

## **SETTING-UP OF CHAIN-LINKED FOOD PROCESSING UNITS THROUGH SELF HELP GROUPS USING 'NBMS' MODEL**

Nilanjan Sengupta, Ratan Majumder

Forum of Scientists, Engineers and Technologists (FOSET)

15N Nelli Sengupta Sarani, Kolkata – 700087

Phone: (033)-22529675, Email: [foset@rediffmail.com](mailto:foset@rediffmail.com), [nsg1962@rediffmail.com](mailto:nsg1962@rediffmail.com)

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### **ABSTRACT**

A staggering 25 to 30 per cent of production of fruits and vegetables in India is lost due to wastage. India ranks first few positions globally in the production of fruits and vegetables. But hardly one percent of the annual production of fruit and vegetables is processed in this country which is much lower compared to other developing nations.

Food Processing and other post-harvest technologies are the best option available to reduce the wastage of 50% of food and vegetable products and enhance food security of the country. The right post harvest practices such as good processing techniques, and proper packaging, transportation and storage can play a significant role in reducing spoilage and extending shelf life. Indians spend about 50% of household expenditure on food items. Demand for processed/convenience food is constantly on the rise. India's comparatively cheaper workforce can be effectively utilised to setup large low cost production bases for domestic and export markets. A chain-linked model of food processing at rural level can be developed using NBMS (Nodal-Big-Medium-Small) model and involving the Self Help Groups. The capital required for this business will be evenly distributed among the groups lessening the economic burden on them and the ongoing schemes and grants of different government departments can be clubbed together to assist the Self Help Groups to enter into this foray.

Keywords: Food preservation and processing, Chain-linked process, Self Help Groups

## **INTRODUCTION**

A staggering 25 to 30 per cent of production of fruits and vegetables in India is lost due to wastage and value destruction, according to a joint study conducted by Mc Kinsey & Co and Confederation of Indian Industry (CII). Despite a substantial raw material base, and possible potential; the levels of processing at present are very low. There is large amount of wastage of perishable agricultural produce. The estimated losses of fruits and vegetables alone are to the tune of Rs.22,000 crores in a year.<sup>1</sup> India ranks first few positions globally in the production of fruits and vegetables. It accounts for 8 per cent of the world's production of fruits and leads in mango, banana, cauliflower and green peas. But this premier position in production is not reflected in processing, value addition and exports. In India, hardly one percent of the annual production of fruit and vegetables is processed, while in Brazil and USA it is 70per cent, in Philippines 78 per cent, in Malaysia 83 per cent and in Thailand 30 per cent.<sup>2</sup>

In India agriculture still maintains about 70 percent of the population of the country. About 75% population of this country lives in rural areas. Food Processing and other post-harvest technologies are the best option available to reduce the wastage of 50% of food and vegetable products and enhance food security of the country. It may be considered as the true linkage between the agriculture and the industry in terms of employment opportunity, livelihood development of rural people and prevention of migration to urban areas during non-harvesting period.

Unprocessed foods are very likely to be spoilt by biochemical processes, microbial attack and infestation. The right post harvest practices such as good processing techniques, and proper packaging, transportation and storage (of even processed foods) can play a significant role in reducing spoilage and extending shelf life. The challenges in processing lie in retaining the nutritional value, flavour, aroma, and texture of foods, and presenting them in near natural form with added conveniences. Processed foods need to be offered to the consumer in hygienic and attractive packaging, and at affordable costs. The minimization of wastage of agricultural produces by this process will in-turn ensure health and nutrition security for millions of people below poverty level.<sup>3</sup>

The study conducted by Ministry of Food Processing Industries of Govt. of India revealed that 'Rapid urbanisation, increased literacy and rising per capita income , have all caused rapid growth and changes in demand patterns, leading to tremendous new opportunities for exploiting the large latent market. An average Indian spends about 50% of household expenditure on food items. Demand for processed/convenience food is constantly on the rise. India's comparatively cheaper workforce can be effectively utilised to setup large low cost production bases for domestic and export markets. Due to its diverse agro-climatic conditions, it has a wide-ranging and large raw material base suitable for food processing industries. Presently a very small percentage of these are processed into value added products.'<sup>4</sup>

## **WHAT IS N-B-M-S MODEL AND WHY IT IS BEST SUITED FOR INDIA**

The food processing industries in India are broadly classified into (a) unorganised and cottage scale industries; and (b) organised processed food industries. In general it has been noticed that the categories under (a), whose products though may be of superior quality cannot withstand stiff competition from its economically powerful rival under (b) category.

Food Processing business is a cash-intensive business and it requires solid financial back-up. There are lot of competitions in the market and 'Brand Names' matter in this field. Consumers get swayed by advertisement in media even by products of inferior quality. The Trans-national companies are investing heavily in this business and it is obvious that they will try their best to procure the raw materials at lowest possible price, engage mechanised processes in their factories and thus depriving the poor growers and other workers. These companies are not intended for creating more economic upliftment of the other stakeholders.

For generating employment opportunities in rural areas, it is necessary to expand the coverage of villages through Self Help Groups (SHG). It is imperative to widen the base of village industries and increase productivity and thereby ensure higher earnings to the SHGs which would sustain them in the activity.

NBMS model (Nodal – Big – Medium – Small) was formulated by CSIR and Dept. of Science & Technology, Government of India. It is a chain linked process ranging from remotest villages to the main business hub. It can play a crucial role by distributing the capital, labour force, storage space, raw materials and also the profit out of the business. A district/ taluka or state-wise common brand name and door-to-door marketing by unemployed youth would also help in income generation and popularisation of the products.

Self Help Groups of women can play a major role in this business. Self Help Groups are emerging as the newest and strongest localized centres of economic activities in India. They provide the poor women at rural level with the support necessary for taking steps to have control of their lives in private and in society. SHGs, if directed properly, can provide economic self-reliance of women from economically weaker sections and thus contribute to their overall development and social empowerment. SHGs are micro-credit groups and are entitled to get loans from financial institutions against their small savings at much lower rate to carry out profitable economic activities. The Economic Survey 2006-07 states that over 2 lakh Self Help Groups (SHGs) availed bank loans worth Rs.11,398 crore as on 31st March 2006. The average bank loan per Self Help Group was around Rs.50,917. 2.38 lakh SHGs were credit linked as on December 31st 2006 against the target of 3.85 lakh new SHGs during 2006-07. The Survey says that in all 547 banks including 470 Commercial Banks, 158 Regional Rural Banks and 342 Cooperative banks are actively involved in the operation of the Self Help Groups –Bank Linkage Programme introduced as a mechanism to provide the rural poor easy and self-managed formal financial services on a sustainable basis by enabling them to gain access to banking services in a cost-effective manner. The programme has enabled nearly 329 lakh families in the country to gain access to micro-finance facilities from the formal banking system.<sup>5</sup>

The Self Help Groups of different economic category (based on their location and entitlement of loan) can be involved. They will be properly trained in food processing techniques, the quality control aspect and on hygiene and public health. Through this process the rural workforce can be easily engaged into an income generation activity which will not only earn them money but also ensure their nutrition security.

#### Stages of Food Processing:

Preservation and processing of fruits and vegetables is done in four distinctive steps namely:

- Preservation
- Semi Processing
- Final Processing and Packaging
- Marketing

In every stage techno-managerial input is needed on basic concepts of Microbes. Spoilage and preservation. Sanitation and nutritional relation between food and health, Preservative and additive to be added in food products. Processing, Drying, Fermentation, Chemical preservation of commercially and nutritionally important fruits and vegetables available locally, Records Keeping. Market Survey and marketing are all different aspects which are needed at different stages of the production and marketing process.

**N-B-M-S MODEL IN FOOD PROCESSING**

The Nodal – Big – Medium - Small approach of Marketing – Final Processing & Packaging – Semi Processing - Preservation of food products would be the most appropriate approach to our country in terms of sharing of responsibility, capital and surplus among a wide section of people. Under this approach a radial network of Self Help Groups can be created (See Table 1), which will certainly ease the financial burden on each of them by distribution of capital.

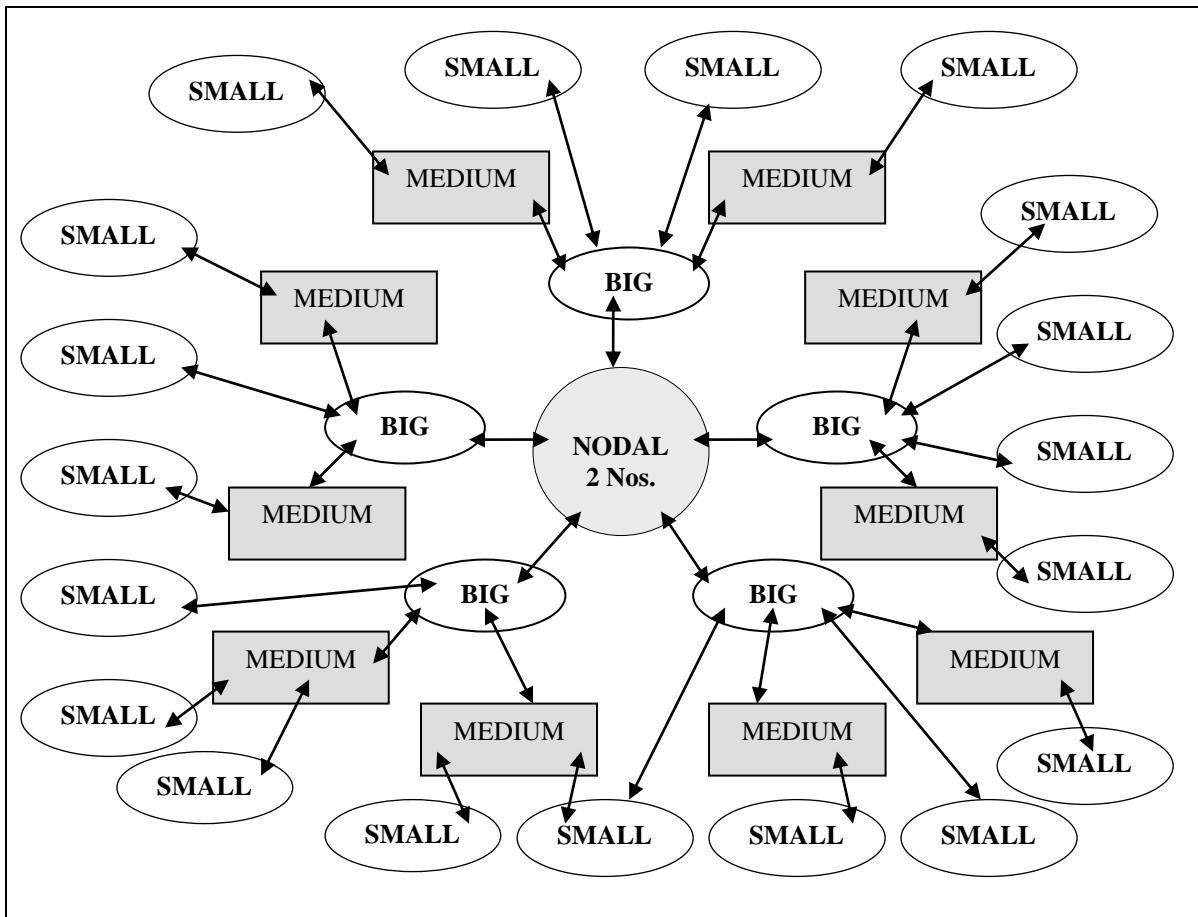


TABLE 1 – SCHEMATIC DIAGRAM OF N-B-M-S MODEL

The above-mentioned four stages of can be taken up by different Self Help Groups and Cooperatives in a reverse way as mentioned below:

Stage	Model	Type of SHG / Cooperative	Required Financial Capability
Preservation & Semi Processing – Tiny scale	Small	SHG - Extremely Rural	Rs.60,000/-
Preservation & Semi Processing – Medium scale	Medium	SHG - Villages at Fringe Area of towns	Rs.1,20,000/-
Final Processing and Packaging	Big	Cooperative - Towns	Rs.10,50,000/-
Marketing	Nodal	Cooperative - District Headquarter/ Business Hub	Rs.36,00,000/-

The tentative capital requirement, expected profit etc. for an NBMS system in a subdivision of a district has been depicted in Table -2 (Economics of Food Processing in NBMS model). The model is expandable to any length.

	No of SHG	Monthly Capacity (Kg)	Total capacity (Kg)	Purchase Price (Rs.)	Processing expense + transport (Rs.)	Sell Price (Rs.)	Monthly Total Profit (Rs.)	Monthly Profit per SHG (Rs.)	3 month's working capital (Rs.)
SMALL	20	3000	60000	5	1.5	10	210000	10500	58500
MEDIUM	10	6000	60000	5	1.5	10	210000	21000	117000
BIG	5	10000	50000	10	25	42	350000	70000	1050000
NODAL	2	25000	50000	42	6	57	450000	225000	3600000

Table -2 : Economics of Food Processing in NBMS model

#### Preservation & Semi Processing in tiny scale (Small)

- Can be done in homes or in any common place within a village by about 10 women.
- Local agricultural produce will be the raw material.
- Capacity of storage will be approximately 3000kg per month.
- Only some preservative, storage drums and small utensils are required.
- **Total cost of establishment** will be around **2.5 Lakh** including a 500 sq.ft. workshed on a free land.
- About 20 such SHGs of 10 members each are needed having total production capacity of 60M.T. per month (Raw Material).
- This will earn a minimum monthly surplus of Rs.10500/- per SHG i.e. Rs.1050/- per member per month
- Total no. of women can be engaged thus will be 200. Total cost of establishment is Rs.50 Lakhs

#### Preservation & Semi Processing in medium scale (Medium)

- Needs a small laboratory set-up and minor equipment like pulper, juicer etc.
- Local agricultural produce will be the raw material.

- Capacity of the unit will be around 6000kg per month.
- **Total cost of establishment** will be around **5.0 Lakh** including a 1000 sq.ft. workshed on a free land.
- About 10 such SHGs of 10 members each are needed having total production capacity of 60M.T. per month @ 6.0 M.T. per SHG..
- This will earn a minimum surplus of Rs.12000/- per month i.e. Rs.1200/- per member.
- Total no. of women can be engaged thus will be 100. Total cost of establishment is Rs.50 Lakhs.

#### Final Processing and Packaging (Big)

- Needs full-fledged laboratory for quality control and all equipment for food processing and packaging.
- Capacity of the unit will be around 10000kg per month.
- **Total cost of establishment** will be around **20.0 Lakh** including a 1500 sq.ft. workshed on a free land.
- About 5 such SHGs/ Cooperatives of 15 members each are needed having total production capacity of 50M.T. per month.
- This will earn a minimum surplus of Rs.20000/- per month i.e. Rs.1350/- per member.
- Total no. of women can be engaged thus will be 75. Total cost of establishment is Rs.100 Lakh.

#### Marketing (Nodal)

- Needs only storage space cum office with computers at Prominent towns of the district
- Capacity of the storage will be around 25000kg per month.
- **Total cost of establishment** will be around **7.0 Lakh** including a 1000 sq.ft. storage-cum-office on a free land.
- About 2 such SHGs/ Cooperatives of 20 members (including sales personnel) and two marketing personnel each are needed
- This will earn a minimum surplus of Rs.50000/- per month i.e. Rs.2000/- per member and Rs.5000/- per marketing personnel.
- Total no. of women can be engaged thus will be 40. Total cost of establishment is Rs.14 Lakh

#### Summary

- Cost of establishment : Rs. 214 lakh i.e. Rs.2.14crores
- Working Capital needed : Rs. 48.255 lakh i.e. Rs.0.48 crores
- No. of SHGs involved : 37
- No. of women involved : 415
- Investment per woman : Rs 2.62 crores / 415 women = Rs. 63132/-

### **THE FUNDING OPTIONS**

The Government of India and State Governments through their various schemes like those under DRDC spend lot of money towards training of Self Help Groups in Food Processing Techniques. A sum of about Rs.40,000/- is spent for every training involving 15 heads. But it has been observed that in most of the cases the trainings remain unfruitful as the trainees could not manage necessary fund and infrastructure to utilise the expertise gained from those classes. It would be wise for the Government to utilise the money spent

for the training to build-up the infrastructure for the NBMS food processing chain. There will be on-job training for the SHG members in the Centres set-up with Govt. funding.

The Government of India, Ministry of Food Processing Industries, have announced number of schemes for accelerating the growth of the Food Processing Sector in the States for resolving the problems of the agricultural surplus/wastages and creation of rural jobs and for better pricing to the farm products. In the scheme of technology upgradation / establishment / modernization of Food Processing Industries, the Government of India gives a one time grant to set up / expand / modernize food processing industries covering all segments. In the scheme for Human Research Development, the Government of India gives grant-in-aid to set up Food Processing and Training Centers (FPTC), creation of infrastructure facilities for running Degree/Diploma courses and entrepreneurship development programmes.<sup>6</sup>

The National Rural Employment Guarantee scheme launched by the Government of India as a part of the Common Minimum Programme, can also be utilised for creation of employment through the food processing business by the Self Help Groups

The Banks also disburse loan to SHGs to commence and carry out their own business. Funding form Local Area Development Plan of the Honourable Member of Parliaments (MPLAD) can also be used in developing this venture.

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<sup>1</sup> Mr. Subodh Kant Sahai, Hon'ble Minister for Food Processing Industries in his speech Food world India 2005 organised by FICCI on 28-30 Nov. 2005 at Kolkata

<sup>2</sup> 8<sup>th</sup> Five Year Plan (Vol.-2), Planning Commission of India

<sup>3</sup> [www.ircc.iitb.ac.in/~webadm/update/archives/Issue1\\_2004/focus.html](http://www.ircc.iitb.ac.in/~webadm/update/archives/Issue1_2004/focus.html)

<sup>4</sup> Why Invest in Indian Food Processing Sector? – Ministry of Food Processing Industries, Govt. of India

<sup>5</sup> Press Information Bureau release dated 27.02.2007 (pib.nic.in/release/release.asp?relid=25142)

<sup>6</sup> Ministry of Food Processing, Govt. of India: <http://mofpi.nic.in>