Food and Nutrition Security Community

Solution Exchange for the Food and Nutrition Security Community
Consolidated Reply

Query: Food Insecurity Atlases – Experiences; Examples

Compiled by Gopi N. Ghosh, Resource Person, N. P. Y. Raman, Consultant and T. N. Anuradha, Research Associate

Issue Date: 22 April 2008

From Nisha Srivastava, UN World Food Programme, New Delhi
Posted 26 March 2008

The approach to analyse food security is in the accepted framework of 'AAA' – **Availability** (production factors, i.e. agricultural production, its determinants and availability to households); **Access** (household and individual's access to food and factors determining it, i.e. poverty and literacy levels, vulnerability of populations, etc.); and **Absorption** (ability to absorb food - health conditions, availability of potable water and sanitation). The lacunae in these three major factors gets reflected in the form of 'Food Insecurity Outcome' (child malnutrition, child mortality, low BMI among adults, etc.), which taken as manifestation of food insecurity.

High levels of food insecurity as reflected in the poor nutritional indicators and the periodic reports of hunger and deaths due to malnutrition are matters of continuing concern. The problem is more acute in some states as compared to others. Even within a state, there are deep disparities. Maharashtra, for example, offers a striking example where high economic growth also co-exists uneasily with severe food insecurity in many parts of the state. The situation is broadly similar in other states too.

In order to understand and analyse the sub-state patterns of food insecurity (which includes nutritional insecurity), World Food Programme (WFP) together with the Government and the Institute of Human Development is in the process of preparing state-wise 'Food Insecurity Atlases', taking districts as units of analyses. The states being taken up initially are Orissa, Madhya Pradesh, Jharkhand, Bihar and Chhattisgarh. The approach is to analyse food security in the accepted framework of availability, access and absorption. The atlases will be based on qualitative information as well as extensive analysis of secondary data (Census, NSSO, NFHS, RCH, etc). Consultations have been held in some states.

It is hoped the atlases will become tools for both policy analysis and action. The key issues we are exploring for each of the above states (and districts within states) are the following:

- Major factors that impact food security (general or specific to the state concerned)
- The best or worst off districts in the states and factors responsible for bringing in the positive impact (better is the district higher is the level of food security in terms of AAA)
- Effectiveness of the government and the civil society initiatives in promoting food security

- Any information available on the situation of particular population groups and their coping strategies

We would like to enrich the reports with the experience and knowledge of the Solution Exchange network, and welcome specific reports or information from members on any of the above issues, or on any other issues that may be relevant to the food security situation for these particular states.

Responses were received, with thanks, from

1. **Ajit Sharma, Indian Society for Agribusiness Professionals, New Delhi**
2. **P. K. Thampan, Peekay Tree Crops Development Foundation, Kochi**
3. **N. P. Y. Raman, United Nations, New Delhi**
4. **Swarna S. Vepa, Madras School of Economics, Chennai**
5. **K. D. Singh, Independent Consultant, New Delhi**
6. **Raj Ganguly, Independent Consultant, New Delhi (Response 1; Response 2)**
7. **Bimal Biswas, Independent Consultant, New Delhi**
8. **Swarna K, Food and Agriculture Organization of the United Nations (FAO), New Delhi**

Further contributions are welcome!

Summary of Responses
Comparative Experiences
Related Resources
Responses in Full

Summary of Responses

Food insecurity exists when all people at all times, do not have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and preferences for an active and healthy life. Responding to the query on developing "food insecurity atlases," discussants highlighted various factors, including state specific aspects, affecting food insecurity, provided examples of coping strategies, and listed suggestions for addressing the problem.

Members cited inadequate food production, lack of money to purchase food and the ability to assimilate food properly as the **major factors for food insecurity** in the country. They also explained food production is a function of many factors such as soil, climate, and inputs (like seed, water, fertilizers and credit). Moreover, they highlighted that stagnant food grain output, the growing population and the absence of any technological breakthrough to scale up production are the key contributory reasons for the present situation. Further, respondents stated that in India farming has become less remunerative leading to increasing unemployment, rural poverty and large-scale migration to urban areas in search of employment. Instability in production resulting in higher prices for local food grains, distress selling by farmers, increased cultivation costs and an ineffective public distribution system were cited as other contributing factors to food insecurity.

Discussing **state specific factors**, members felt there is vast unutilized potential for improving agriculture production in **Orissa**, **Madhya Pradesh**, **Jharkhand**, **Bihar** and **Chhattisgarh**. They referred to the "Food Insecurity and Vulnerability Information and Mapping System" of the Food and Agriculture Organization of the United Nations (FAO) as one system of indices that has identified various indicators and developed food insecurity maps for **Orissa** and **Himachal Pradesh**, which could help improve production. Discussants argued these states are already either severely or extremely food insecure, with Orissa and Madhya Pradesh witnessing a negative agricultural growth. The states all have

a different set of production and consumption problems that need to be addressed respectively. For example, in **Rajasthan** drought is the major problem, in **Orissa** floods, lack of irrigation despite good rainfall in **Bihar**, and in **Gujarat** the shift to commercial crops. Thus, members recommended rating districts with poverty indices and human development indices, and using this data as the basis for directing development resources.

While considering **food security issues**, respondents discussed the importance of taking into account all the calorie sources households have access to and the inter-state differences in the availability and prices of food grains. For example, in **Kerala** the production of cereals is far less than the normal requirement in terms of calorie contribution. The output of food grains in the state has consistently declined over the past three decades. As a result, the total availability of food grains including the quota of rice and wheat drawn from the central pool is insufficient to maintain the same level of per capita availability as in other states. This situation has also caused comparatively higher food grain prices in the state.

Members also stressed the need to map **special population groups** – for example, the tribal dominated areas within 5 km of forest boundaries, which includes about 70% of the tribal population in the country**. Orissa**, in particular has a very high incidence of poverty (50%), with almost 70% of the populace in Schedule Tribe areas living below the poverty line. The tribal economy in Orissa is predominantly land based, absorbing nearly 90% of the total population, compared to 65-70% nationally and in selected states. Moreover, very poor growing conditions for crops in these areas make them extremely vulnerable to climatic fluctuations and low yield.

Additionally, discussants recommended employing **area specific sustainable agriculture** involving local communities as a possible long-term solution to food insecurity. They referred to several successful experiments like the alternative self-sustaining Public Distribution System (PDS) model by Dalit women in **Andhra Pradesh**, traditional agriculture and bio-diversity conservation in the western ghat region in southern **Karnataka**, dry land farming by farmers of Bundlekhand in **Uttar Pradesh** and wet rice cultivation in the northeast. Appreciating the initiative taken by a farmer's organization in the Pattanakkad Panchayat in Alappuzha district of **Kerala,** respondents outlined how the organization spearheaded a campaign for vegetable cultivation to improve food security. They also highlighted the necessity of documenting these experiences in detail.

Respondents also suggested homestead-based intensive integrated farming as the option for the government and civil society to address the issue. Other **suggestions** included:

- Producing multiple sources of food to increase availability of food to prevent undernutrition
- Improving physical access to diverse food sources, opportunity to the economically deprived sections of the society for regular income and employment
- Using area specific agro-techniques devoted to resource conservation and production of foods appropriate to local conditions
- Encouraging community-based organisations (CBOs) capable of triggering group action to produce and market foods at local levels
- Making consumption credit and credit for the people who manage PDS outlets available at reasonable rates

Further, respondents urged mainstream researchers to do some serious introspection so that research is targeted towards meeting the needs of the market and farmers to ensure food and nutrition security at macro and micro levels. They also emphasized conducting educational and training programs for specific population groups (like tribals) to help them maximize their potential to grow, develop and self-sustain.

Finally, respondents pointed out that making food available through domestic production, commercial imports, food aid or all, will likely be necessary to achieve food security in a country. However, at the same time these may not be sufficient, they stressed, noting that people must have access to their own locally produced food, the ability to purchase food in local markets along with access social safety nets of

food. Since, food insecurity may manifest on a chronic basis reflecting severe poverty or as "crises," the emphasis needs to be on achieving food security at the local level through increasing yields, reduction in production costs, as well as enhancement in the ability of small farmers to retain adequate quantity of food grains for self-consumption.

Comparative Experiences

Kerala

Self-Help Groups (SHGs) Contribute to Food Security, Alappuzha District *(from P. K. Thampan, Peekay Tree Crops Development Foundation, Kochi)*
'Haritha Samrudhi,' a SHG has been sucessful in promoting intensive integrated agriculture among large farm holdings and is supporting the creation of multiple sources of food, income, and employment benefitting over 200 farmers. This SHG is also promoting agroforestry vegetable cultivation and the assessment the vegetable output would serve the requirements of protective foods of over 1,200 households in the Panchayat for about three months.

Related Resources

Recommended Documentation

From N. P. Y. Raman, United Nations, New Delhi

The State of Food and Agirculture 2003-2004
Report; Food and Agriculture Organization of the United Nations (FAO); Rome; 2004
Available at ftp://ftp.fao.org/docrep/fao/006/Y5160e/Y5160e00.pdf (PDF Size: 179 KB)
Introduces a range of national agriculture and food security indicators designed to serve as a tool for monitoring the state of food and agriculture production across countries

The State of Food and Agriculture 2006 - Food Aid and Food Security
Report; Food and Agriculture Organization of the United Nations (FAO); Rome; 2006
Available at http://www.fao.org/docrep/009/a0800e/a0800e00.htm
Argues that food aid should be seen in the context of broader concepts and strategies supporting food security and social welfare

Safety Net Programmes: Outreach and Effectiveness
Artilce; by S. Mahendra Dev, K. Subbarao, S. Galab and C. Ravi; Economic and Political Weekly; 1-7 September 2007; Abstract of article, full article available on subscription
Available at http://www.epw.org.in/epw/user/loginArticleError.jsp?hid_artid=10981
Outlines results of a survey in Orissa and Madhya Pradesh indicated 'drought' (food availability) and sudden health problems (food absorption) as the principal risks for food security and life

From Raj Ganguly, Independent Consultant, New Delh; response 1

Understanding the Dynamics of Food Insecurity and Vulnerability in Orissa
Working Paper; Food Security and Agricultural Projects Analysis Service (ESAF); Food and Agriculture Organization of the United Nations (FAO); Rome; October 2007
Available at ftp://ftp.fao.org/docrep/fao/010/ai207e/ai207e00.pdf (PDF Size: 884 KB)
Documents the main findings of a study on food insecurity and vulnerability in Orissa in support of promoting interventions for food security and livelihoods at state level

Understanding the Dynamics of Food Insecurity and Vulnerability in Himachal Pradesh
Working Paper; by Food Security and Agricultural projects Analysis Service (ESAF); Food and Agriculture Organization of the United Nations (FAO); Rome; May 2007
Available at ftp://ftp.fao.org/docrep/fao/010/ah942e/ah942e00.pdf (PDF Size: 703 KB)

Analyses the main characteristics and causes of food insecurity and vulnerability, seeking to identify who and where the vulnerable and food insecure are and why they are at risk

From Swarna K, FAO, New Delhi

Food Security and the Millennium Development Goal on Hunger in Asia: Annex 1 Food Security in India
Article; by John Farrington and N.C. Saxena; Working Paper 231; Overseas Development Institute (ODI); United Kingdom; 2003
Available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_annex1_India.pdf (PDF Size: 60 KB)

Notes the substantive achievements made over the last 50 years in food security in India, and also points out areas of continuing concern, including high rates of under-nutrition

Socio-Economic and Production Systems Study Series: Overview of Socio-Economic Situation of the Tribal Communities and Livelihoods in Madhya Pradesh and Bihar
Study; Food and Agriculture Organization of the United Nations (FAO); 1998
Available at http://www.fao.org/docrep/007/ae393e/ae393e00.htm

Studies the socio-economic situation (including livelihoods) of tribal communities in Madhya Pradesh and Bihar, looks into below subsistence food production and food insecurity

Food Insecurity in India: Causes and Dimensions
Study; by Sujoy Chakravarty and Sejal A. Dand; Indian Institute of Management Ahmedabad (IIMA); April 2005
Available at http://www.iimahd.ernet.in/publications/data/2005-04-01sujoy.pdf (PDF Size: 351 KB)

Study uses existing work and conventional data sources in order show the extent of food insecurity in India and the logic to different pattern of its casualty

Food Security Module India
Paper; by P. V. Srinivasan; Role of Agriculture Project; Food and Agriculture Organization of the United Nations (FAO); Rome; October 2003
Available at ftp://ftp.fao.org/es/ESA/Roa/pdf/4_Food_Security/FoodSecurity_India.pdf (PDF Size: 277 KB)

Analyzes how agriculture affects food security at the macro (national) level and at the household level

Stages in Defining and Setting up a Food Security Information Early Warning System (FSIEWS)
Handbook; by Food and Agriculture Organization of the United Nations
Available at http://www.fao.org/docrep/003/x8622e/x8622e05.htm

Explains the various stages in setting up a FSIEWS, and how the first stage deals with basic study of food security, analysis of country specific constraints and actors

From T. N. Anuradha, Research Associate

Mapping Food Insecurity
Article; by Lakshmi Murthy; InfoChange; February 2004
Available at http://www.infochangeindia.org/bookandreportsst61.jsp

Analyses food insecurity atlas that presents a rise in number of people living in impoverishment in spite of presents shift from food deficient economy to food surplus one

Food Security and Nutrition: Vision 2020
Report; by R. Radhakrishna and K. Venkata Reddy; Planning Commission
Available at http://planningcommission.nic.in/reports/genrep/bkpap2020/16_bg2020.pdf (PDF Size: 93.6 KB)

States that through India achieved success in combating transient food insecurity caused by droughts or floods, it has failed to make much dent in chronic food insecurity

Public Distribution System and Food Security
Report; Planning Commission; November 2001
Available at http://planningcommission.nic.in/aboutus/committee/wrkgrp/wg_pds.pdf (PDF Size: 284 KB)

Part of the Tenth Five Year Plan report on food security deals with the changing consumption pattern for food in India and reviews some studies on demand and supply projections for cereals

The Negative Effects of Poverty and Food Insecurity on Child Development
Review Article; by Mariana Chilton, Michelle Chyatte and Jennifer Breaux; Department of Community Health and Prevention, Drexel University School of Public Health, Philadelphia, USA; Indian Journal of Medicine; October 2007
Available at http://www.icmr.nic.in/ijmr/2007/October/1003.pdf (PDF Size: 61 KB)

Addresses the importance the importance of early childhood nutrition and the detrimental effects on child health and development due to poverty and food insecurity

Recommended Organizations and Programmes

From Raj Ganguly, Independent Consultant, New Delhi, response 2

Central Rice Research Institute, Cuttack
ICAR, Cuttack 753006 Orissa; Tel: 91-671-2367768-83; Fax: 91-671-2367663; crrictc@ori.nic.in; http://crri.nic.in/

Aims to improve the quality of life of rice farmers and played a key role in ensuring food security of by ensuring food supply during the Green Revolution

International Rice Research Institute, Manila
6776 Ayala Ave. Security Bank Center, Suite 1009, Makati City, Metro Manila, Philippines ; Tel: 63-2-8911236; Fax: 63-2-8911174; irriinbox@cgiar.org; http://www.irri.org/science/cnyinfo/india.asp

Non-profit research training centre working towards reducing poverty and food insecurity through collaborative research and strengthening agricultural extension systems

Recommended Portals and Information Bases

Food Insecurity and Vulnerability Information and Mapping Systems (FIVIMS), Food and Agriculture Organization of the United Nations, Rome *(from Raj Ganguly, Independent Consultant, New Delhi, response 1)*
http://www.fivims.net/static.jspx?lang=en&page=overview

Provides an explanation of food insecurity, its dimensions magnitude and nature of food insecurity and vulnerability along with details of undernourished people in the world

Related Consolidated Replies

Food Security through Panchayats, from B. Rajaraman, Civil Supplies and Consumer Protection Department, Chennai (Advice; Comparative Experiences). Decentralization Community and Food and Nutrition Security Community. Issued 10 January 2006

Available at http://www.solutionexchange-un.net.in/decn/cr-public/cr-se-decn-food-07010601-public.pdf (PDF, Size: 211 KB)

Attempts to explore possible strategies for involving PRIs in food security administration, and models/best practices in these areas.

Food Insecurity during Natural Disasters, from Rahul Mangaokar, A.I.R Society, Ahmedabad (Comparative Experiences). Food and Nutrition Security Community and UNDP Crisis Prevention and Recovery Network**.** Issued 16 February 2006
Available at http://www.solutionexchange-un.net.in/food/cr-public/cr-se-food-global-16020601-public.doc (Document, Size: 191 KB)

Presents the dynamics of ensuring food security during disasters and ways to ensure early relief and restoration of livelihoods through a multi-pronged effort at all levels.

E-Discussion Summary: Food Security for Vulnerable Groups through Panchayats Rajwant Sandhu, Ministry of Panchayati Raj, New Delhi. Decentralization Community and Food and Nutrition Security Community**.** Issued 9 October 2007
Available at http://www.solutionexchange-un.net.in/decn/cr-public/cr-se-decn-10100701-public.pdf (PDF,Size : 196 KB)

Discusses role assigned to community based organizations and panchayats to enhance food security of vulnerable groups, role of Governments in improving PDS

Responses in Full

Ajit Sharma, Indian Society for Agribusiness Professionals, New Delhi

There is a vast unutilized potential for agriculture production in Orissa, Madhya Pradesh, Jharkhand, Bihar and Chhattisgarh. Farming has however become less remunerative leading to increasing unemployment, rural poverty and large-scale migration to urban areas. To improve the situation and ensure food security, the existing potential should be fully harnessed through re-orientation of agriculture practices.

P. K. Thampan, Peekay Tree Crops Development Foundation, Kochi

My response to each of the points highlighted in the query of Nisha Srivastava on food security issues is furnished below:

The major factors that impact food security are:

- production and availability of multiple sources of food to prevent undernutrition and/or malnutrition
- physical access to diverse food sources so that the food people eat supplies the minimum calories or protein of the desired quality the body needs
- opportunity to the economically deprived sections of the society for regular income and employment
- area specific agro techniques devoted to resource conservation and production of foods appropriate to local conditions and needs
- the slow but steady erosion of the social status and profitability of farming
- presence of community-based organizations (CBOs) capable of triggering group action in producing and marketing foods of plant and animal origin at the local levels.

While considering food security issues it is important to take into account all the sources of calories to which the households have access to and the inter-state differences in the availability and prices of food grains. For example, in Kerala the production of cereals is far less than the normal requirement in terms of calorie contribution. The output of food grains in the state has been consistently on the decline over

the past three decades. As a result, the total availability of food grains including the quota of rice and wheat drawn from the central pool proved to be insufficient to maintain the same level of per capita availability as in other states. The situation also caused comparatively higher food grain prices in the state.

Another noteworthy phenomenon in Kerala is the availability of many non-cereal food sources, which form part of the daily diet of the people contributing to a significant proportion of the calorie intake. The major non-cereal food sources to which the people have ready access are coconut, cassava and other tubers, jack and banana including other plantains. The combined contribution of dietary energy from these sources is more than the contribution of rice produced in the state. However, there exists a deficit of about 30% in the daily food energy requirement at the rate of a minimum per capita daily intake of 2,400 calories in villages and 2,100 calories in cities. The position may show some change if the dietary intake of fish and livestock products is also taken into account in relation to different income groups of the population. Presently by availing food grains released from central pool and/or procuring from other states the existing gap is being bridged.

In states like Kerala homestead-based intensive integrated farming is the best option for the government and civil society to pursue with vigour. Integrated farming envisages the growing of diverse species of economically important woody perennials along with agricultural crops including vegetables and livestock components in the same operational holding. Such a system is very compatible in coconut holdings. The system would, to a large extent, safeguard the ecological base of farming through its influence on erosion, nutrient cycling, water use efficiency and on microclimate. Apart from the ecological benefits, the system ensures multiple sources of income, nutritious food articles of plant and animal origin and additional on-farm employment. The system also insures against the risks associated with single crop economy.

One example to show the initiative taken by a farmer's organization to contribute to food security in one Panchayat is not irrelevant here. In the Pattanakkad Panchayat in Alappuzha district of Kerala a farmer's SH group named as 'Haritha Samrudhi'is spearheading a campaign for vegetable cultivation in as many households as possible. It is organizing a competition and already over 200 farmers have registered as participants. The assessment of the group is that the competitors would cover not less than eight ha and the vegetable output from the area would serve the requirements of protective foods of over 1,200 households in the Panchayat for about three months. Such initiatives by farmer's groups/CBOs could complement and strengthen the efforts of the government to achieve food security for the people.

N. P. Y. Raman, United Nations, New Delhi

I would like to state that in the current context of growing sense of food insecurity, the query assumes significance. Stagnant food grain output, increasing population and absence of any technological breakthrough for upscaling production are some of the contributory factors for the present situation.

The states mentioned either – Orissa, Madhya Pradesh, Jharkhand, Bihar and Chhattisgarh – are already severely or extremely food insecure, with more states sliding down the ladder. In the recent years, agriculture has witnessed a negative growth in Orissa and MP.

At micro level, apart from the problem of food availability on account of poorly administered PDS, food accessibility particularly by the vulnerable groups in rural areas is adversely affected by shrinking agrarian income and its absorption by poor sanitation, health care etc. FAO's 'The State of Food and Agriculture 2003-04 (ftp://ftp.fao.org/docrep/fao/006/Y5160e/Y5160e00.pdf) and 2006 (http://www.fao.org/docrep/009/a0800e/a0800e00.htm) indicate a drop in the annual average increase in dietary energy supply. A major segment of the people surveyed in Orissa and Madhya Pradesh consider 'drought' (which relates to food availability) and 'sudden health problem' (which relates to food

absorption) as the principal risks for their life and security. (cf: Safety Net Programs: Outreach and Effectiveness' E & P Weekly Sep 1-7, 2007)
(http://www.epw.org.in/epw/user/loginArticleError.jsp?hid_artid=10981)

As for coping strategies, area-specific sustainable agriculture involving the local community could be the long-term answer for food insecurity. Several successful experiments in our midst – alternative self-sustaining PDS model by dalit women in Andhra Pradesh, traditional agriculture and bio-diversity conservation in the western ghat region in southern Karnataka, dryland farming by farmers of Bundlekhand in Uttar Pradesh, wet rice cultivation in the northeast - have demonstrated this.

I would welcome more members to respond to the points in the query and share their valuable inputs so that the discussion becomes more productive and useful to the querist.

Swarna S. Vepa, Madras School of Economics, Chennai

World Food Programme (WFP) New Delhi has been working with district level Food Insecurity studies since 2001. M.S. Swaminathan Research Foundation has also brought out Reports on Madhya Pradesh, Rajasthan, Orissa and Gujarat in 2001-02 at the district level in collaboration with World Food Programme. They have also jointly brought out the three state level Food Security Atlases that have been widely appreciated. As a Programme Director at MSSRF, I had an opportunity to be very closely associated with the state level publications as well as district level reports.

I would like to share my thoughts on the issue.

In my opinion, each one of these states have a different set of production and consumption problems that need to be addressed. For example, drought would be the major problem for Rajasthan and floods are a major problem for Orissa. Lack of irrigation despite good rainfall is probably the major issue in Bihar. Shift to commercial crops could be a problem in Gujarat. It is important to identify the major issues constraining food grain production.

It is important to identify the set of factors that cause staple production instability (fluctuations in production) that cause shortages and increase the local food grain prices. Many studies have shown that higher production is associated with higher level of consumption at the state and district level. (Instability is considered as a food insecurity factor in the Atlases) Reduction in instability is the major solution.

Second is consumption of food grains out of homegrown produce, which decreases poverty. (FAO study based on unit level NSS data supports this view). However during droughts small farmers pledge the harvest in the sowing season itself. Hence, they are forced to sell the produce at low price soon after the harvest even in non drought years and buy back the same in lean seasons at higher prices. The solution lies in enabling them to retain food grains for self-consumption. It is important in the subsistence states and districts, with lower level of commercialization.

Third is the cost of cultivation. Commission for Agricultural Costs and Prices (CACP) report has shown that the profitability is either negative or very low for wheat and Paddy in these states even if we assume that they receive MSP. The solution lies in increasing the yields and reducing the per hectare costs and per unit cost of production.

Lastly, no doubt PDS has to be made available to all the needy. Landless depend upon PDS when local prices are high. It has to be made effective. While shifting the management of the PDS shops from private traders to local communities is a welcome step from the effective delivery point of view, it may have has viability problems when handled by the assets less.

The planning Commission report on PDS while acknowledging huge amount of diversions of PDS food grains to open market, also makes a point about the viability of a retail outfit with fewer cards. Especially in backward regions, the PDS managed by dalit women find it difficult to raise the money to pay for the bulk supply and then recover the money from the cardholders. Consumption credit and credit to the people who manage the PDS outlets at reasonable rates is an added requirement.

K. D. Singh, Independent Consultant, New Delhi

With reference to point 4 of the query relating to information on particular population groups, I would like to share statistics relating to Scheduled tribes in Orissa (vis-à-vis contiguous areas of Andhra Pradesh having dominant tribal population) where the incidence of poverty and hence food insecurity, and indices of human development are deplorable, especially in Scheduled Tribes areas, which are located within 5 km distance from forests.

Orissa, in particular, has a very high incidence of poverty at the State level (50%) and almost unacceptable level (70%) for the ST areas Not only is the incidence of poverty is appalling, but also the level of poverty within the poor as a class: their income is less than half of the State's poverty line (Table 1 and 3).

Table 1: Human Development in ST areas compared to Country and State Averages

Variable	Unit	All India		AP		Orissa	
		All	ST	All	ST	All	ST
Population	Million	846	68	67	4	32	7
Literacy rate	%	52	30	44	17	49	22
Cultivators	%	39	55	28	41	44	51
Agriculture Labourers	%	26	33	41	47	29	38
Poverty incidence	%	39	52	21	26	55	71
Income level	RS	4485	1609	5046	915	3028	600

Source: Planning Commission of India and States 2000

Table 2: Some indicators of human development in ST villages

District	Villages Studied	Schedule Tribe %	Literacy Rate (%)	Amenities Occurrence in (%) of Villages		
				School	Medical	P & T
Orissa						
Mayurbhanj	2524	85	23	65	6	14
Phulbani	2026	84	22	48	3	6
Koraput	4613	86	9	63	7	12
AP						
Visakhapatnam	2317	94	13	37	12	16
East Godavari	522	88	17	73	6	21
Adilabad	500	82	14	85	6	14

Source: National Census 1991

The percentage of Cultivators and Agricultural labourers, added together, gives an estimate of the livelihood derived from land. From Table 1 data, an inference could be drawn that tribal economy is dominantly land based absorbing nearly 90% of the total population, compared to 65-70 % for the country and selected States.

Table 3 shows a very poor growing condition for crops in ST areas, which makes them most vulnerable to climatic fluctuation and yield, which is very low.

Table 3: Constraints imposed for development in ST areas

District	Agriculture holding in ST Areas of the Conservation Zone		Growing seasons (month)	Terrain	Distance To Town (km)
	Ha/ Household	(%) Irrigated			
Orissa					
Mayurbhanj	1.4	6.8	6.0	Hilly	27
Phulbani	1.0	2.8	5.0	Hilly	54
Koraput	1.5	4.2	5.0	Hilly	37
AP					
Visakhapatnam	1.8	0	5.6	Hilly	75
East Godavari	1.4	5.1	5.7	Hilly	60
Adilabad	2.8	0	5.0	Hilly	37

I strongly feel that we should map out tribal dominated areas within 5 km from forest boundary, which will include about 70% of their population in the country. I can help you in mapping. No, doubt, STs are not only the poorest, but most vulnerable.

Raj Ganguly, Independent Consultant, New Delhi *(response 1)*

The FIVIMS (http://www.fivims.net) Food Insecurity and Vulnerability Information and Mapping System, of the FAO is one such system of indices that has already identified various indicators and developed various maps for food insecurity. Their studies in Orissa and Himachal Pradesh are available at ftp://ftp.fao.org/docrep/fao/010/ai207e/ai207e00.pdf (PDF, Size: 883 KB); ftp://ftp.fao.org/docrep/fao/010/ah942e/ah942e00.pdf (PDF, Size: 703 KB)

In my recent visit to Orissa I chanced to glance through one of their report "Orissa Food Insecurity and Vulnerability Information and Mapping System" - By Damodar Tripathi, Jiten Kr. Mishra, Naoko Horii, Julie Tripathi; Published by D J Research and Consultancy, FAO, Government of India and Government of Orissa. What was very striking to note that the District - Kalahandi of Orissa, which is worldwide noted for its high poverty and food insecurity, topped the list of districts for food production and availability. So the reasons there of may be really complex and intertwined, and needs to be identified, highlighted and targeted in the developmental efforts, through your recent initiatives. Rating of districts on poverty indices and human development indices should be the basis for directing the development resources.

Bimal Biswas, Independent Consultant, New Delhi

Major factors that impact the food security are food production, enough money to purchase food, and good healthy condition to assimilate the same properly to provide energy to work. Food production is a function of many factors such as soil, climate, inputs like seed, water, fertilisers, credit, management and so on

Soils of Orissa are low to medium in N, P and K. They have various other problems like acidity (about 66 percent area), alkainity, erosion, toxicity. Low use of inputs such as High Yielding Variety seeds, fertilizers (47 kg/ha against national average of 115 kg/ha). Fertilsers use is mainly confined in a few districts (Sambalpur, Puri, Ganjam, and Cuttack etc as a result the food grains productivity is low in the state (1211 kg/ha against the national average of 1715 kg/ha). Average annual rainfall is medium to high

(1498 mm) flood and drought, cyclone etc are very common which add misery to the state. Temperature in some of the districts namely Sambalpur Balangir, Koraput goes as high as 50^0C. Interestingly the food grains production of the world famous poverty dominated district Kalahandi is 0.43 mt which has the fourth position in the state, the other three are Dargarh (0.59 mt), Mayurbhanj (0.51 mt) and Ganjam (0.49 mt). Therefore, food production is not enough, employment opportunities should be there to earn enough money to purchase food. Food absorption is also likely to a serious problem with the people having poor health.

The better districts are Cuttack, Puri, Ganjam, while the western districts are worst.

The government and the civil society efforts in most of the cases could not yield desired results, because of lack of seriousness, honesty, devotion and firm determination to reach the goal.

The tribal people are simple, big hearted but have been exploited for centuries. They lost faith in others as well as in themselves. Educational and training programmes manned by people who have real love for these people have to be initiated to create awareness and real faith in them so that they can help themselves. Once they understand that they have the hidden unlimited potential to grow and develop, nothing can stop them.

Raj Ganguly, Independent Consultant, New Delhi *(response 2)*

Adding further to the discussion and points raised by Bimal Biswas, I would like to point out the role of Research and Development in ensuring food security. Indian Agriculture and Extension network should be one of the largest in the world. However, the gap between public research labs and adoption of technology by the farmers still is very large particularly in pockets like in Orissa.

Paddy is the single major crop of Orissa covering 51% of the total crop acreage. In addition, the secondary origin centre of paddy is in Orissa and a premier national research facility 'Central Rice Research Institute' is working on only paddy since 1946. It is surprising that the adoption rate of new varieties developed by the central institute and the State Agricultural University is still negligible. The seed replacement ratio of Paddy, which is the main critical factor of productivity, is abysmally low (6% as compared to ideal 25%). Further, the largest selling paddy variety in the state is MTU 7029, a variety developed in Andhra Pradesh in 1980's. Although there is a long list of paddy varieties developed in the state and elsewhere, and which gets added to every year, thanks to the continuous flow of resources, the adoption of them is negligible at farmers field. Either the research does not address the farmer's need or it fails to reach them.

Since 1965, India has released about 640 improved rice varieties: 54% of them for irrigated areas, 27% for the rain fed lowland, and 19% for upland areas. (http://www.irri.org/science/cnyinfo/india.asp) till 2000.

Surprisingly Orissa is in surplus situation in paddy production but is in deficit of pulses and oilseeds production (till 2005-06). This further speaks the need for crop diversification and aim towards 'Nutrition security' than be concerned to food security alone.

I believe a serious introspection is required in this direction to mainstream the research efforts to the need of market and the farmers and thus ensure the food and nutrition security both at micro level and macro level.

Swarna K, Food and Agriculture Organization of the United Nations (FAO), New Delhi

Please find below relevant documentation I came across while conducting some research

Food Security and the Millennium Development Goal on Hunger in Asia: Annex 1 Food Security in India
Article; by John Farrington and N.C. Saxena; Working Paper 231; Overseas Development Institute (ODI); United Kingdom; 2003
Available at http://www.odi.org.uk/publications/working_papers/wp231/wp231_annex1_India.pdf (PDF Size: 60 KB)

Notes the substantive achievements made over the last 50 years in food security in India, and also points out areas of continuing concern, including high rates of under-nutrition

Socio-Economic and Production Systems Study Series: Overview of Socio-Economic Situation of the Tribal Communities and Livelihoods in Madhya Pradesh and Bihar
Study; Food and Agriculture Organization of the United Nations (FAO); 1998
Available at http://www.fao.org/docrep/007/ae393e/ae393e00.htm

Studies the socio-economic situation (including livelihoods) of tribal communities in Madhya Pradesh and Bihar, looks into below subsistence food production and food insecurity

Food Insecurity in India: Causes and Dimensions
Study; by Sujoy Chakravarty and Sejal A. Dand; Indian Institute of Management Ahmedabad (IIMA); April 2005
Available at http://www.iimahd.ernet.in/publications/data/2005-04-01sujoy.pdf (PDF Size: 351 KB)

Study uses existing work and conventional data sources in order show the extent of food insecurity in India and the logic to different pattern of its casualty

Food Security Module India
Paper; by P. V. Srinivasan; Role of Agriculture Project; Food and Agriculture Organization of the United Nations (FAO); Rome; October 2003
Available at ftp://ftp.fao.org/es/ESA/Roa/pdf/4_Food_Security/FoodSecurity_India.pdf (PDF Size: 277 KB)

Analyzes how agriculture affects food security at the macro (national) level and at the household level

Stages in Defining and Setting up a Food Security Information Early Warning System (FSIEWS)
Handbook; by Food and Agriculture Organization of the United Nations
Available at http://www.fao.org/docrep/003/x8622e/x8622e05.htm

Explains the various stages in setting up a FSIEWS, and how the first stage deals with basic study of food security, analysis of country specific constraints and actors

---

Many thanks to all who contributed to this query!

If you have further information to share on this topic, please send it to Solution Exchange for the Food and Nutrition Security Community in India at se-food@solutionexchange-un.net.in with the subject heading "Re: [se-food] Query: Food Insecurity Atlases – Experiences; Examples. Additional Reply."

Disclaimer: *In posting messages or incorporating these messages into synthesized responses, the UN accepts no responsibility for their veracity or authenticity. Members intending to use or transmit the information contained in these messages should be aware that they are relying on their own judgment.*

Solution Exchange is a UN initiative for development practitioners in India. For more information please