27) – based on NSS Survey 2009-10

²⁰ Report of the Expert Group to Advise the Ministry of Rural Development on the Methodology for Conducting Below Poverty Line (BPL) Census for 11th Five Year Plan, 2009

²¹ National Commission for Enterprises in the Unorganised Sector, Government of India, Report on Conditions of Work and Promotion of Livelihoods in the Unorganised Sector, 2007

²² World Bank, New Global Poverty Estimates – What it means for India, [web](#)

²³ The Times of India, One-third of world's poor in India, [web](#) 27-8-2008

²⁴ UNDP, Human Development Report 2011

Table 8: Malnutrition in India

National Family Health Survey 2005-06²⁵ & Census 2011²⁶	40% of children under three are underweight; 79% of children between 6-35 months are anemic; 35% of women have below normal body mass indexes; 55% of women are anemic; Deterioration in nutrition-based gender discrimination in the 0-6 year age group.
Global Hunger Index²⁷	21% of the entire population was undernourished in 2005-07 (up from 17% in 1995-97). 44% of children under the age of five are underweight, which together with Bangladesh and Timor-Leste is the highest percentage in the world.
UN Food and Agriculture Organization (FAO)²⁸	48% of children suffer from stunted growth (stunted growth, a manifestation of malnutrition, often leads to irreversible effects like reduced body size, underdevelopment of vital organs and reduced brain size with the resulting probability of impaired intelligence)
Naandi Foundation²⁹	59% of children suffer from stunted growth, half of these are severe cases 42% of children underweight (decreased from 53% in 7 years' time)
World Bank³⁰	Child malnutrition is responsible for 20 % of the overall disease burden in India, around 50 % of all child deaths and more than 50 % of child deaths from major diseases; 75% of preschool children suffer from iron deficiency; 57% from vitamin A deficiency; 85% of districts show endemic iodine deficiency; Malnutrition is strongly associated with socioeconomic and demographic characteristics with highest incidences in rural areas, with women and marginalized social groups (underweight reaches 60% in the lowest wealth strata).
Madras Diabetes Research Foundation	51million people suffer from diabetes which is expected to increase to 87 million by 2030 (the increasing consumption of highly polished rice grains and decreasing consumption of coarse cereals contributes to this trend).

Millets as one of the means to address food and nutritional security

Ensuring food security for the nation is a major policy goal. The contemporary definition states that food security is achieved *“when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life”*.³¹ Understanding of food security has broadened beyond the availability and access to ‘just’ food to encompass nutrition as well. Stagnating productivity growth and production of rice and wheat, which make up the backbone of the food system in India, endangers future food availability.

²⁵ Report of the Expert Committee on National Food Security Bill, 2011

²⁶ Government of India, Planning Commission, An approach to the Twelfth Five Year Plan (2012-27)

²⁷ IFPRI et al., Global Hunger Index 2011

²⁸ FAO, India Brief

²⁹ Naandi Foundation, Hunger and Malnutrition Survey 2011 (conducted in 100 districts)

³⁰ World Bank: Health, Nutrition and Population, “India’s Undernourished Children”, 2005

³¹ Definition of 1996 World Food Summit in: FAO, Trade Reforms and Food Security, 2003

More millets in the food system will contribute to greater grain availability not only in terms of quantity, but also quality. The superior nutritional characteristics of millets compared to other major cereals are long-known and documented. Millets contain high amounts of proteins and fibre, B-complex vitamins including niacin, thiamine and riboflavin, the essential sulphur-containing amino acid methionine, lecithin, and some vitamin E. They are rich in iron, magnesium, calcium and potassium. The seeds also contain phyto-nutrients, including phytic acid, which is believed to lower cholesterol, and phytate, which is associated with reducing risk of cancer.

Table 9: Comparative table of approximate nutrient contents of various cereals³²

Cereal (per 100g)	Protein (g)	Carbo hydrates (g)	Fat (g)	Crude fibre (g)	Mineral matter (g)	Calcium (mg)	Phosphorus (mg)	Iron ³³ (mg)
Sorghum	10.4	72.6	1.9	1.6	1.6	25	222	5.4
Pearl millet	11.6	67.5	5.0	1.2	2.3	42	296	11.0
Finger millet	7.3	72.0	1.3	3.6	2.7	344	283	3.9
Proso millet	12.5	70.4	1.1	2.2	1.9	14	206	2.9
Foxtail millet	12.3	60.9	4.3	8.0	3.3	31	290	2.8
Kodo millet	8.3	65.9	1.4	9.0	2.6	27	188	1.7
Little millet	8.7	75.7	5.3	8.6	1.7	17	220	9.3
Barnyard millet	11.6	74.3	5.8	14.7	4.7	14	121	18.6
<i>Maize</i>	<i>11.5</i>	<i>66.2</i>	<i>3.6</i>	<i>2.7</i>	<i>1.5</i>	<i>20</i>	<i>348</i>	<i>2.7</i>
<i>Wheat</i>	<i>11.8</i>	<i>71.2</i>	<i>1.5</i>	<i>1.2</i>	<i>1.5</i>	<i>41</i>	<i>306</i>	<i>3.5</i>
<i>Rice</i>	<i>6.8</i>	<i>78.2</i>	<i>0.5</i>	<i>0.2</i>	<i>0.6</i>	<i>10</i>	<i>160</i>	<i>1.8</i>

Note: Figures in bold indicate the highest nutrient content among the crops compared; Non millet crops compared are given in italics.

It appears obvious that millets, which tend to leave wheat and rice far behind in terms of nutrient contents, could contribute significantly to an increased intake of micronutrients, making millet consumption as a way to address nutritional issues.³⁴ This is the case even though the comparison is made with brown rice, which is considered better in nutrition than the white rice. It is to be noted that specific millet crop is rich in specific nutrient making it amenable for specific nutrient related preparations. Given the fact that nutrient deficit is a more pressing issue rather than the deficit in calories in India, the relevance of millets in the food system becomes eminent.

³² National Institute of Nutrition, Hyderabad

³³ Iron content is taken from: Hulse, et al., 1980; United States National Research Council/National Academy of Sciences, 1982; USDA/HNIS, 1984. The rice mentioned is brown rice.

³⁴ Nutrient content, while inherent to each grain, is influenced by the extent and type of processing. Nutritious levels in ready-made foods could therefore be significantly lower than in the unprocessed grain. Attention to this aspect is required when elaborating policies. Likewise, there are claims that although millets contain more nutrients, their contents are less bio-available to the human body than nutrients from rice and wheat. Other claims counter these postulates. Unfortunately, given insufficient historical attention to these cereals, many questions are left unanswered requiring renewed scientific efforts.

Millets as part of rainfed agriculture

Millets are grown mainly under rainfed conditions in India. Many studies indicate that rainfed agriculture development in India will be the linchpin for inclusive growth of the nation, as large part of the poor rural households live in rainfed agriculture regions. Economic findings show that agricultural growth has the greatest poverty reduction potential compared to any other (urban) sector. Agriculture can stimulate local consumption and production linkages, thereby fuelling local economies.³⁵ In a recent report the Indian Council for Agricultural Research (ICAR) has reconfirmed the power of agricultural productivity in reducing rural poverty: a 1% productivity increase reduces poverty by 0.65%.³⁶ One of the historically underemphasized areas within agriculture is rainfed agriculture. Despite India's significant investments in irrigation, around 60% of total area remains rainfed (approx. 50% for Tamil Nadu), responsible for about 40% of national food supply.³⁷ Given physical and institutional limits to the indefinite spread of irrigated systems, rainfed farming will remain a central and conspicuous feature of the national agricultural landscape.

Rainfed areas tend to have lower productivity, higher yield instability and house the majority of the poor and marginal farmers.³⁸ At the same time, considering the yield gaps prevalent at this day, they can be seen as hiding vast potential. These regions have recorded high rates of productivity increase in the past (and for certain crops up to present day),³⁹ making the prospect of closing yield gaps a realistic option. From this standpoint, rainfed areas are key to the fight against poverty and marginalization, to securing long-term national and regional food supply and to tackle malnutrition. It therefore makes full sense to prioritize these areas within the national development strategy. Considering the characteristics of millets as rainfed staple crops, no credible and effective strategy for rainfed agriculture development could do without their promotion as central pillars of the effort.

Although presumably feasible, addressing rainfed agriculture is by no means an easy task. Rainfed areas are highly diverse covering a wide range of climatic, agro-ecological and socio-cultural regions with different kinds of cropping patterns, farmers' preferences, socio-

³⁵ For instance: World Bank, Agriculture for Development: World Development Report 2008

³⁶ ICAR National Centre for Agricultural Economics and Policy Research, Instability and Regional Variation in Indian Agriculture, 2011

³⁷ Planning Commission, Government of India, 11th 5 Year Plan 2007-12, Volume III, 2008

³⁸ Sharma, et al., Realizing the Potential of Rainfed Agriculture in India

³⁹ Same as previous note & XII Plan Working Group, Final Report on Natural Resource Management and Rainfed Farming., 2011

economic indicators and crop potentials, requiring more subtle and location-specific approaches.

Barriers to increase in millets production and consumption

Based on the considerations above, increased production and consumption of millets is likely to result in various societal benefits. Finding ways to achieve increase in production and consumption of millets, given the negative trends, is not straightforward. To elucidate the areas requiring attention, some of the main underlying barriers which have limited and still are limiting the production and consumption of millets are listed.⁴⁰

- Lower or near absence of production support in terms of input supply and subsidy (seed and nutrients), irrigation support, and marketing support, when compared to the support enjoyed by other crops. This is particularly so for small millets.
- *Near lack of reach of improved methods of production and technologies like improved varieties to small millet farmers (except finger millet in certain pockets).*
- *Lack of organised seed distribution mechanisms to supply good quality seeds for small millet crops in accordance with farmers' preferences.*
- *Lack of appropriate post-harvest processing technologies for small millets except finger millet.*
- Competition from other market friendly remunerative crops.
- Changes in preference patterns in consumption which resulted in inadequate appreciation of millets and moving away from them (Sanskritisation). This is mainly due to inclusion of only rice and wheat into the Public Distribution System (PDS). This in turn resulted in drastic decline in consumption even where there is production. Lack of public procurement and marketing support.
- *Inadequate research on production improvement and food product promotion for small millets.*
- Absence of public or private funded promotion of millets as a nutritious food category.
- Some of the millet crops like little millet and sorghum got transformed in a short period from a food crop to a commercial crop due to strong industrial demand and consequent attractive farm gate prices; but this phenomenon has crowded out consumption in the area of production.
- *Lack of available information primarily about small millets, which reduces the ability to introduce policy measures.*

⁴⁰The barriers specific to small millets are given in italics.

1.3. Conclusion: Why is policy support required for millets?

A brief attempt was made to highlight certain features of millets by placing them in the contexts of poverty reduction, national food and nutritional security, rainfed farming and rural development. Other aspects closely related to millets like cultural identity, agrobiodiversity conservation and climate change mitigation can be added as well. Millets are staple crops with numerous beneficial characteristics, quite capable of being put at the heart of an integrated, inclusive development strategy for rainfed rural areas.

Millets are not only important for rural livelihoods, but for urban ones as well given their nutritional qualities. Improved nutrition is not only an outcome of economic growth (even though the two are imperfectly correlated),⁴¹ but a precondition for it as well. Improved nutrition weakens the transmission of poverty from one generation to the next.⁴² One report suggests that micronutrient deficiency alone costs India US\$2.5 billion annually.⁴³ Millets provide the much needed food and fodder security especially to the vulnerable groups. It is pertinent to note that food security at national level will only be effective when regionally important crops are allowed to play their due role in meeting food and fodder needs of the region and thus avoiding the undesirable dependence on other regions as well as a fewer number of food crops for meeting food needs.

Although demand for millets has been declining throughout the years, this may be more attributable to circumstantial factors than conscious choice. A recent survey found 79% of respondents willing to include millets into their food basket.⁴⁴ Even so, millets and primarily small millets are in a situation of crisis in India. Amongst the causes for this crisis, historical policy neglect of these crops is an important one. It can be seen that many of the barriers listed in the previous section emerge from such policy neglect. So without addressing the policy related barriers much progress cannot be made in promotion of production and consumption of millets.

Present-day willingness of policy makers to focus on millets is encouraging, but caution is needed in the design and implementation of enabling measures, as good intentions may

⁴¹ Higher incomes often result in shifts in consumption patterns towards non-food items, increased consumption of highly processed foods and 'empty calories' like sugars and increased fat intake.

⁴² International Assessment on Agricultural Knowledge, Science and Technology for Development (IAASTD), Global Report, 2009

⁴³ World Bank: Health, Nutrition and Population, "India's Undernourished Children", 2005

⁴⁴ India Together, Adding Millets to the Basket, [web](#), 31-12-2011 – a study by IIT-Delhi and the University of Allahabad

result in disappointment when policies do not achieve intended results. While an equal-level playing field should be created for millets in all respects, this need not necessarily mean replication of monocropping with improved variety/hybrid and fertilisers promotion strategy as employed for wheat and paddy. As noted earlier millet cropping systems as part of diverse rainfed ecosystems and so need of custom-made location specific approaches.

The purpose of this paper is to contribute towards better-informed policy and more effectively designed implementation mechanisms related to millets to achieve greater public welfare. In the subsequent chapters an attempt is made to review the existing policies related to millet and to suggest needed policy actions for increasing production and consumption of millets. Suggestions are also made for policy related initiatives under RESMISA project.

Chapter II - Review of Policy on Millets

2.1. Preliminary remarks

If the previous chapter set the stage for why supportive policies are required for millets, the present chapter takes a closer look into the existing policy environment. It presents and analyses policies at national, Andhra Pradesh, and Tamil Nadu levels that are *explicitly* designed for millets or specifically mention millets in their provisions. The main positive aspects and gaps in these policies are identified and, subject to the availability of information, remarks made on implementation practice.

Policies and measures which *implicitly* cover millets in their scope and which can be used to derive support for millets are not discussed in this section. One reason is that, when done consistently, this would involve the review of too large a number of policy documents to be justified under the present effort. The other more substantive reason is that general measures have proven insufficient to ensure a breakthrough for millets. Millets, and particularly small millets, are found to be in such a marginalized position in the socio-economic, political, and technological spheres that targeted policies are required to produce effects of sufficient scale.

A note should be made about the use of the term 'policy'. Policy is a broad concept covering many types of measures emanating from different levels of authority and with different operational implications. This paper primarily covers schemes and programmes which are instruments close to implementation level.

2.2. Existing policies on millets: India and Tamil Nadu

Few policies exist in India specifically designed for millets and millets farmers. Few policies even explicitly include millets into their objectives and provisions. Over the last decades, different national-level initiatives were launched for research on millets encompassing "All-India Coordinated Improvement Projects" and the establishment of millets-specific research institutes and directorates.⁴⁵ But millets never received the same developmental attention as other cereals like rice and wheat. Amongst the reasons for this lack of emphasis on millets are centralised approach for addressing national food security and the optimism that prevailed in past decades about the ability of rice and wheat alone to provide food security

⁴⁵ Like the "All India Coordinated Improvement Projects" for millets (1965), sorghum (1969), pearl millet (1985) and small millets (1986), the Directorate of Millets Development (1971), the International Crops Research Institute for the Semi Arid Tropics (1972) etc.

to the nation. Certain traits of millets also played part, like the yield instability associated with rainfed millets production, the lower shelf life of processed grain and the negative social status of millets as a poor man's crop.⁴⁶

The first national comprehensive scheme for millets development is the **Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP)**, introduced in 2011 under the "National Agriculture Development Programme" (NADP) or "Rashtriya Krishi Vikas Yojana" (RKVY) (*for more on NADP/RKVY see Annexure II*). INSIMP purports to be an integrated scheme by combining different policy components like demonstration, inputs, seed, post-harvest technology, awareness raising, capacity building and research. It extends to all states and union territories and targets all millets (sorghum, pearl millet, finger millet and other five small millets). However, only districts with minimum areas under millets cultivation (10,000 ha for sorghum and pearl millet, 5,000 ha for finger millet and 2,000 ha for other five small millets) are eligible for support. As part of the 2011-12 annual budget, Rs 300 crore has been allocated for the scheme's implementation.⁴⁷

Box 1: INSIMP

This scheme aims to demonstrate the improved production and post-harvest technologies in an integrated manner with visible impact to catalyse increased production of millets in the State. Besides increasing production of millets, the scheme through processing and value addition techniques is expected to generate consumer demand for millet based food products.

INSIMP's main policy components are presented below. More details are available in Annexure I.

- * **Demonstrations** are conducted in districts with minimum identified areas under millets cultivation but where productivity is less than the National Average Yield.
- * **Inputs** are provided in the form of production kits supplied free of charge for maximum 2 ha to all farmers from selected units in selected districts. Kits include micro-nutrients, fungicides, (bio) fertilizers, DAP, urea, potash, pesticides, herbicides, etc. Seeds of improved and hybridized varieties (for 0.4 ha) are distributed as well.
- * **Seed production** is promoted through an incentive for hybrid seeds and High Yielding Varieties (HYVs), of which 75% is passed on to farmers and 25% to seed agencies.
- * **Post-harvest technology** is promoted through the establishment of three national centres for demonstration and training, through the distribution of processing units for various districts and by organizing **capacity building** trainings in post-harvest management.
- * Support is provided for state-initiated **awareness raising campaigns** to stimulate millets consumption.
- * One percent of the funds are made available for different **research** topics.

Tamil Nadu has earmarked Rs 1,051.00 lakh for INSIMP implementation for 2011-12, as shown in the table below. The amount utilised during the year 2011-2012 was Rs 1007.43 lakh.

⁴⁶ Dr. Seetharam

⁴⁷ For more details on INSIMP see agritech.tnau.ac.in/pdf/2011/INSIMP.pdf

Table 10 : Tamil Nadu INSIMP implementation plan 2011-12

S. No.	INSIMP	Unit	Target	Expenditure (Rs lakh)
1	Demonstrations	Ha	23000	630.00
2	Minikit distribution	Nos.	23000	47.50
3	Technical Assistants (TA)	Nos.	52	25.00
4	Trainings / Unit	Nos.	52	130.00
5	Seed production	Qtl	3000	30.000
6	Awareness campaign	Nos.	10	20.00
7	Installation processing units	Nos.	25	168.50
	Total			1,051.00

Source: Department of Agriculture, Government of Tamil Nadu 2011-2012.

Table 11: Seed production

S.No.	Name of the crop	No. of Districts	Minikit distribution	
			Area in ha	Amount in lakh Rs
1	Finger millet	6	1500	15.00
2	Pearl millet	9	1500	15.00
	Total	15	3000	30.00

Source: Department of Agriculture, Government of Tamil Nadu 2011-2012.

Andhra Pradesh has around Rs 1,131.80 lakh allocated for INSIMP with more implementation details available per millet type. For **Karnataka** Rs 2,657.00 lakh and **Odisha** Rs 295.00 lakh were allocated for INSIMP during 2011-12.⁴⁸

Table 12: Andhra Pradesh INSIMP implementation⁴⁹

Component		Rs lakh	Subtotal
Input kits	Sorghum (1000 ha. each)	480.00	
	Finger millet (500 ha. each)	90.00	
	Little millet (200 ha. each)	48.00	
	Foxtail millet (200 ha. each)	40.00	658.00
Seed mini kits	Sorghum (4 kg each)	32.00	
	Finger millet (4 kg each)	6.00	
	Other small millets (4 kg each)	8.80	46.80
Capacity building		110.00	
Seed Production		92.00	
Processing units	Sorghum	80.00	
	Pearl millet	40.00	
	Finger millet	20.00	140.00
Awareness raising			20.00
Administrative expenses + technical services			65.00
	Total		1,131.80

It is too early at the moment to draw overall conclusions about this new scheme, but some preliminary remarks can be made. In a positive light INSIMP can be seen as an expression of

⁴⁸NADP/RKVY, Allocations for 2011-12, [web](#)

⁴⁹DAC list of approved projects 2011-12, Andhra Pradesh, [web](#)

the mounting concern over the state of millets and as first attempt to put forward a comprehensive national strategy for millets promotion. At the same time, certain features of the scheme's design seem less than adequate. While the aims of INSIMP appear to be far fetching, it suffers from lack of causality and balance between its different components, raising doubts about the truly integrated nature of the scheme. Particularly there is poor focus on promotion of millets consumption. In a similar vein, the interventions proposed and implementation modalities appear quite 'business as usual' focusing on inputs supply, even though an increasing number of authorities are underlining the importance of new approaches to rainfed farming.

Table 13: INSIMP budget as share of total allocations under NADP/RKVY and Department of Agriculture and Cooperation (DAC) for 2011-12 and indicative total support under the scheme measured per hectare

INSIMP budget	NADP/ RKVY	DAC	Support per ha for total area under millets cultivation ⁵⁰	Support per ha for area under millets in districts covered by the scheme ⁵¹
National	3.8%	1.8%	Rs 82	
Tamil Nadu	3.2%			Rs 360

The "Dharwad Declaration on Millets" (2011) goes even further by criticizing the basic approach of the scheme as harmful for the millet cultivating environment (e.g. INSIMP is inducing the "hybridization, monocropping and chemicalization of millet cultivation").⁵² Furthermore, limiting support to farmers in selective millet growing districts discriminates negatively against millet farmers in other areas. This could result in the compartmentalization of millets cultivation, which may negatively reflect on the aim of curbing area losses under millets as well as increasing home consumption of these grains. Further budget allocation for the first period of INSIMP is quite meagre when compared to the changes it intends to bring about.

Internal sources admit that INSIMP implementation was very poor in 2011; too few activities were undertaken in relation to allocated resources. The lack of thorough conceptualization of the policy was part of the problem. For instance, one of the policy components provides for the distribution of seeds to farmers. In reality this component could hardly have been implemented given the lack of available seed. To operationalize such action seed production should have been promoted at least two seasons earlier to ensure sufficient stock. Regardless of the initial difficulties, intentions are there for expanding INSIMP to include more policy components and allocate more funding. This means that the present scheme

⁵⁰ INSIMP budget for 2011-12 (300 crore) divided by total area under millet cultivation in India (2009 data)

⁵¹ INSIMP budget for 2011-12 divided by total area of districts proposed for inclusion

⁵² Millet Network of India, Press Release of 18-10-2011

should rather be seen as a kind-of pilot programme than as a full-fledged policy, meaning that space exists for elaboration and improvement.

The **Rainfed Area Development Programme (RADP)** was launched during the year 2011-2012 as a sub scheme of Rashtriya Krishi Vikas Yojana (RKVY) to address the needs of rainfed areas. It existed as a separate program for several years after which it got subsumed under RADP/RKVY in 2011 (*for more on RADP see Annexure II*). It aims to put forward a holistic approach to rainfed area development through the promotion of rainfed farming systems and by focusing on the needs of small and marginal farmers. It promotes integrated farming practices, favours mixed farming systems, minimum soil disturbance, utilization of crop residues and crop rotation. It assists farmers in improving the productivity of existing cropping patterns and in diversifying production. Amongst programme components, support for Recommended Cropping Systems (RCS) includes support to millets.

Box 2 – Recommended Cropping Systems on RADP eligible for support involving millets⁵³

Type	Practice	Support (max 2 ha)
Rice/wheat based	Rice-wheat-sorghum + cowpea	25% or 10,000 Rs/ha, or cost of inputs
Coarse cereals based	Sorghum-pigeonpea Sorghum-chickpea/safflower Sorghum/maize-mustard Cowpea-finger millet Finger millet + soybean-field bean	25% or 5,000 Rs/ha, or cost of inputs
Oilseed based	Soybean + pigeonpea/sorghum-chickpea-rapeseed-safflower Castor-pigeonpea/sorghum/green gram /black gram Sunflower/safflower coarse cereals	25% or 7,500 Rs/ha, or cost of inputs
Fibre based	Cotton+sorghum/pigeon pea/soybean/groundnut/greengram	25% or 10,000 Rs/ha, or cost of inputs
Pulse based	Green gram-finger millet Blackgram-barley/rapeseed/mustard/finger millet Cowpea-finger millet	25% or 5,000 Rs/ha, or cost of inputs
Tree/silvi-pastoral	Neem+sorghum	50% or 15,000 Rs/ha, or cost of inputs

*Or any other cropping combination recommended by ICAR, SAU, KVK, ATMA

It is difficult to assess this broad-intentioned scheme from the perspective of millets and millets farmers. Subject to the actual application of the stated objectives, such approach could bring a welcome addition to existing agricultural development mechanisms and could provide positive contribution to millet farmers. A quick look at the RCSs in the box above however invites the observation that small millets (excluding finger millet) seem to be largely left outside the scope of this initiative. Budget allocated for RADP for 2011-12 was Rs 250 crore.

⁵³ Department of Agriculture and Cooperation, Guidelines for Rainfed Area Development Programme, 2011

Under RADP Tamil Nadu provides support for RCSs as well as a 100% premium subsidy for crop insurance for the first two years when rice, coarse cereals, oilseeds or pulses of more than 1 hectare is adopted.⁵⁴ But the activities are limited to 4 districts with respect to coarse cereals based and limited to few crops⁵⁷. Budget allocated under RADP for Tamil Nadu (22 districts) during the year 2011-2012 was Rs13.85crore and the amount utilised was Rs12.2327crore.⁵⁵ **Andhra Pradesh** has Rs 1,500 lakh allocated in RADP for adopting RCSs for (coarse) cereals, oilseeds and pulses.⁵⁶

The oldest national level general instrument used to support millets is “**Macro Management of Agriculture**” (MMA), operational since the year 2000 (*for more information see Annexure - II*). MMA includes 27 Centrally Sponsored Schemes supporting the realization of agricultural development programs throughout the country. Millets are covered as a sub-category of coarse cereals under the **Integrated Cereals Development Programmes in Coarse Cereals based Cropping Systems Areas (ICDP-CC)** launched in 1994. The following amounts were allocated for millets under ICDP-CC in selected states during 2007-10.

Table 14: ICDP-CC allocations for selected states

State	Crop	Area (Lakh ha)	Activities	Expenditure (Rupees in Lakh)		
				2007-08	2008-09	2009-10
Andhra Pradesh	Sorghum	5.28	Demonstrations/ Integrated pest management demonstration/ seed	5.74	8.42	17.69
	Pearl millet	0.92		0	0	2.72
	Finger millet	0.69		7.43	8.59	0.53
	Total	6.89		13.17	16.91	20.94
Odisha	Finger millet	0.71	Demonstration, seed, Farmer field schools, exposure visit	26.80	37.70	33.74

Source: Government of India, Directorate of Millets Development, *Status Paper on Millets*, 2010

Table 14.1: ICDP-CC allocations for Karnataka

State	Crop	Area (Lakh ha)	Activities	Quantity in Quintals		
				2007-08	2008-09	2009-10
Karnataka	Sorghum	16.17	Seed supply	49110	42140	45434
	Pearl millet	3.77		14690	10575	14600
	Finger millet	8.41		20860	21150	22635

Source: Government of India, Directorate of Millets Development, *Status Paper on Millets*, 2010

Though named as ‘Integrated Cereals Development Programmes in Coarse Cereals based Cropping Systems Areas’, as can be seen from the table only limited activities were taken up

⁵⁴Tamil Nadu Agriculture Department Citizen Charter 2011

⁵⁷Citizen Charter 2011, Department of Agriculture, Government of Tamil Nadu.

⁵⁵, Policy note 2012-2013, Government of Tamil Nadu, web

⁵⁶DAC 2011-12 list of approved projects, Andhra Pradesh, web

as part of this scheme. While Andhra Pradesh, Karnataka and Odisha seem to be utilising this opportunity to promote millets cultivation, Tamil Nadu Government was not doing the same. In Tamil Nadu no fund was allocated to coarse cereals development programme under MMA during 2011-12.

It is striking that even though the MMA provides a flexible mechanism with extensive budget support to states, so little has been used for millets. Of the approximately Rs 765 crore spent in 2009-10 for MMA the millets component is negligible.⁵⁷ Again within millets, the only small millet receiving attention is finger millet; other small millets are entirely outside the policy scope.

Another important national instrument with a more circumscribed thematic area that explicitly covers millets is the **National Agricultural Insurance Scheme (NAIS)**. NAIS's main objective is to provide insurance coverage and financial support to farmers in the event of crop failure as a result of natural calamities, pests and diseases. Millets are amongst the specified crops for which coverage can be provided. The scheme provides limited premium rates for certain crops in certain circumstances (including millets) and allows premium subsidy to be extended to 50% in case of small and marginal farmers. Costs for this are shared between central and state levels.⁵⁸ While Rs 950 crore was transferred for the scheme from central level to the implementing agency in 2010-11⁵⁹, Rs 550 crore was the previewed budget for 2011-12.⁶⁰

As detailed in the table below, Tamil Nadu provided an increased premium subsidy under NAIS for 2011-12 and also extends the pilot **Modified National Agricultural Insurance Scheme** with a modified premium gradation system to millets farmers.

Table 15: Tamil Nadu premium subsidy under NAIS⁶¹

Beneficiaries		GOI subsidy %	Tamil Nadu subsidy %	Total subsidy %
Loanee farmer	SF/MF	5	45	50
	Other farmers	-	50	50
Non-loanee farmer	SF/MF	5	50	55
	Other farmers	-	50	50

A Weather Based Crop Insurance Scheme (WBCPIS) covering millets farmers is operational at both national and state levels, implemented like the NAIS through the Agricultural

⁵⁷Ministry of Agriculture, Note on Demands for Grants 2010-2011

⁵⁸Tamil Nadu Agricultural University, Crop Insurance: National Agricultural Insurance Scheme, [web](#)

⁵⁹Ministry of Agriculture, Note on Demands for Grants 2010-2011

⁶⁰Ministry of Agriculture, DAC, Outcome Budget 2011-12

⁶¹Tamil Nadu Agriculture Department Citizen Charter 2011

Insurance Company of India. The fund allocated in 2009-10 and 2010-11 was Rs 50 crore and 100 crore, respectively and 450 crore previewed for 2011-12.⁶²Tamil Nadu provides premium subsidy to all farmers.

The eternal problem with the NAIS as well as similar insurance schemes in India and other countries is that although possibilities to make use of such instruments exist on paper, consistently too few farmers actually make use of them. How to bring these schemes to the smallest farmers remains a question unresolved.

Different **state level initiatives** exist on seeds, explicitly targeting millets. Tamil Nadu's **National Seed Multiplication Scheme of Paddy, Millets, Pulses and Oilseeds** grant a premium of Rs 2 per kg above the government procurement price for the production of certified millet seed. Eligibility to this program is limited to farmers who produce seeds for the Department of Agriculture on contractual basis, but special provisions exist for scheduled tribes (ST) and scheduled casts (SC); likewise women's and farmers' interest groups are accorded priority. The **Seed Village** scheme, which is operational since 2006-07, distributes certified millets foundation seeds at 50% of cost for 0.4 ha and 4000 trainings per year are organized for farmers who have received such seeds with 100 participants per training. These schemes aim to improve the quality of seed and, as it appears, more particularly the quantity of certified seed production. Furthermore, under the **Program for Reclamation of Saline and Alkaline Soils**, 50% subsidy is granted for seeds of paddy, millet and pulse varieties resistant to saline and alkaline soils.⁶³Seed certification targets, as well as a seed distribution plan are provided below.⁶⁴

Table 16: Tamil Nadu seed certification targets⁶⁵

Quantity of seeds certified (in metric tonnes)			
Crop	2010-11		2011-12
	Target	Achievement	Target
Variety Millets	420	242	250
Hybrid Millets	10	8	10

⁶²Ministry of Agriculture, Note on Demands for Grants 2010-2011 & Ministry of Agriculture, DAC, Outcome Budget 2011-12

⁶³Tamil Nadu Agriculture Department Citizen Charter 2011

⁶⁴Tamil Nadu Agriculture Policy Note 2011-12 (both plans)

⁶⁵, ^{65a} Tamil Nadu Agriculture Policy Note 2010-2011

Table 17: Tamil Nadu seed distribution plan^{65a}

Seed distribution Plan for 2011-2012 (in metric tonnes)				
	Total Requirement	Department Certified Seeds	Private Certified / labeled seeds	Seed Replacement Rate
Millets	12153	450	6243	55%
Seed distribution Plan for 2012-2013 (in metric tonnes)				
Millets	12150	470	6240	55%

Several other millet-focused state policies, schemes and programs can be mentioned. Tamil Nadu has a **Soil Health** program providing various forms of assistance for improving soil quality, including the distribution of micro nutrient mixtures for all farmers at full cost (amounting to Rs 56.3 per kg for millets). The Tamil Nadu **Agricultural Research Programme** for 2011-12 and 2012-2013 highlights the priority of evolving high yielding, disease resistant varieties of sorghum and pearl millet varieties. It also highlights the progress in the evolution of nutritionally superior finger millet with higher calcium, zinc and iron contents.

The **Tamil Nadu State Agricultural Plan** for the 11th Five Year Plan period intended to bring an additional 3.09 lakh ha under millets cultivation and achieve a productivity increase of 103.05%. Focus areas under the plan for 2009-10 were productivity increase and crop development of coarse cereals, oilseeds, pulses and minor millets for which an amount of Rs 450.00 lakh was allocated. All previous programmes and schemes combined should contribute to attain the area and production programme in Tamil Nadu. The details of plan and achievement are given below.

Table 18: Tamil Nadu area and production programmes

Crop	2010-11				2011-2012				2012-13	
	Area (lakh ha)		Production (lakh metric tonnes)		Area (lakh ha)		Production (lakh metric tonnes)		Area	Production (lakh metric tonnes)
	Target	Achievement	Target	Achievement	Target	Achievement	Target	Achievement	Target	Target
Rice	22	20.16	82	62.53	22	20.74	86	79.62	22	86.5
Millets	12	8	23	19.15	10	9.51	24	23.08	11	26.95
Pulses	12	8.32	7.5	3.67	10	9.07	6	3.3	10.4	6.55

Although the systematic inclusion of millet into Tamil Nadu's agricultural development strategies is laudable, it does not escape the bias against small millets. Probability is high that these schemes limit themselves to sorghum and pearl millet, and to a lesser extent finger millet, while other small millets remain below the radar. This presumption is

supported by the seed distribution plan where the distribution of private seeds is accorded major priority. Field experience shows that private companies are not involved in small millets seed production.

The **Minimum Support Price (MSP)** instrument is implemented at national level for different crops and plays a major role in farmers' production decisions. MSP is announced for wheat, paddy and coarse cereals including sorghum, pearl millet and finger millet every year. Prices are recommended by the Commission for Agricultural Costs and Prices (CACPC) and fixed by the Department of Agriculture and Cooperation (DAC) for the whole country. All the covered grains conforming to quality standards are bought at this price when offered at specified procurement centres. Purchased grains are further distributed throughout the country by the Food Corporation of India (FCI) for the PDS and other food-based welfare schemes.

MSP can be a very effective instrument for providing market security to farmers and boost production of a supported crop. The system is however wholly dependent on effective **procurement** practice. As shown in the table below, comparative MSPs and price increases are in the same range for rice, wheat and millets. Nevertheless, the mechanism has not functioned to the benefit of millet farmers for the simple reason that public procurement based on these prices has been very scarce.

Table 19: Comparative picture of MSPs for food grains fixed by GOI over the period 1977-2010.⁶⁶

Year	Rice (common)	Wheat ⁶⁷	Sorghum		Pearl millet	Finger millet
			Yellow	Maldandi		
1977-78	77	110	74	-	74	74
1987-88	150 (95)	173 (57)	135 (82)	-	135 (82)	135 (82)
1997-98	415 (177)	455 (163)	360 (167)	-	360 (167)	360 (167)
2007-08	645 (55)	1000 (120)	600 (67)	620	600 (67)	600 (67)
2008-09	850 (32)	1080 (8)	840 (40)	860 (39)	840 (40)	915 (53)
2009-10	950 (12)	1100 (2)	840 (0)	860 (0)	840 (0)	915 (0)
% increase over 1977-78	1134	900	1035	-	1035	1136

Figures given in parenthesis indicate % increase over previous period/year.

⁶⁶ Government of India, Directorate of Millets Development, *Status Paper on Millets*, 2010

⁶⁷ Ministry of Consumer Affairs, Food and Public Distribution, [web](#)

Several state governments have been procuring coarse grain including Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Haryana, Karnataka, Madhya Pradesh, Maharashtra, and Rajasthan. In order to encourage the consumption of coarse grains under the Public Distribution System next to wheat and rice, coarse grains are being made available at Central Issue Price (CIPs). As a result of these measures, the allocation of coarse grains under TPDS has increased as indicated below.

Table – 20: Coarse grain allocation to several states for 2001-2006⁶⁸ and 2010-2011^{68a}

Year	Coarse grain	Quantity allotted in (metric tonnes)	States
2001-02	Maize	10,000	Gujarat
2003-04	Bajra & Maize	22,476	Rajasthan
2004-05	Maize, Ragi	69,123	Gujarat, Karnataka
2005-06	Maize, Jowar, Bajra, Ragi	2,80,790	Madhya Pradesh, Gujarat, Rajasthan, Sikkim, Chhattisgarh, Karnataka
2010-2011	Maize, Jowar, Bajra, Ragi	1,27,825	Madhya Pradesh, Gujarat, Rajasthan, Sikkim, Chhattisgarh, Karnataka, Haryana

As can be seen from the table above data on coarse grain allocation for some states is available only for few years and the data on utilization of the allocated grains are also not available. Successful procurement will boost production of millets and can facilitate the realization of other consumption related policy objectives.

The other side of the coin of MSP and procurement are the **Public Distribution System (PDS)** and other **food-based welfare schemes**. If the former are oriented to production, then the latter relate to consumption measures aiming to achieve food and nutritional security for the entire population. At the time of writing, the **National Food Security Bill (NFSB)** is pending final adoption. It purports to be a landmark framework policy which aims to finally throw off the “burden of hunger and malnutrition”. An allocation of Rs1, 60,887 crore for 2011-12 was announced for the Bill’s implementation, amounting to an increase of 17% over the previous period spending on social welfare and to 36.4% of total plan allocation.⁶⁹

The present version of the Bill proposes inclusion of millets into the PDS under the heading of ‘coarse grains’. During preparation this inclusion was strongly advocated with the arguments that it would improve nutritional status and would help to create a large demand for the benefit of millet farmers. Millets in the PDS is not a new idea; the possibility was

⁶⁸ ^{68a} Ministry of Consumer Affairs, Food and Public Distribution, [web](#)

⁶⁹ National Budget speech 2011-12

already noted in the Tenth Five Year Plan⁷⁰ and was promised by the **National Policy for Farmers** (2007) five years ago.⁷¹ According to the Ministry of Consumer Affairs, Food and Public Distribution website, coarse grains have already been made available under the PDS at 50% of economic cost for BPL families, 70% for above poverty line (APL) families and at Rs 200 per quintal for AAY families in certain states.⁷² Even earlier singular state-level initiatives have been undertaken to include millets into welfare schemes. However they do not appear to have been successful, primarily due to negative social connotations with these grains. Such experiences underline the importance of awareness raising and positive image building particularly in areas where millets are perceived as inferior grains.

The question with the NFSB is not as much about the novelty of its provisions, but whether they can create sufficient thrust to make lasting and significant changes in favour of millets. Many details remain to be specified under the NFSB and much regional work will need to be done to achieve feasible models for millets inclusion. For example necessary measures need to be taken to address the short shelf life of dehulled products of small millets other than finger millet, which may involve technology related, infrastructure and procurement related initiatives. This calls for adequate fund provisions for piloting various options available to find the suitable one. Nevertheless adoption of this Bill would present a great opportunity for constructive action. Necessary caution should be taken to avoid the same problem of sidelining of small millets as seen in many other schemes.

Box 3 – Highlights from National Food Security Bill (pending parliamentary adoption)

- * Priority households and general households will receive subsidized food grains under the Targeted Public Distribution System –for priority households 7 kg/person per month will be given and for general households minimum 3 kg/person.
- * Subsidized prices per grain type: rice Rs 3/kg – wheat Rs2/kg – **coarse grains** Rs1/ kg for prioritized households. For general households: price not more than 50% of MSP for respective grain.
- * Entitlements will cover 75% of rural population and 50% of urban population as long as at least 46% of the rural population and 28% of the urban population is designated as priority household.
- * Various free nutritious meals are provided for different categories of people (pregnant & lactating mothers, children, destitute, starving etc.).
- * Special focus is promised for needy groups in hill and tribal area.
- * Different measures are proposed to boost agricultural development:
 - Agrarian reforms to secure the interest of small and marginal farmers;
 - Incentivizing decentralized procurement for coarse grains;
 - Ensuring geographic diversification in procurement;
 - Augmentation of safe storage facilities.

⁷⁰ Planning Commission, Tenth Five Year Plan, Chapter 3.4

⁷¹5.10.1. (iv) The food security basket will be enlarged by storing and selling nutritious millets such as bajra, jowar and ragi and other crops through the network of the Public Distribution Systems (PDS).

⁷² Ministry of Consumer Affairs, Food and Public Distribution, [web](#)

Implementation of the NFSB through the PDS and the various food-based welfare schemes is likely to differ from state to state, particularly regarding the grains that will actually be included for distribution. Tamil Nadu, in its “Approach to the 12th Five Year Plan” states the aim of including ‘nutritious grains’ (clearly referring to millets) into the PDS. The “Public Distribution Scheme Policy Note 2011-12” however does not yet mention this inclusion neither for the covered period, nor for the next.

Regarding welfare schemes, Tamil Nadu has allocated a sum of Rs 1278.25 crore for the **MGR Nutritious Meal Programme 2011-12** and Rs1784.77 crore for the **Integrated Child Development Scheme (ICDS) 2011-12**. Initiatives implemented under these schemes like the Noon Meal Programme, National Programme of Mid-Day Meal, Supplementary Nutrition, Take Home Ration etc. are meant to reduce hunger and improve nutrition by providing meals and supplementary nutrition to beneficiaries of different age, gender and social status.

While some of the mentioned schemes and programmes exist at national level and the NFSB sets minimum nutritional standards to be achieved per meal for different age groups, various details including menu composition remain state-administered. In Tamil Nadu millets are not part of the menu of majority of the food schemes, which do include rice, dhal, vegetables, potatoes, eggs, gram etc. Finger millet flour (5% of total composition) is included in the menu under Supplementary Nutrition under ICDS which is provided 300 days per year to malnourished children between 6 and 36 months and pregnant women and nursing mothers. Government is also considering the introduction of other millets into the ICDS.

2.3 Conclusion

To conclude, only limited policies and schemes explicitly include millets. There are no exclusive Government schemes/projects/ programs for small millets. Of the available schemes, the most important ones are **Initiative for Nutritional Security through Intensive Millets Promotion (INSIMP)** as part of **Rashtriya Krishi Vikas Yojana” (RKVY)**, **Rainfed Area Development Programme (RADP)** as part of **Rashtriya Krishi Vikas Yojana” (RKVY)**, **Integrated Cereals Development Programmes in Coarse Cereals based Cropping Systems Areas (ICDP-CC)** under **Macro Management of Agriculture (MMA)**. There is a lot of variation across the states on how they utilise these opportunities for promoting millets. Further most of the states usually focus on sorghum, pearl millet and finger millet and leave out many of the small millets while implementing these schemes.

Of the schemes mentioned, INSIMP is the only comprehensive initiative to support millets. Being the first year it has faced many starting problems. This scheme is expected to continue in the years to come. It is too early at the moment to draw overall conclusions about this new scheme, but some preliminary remarks can be made. In a positive light INSIMP can be seen as an expression of the mounting concern over the state of millets and as first attempt to put forward a comprehensive national strategy for millets promotion. While the aims of INSIMP appear to be far fetching, it suffers from lack of causality and balance between its different components, raising doubts about the truly integrated nature of the scheme. Particularly there is poor focus on promotion of millets consumption. In a similar vein, the interventions proposed and implementation modalities appear quite 'business as usual' focusing on inputs supply, even though an increasing number of authorities are underlining the importance of new approaches to rainfed farming. The present scheme can be seen as a kind of pilot programme than as a full-fledged policy, meaning that space exists for elaboration and improvement.

In all the other schemes the state has options to include millets and so there is lot of difference in implementation across the states. Besides these schemes there are many state level schemes on various aspects like crop insurance, supply of micro-nutrients, and seed production, which include millets as one crop category. As mentioned earlier, even if millets are included under these schemes, most of the small millets are passed over.

While there is countable number of policy initiatives for promoting production of millets, there is almost no scheme or policy initiative in place for promoting consumption. Most of the public food programs do not include millets, except inclusion of finger millet in ICDS in few states. The **National Food Security Bill (NFSB)** which is pending final adoption at the time of writing is expected to change this scenario by a large measure. The present version of the Bill proposes inclusion of millets into the PDS under the heading of 'coarse grains'. Millets in the PDS is not a new idea: According to the Ministry of Consumer Affairs, Food and Public Distribution website, coarse grains have already been made available under the PDS at 50% of economic cost for BPL families, 70% for above poverty line (APL) families and at Rs 200 per quintal for AAY families in certain states.⁷³ Even earlier singular state-level initiatives have been undertaken to include millets into welfare schemes. However they do not appear to have been successful, primarily due to negative social connotations with these grains. Such experiences underline the importance of awareness raising and positive image building particularly in areas where millets are perceived as inferior grains. Many details remain to be specified under the NFSB and much regional work will need to be done to achieve feasible models for millets inclusion. Here also there is possibility of unduly side-lining small millets and so necessary design and implementation caution to be taken.

⁷³ Ministry of Consumer Affairs, Food and Public Distribution, [web](#)

Chapter III - Example from practice

3.1. Pilot project introducing millets into the Public Distribution System⁷⁴

A pilot project was taken up under the APDAI project with the support of the Department of Civil Supply and District Administration of the Anantapur district with the objectives of:

- Promoting millets to ensure food and nutritional security for households through the Public Distribution System (PDS).
- Exploring the possibility of evolving a decentralized multigrain and need-based PDS suitable to local conditions.
- Bringing back millets in the production system and to make agriculture in the district more economical and sustainable.
- Developing rural entrepreneurship opportunities through millet processing and through creation of rural employment in the long run.

Need assessment

A survey on millet food grain need assessment was undertaken. Three fair price shops in Nallacheruvu and two fair price shops in Gandlapenta mandal covering 2,157 households in 20 villages were surveyed for finding out the quantity of millets needed per month at the household level. It has been estimated from a preliminary study that in rural areas, for an agricultural family of 5 members, food grain requirement ranged from 75 kg to 90 kg of rice per month. The main millets consumed in this area were finger millet (*Ragi*), pearl millet (*Sadda*), and Sorghum (*Jonna*), in the order of priority. The share of millets consumed varied from as low as 1% to 10% of the total monthly food grain requirement. *Ragi* was requested by 98% and *Sadda* by 90% of the households surveyed. The monthly requirement for *Ragi* was estimated to be 5 kg and *Jonna* and *Sadda* to be 2 to 3 kg each. The demand for other small millets like foxtail millet (*Korra*) and little millet (*l*) was very negligible. Based on this information collected from villages, it was decided to initiate millets distribution through PDS with the initial plan to supply *Ragi* at 1.00 kg/member and a maximum of 5 kg/household, *Sadda* at 0.50 kg/member and a maximum of 2 kg/household, and *Jonna* at 0.25 kg/member and a maximum of 1 kg/household.

⁷⁴M.N. Dinesh Kumar, Dr. M. Vanaja, APDAI – WASSAN (Case study reproduced from WASSAN)

Implementation procedures adopted

With the participation of Commissioner, Civil supplies, systems and norms were established to facilitate the procurement in the PDS. It was designed that the local Mandal Mahila Samakyas (MMS) will locate the suppliers and procures the millets. Procurement will be similar to existing rice procurement system. MMS will purchase the produce from the farmer or open market depending on the availability and supply to the PDS through procurement centre. Millets will be placed in the ration shop and supplied at subsidised price of Rs 8/kg for all grains. MMS will ensure proper storage facility. Millet subsidy was planned for both pink and white card holders. Staff and system of records were put in place to ensure smooth operation.

An intensive campaign was organised to reach the people in all the 20 habitations by various means like wall writings, village level meetings, pamphlet distribution and habitation wise campaign about the millet PDS through auto with mikes and banners in the Fair Price (FP) shops. House to house coupon distribution was taken up to reach all households served under each of the FP shop.

Impact of the pilot

- The poorer section of the people felt that because of this, they are getting the millets close to their house at an affordable price.
- Because of this, the regular use of millets in the daily food consumption has improved.
- In Pallevandla Palli the villagers had to go nearly 10 km to Nallacheruvu to buy Ragi and Sadda. They were used to buying 0.5 kg or 1 kg at a time. Now because of the pilot they are able to get monthly need of millet grain at one time. One out of four wanted to raise the quantity of Sadda provided.
- As part of the pilot it was attempted to work out a mechanism for the local procurement of millets from the farmers within or neighbouring areas of each mandal. Ragi and Sadda were procured by the seed bank from the farmers in the pilot villages.
- The assurance of procurement to the farmers at farm gate and advance announcement of minimum support price resulted in farmers taking up cultivation of Ragi and Sadda in their irrigated fields. Production of Ragi increased 3 times in Gorantla Vari Palli and other nearby villages due to the assured market support for supplying to the PDS. As part of the grain supply to PDS, nearly 30 tonnes of millet grains were procured from the farmers.

Constraints faced

- Due to various reasons, the millets distribution did not coincide with the paddy rice distribution timing.
- The fact that millets grain sales by the FP shops is not a priority for the dealers meant that there have been delays in the payment by way of DD to the APSCSC Ltd., for the grain supply.
- Disruption due to the changes in the officials at the Mandal and the District level.

More details are available on the following web link:

http://www.rainfedindia.org/images/millets_casestudy.pdf

Chapter IV- Strategies, Recommendations and Policy Action Plan

The present chapter presents an outline for integrated small millets development strategy while linking it with recommendations to specific government departments and suggestions for action for the RESMISA project and other civil society actors.

4.1. Outline for an integrated millets development strategy

What millets need but still miss, also with the current INSIMP, is a comprehensive, integrated development strategy which simultaneously addresses production, demand and research on an extensive, though location-sensitive scale.

Such a development strategy should at least include the following general objectives

1. Increasing demand for and consumption of all millets throughout the country.
2. Increasing production and productivity of all millets in a sustainable way, starting by reversing the decline of area under millets and restoring them to year 2000 levels.

Components of an integrated millets development strategy

I. Production

Production is to be enhanced by improving productivity in an ecologically and socially sustainable way taking full account of the particularities of rainfed production, especially its heavy reliance on natural resource quality. Focus should be on creating a level playing field in terms of policy support for production of millets, especially small millets, when compared to other crops. The strategy should adopt a differentiated approach to the production of millets in accordance with their functions as homegrown food, livestock fodder, and commercial crop, while being aware of potentially disruptive effects of blowing up any one of the uses. It should furthermore extend to all farmers engaged in millets production instead of millet clusters, to allow freedom of choice in cultivation. Finally, the strategy should be as decentralized as feasible to ensure maximum adaptation to local conditions. Specific attention should be given to the following aspects:

- Support for **soil health improvement**: Farmers involved in millet cultivation should receive explicit recognition as a group entitled to support for soil health improvement, which is already taken-up in different programs and they should be scaled-up. Novel

measures to support local practices like silt application and sheep penning should be taken up.

- **Location specific packages of practices (PoPs)** should be evolved, demonstrated, and supported for all millets, with special focus on the need for including small millets. They should build on the existing best practices in the region like mixed farming practices, rather than only relying on monocropping with improved varieties/ hybrids and fertilizer based PoPs.
 - Certified organic millet production should be supported.
 - Agrochemicals ought to act as support for productivity increases, rather than constitute the core strategy.
- **Support for seed** should ensure that farmers have a choice of millets varieties at their disposal. A two-pronged approach is required stressing, on the one hand, large scale organized seed channels for generally established and proven varieties and, on the other hand, local seed banks for niche varieties grown in specific areas. Existing support mechanisms for seed production should be extended to include well-performing local varieties.
- Selective **mechanization** support is required for implements covering various activities, especially for weeding, harvesting, threshing and dehulling. Implements should allow improvements in labour productivity without excessively impinging on demand for farm labour, which would affect landless labourers. Most crucial is to promote penetration of those implements that replace labour at those critical moments in the production process in which labour is scarce. Mechanization strategies should be implemented in coordination with MGNREGA policy.⁷⁵
- **Support for drying and threshing yards:** The need for this is common to various crops and such yards built under existing general agricultural schemes are utilized by millet farmers. One could imagine that priority areas for development of such infrastructure are determined on the basis of millets cultivation. Such infrastructure will improve the effectiveness of dehulling and the quality of dehulled grains by reducing the incorporation of impurities.

⁷⁵ Mahatma Gandhi National Rural Guarantee Act

- **Financial support** should be provided to farmers cultivating millets on small scale (primarily for home consumption), who use ecologically sound or organic-equivalent farming practices and maintain an identified level of on-farm biodiversity. (*Regarding the important role of biodiversity in agriculture and economics, see Annexure III*).
- **Procurement** of millets should be organized and implemented in all millets-cultivating districts based on a relevant intervention price (MSP). Large-scale procurement shall boost production which is indispensable for the realization of different millets-related policy aims.
- **Marketing** initiatives which aim to provide millet farmers with a higher income share for their produce, like value chain integration, regulated markets, establishment of production cooperatives, and various value addition initiatives should receive support on a case-by-case basis.

II. Consumption

For the consumption component, a differentiation has to be made between welfare-scheme derived consumption, market-based consumption, and harvest-based consumption (for millet cultivating households). Attention is required to all three of these forms.

- Millets ought to be included in the **PDS** based on regional production and consumption patterns and issued at the price proposed in the draft NFSB (Re 1/ kg). The quantity supplied need to be increased based on the consumer response gradually towards an allocation of 10 kg per household. Millets should likewise be included into the menus of various **food-based welfare schemes** implemented on state level.
- Support is needed for **post-harvest processing** both for improving and disseminating technology. Lack of effective and affordable post-harvest technology for small millets other than finger millet is a major barrier to the proliferation of these crops. Improving this technology is a focal point of the overall strategy. For promoting consumption support for technology dissemination and infrastructure development at three levels can be envisioned:
 - *Support for small processing units within a radius of five kilometers from the village:* Provide investment support to local entrepreneurs for the installation of processing units for dehulling and flour making of location specific millets. Local entrepreneurs already running small mills can be given preference as they have

necessary infrastructure and clientele in place. Such infrastructure will support home consumption.

- *Support for production cum processing cluster*: Support cluster initiatives covering 1,000 ha or 2,000 farmers or a number of villages (as appropriate) where grains are gathered and processed for commercial distribution. It will provide ready-to-cook grain for shops, rural markets and supermarkets.
- *Support for ready-to-eat millet food entrepreneurs*: Support to be given for micro-, small- and medium-entrepreneurs intent on producing half-fabricates and/or ready-to-eat millets-based foods; as such private enterprises are crucial for filling the gap that seems to exist between people's preferences, which appear to favour millets, and the declining market demand for these grains for local consumption. These food entrepreneurs will increase market visibility for millets and introduce new products better acceptable for contemporary tastes. Special approaches should be designed to incentivize informal entrepreneurs not covered by the micro enterprise definition. These are, for instance, people selling 'street foods', which are continuously consumed by large segments of the population and therefore an important demand factor.
- **Awareness-raising sub-component** should receive high priority and that needs to be reflected in funding allocations. The lack of awareness about millets and the negative image of these crops that persists in certain areas could endanger supply focused interventions like introduction of millets in PDS. Awareness-raising should occur at three levels.
 - The first level concerns direct consumption promoting campaigns and image building through mass media coverage.
 - The second level refers to a more basic integration of information on millets into the curricula of both general and specialized education as well as into recommendations published by establishments in the health and nutrition spheres.
 - The third level is about effectively spreading information amongst farmers and other potential beneficiaries of the support offered by the integrated strategy.

III. Research

Research is a cross-cutting area relevant and integral to all components. Research is critical to address the current production and consumption constraints. In the case of millets and rainfed agriculture as a whole, it is important that

- Research departs from the socio-economic and agro-ecological realities as they exist on the ground
- Participatory research approaches are adapted to address the local constraints and realities
- Small millets are systematically included into research efforts
- Clear concepts are elaborated for integrated, sustainable farming methods which are replicable, sufficiently adaptable and manageable (in the sense of knowledge requirements and cost)

Special initiatives for backward and tribal regions

A set of special initiatives should be launched under the general strategy specifically designed for backward and tribal regions. These initiatives should be entirely localized and specifically designed for each identified area, spanning the entire cultivation, marketing, consumption, and technology spheres. Cluster approach based interventions can be tried in these areas.

Implementation modalities

- For an integrated strategy, encompassing broad agenda on production, consumption and research, to become a reality it has to cut across various ministerial departments. This would be possible only if the existing INSIMP is expanded or replaced with 'Mission on millets', as suggested by the planning commission working group. Detailed working mechanisms based on the lessons from such successful missions need to be evolved by involving various stakeholders.
- Innovative forms of **cooperation with civil society** organizations need to be established for the implementation of the decentralized development strategy. There exists considerable experience with few such organisations emerging from their long time grassroots work on millets, which need to be capitalised for the large scale millet promotion program. Further presence of staff from civil society organizations with strong performance orientation could be instrumental in

effectively implementing program components requiring adaptation to local circumstances. This is particularly so for small millets, which are grown in remote areas where the Government machinery is not effective in extension programmes.

4.2. Specific Recommendations to Central and State Government Departments

I. Department of Agriculture and Co-operation, Government of India, State Department of Agriculture

1. Increasing the area under small millets cultivation: Limiting support to farmers under small millet cultivation in selected areas would result in the compartmentalisation of millet cultivation and may reduce cultivation and consumption of millets. Overall millet promotion plan should cover the potential farmers and area of cultivation under millet. Sufficient budget and inputs have to be allocated for implementation. For realising this twin operational strategies are required to improve the millet cultivation in the nation namely, one for millet promotion in concentrated locations and Another for millet promotion in dispersed locations. Importance and focus should be ensured for small millets equally as being given to other millets like sorghum and pearl millet.
2. Support for seed production: There is a shortfall in the targeted seed production and mini-kit distribution. INSIMP restricts support to only the varieties released during last 5 years. Seed production of proven and successful indigenous varieties of millets to be included as part of INSIMP and other seed support schemes like seed village and seed bank schemes.
3. Promotion of soil health and best practices for millets: As millets are grown mostly in marginal lands in diverse ecosystems, support needs to be given for location specific, eco-friendly measures for improving the fertility of the soil and per acre productivity. Financial support should be given for practices like silt application and sheep penning by devising novel implementation procedures.
4. Installation of processing unit: State and Central Governments has to provide investment support for the installation of processing units for dehulling and making flour by rural entrepreneurs at small to medium scale to handle location specific combination of millets (including small millets). This infrastructure will promote household consumption.

5. Biodiversity: A cluster of Agricultural Biodiversity Heritage Sites [BHS] at the regional/local level should be promoted for millet based cropping system in order to preserve different varieties of millets in individual and community seed banks. Incentives have to be provided to various initiatives to foster and improve agro-biodiversity like organising biodiversity fair and community biodiversity register.
6. National Food Security Mission: Importance and focus should be extended to millets equally as is being given to other crops like rice, wheat, and pulses in NFSM guidelines and budget allocation.
7. Rashtriya Krishi Vikas Yojana: Specific guidelines must be created to facilitate participation of civil society organizations and farmers' organizations and for Public Private Partnership in schemes like INSIMP for better reach in the remote areas where small millets are being grown and for effective implementation in partnership with farmers.

II. Agriculture Universities and Research stations supported by Government of India

1. Long term perspective plan for research on millets should be taken up and a level playing field in terms of research visibility and fund allocation must be ensured for millets as compared to other crops.
2. Systematic efforts for engaging effective dissemination of already existing relevant research to poor farmers in remote corners of the country must be taken up in alignment with schemes like INSIMP.
3. Participatory approaches to millet research should be followed for effective research results and dissemination in collaboration with farmers' organisations and other stake holders like participatory varietal selection and participatory plant breeding.
4. As millets, particularly small millets, are grown in remote regions far away from agriculture research stations, systematic on-farm research should be given necessary attention to get research results suitable for these remote regions, besides on-station research.
5. Strategic research that needs to be concentrated on include:
 - a. Efficient small scale, energy efficient models of weeding, harvesting, threshing, and dehulling implements and machineries must be evolved, particularly for small millets, to address labour scarcity.
 - b. Validation research for assessing the community perceptions related to nutritional benefits of millets, like their suitability to diabetic patients and difference between local and improved varieties of finger millet in their ability to give satiety, needs to be taken up.

- c. Efforts for systematic participatory documentation of indigenous practices must be taken up and validation research should be taken up for finding their relevance for production and consumption enhancement.
- d. Special attention should be given for meeting the research needs of small entrepreneurs involved in millets food business, like street vendors, as they play critical roles in reaching common people on a large scale.
- e. Special attention must be given to research to address the kodo millet poisoning and for improving the shelf life of small millet processed products.

III. Ministry of micro, small and medium enterprise development, GOI and State Governments

1. Support to local entrepreneurs: Micro, small and medium entrepreneurs' intent on producing processed, partly cooked and/or ready-to-eat millets-based foods needs encouragement. Special approaches should be designed to incentivize informal entrepreneurs not covered by the micro enterprise definition. These are, for instance, people selling 'street foods' or 'farmers canteens' which are continuously consumed by large segments of the population and therefore an important demand factor. Efforts to suitably modify existing provisions in Tamil Nadu like a) *Subsidies for micro manufacturing enterprises*, b) *Subsidy schemes for micro, small and medium manufacturing enterprises* established in industrially backward blocks and agro based enterprises set up in all the blocks in the State and c) *Special Capital Subsidy for Thrust Sector Enterprises set up* anywhere in the State need to be taken up. for promoting millet based enterprises,

IV. Department of Food and Public Distribution, Ministry of Consumer Affairs, GOI and Department of Social Welfare and Nutritious Meal Programme Department of Tamil Nadu

1. National Food Security Bill (NFSB) (pending parliamentary adoption)

- Specific plan for assessing and rising demand and for addressing constraints related to procurement, inadequate processing capacity and low shelf life of processed products needs to be made with necessary allocation of funds.
- Guidelines for involvement of local farmers' organisations and women federations for managing part of the operations needs to be made for facilitating the model of local procurement, storage and distribution.
- The State Government can collaborate with NGOs to seek inputs from existing working models on millets promotion. These models/pilots will feed forward the learning on principles of local production, distribution, and consumption.

2. Public food programs other than PDS

Guidelines to be prepared for introduction of millets in all public food programs besides PDS. There already exists the model of introduction of finger millet in ICDS by the Tamil Nadu government. Finger millet flour (5% of total composition) is included in the menu under supplementary nutrition under ICDS, which is provided 300 days per year to malnourished children between 6 and 36 months, pregnant women, and nursing mothers. Similar efforts need to be taken up with other public food programs like midday meals and tribal student hostels run by Government.

4.3. Policy advocacy and action plan

Based on the findings from this paper, a following set of activities are proposed for the RESMISA project.

Input into policy and advocacy action plans

RESMISA project, based on lessons from various research activities and in collaboration with other networks such as RRA, will focus their millets policy advocacy agenda on the following topics:

- Providing recommendations to the Food Security Bill on inclusion of millets into the PDS
- Providing recommendations for the improvement of INSMIP's conceptual framework and implementation practice to allow it to achieve its objectives

Activities to be undertaken under the RESMISA project

The RESMISA project itself will undertake research on the following topics to contribute its share to the enhancement of millets production and consumption:

- Procurement procedures and infrastructure necessary to ensure smooth and safe millets supply through the PDS and the related cost implications when compared to existing grains.
- Market research on the uptake of millets if provided under the PDS, with differentiation between various categories of consumers.
- Case study for Tamil Nadu about the cost implications of including millets into ICDS schemes.

Scoping study on the feasibility of introducing millets in the public food programs

ANNEXURES

ANNEXURE I

DETAILS ON DIFFERENT NATIONAL AGRICULTURAL DEVELOPMENT SCHEMES

National Agriculture Development Programme (NADP)/Rashtriya Krishi Vikas Yojana (RKVY)

NADP/RKVY is the country's primary instrument for agricultural development, established in 2007 to help achieve the "National Agricultural Policy's" (2000) aim of 4% annual growth in agriculture. When states qualify for assistance under the scheme, expenditure is fully centrally sponsored. Eligibility for support is dependent on each State maintaining a baseline share of expenditure on agriculture compared to total state expenditures.

Areas of focus include:

- * Integrated development of major food crops such as wheat, paddy, **coarse cereals, minor millets**, pulses and oilseeds.
- * Activities related to enhancement of soil health.
- * Development of rainfed farming systems in and outside watershed areas.
- * Innovative schemes.

Macro Management of Agriculture (MMA)

MAA was launched in 2000 subsuming 27 Centrally Sponsored Schemes. States can present a work plan addressing state-specific needs and apply for financial support for realizing the plan. Assistance is provided in the ratio of 90:10 (90% from central level, 10% from states). North-Eastern states are provided with full central assistance. Assistance is 80% grant and 20% loan.

Rainfed Area Development Programme (RADP)

The RADP was launched under the Eleventh Five Year Plan as a separate scheme for rainfed areas with an allocated outlay of Rs 3,500 crore for the period. It is meant to promote integrated and holistic development of about 22 lakh ha rainfed area over a period of five years, involving creation of about 3 lakh water harvesting and recharge structures, provision of 65,000 water lifting devices and construction of about 2.25 lakh units of different soil and water conservation structures like check dams, gabions, and gully plugs. About 90,000 demonstrations on farming systems, crop diversification, and improved farming practices

would be organized. The green cover would be increased by raising plantation under agro-forestry, horticulture and silvi-pastures over an area of about 1 lakh ha.

Its objectives are to increase farmers' income by 100%, productivity by 50%, cropping intensity by 15 to 20%, supplementary irrigation by 20%, seed replacement rate by 10%, and employment generation by 30% in the project areas.

Since 2011 RADP is primarily being implemented as a sub-scheme of the NADP/RKVY with similar objectives.

National Food Security Mission (NFSM)

NFSM was launched in 2007-08 consisting of three components: Mission on rice, Mission on wheat and Mission on pulses. The initial aim of the programme is to increase the production of rice by 10 million tonnes, wheat by 8 million tonnes, and pulses by 2 million tonnes by the end of the 11th 5 Year Plan period (2012). It is a fully centrally sponsored scheme.

ANNEXURE II

AGRO-BIODIVERSITY AND MILLETS

No operative policy is available at national and state levels with a well-defined plan for conserving and expanding agro-biodiversity, not to mention a policy of this kind that includes focus on millets. While conservation of natural resources are taking a more prominent place on the political agenda, a consistent approach to agro-biodiversity with the logical link to on-farm crop varietal conservation and improvement is yet to be formulated.

This is regardless of the **National Policy for Farmers** (2007), an umbrella policy adopted by GOI based on the recommendations of the National Commission on Farmers, which dedicates significant attention to the topic. One of the stated major policy goals is *“to protect and improve land, water, bio-diversity and genetic resources essential for sustained increase in the productivity, profitability and stability of major farming systems by creating an economic stake in conservation.”* It expresses strong support for farmer- and community oriented preservation of agro-biodiversity involving the revitalization of traditional knowledge. It also refers to the introduction of a nationwide programme that should promote the *“ex situ and in situ conservation of plant genetic resources at the field/farmer level”* and the setting up of farmer-level gene and seed banks in areas where traditional varieties are in danger of extinction. Although millets are not explicitly mentioned, the policy in many ways refers to the circumstances in which they are cultivated.

Agro-biodiversity is not to be taken lightly. Apart from being responsible for the character of landscapes and providing aesthetic, social and spiritual functions, genetic diversity is one of the building blocks of properly functioning ecosystems that provide life-sustaining services to humanity. Agriculture serves as prime example of a human enterprise whose performance is directly related to the quality of ecosystem services. Services provided by ecosystems include (micro) climate, water and erosion regulation, water filtration, soil formation, water and nutrient cycling, primary production (accumulation of energy and nutrients by plants and organisms), pest control, and pollination. Conserving agro-biodiversity, and in many cases expanding it, is one of the indivisible components of a strategy that is to assure the future viability of (rainfed) farming. There is urgent need for moving into this direction if one accepts the findings from the Millennium Ecosystem Assessment which reports that approximately 60% of ecosystem services throughout the world are being degraded or used unsustainably.⁷⁶

⁷⁶ Millennium Ecosystem Assessment, Ecosystems and Human Well-being Synthesis, 2005

The expansion of ecosystem economics through such initiatives as The Economics of Ecosystems and Biodiversity (TEEB) is not a coincidence. It stems from the realization that the system currently used for accounting and valuing social resources is defective at least in terms of its approach to natural capital. This system often encourages activities that deplete productive resources, with the result of reducing society's ability to sustain itself in the long term. Ecosystem economics attempts to improve the scientific base of economic valuation by broadening cost-benefit analysis to include quantifiable services provided by ecosystems into the calculation. The outcomes of these often show that investments in the conservation and development of natural resources, including biodiversity, end-up being the strategies providing highest economic return. As private parties will often be unable (for socio-economic reasons) or unwilling (natural resources are often public or common pool resources for which payments cannot be easily solicited) to invest in such improvements, a big task is laid on government to provide public investment into this area.

It is well-accepted that private entrepreneurship thrives on strong public goods, while it is rarely able to provide the necessary preconditions by itself. Ecosystem economics is supported by some private interests who see opportunities to capitalize on cost reductions in areas where nature can be made to work for us, rather than us working against it. Likewise, there is a well-grounded expectation that various climate change prevention and adaptation mechanisms at international level will be elaborated in the course of the next several years, containing elements supporting ecosystem functions. In this context a convincing and adoptable strategy will need to be devised in support of agro-biodiversity. Referring to the characteristics of millets which are touched upon in the first chapter, enlarging the cropped area under millets cropping systems as well as increasing their varietal diversity can have multiple ecological benefits. A coherent argument for supporting their production for preserving the existing area under cultivation and to extend the cultivation to suitable areas, particularly to their earlier cultivating regions, can be made. This kind of support for millets is necessary to sustain their production and production by addressing the current competition from market friendly crops like maize.

ANNEXURE III

Crop wise area (in lakh ha) and production (in lakh MT) under Millets (2000-2011)

Government of Tamil Nadu

Name of the Crop	2000-01		2001-02		2002-03		2003-04		2004-05	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
Sorghum (Cholam)	3.313	3.06	3.172	2.748	3.196	2.107	4.016	2.459	3.767	2.52
Pearl millet (Cumbu)	1.292	1.703	1.25	1.529	1.02	0.886	1.588	1.723	0.976	1.243
Finger millet (Ragi)	1.269	2.594	1.249	2.353	1.042	1.401	1.184	1.763	1.088	1.54
Maize	0.814	1.399	0.729	1.184	1.21	1.916	1.601	2.509	1.898	2.947
Total Cereals	6.688	8.756	6.4	7.814	6.468	6.31	8.389	8.454	7.729	8.25

Name of the Crop	2005-06		2006-07		2007-08		2008-09		2009-10		2010-11	
	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production	Area	Production
Sorghum (Cholam)	3.162	2.314	2.944	2.939	2.835	2.478	2.589	2.134	2.385	2.22	2.914	2.912
Pearl millet (Cumbu)	0.819	0.947	0.655	0.99	0.598	0.858	0.567	0.84	0.544	0.827	0.756	1.117
Finger millet (Ragi)	0.995	1.321	0.955	1.481	0.937	1.759	0.901	1.699	0.823	1.609	1.02	2.44
Maize	2.028	2.412	1.978	7.591	2.234	8.101	2.866	12.579	2.442	11.381	2.841	12.242
Total Cereals	7.004	6.994	6.532	13.001	6.604	13.196	6.923	17.252	6.194	16.037	7.531	18.711

ANNEXURE III continued

Name of the Crop	2001-02		2002-03		2003-04		2004-05	
	Area in ha	Production in MT						
Foxtail millet (Korra)	1411	652	1000	500	2210	1091	1626	793
Kodo millet (Varagu)	11345	16330	14200	15800	7748	9876	8547	10455
Little millet (Samai)	48076	33060	42900	31000	48126	27808	33819	27866
Barnyard millet (Kuthiraivali)	4382				6590		6395	
Proso millet (Panivaragu)	695				3		243	
Other Cereals	52	2887**	7700*	4300**		3769**		3712**
Total	65961	52929	65800	51600	64677	42544	50630	42826

* Includes the Area of Kuthiraivali and Panivaragu

** Includes the Production of Kuthiraivali and Panivaragu

Name of the Crop	2005-06		2006-07		2007-08		2008-09		2009-10	
	Area in ha	Production in MT								
Foxtail millet	1355	665	832	513	864	405	813	411	1074	517
Kodo millet	5871	6676	11056	30666	5546	8144	4086	5679	5930	8805
Little millet	27577	19604	24997	25750	24229	24281	21231	16503	22292	19682
Barnyard millet	2244		7419		7288		5216		3514	
Proso millet	264		298		319		300		331	
Other Cereals	8620*	3127* *	8181^	4545^ ^		4254* **		3104* **		224** *
Total	45931	30072	52783	61474	38246	37084	31646	25697	27804	29228

* It includes the area of Kuthiraivali, Panivaragu and others

** It includes the production of Kuthiraivali, Panivaragu and others

^ It includes the area of Kuthiraivali, Panivaragu and wheat

Source: Directorate of Agriculture, Govt. of Tamil Nadu

About RESMISA Project

The action research project 'Revalorising Small Millets in Rainfed Regions of South Asia' aims to increase production and consumption of nutritious small millets and associated pulse and oil seed crops in rainfed regions of India, Nepal and Sri Lanka. It focuses on overcoming existing constraints related to production, distribution and consumption of small millets and associated crops and uses gender sensitive participatory approaches. It pursues a multi-pronged research strategy related to conservation, productivity enhancement, value addition, post-harvest processing, promotion and policy action to raise the profile of small millets. The project has selected six research sites in the backward and tribal dominated pockets of Tamil Nadu, Andhra Pradesh, Odisha and Jharkhand states of India and one site each in Sri Lanka and Nepal.

One of the objectives of this project is Public policy analysis and change aimed at conducive policy environment for small millets. As part of that objective this policy review paper on millets was prepared. The purpose of this paper is to contribute towards better-informed policy and more effectively designed implementation mechanisms related to millets to achieve greater public welfare. An attempt is made to review the existing policies related to millet in India, and in states of Tamil Nadu and Andhra Pradesh and to suggest needed policy actions for increasing production and consumption of millets. Suggestions are also made for policy related initiatives under RESMISA project.

This project is anchored by DHAN Foundation and Canadian Mennonite University. The project is implemented in South Asia by DHAN Foundation in India, LI-BIRD in Nepal and Arthacharya Foundation in Sri Lanka. The other South Asian partners are Tamil Nadu Agriculture University, All India Coordinated Small Millets Improvement Project of ICAR and WASSAN. This project is supported by Canadian International Food Security Research Fund (CIFSRF) promoted by Canadian International Development Agency (CIDA) and International Development Research Centre (IDRC), Canada.

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