



# Targeted Public Distribution System Nutritional Effectiveness

November 2014



**World Food Programme**



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## Preface

With a presence in over 80 countries, World Food Programme (WFP) is the world's largest humanitarian organisation fighting hunger. In India, WFP has been working in close collaboration with the Government of India to support various food-based schemes since 1963. In the last few years WFP has realigned its focus from being a food aid provider to a catalytic partner to the Government of India working towards strengthening existing food-based social safety nets. WFP is providing technical assistance and capacity development support to the Government as well as developing successful pilot projects that are scalable and adaptable to the diverse conditions found across India. With the large numbers of hungry and malnourished people residing in India, WFP's vision of ending hunger worldwide is unfeasible without significant impact in India.

WFP in collaboration with the Ministry of Consumer Affairs, Food and Public Distribution (MCAFPD) developed a Best Practice Solution – 3S Model (Secure, Strengthen, Save) for enhancing the efficiency of the Targeted Public Distribution System (TPDS), the world's largest food-based social safety net. The Solution was endorsed by the Ministry and shared with all States for consideration in their TPDS reform efforts and is already being customised and implemented in two States – Odisha and Kerala. Full implementation of the 3S Model is expected to generate considerable savings for the government resulting from an efficient system. WFP urges all States to not only reform their TPDS to make it more efficient but also to re-invest the savings for enhancing the nutritional value of the TPDS food basket.

WFP is committed to enhancing the nutritional effectiveness of the TPDS especially for the most vulnerable groups. To this effect WFP in partnership with WIPRO Limited has developed recommendations and a supporting operational strategy to enhance the nutritional content of the TPDS food basket. WFP can support interested States in customising these recommendations and strategy to their local context.

WFP would like to take this opportunity to extend our gratitude to all government officials, UN agencies as well as non-governmental partners and the other stakeholders, who contributed to the research and development of these recommendations with their valuable insights. The WFP Nutrition Team that led the research project is Dr. Shariqua Yunus Khan (Programme Officer– Health and Nutrition) and Manasi Shukla (Programme Officer– Food Technology). This report is authored by Birgit Hussfeld (Consultant) and Manmeet Kaur (Advocacy and Knowledge Management Officer).

## List Of Abbreviations

AAY	: Antyodaya Anna Yojana
ANC	: Ante Natal Care
ANM	: Auxiliary Nurse Midwife
ASHA	: Accredited Social Health Activist
Cr	: Crores (one Indian crore corresponds to 10,000,000)
DALY	: Disability-adjusted life years
DFPD	: Department of Food and Public Distribution
DoHFW	: Department of Health and Family Welfare
DWCD	: Department of Women and Child Development
FCI	: Food Corporation of India
FPS	: Fair Price Shop
FSSAI	: Food Safety and Standards Authority of India
GHI	: Global Hunger Index
gms	: Gram or Gramme
HBM	: High Burden Malnutrition (district)
HPUT	: Households with Pregnant women and Under Two's
ICDS	: Integrated Child Development Scheme
ICMR	: Indian Council of Medical Research
IEC	: Information, Education and Communication
Kcal	: Kilocalories
Kg	: Kilogramme
MCP	: Mother and Child Protection
MCTS	: Mother and Child Tracking System
MDM	: Mid-Day Meal
Mn	: Million
MoHFW	: Ministry of Health and Family Welfare
MT	: Metric Ton
MCAFPD	: Ministry of Consumer Affairs, Food and Public Distribution
MWCD	: Ministry of Women and Child Development
NFHS	: National Family Health Survey
NFSA	: National Food Security Act
NNMB	: National Nutrition Monitoring Bureau
NPNL	: Non-Pregnant, Non-Lactating
PPM	: Parts per Million
RDA	: Recommended Dietary Allowance
RDI	: Recommended Dietary Intake
Rs	: Indian Rupees (conversion rate to United States Dollars used INR 60: USD 1)
TPDS	: Targeted Public Distribution System
USD	: United States Dollars
WFP	: World Food Programme

## Glossary

**Food security** has been defined, at the World Food Summit in 1996, as “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”. Food security includes aspects of availability, access, utilisation as well as stability. Household food security is the application of this concept to the family level.

**Food availability** refers to the physical presence of food in the area of concern through all forms including domestic production, commercial imports and food aid.

**Food access** refers to a household’s ability to acquire adequate amounts of food, through any combination of home production and stocks, purchases, barter, gifts, borrowing and food aid. Food may be available but not accessible to certain households if they cannot acquire a sufficient quantity or diversity of food.

**Food utilisation** refers to the household’s use of the food to which they have access (e.g. intra-household food sharing, food preparation, storage, etc.) and the individual’s ability to absorb and use the nutrients. Food may be available and accessible but certain household members may not benefit fully if they do not receive an adequate share of the food in terms of quantity and diversity, or if their bodies are unable to absorb food because of poor food preparation or sickness.

**Nutrition security** goes beyond the traditional concept of food security (access, availability, stability and utilisation of food) and recognises that nutritional status is dependent on a wide and multi-sectoral array of factors. Individual food intake

and illness are immediate cause of malnutrition, which are in turn affected by the underlying causes of household food security, care and health practices and health and hygiene conditions. Nutrition security exists when food security is combined with a sanitary environment, adequate health services and proper care and feeding practices to ensure a healthy life for all household members.

**Malnutrition** occurs when nutrient and energy intake does not meet, or exceeds, an individual’s requirements to maintain growth, immunity and organ function. Malnutrition is a general term that covers both under-nutrition and over nutrition (overweight/obesity).

**Acute Malnutrition**, or wasting, develops as a result of recent rapid weight loss or a failure to gain weight. In children, it is assessed through the nutritional index of weight-for-height or mid-upper arm circumference. Acute malnutrition is also assessed using the clinical signs of visible wasting and nutritional oedema.

**Stunting**, often referred to as chronic under-nutrition, develops as a result of inadequate nutrition or repeated infections or both; typically, during the critical window of opportunity of the first 1000 days from conception to two years of age. It is measured by the nutritional index of height for age (too short for his or her age). Unlike wasting, the development of stunting is a slow cumulative process and it may not be evident immediately. Chronic under-nutrition cannot generally be reversed, only prevented.

**The first 1000 days of life**, the period from the start of a woman’s pregnancy to the child’s second birthday are important because of the increased nutritional needs of mother

and child. Evidence has shown that under-nutrition during the first 1000 days leads to irreversible impairment in physical growth and cognitive development. Ensuring access to the right nutrition during this 1000 day window is crucial.

**Nutrients** are divided into two broad categories- macronutrients and micronutrients- based on the amount required by the human body. Micronutrients (vitamins and minerals), although only needed in small amounts, are as essential as macronutrients (protein, fat, and carbohydrates) for ensuring the life and health of an individual. Micronutrients are active components in physical processes of the body. Micronutrients are essential for immunity and prevention of mortality among the most vulnerable groups.

**Micronutrient deficiencies** often result from inadequate dietary consumption, and infectious diseases, which decrease absorption of nutrients while at the same time increasing individual nutritional requirements. Underlying these direct causes, inadequate health care and sanitation, poor infant and young child feeding practices and household food insecurity contribute through influencing intake and illness at the individual level.

**Iron deficiency** is defined as a condition in which there are no mobilisable iron stores and the supply of iron to tissues is compromised. The more severe stages of iron deficiency are associated with anaemia, where the number of red blood cells is reduced or their oxygen-carrying capacity is insufficient caused by too little iron in the diet, poor absorption of iron by the body and/or the loss of blood. Iron-deficiency anaemia is defined as meeting the criteria for both iron deficiency and anaemia based on haemoglobin testing. Iron deficiency is considered to be the major cause of anaemia globally,

which sometimes is accompanied by other conditions such as deficiencies of vitamin A, vitamin B12 and folic acid, as well as infections.

**Food fortification** is the process whereby one or more nutrients (vitamins or minerals) are added to foods during processing. This increases the nutritional value of the food without greatly altering the taste or acceptability. Fortification is an effective low-cost means of addressing micronutrient deficiencies at the population level.

**Supplementation** is distribution of concentrated doses in pill or drop form for specific micronutrients for specific groups, such as vitamin A for children in the age group 6-59 months.

**Recommended Dietary Allowances (RDA):** The average daily dietary intake of nutrients that is sufficient to meet the nutrient requirements of nearly all (approximately 98 per cent of) healthy individuals in a given population. RDA includes a margin of safety, to cover variation between individuals, dietary traditions and practices. The RDAs are suggested as averages per day for physiological groups such as infants, pre-schoolers, children, adolescents, pregnant women, lactating mothers and adult men and women, taking into account their physical activity.

For the purpose of this study, RDA has been used to refer to nutrients while recommended dietary intake (RDI) has been used to refer to food groups such as pulses, cereals etc.



# Executive Summary

In 2013 WFP carried out a study to explore the scope of using the Targeted Public Distribution System (TPDS) for improving nutrition security in the country. The study has resulted in the development of this innovative strategy for reducing the levels of under-nutrition among the identified high priority groups. This is a timely proposal as the National Food Security Act (NFSA) has renewed the attention to nutrition in the national development agenda.

The study draws attention to the unique 'Window of Opportunity' presented by the first 1000 days of life (from conception to a child's second birthday). Nutrition interventions during this particular period yield maximum positive impact not only for the health and wellbeing of mother and child but also extend into future livelihood prospects and the overall economic performance of the country.

Households with the lowest wealth index are most severely affected by under-nutrition. Hence, special attention to Antyodaya Anna Yojana (AAY) households is also recommended. These high priority target groups are economically weak, nutritionally challenged and can be effectively targeted through the TPDS.

This strategy, therefore, proposes to leverage the TPDS platform to invest in India's future wellbeing and prosperity by providing nutritionally valuable food items to AAY households as well as to households with pregnant women and children under the age of two (HPUT) i.e. targeting the 1000 day window of opportunity. For the latter target group, it is recommended to

target households in the High Burden Malnutrition (HBM) districts.<sup>1</sup>

The proposed food basket for targeted HPUT under the Priority Household category includes 25 kg of fortified staple foods and 35 kg for AAY households (including HPUT under the AAY category). In addition, WFP recommends 5 kg of pulses, 2 kg of edible oil and 1.5 kg of iodised salt per month for both groups. The estimated range of monthly expenditure to be borne by the beneficiary households has been estimated to lie between Rs 346 and Rs 524 (United States Dollars (USD) 5.80 – 8.70) for AAY households and Rs 326 - 504 (USD 5.40 – 8.40) for HPUT. The subsidy requirement for the proposed food basket totals around Rs 6,964.84 crores (cr) (USD 1.16 billion) per annum for AAY households and Rs 924.77 cr (USD 154 million) in the first year for HPUT in 100 HBM districts.

With one in every three malnourished children in the world living in India, this is an investment, India cannot afford to not make.

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1. Ministry of Women and Child Development has identified 200 districts for a multi-sectoral nutrition programme. WFP recommends a phased approach for which initially 100 districts have been prioritised; list can be found in the annex of this report.

# 1. Why Investment In Under-Nutrition Is Essential?

Despite economic growth over the past two decades, India remains home to a large concentration of food insecure and undernourished people. According to the 2013 Global Hunger Index (GHI)<sup>2</sup>, India ranked 63<sup>rd</sup> out of 120 countries with the situation being described as alarming. The nutritional status of India brings to light worrying deficiencies particularly among children and women and the lowest wealth index group. Micronutrient deficiencies during pregnancy have a lifelong effect on the health, wellbeing and future livelihood prospects of children. The approximately 1000 days - from the start of pregnancy until a child's second birthday - present a unique window of opportunity to lay the foundation for a healthy and productive life.

The Government of India, through the Ministry of Consumer Affairs, Food and Public Distribution (MCAFPD), has been taking effective steps to address hunger in India most significantly through the Targeted Public Distribution System (TPDS), which is run under the joint responsibility of the central and state governments. With the passing of the National Food Security Act (NFSA) in September 2013, coverage of the TPDS extends access of highly subsidised staple foods to 50% of the urban and 75% of the rural population. Special attention is given to Antyodaya Anna Yojana (AAY) households, which represent the economically weakest section in India; they are also found to be extremely susceptible to nutritional deficiencies. The NFSA recognises the urgent need to address malnutrition in the country and has drawn attention to the need for nutritional security.

Nutrition interventions are best targeted at the poorest households as well as at pregnant women and households with children under the age of two for maximum impact. TPDS is an existing national platform that reaches the most remote areas as well as targets vulnerable population groups, making it an apt channel to be further leveraged to improve nutritional security in addition to the food security situation of the targeted groups.

Together with Wipro, WFP conducted this study on how to leverage the TPDS to reach the most nutritionally challenged groups. Wide stakeholder consultations and field visits to select states that are offering expanded TPDS food baskets were carried out, nutritional gaps identified and a feasible operational strategy developed. Himachal Pradesh, Chhattisgarh, Rajasthan, Tamil Nadu and West Bengal were visited as these states have introduced state level nutritional interventions using the TPDS,<sup>3</sup> ranging from diversified food baskets (including pulses, iodised salt and edible oils) to supplying fortified staple foods and targeting specific groups (such as pregnant women).

This research was qualitative, included discussions with state officials and focus groups including fair price shop managers and beneficiaries. In addition, secondary data from sources including the National Nutrition Monitoring Bureau (NNMB), National Statistical Survey Organisation and Annual Health Survey and the Sample Registration System on the status of maternal and child nutrition, including dietary intake patterns of households,

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2. Developed by the International Food Policy Research Institute, the GHI measures progress and failure in addressing hunger worldwide.

3. In addition to states visited in the context of the study, Andhra Pradesh, Assam, Goa, Gujarat, Madhya Pradesh, Maharashtra, Punjab, Tripura, Daman and Diu and Lakshadweep also offer expanded TPDS food baskets.

especially those with pregnant women and young children, were studied.

With this recommended strategy of nutritionally enhancing the TPDS food basket, WFP presents a viable solution to address under-nutrition in India in an effective and sustainable manner by leveraging the TPDS and existing frameworks to target two identified high priority groups: pregnant/lactating women and children up to the age of two i.e. within the critical 1000 day window of opportunity and AAY households.

### 1.1 Current Status of Under-nutrition in India

The magnitude of the problem of under-nutrition of women is evident from the fact that every third woman of reproductive age in India is undernourished (with a Body Mass Index (BMI) lower than 18.5 kg/m<sup>2</sup>). Although the prevalence of undernourished women varies greatly between states, as per the National Family Health Survey 3 (NFHS), it is observed most significantly across India in the lowest wealth index.

Under-nutrition among under five year old children is measured in terms of underweight (children with low weight for age), stunting (children with low height for age) and wasting (children with low weight for height). India is one of the eight countries

where 49% of the global underweight children live.<sup>4</sup> In children under five years of age, NFHS indicates

- 48% children are stunted (22% severely)
- 42.5% children are underweight (15.8% severely)
- 19.8% children are wasted (7.9% severely)

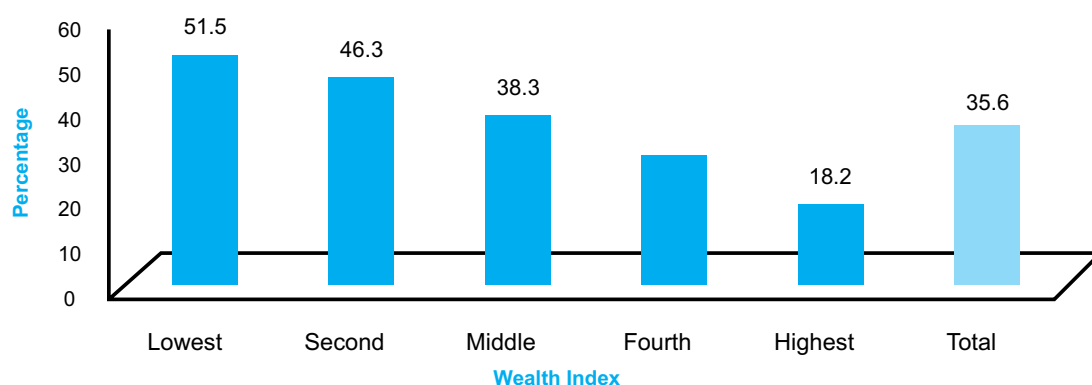
Children from poor households are approximately three times more likely to be affected by under-nutrition than their peers in wealthier families.

Prevalence of undernourishment in men, while slightly lower, is far from insignificant with 28% of the men in India having a Body Mass Index below normal.

### Micronutrient Deficiencies

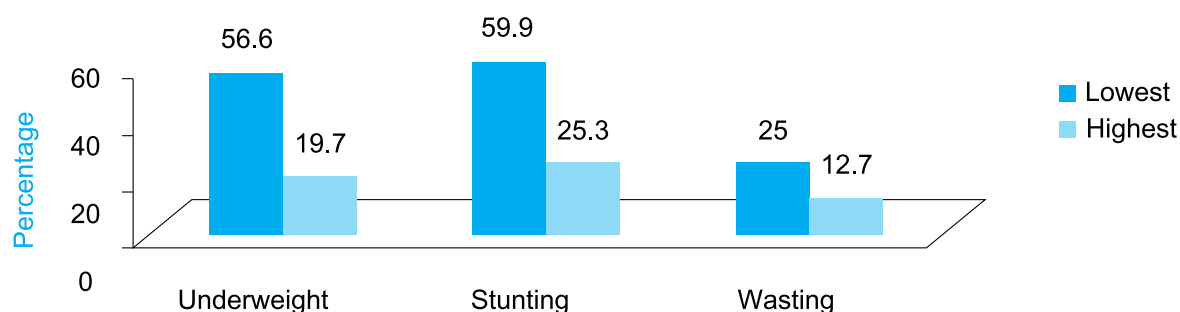
In addition to the already mentioned common indicators for under-nutrition, there are widespread deficiencies in the intake of essential vitamins and minerals as well as micronutrients such as iron, iodine, folic acid, zinc and vitamin A in India, which have adverse effects on survival, growth and brain development.

For instance iron deficiency anaemia has serious implications throughout the life cycle as it adversely affects brain development of the foetus, cognitive development of young children and therefore academic



**Figure 1: Prevalence rate of undernourished women based on wealth quintile**

4. Source: [www.livemint.com/Politics/TGTiBIxI3QbAihd0wNEuJN/India-has-highest-number-of-underweight-children-World-Bank.html](http://www.livemint.com/Politics/TGTiBIxI3QbAihd0wNEuJN/India-has-highest-number-of-underweight-children-World-Bank.html)



**Figure 2: Under-nutrition prevalence rates for all three indicators by wealth groups**

performance and general learning ability, work and livelihood prospects. Anaemia is a national health concern reported across gender and all age groups. However, the implications are known to be most serious during pregnancy and childhood. Anaemia during pregnancy accounts for one fifth of maternal deaths.

Another major public health concern is iodine deficiency. Thanks to salt iodisation programmes, the prevalence of clinical forms of iodine deficiency (such as goitre and birth of children with brain damage) has reduced significantly. However, the serious implications of iodine deficiency remain a concern particularly in the lower wealth index where intake of iodised salt is reported to be extremely low.

## 1.2 Food and Nutrient Intake Patterns and Gaps

Poor purchasing power worsens the health and nutrition situation most significantly due to limited economic access to high quality foods such as pulses, vegetables, oils, milk and other dairy products.

National Nutrition Monitoring Bureau highlights that there is a gap in the intake of both macronutrients and micronutrients across age and physiological groups as compared to respective recommended dietary allowances. For this study two types of reference households are assumed to be representative of the larger

population. Each household will have five members: (i) Non-Pregnant/ Non-Lactating (NPNL) consisting of one moderately active adult male, one moderately active non pregnant, non-lactating adult female, one sedentary adult male (elderly) and two children (aged 12 and two) (ii) HPUT household similar to NPNL but with a pregnant or lactating woman. Using NNMB data food and nutrient gaps for each household have been calculated by aggregating each member's intake against aggregate of each member's Recommended Dietary Allowance (RDA). The extent of existing inadequacies for each of the above mentioned households is shown in Table 1.<sup>5</sup>

Food Items	10 States Pooled	
	NPNL	HPUT
Cereals and Millets	8.7	6.3
Pulses and Legumes	-58.2	-57.3
Green Leafy Vegetables	-83.1	-82.7
Other Vegetables	-77.8	-76.9
Roots and Tubers	-66.7	-64.4
Fruits	-78.4	-77.0
Milk and Dairy Products	-79.7	-79.4
Fats and Oils	-52.9	-52.1
Sugar and Jaggery	-52.8	-52.8

**Table 1: Percentage of Inadequacy of Food Intake against RDI based on data collected in ten states<sup>6</sup>**

5. As suggested by the Indian Council of Medical Research (ICMR) in 2010 and the National Nutrition Monitoring Board (NNMB) data in 2012

Data for HPUT indicates that consumption of cereals is adequate while that of pulses is below 50% of the Recommended Dietary Intake (RDI).<sup>7</sup> Most of the energy and protein in the child as well as the mother's diet is derived from cereals. In the absence of adequate intake of pulses and foods such as milk, meat or eggs, the quality of protein intake is poor. Other food items rich in minerals and micronutrients such as green leafy vegetables, roots and tubers, fruit etc. are also markedly inadequate.

The intake of micronutrients is also found to be inadequate with almost 26% households consuming less than 50% RDA of iron and about 80% consuming less than 50% RDA of vitamin A, further illustrated in table 2.

Nutrients	Average percentage of households consuming <50% RDA of micronutrients in ten States
Energy	7.6
Protein	11.2
Calcium	44.2
Iron	25.5
Vitamin A	80.6
Thiamine	9.8
Riboflavin	49.6
Niacin	9.7
Vitamin C	34.9
Dietary Folate	38.5

**Table 2: Households Consumption of Micronutrients (less than 50% of RDA)<sup>8</sup>**

Although the immediate causes of under-nutrition are inadequate dietary intake and frequent infections, which prevent absorption of nutrients,

the problem is complex and multi-dimensional. Unsanitary environment, food insecurity, lack of health services and access to clean water play a crucial role in aggravating the problem. Well coordinated efforts from different sectors including agriculture, food, health, rural development, women's empowerment, biotechnology, water and sanitation, education, information and broadcasting are needed to resolve the underlying causes of under-nutrition in India. This study focuses on lack of access to quality food and household food insecurity.

Despite a range of schemes to address under-nutrition, nutrient gaps are still rampant across India. Some overall dietary trends observed include:

- The gaps observed in food and nutrient intake reveal that the average diet is adequate in cereals but lacks adequate and good sources of quality protein such as pulses or dairy products. In addition, the consumption of fat is rather poor with reduction in overall energy intake and absorption of fat-soluble vitamins such as vitamin A, D and K.
- The intake of all micronutrients is grossly inadequate. These include micronutrients such as iron, vitamin A and zinc. Deficiencies in intake of these micronutrients constitute a major public health concern.
- The diet during pregnancy shows significant gaps in pulses, fats and oils as well as foods rich in calcium, iron and vitamin A.
- The nutrition situation is worst in the lowest wealth index of the population. There is an urgent need to enhance the quality of the food basket of households with low purchasing power. This implies that

6. Diet & Nutritional Status of Rural Population – Third Repeat Survey (NNMB Tech. report # 26-2012)

7. Data collected in Andhra Pradesh, Gujarat, Kerala, Karnataka, Maharashtra, Madhya Pradesh, Odisha, Tamil Nadu, West Bengal and Uttar Pradesh

8. The table represents data, which includes information on NPML and HPUT households in Tamil Nadu, West Bengal and Madhya Pradesh for the same ten states as in previous table. Source: Diet & Nutritional Status of Rural Population – Third Repeat Survey (NNMB Tech. report # 26-2012)



highest priority should be accorded to AAY households.

- Further household level nutrition security is exacerbated due to issues related to gender discrimination, related intra-household food distribution and some traditional food preparation and consumption patterns.

few states have extended their TPDS food basket providing a larger variety of subsidised food items, including nutritionally valuable foods.

### **1.3 Existing Nutrition Enhancement Programmes**

A number of measures have been taken by the centre and state governments to reduce poverty, increase food production and availability, improve purchasing power of households and empower women. In addition there are specific programmes in place aiming to address the gap in food and nutrient consumption. These include the Mid Day Meal Scheme (MDM), a school feeding programme for upper and lower primary school children across the country, the Integrated Child Development Scheme (ICDS) targeting pregnant and lactating mothers as well as children under the age of six, and the TPDS. TPDS, originally conceived as an instrument for protecting consumers from food shortages and producers from price fluctuations, has the widest reach across the country.

Under the ICDS, nutrition supplements are expected to meet 30% of the RDA of protein and energy and 50% for micronutrients. The MDM scheme addresses classroom hunger aimed at increasing enrolment and school attendance for upper and lower primary school children.

Over the years and most notably with the passing of the NFSA in 2013, the TPDS has developed into likely the largest food-based social safety net worldwide targeting 75% of the rural and 50% of the urban population in India. Although recommended in the NFSA, there is currently no national provision for providing nutritionally valuable foods under the TPDS. Only a

## 2. Proposed Strategy For Improving Nutritional Effectiveness Of The TPDS

It is well established that India needs to address this mammoth under-nutrition problem. The MDM and ICDS ambit is focussed to catering to specific age groups and based on gender, whereas the TPDS caters to the needs of the entire household. Given the wide coverage at the household level of the TPDS, it is an apt platform for leveraging further for optimal nutritional impact in a life-cycle approach.

WFP proposes to leverage the TPDS to reach two high priority groups, TPDS beneficiary households with pregnant women and children under the age of two and AAY households, with a nutritionally enhanced food basket.

### 2.1 Proposed Household Food Basket

It has been observed that on average almost half of the nutritional requirements on the household level remain unfulfilled. The proposed strategy seeks to fill this gap on the household level (of targeted high priority households) through the TPDS. The recommendations for the food basket include:

1. Expand the TPDS food basket in order to meet 50% of the RDI of pulses and edible oil, bearing in mind local preferences.<sup>9</sup> In addition, issuing different types of pulses and oils on a rotation basis is suggested.
2. Fortify the staple foods, mainly wheat or rice in the current basket, in order to reduce micronutrient gaps (often termed as hidden hunger). Wheat flour should be fortified in primarily wheat-eating states and rice can be fortified in states where

rice is the main staple. The choice of micronutrient and its concentration would depend on the local reality at the state level (i.e. bearing in mind issues such as the most prevalent deficiency in the state, cost implication etc.). However, overall some key micronutrients where major inadequacies have been noted include calcium, iron, Vitamin A and Riboflavin.

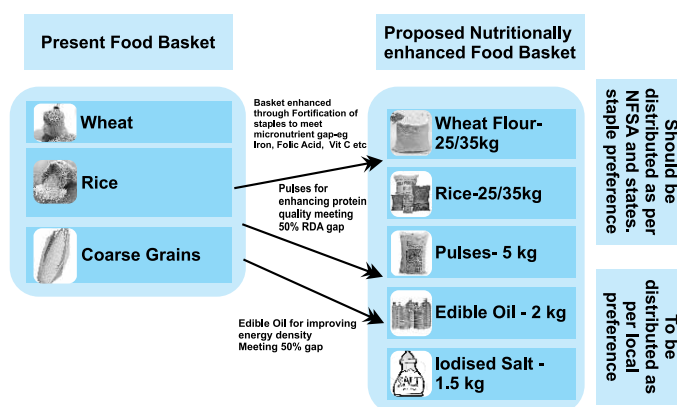


Figure 3: Proposed Food Basket

### 2.2 Guiding Principles of the proposed strategy:

#### 1. Focus on Addressing Nutritional Gaps in the Diet of the Target Population

A balanced healthy and nutritious diet comprises various food groups such as cereals, pulses and legumes, fats and oils, vitamins and minerals. The daily requirements for macro and micro-nutrients should be met through the regular intake of these varied food sources. The proposed strategy focuses on addressing identified gaps through an enhanced TPDS food basket including fortified staples such as wheat and/or rice, pulses, edible oil and iodised salt.

9. For example, palm oil is the most widely consumed oil across India, but in the North and the East mustard oil, in the South sunflower oil and in Western India soybean oil are preferred. As for pulses: although arhar dal (yellow pigeon pea) is preferred across all regions, in the North-East masur dal (split red lentils) is most widely consumed and chana (chickpea) are very common in Northern India.

## **2. Focus on Including Locally Produced and Preferred Food Items in the Basket**

Locally produced and preferred food items should be supplied rather than providing the same type of food items across the country. This is to increase acceptance and readiness to consume the nutritious food as well as to ease procurement procedures.

## **3. Focus on Effective Targeting to Gain Maximum Impact from the Proposed Initiative**

Priority is given to beneficiary groups most vulnerable to nutritional challenges for maximum and life-long impact of the intervention. These are households with pregnant women and under two year olds and AAY households.

## **4. Focus on Using Existing Administrative Structures**

Existing administrative and monitoring structures – most notably of the TPDS and Multi-Sectoral Nutrition Programme – should be leveraged to operationalise the proposed strategy. Institutional and operational convergences between the relevant ministries at all levels as well as exchange of institutional knowledge and required data and infrastructure can thus be facilitated enabling timely and informed decision-making. Very limited additional infrastructure is required for implementing this strategy.

## **6. Decentralised Model of Procurement, Storage and Supply**

Procurement, storage and supply of food items should be decentralised. States are encouraged to procure and supply locally produced or procured pulses and oil to the targeted beneficiaries bearing in mind local tastes and preferences.

## **7. Price Control Mechanism**

An open tender-based supply chain approach enables competitive procurement of the various food items required. Since prices are likely to be

volatile, suitable control mechanisms need to be introduced in order for the food items to remain affordable for the target population. Limited subsidy is a regulatory method as it can provide the necessary cushion against inflation and price volatility. Commodities should not be over-subsidised to prevent potential open market distortions.

India currently does not produce sufficient amounts of pulses and oils. 48% of pulses are imported to meet domestic demand. Hence it is likely that part of the additional requirement would be met through imports. This may not have a direct impact on the fiscal health of the economy, if price control mechanisms are utilised. Further reliance on imports will only be an interim measure; government initiatives such as the National Food Security Mission are already on-going to increase domestic production for self-sufficiency.

## **2.3 Target Beneficiary Groups**

The NFSA emphasises “provide for food and nutritional security through a human life cycle approach, by ensuring access to adequate quantity and quality of food at affordable prices to people to live a life with dignity and for matters connected therewith or incidental thereto”.

In addition to the general beneficiary population, the NFSA highlights AAY households as a group to be specifically targeted. NFSA refers to the significance of preventive measures during the 1000 days window of opportunity. Attention to this will also support the achievement of the United Nations Millennium Development Goal 4 and 5, pertaining to the improvement of health and nutrition among mothers and children.

Two categories of households are proposed for targeting for this nutrition strategy – households with pregnant women and children under the age of two (HPUT) and AAY households.

## Households with Pregnant Women and Under Two year olds (HPUT)

It has been iterated that investing in improved nutrition during the first 1000 days is of critical importance and will contribute towards breaking the cycle of poverty on an individual level and improve the performance of a national economy on the macro level. Therefore households with children under the age of two and households with pregnant women are proposed as a high-priority target group.

TPDS beneficiary households (both AAY and priority households) with pregnant women should be targeted from the moment a pregnancy is detected until two years post-delivery. During the initial phase, HPUT in the 100 High Burden Malnutrition (HBM) districts should be prioritised.

It is estimated that among TPDS beneficiaries there are on average 37,204 households with pregnant women in any given year in a district in India.<sup>10</sup> As this strategy recommends extending the benefits to a household with a pregnant mother for two years, for the first three years of the rollout, the numbers of HPUT category in any given area would increase due to the addition of the new pregnancies and the follow up for the pregnancies of the year before. Accordingly, in the first year the targeted households with pregnant women across 100

HBM districts are estimated to be 3.7 million. HPUT beneficiaries would be about 11 million by the third year.

During the post-pregnancy period, entitlement of HPUT would take the following conditions into consideration:

- Benefits would be extended to a household for the first two live births only
- In case of death of the infant, the enhanced food basket would be discontinued.
- In case of death of the mother, the enhanced food basket would continue to be provided until the child's second birthday.

Whilst ideally States should extend these benefits to both AAY and HPUT, incase a State can only target HPUT, AAY households with pregnant women and children under two years of age should be given entitlements as per the AAY category. The recommended food basket for HPUT from the priority household category is 25 kgs of fortified wheat flour or rice, 5 kgs of pulses, 2 kgs of edible oil and 1.5 kgs of iodised salt.

To provide the enhanced food basket to HPUT, any one HBM district has estimated requirements in the first year of 1000 mt of edible oil, 2000 mt of pulses, 670 mt of iodised salt and 11000 mt of fortified flour or rice.

Total Estimated Requirement (in million metric tons)	Oil		Pulses		Iodised Salt		Fortified Flour/ Rice	
	1 HBM District	100 HBM Districts	1 HBM District	100 HBM Districts	1 HBM District	100 HBM Districts	1 HBM District	100 HBM Districts
Year – 1	0.001	0.089	0.002	0.223	0.00067	0.067	0.011	1.116
Year – 2	0.002	0.179	0.004	0.446	0.001	0.134	0.022	2.232
Year – 3	0.003	0.268	0.007	0.670	0.002	0.201	0.033	3.348

**Table 3: Estimated requirements over three Years for HPUT**

10. The figure was arrived by calculating 67% (based on NFSA defined overall TPDS coverage: 75% rural and 50% urban population) of the average number of pregnancies in any one district.

### AAY Households

Households with the lowest income/wealth index are also the nutritionally most challenged group in the country. This group should be targeted across all states.

The Department of Food and Public Distribution (DFPD) has identified 24.3 million households under the AAY category. The proposed monthly food basket for AAY Households is 35 kgs of fortified wheat flour or rice, 5 kgs of pulses, 2 kgs of edible oil and 1.5 kgs of iodised salt.

Details	Oil	Pulses	Iodised Salt	Fortified Flour/Rice
Annual requirement (in million metric tons) – entire country	0.585	1.463	0.439	10.243
Annual requirement (in million metric tons) – per district	0.001	0.002	0.001	0.016

**Table 4: Annual estimated requirements for additional food items for AAY**



## 3. Implementation Framework For This TPDS Nutrition Strategy

### 3.1 Key Components

The proposed administrative and monitoring structure and processes for successful implementation can be categorised between processes associated with the identification of beneficiaries and processes required to operationalise the strategy. The overall proposed procurement method is the Open Tender Procedure, which is already in wide use by various government departments. Domestic availability of the commodities has to be considered whilst affixing the quantities and planning the feasibility of providing pulses and edible oils.

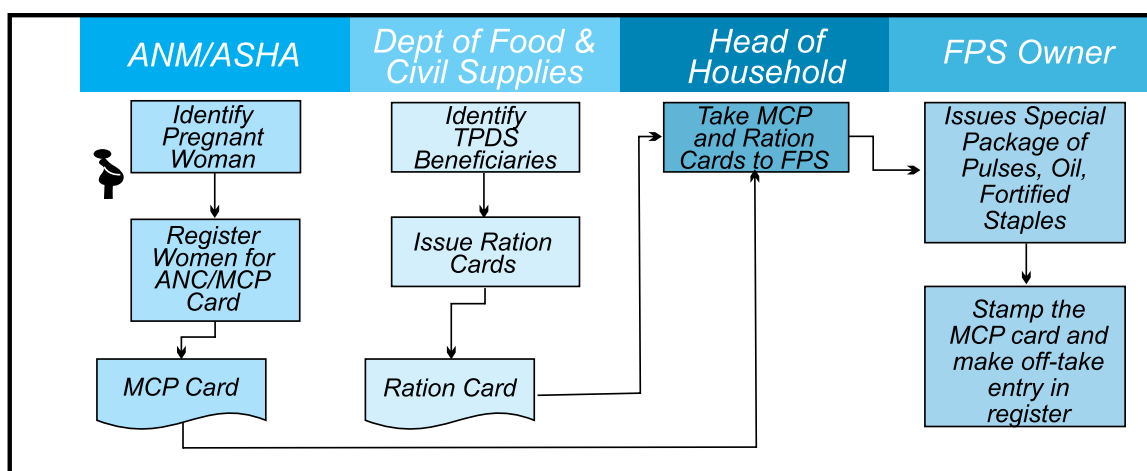
Additionally, comprehensive and robust strategies must be developed to integrate intensive advocacy and Information, Education and Communication (IEC) elements into the planning and rollout. These are key success factors along with capacity building of select stakeholders for ensuring acceptance and smooth rollout.

### 3.2 Processes related to Identification of Beneficiaries

The Department of Food and Public Distribution (DFPD) has already identified AAY households for TPDS entitlements.

The Ministries of Health and Family Welfare (MoHFW) and Women and Child Development (MWCD) identify households with pregnant and lactating women in the context of existing health and nutrition schemes. Currently over 85% of women are registered for Ante Natal Care (ANC) services and follow-up during institutional delivery. Using the existing system of ANC registration, these families with pregnant women can be identified and subsequently tracked post-delivery for two years. The Mother and Child Protection (MCP) card is the instrument through which the Departments of Women and Child Development (DWCD) and of Health and Family Welfare (DoHFW) provide and monitor services to pregnant women and young children. Timely identification of beneficiaries and maintenance of a regularly updated database can be assured through periodic data sharing between nodal ministries (MCAFPD, MWCD, and MoHFW).

The MCP card can be used as the official record for registration of HPUT for TPDS enhanced benefits. The MCP Card, along with the Ration Card, should be used for verification at the FPS.



**Figure 4: Linking information and functions of DoHFW and TPDS**

On average a pregnancy gets detected in its second month. Beneficiary households would be entitled to receive the additional food items from the month subsequent to the month of registration of the pregnancy by the Auxiliary Nurse Midwife (ANM) or the Accredited Social Health Activists (ASHA), to account for data processing and requirement adjustments at the district and FPS level. Traditionally, women deliver their first child at their maternal homes. Due to operational constraints (and before FPS portability is achieved) the proposal is that during the three to four months a woman relocates, benefits should be continued to her marital home.

### 3.3 Procurement, Storage, Logistics and Off-take Mechanisms

#### Pulses, Edible Oil and Iodised Salt

The open tender process provides flexibility to the suppliers to source pulses and edible oil from domestic and/or international markets. Local procurement of these commodities should be preferred where possible but with the adoption of the open tender process the supply will not be impacted by insufficient domestic production.

Proposed supply chain:

- The State Food and Civil Supplies Department estimates the amount of the required commodities, incorporating the requirements as per HPUT list provided by the State Empowered Programme Committee (SEPC).<sup>11</sup> Requirement estimates are done every six months for tendering purposes and on a monthly basis for issuing purchase orders to the suppliers.
- The State Civil Supplies Corporation develops the technical

specifications of pulses, edible oil and iodised salt. The Corporation floats the relevant calls for tender for empanelling the suppliers.

➤ Select suppliers are empanelled for the required items. The Corporation based on lowest cost method creates six-monthly rate list for the commodities. Rates should be all-inclusive and cover the cost of procurement of the items, quality control and standardisation, packaging, storage and transportation to the FPS, FPS owners' commission, any inter/intra state taxes, duties, etc.

➤ The Corporation issues purchase orders to the suppliers every month. The suppliers procure and supply the items to the FPS across the State:

- Storage of pulses, oil and iodised salt would be the responsibility of the supplier.<sup>12</sup>
- The suppliers would submit quality reports to the Civil Supplies Corporation for every batch of items. The Corporation should carry out random inspections of the stocks in order to verify quality and adherence to standards.
- The commodities are supplied to the FPS on a monthly basis as per the details of the purchase orders.
- The suppliers as well as the State Civil Supplies Corporation would maintain inventory records. These records also assist in requirement estimations for the subsequent procurement and supply cycle.
- The FPS issues the supplies to the beneficiaries as per their entitlement.
- State Food and Civil Supplies Department compile the monthly off-take details per district.

11. SEPC is set up under the ICDS and would be responsible to ensure multi-sectoral convergence at an operational level.

12. This would enable the states to supply the enhanced food basket to the target population even in the absence of additional state-owned storage facilities.

## Fortified Staple Foods

For the fortification of staple foods the following supply chain is proposed:

➤ State Food and Civil Supplies Department estimate the requirement for fortified food grains. For HPUT, the list of beneficiaries is received from the SEPC. Estimations are done on a six-monthly basis for tendering purposes and on a monthly basis for issuing purchase orders to the suppliers.

➤ State Civil Supplies Corporation develops technical specifications for the fortified commodity and the fortificants. For fortified wheat flour, the Corporation floats the relevant calls for tender every six months for empanelling wheat flour millers, fortificant suppliers and accredited laboratories for carrying out sample testing and quality control. Similar process would be followed for fortified rice.

➤ Post submission of tenders, the Corporation releases the list of empanelled entities and based on the lowest cost method creates six-monthly rate lists. The Corporation issues purchase orders to the millers every month.

- The rates to be paid to the millers cover the cost of premix/fortificant; transportation of the wheat to the mills, producing fortified wheat flour, sample testing of each batch, packaging, storage and onward transportation of the flour to the FPS.

➤ The millers, using the fortificant procured, process the wheat into fortified wheat flour. Storage of the fortified products shall be the responsibility of the miller. Specialised storage facilities may have to be setup within the premises of the mills. It is recommended that regular inspections of these facilities be carried out by the State Food Department.

➤ The suppliers as well as the State Civil Supplies Corporation maintain inventory records. These records would assist in requirement estimations for the subsequent procurement and supply cycle.

➤ It is important that fortified flour is packed in an appropriate manner and passed through quality assurance checks by the millers. The packaged fortified flour is then transported to the FPS by the miller on a monthly basis as per details of the purchase order. Fortified staple foods should ideally be delivered to the FPS within 12 days of their production to allow for a window of about 30 days for consumption by the beneficiaries. However, in exceptional cases such as in difficult geographical areas, these can be redefined.

➤ The FPS issues the fortified flour to the beneficiaries as per their entitlement.

➤ State Food and Civil Supplies Department compile the monthly off-take details per district.

A very strong focus on quality assurance is required for fortified food items. Fortified commodities tend to have a relatively shorter shelf life if subject to unfavourable conditions such as high temperature or moisture during storage and transit. Ensuring effective packaging, storage and quick turnaround are critical for maximum nutritional benefits. Due care must be taken by the State Civil Supplies Corporation to empanel National Accreditation Board for Testing and Calibration Laboratories-accredited/FSSAI-approved laboratories.

Quality assurance and control are also important to ensure that the added nutrients are present in the recommended amount. While sample testing of the fortified products at the empaneled laboratories should be the responsibility of the millers, reports should also be submitted to the Civil Supplies Corporation. As an additional

measure random inspections by the Corporation should be carried out to verify quality of the supplies, storage and packaging.

### 3.4 Administration, Monitoring and Evaluation and Partner Relations

A well-defined administrative structure for implementation and effective monitoring of this strategy is essential.

For HPUT, the administrative set-up designed and developed by MWCD for implementation of the Multi-Sectoral Nutrition Programme should be leveraged. MCAFPD and its line departments should be a part of the

institutional arrangements for better convergence at all levels.

For AAY Households, it is suggested that the existing federal structure of the MCAFPD is used to administer and monitor implementation.

The State Food and Civil Supplies Department and Corporation would be responsible for the supply chain management. This division of responsibilities is crucial since this strategy should be implemented in a decentralised manner, wherein the state governments take charge of the implementation related activities and the central government supports with subsidy and an enabling policy framework and guidelines. This would

Levels	Administrative Body	Functions/envisaged role under Multi-Sectoral Nutrition Programme	Functions proposed under this Nutrition Strategy
National	Mission Steering Group	<ul style="list-style-type: none"> <li>Executive Committee of the scheme representing Secretaries of nodal ministries such as MCAFPD, MoHFW, MWCD, Ministry of Rural Development</li> </ul>	<ul style="list-style-type: none"> <li>Oversee coordination between line departments</li> </ul>
	Multi-Sectoral Empowered Programme Committee	<ul style="list-style-type: none"> <li>Ensure multi-sectoral convergence at an operational level</li> <li>Headed by the Secretary - MWCD and comprise of representatives from different ministries</li> <li>Guide the implementation of the scheme and approve action plans</li> </ul>	<ul style="list-style-type: none"> <li>Overall programme management</li> <li>Formulation of detailed guidelines and framework for implementation of strategy for HPUT</li> <li>Subsidy management</li> </ul>
	Food and Nutrition Board under MWCD	<ul style="list-style-type: none"> <li>Act as the Technical Support Unit and manage the rollout of the programme</li> </ul>	<ul style="list-style-type: none"> <li>Technical support for programme management</li> </ul>
State	State Nutrition Council	<ul style="list-style-type: none"> <li>Headed by the Chief Minister, it would be the highest body for providing policy directions and oversight to the scheme</li> </ul>	<ul style="list-style-type: none"> <li>Overall monitoring at state level</li> </ul>
	State Empowered Programme Committee (SEPC)	<ul style="list-style-type: none"> <li>Ensure multi-sectoral convergence at an operational level</li> <li>Guide the implementation of the scheme and approve action plans</li> </ul>	<ul style="list-style-type: none"> <li>Beneficiary identification for HPUT</li> </ul>
District	District Nutrition Council	<ul style="list-style-type: none"> <li>Headed by the concerned District Magistrate / District Collector</li> <li>Provide all necessary managerial, technical and administrative support in effective implementation, monitoring and supervision of the programme</li> </ul>	<ul style="list-style-type: none"> <li>Overall implementation support and coordination at district level</li> </ul>

**Table 5: The envisaged roles of various institutions under the Multi-Sectoral Nutrition Programme**

enable the states to supply locally preferred nutritious food items to the target beneficiaries. In addition, different government and non-government stakeholders (technical partners, millers etc.) are required to systematically cooperate to ensure that the planning and operational activities are carried out effectively.

### **3.5 Capacity Building, Advocacy, Information, Education and Communication Strategy**

It is recommended that capacity building and skill enhancement for service providers, caregivers and voluntary action groups (ASHA workers, ANMs, Anganwadi Workers, FPS owners and Village Health Sanitation and Nutrition Committees etc.) is prioritised. The focus should be on raising awareness on dietary requirements and healthy eating habits as well as the modalities and benefits of the enhanced food basket. These groups constitute the most trusted source of information and valuable multipliers at the community level. They fulfil key functions in terms of pregnancy registration, issuing of MCP card and direct community level follow-up with the beneficiaries.

In addition to capacity building, a comprehensive advocacy campaign is needed to mobilise a wide variety of stakeholders in support of the intervention and to ensure its successful implementation. MCAFPD should undertake advocacy at the central level together with concerned nodal ministries such as MWCD, MoHFW and the Ministry of Rural Development to gather support for TPDS as a means for this nutritional intervention, the importance of the 1000 days window of opportunity and hence the critical need for bearing the subsidy cost along with the States for this essential investment in nutrition.

A wide reaching Information, Education and Communication (IEC) strategy for all stakeholders and specifically targeted at groups such as producers, millers, beneficiaries, suppliers, TPDS officials, local authorities is essential for the success of the programme.

### **3.6 Implementation Support**

WFP has developed an implementation plan, covering:

- Policy – ensuring administrative mechanisms and policy frameworks are in place for implementation;
- Partnership – aligning technical experts with planners and administrators of the initiative;
- Programme – ensuring all rollout activities are carried out in parallel to the policy and partnership-level activities.

WFP recommends that a demonstration pilot for this strategy is carried out in select three to five HBM districts located in two - three states. WFP can support interested States in customising this plan to the pilot region. The key lessons learned from this exercise will inform and refine the rollout of the strategy across the country.



## 4. Financial Implications

### 4.1 Estimation of Issue Prices and Subsidy

The following methodology was adopted in calculating subsidy implications and household-level expenditure requirements:

1. The economic costs of the various additional commodities were determined using a method similar to that followed by DFPD for determining the economic price of wheat and rice for De-Centralised Procurement States:  $\text{Economic Cost} = \text{Procurement Price} + \text{Procurement Incidentals} + \text{Distribution Incidentals}$
2. The subsidy related aspects – at centre and state levels – were outlined for each of the recommended commodities. The subsidy amounts were used along with the total requirement of each commodity to arrive at the total estimated subsidy for each commodity by target group.

3. The per unit issue prices were arrived at after adjusting the subsidy amounts with the economic costs of each of the commodities. These issue prices, along with the allocated quantities of each food item in the proposed food basket, were used to estimate monthly household level expenditure per target group.

### 4.2 Estimation of Economic Costs

Food Item	Range of Economic Cost (in Rs per Quintal/100 kgs)
Pulses	4,152 – 6,113
Edible Oil	9,701 – 13,386
Iodised Salt	300 – 700
Fortified Wheat Flour	1,714
Fortified Rice	2,477

**Table 6: Economic Prices of Items to be included in Food Basket<sup>13</sup>**

13. Wholesale prices of these commodities may differ from the economic prices determined in this section.

Commodity	Current Scenario and Analysis	Recommendations
Pulses	<ul style="list-style-type: none"> <li>Central government has withdrawn its subsidy of Rs 20/kg for 1 kg pulses per AAY family</li> </ul>	<ul style="list-style-type: none"> <li>This subsidy should be revived.</li> <li>Additional subsidy on pulses by state governments is not deemed necessary to avoid impact on retail markets.</li> </ul>
Edible Oil	<ul style="list-style-type: none"> <li>Central government has withdrawn its subsidy of Rs 15/kg for 1 kg oil per AAY family</li> </ul>	<ul style="list-style-type: none"> <li>This subsidy should be revived.</li> <li>Further subsidy by state governments should be discouraged.</li> </ul>
Iodised Salt	<ul style="list-style-type: none"> <li>No subsidy has been extended currently by central or state governments for providing iodised salt</li> </ul>	<ul style="list-style-type: none"> <li>Existing policy should continue.</li> </ul>
Fortified Wheat Flour	<ul style="list-style-type: none"> <li>The central government subsidy on wheat varies from state to state (e.g. for Rajasthan, it was Rs 1205.42 per quintal)</li> <li>There would be an add-on expenditure of Rs 58.56 per quintal of wheat, since approximately 4 kg additional wheat is required per quintal to produce 1 quintal of wheat flour</li> <li>Cost of converting wheat to fortified wheat flour is Rs 250 per quintal<sup>14</sup></li> </ul>	<ul style="list-style-type: none"> <li>The total additional subsidy of Rs 308.56 per quintal to be borne by the state governments</li> </ul>
Fortified Rice	<ul style="list-style-type: none"> <li>The central Government subsidy on rice varies from state to state.</li> <li>Cost of blending milled rice with fortified rice kernels is Rs 250 per quintal<sup>15</sup></li> </ul>	<ul style="list-style-type: none"> <li>The additional subsidy of Rs 250 per quintal to be borne by the state governments</li> </ul>

**Table 7: Subsidy Considerations**

	Edible Oil	Pulses	Iodised Salt	Fortified Flour	1 HBM Dist	Total 100 HBM districts
<b>Year – 1: Targeting Households with Pregnant Women</b>						
Total Estimated Households	37,204	37,204	37,204	37,204		
Total Requirement (in mn. MT)	0.001	0.002	0.001	0.011		
Subsidy Required (in Rs cr.)	1.34	4.46	0	3.44	9.24	924
<b>Year – 2: Targeting Households with Pregnant Women and Under-1's</b>						
Total Estimated Households	74,408	74,408	74,408	74,408		
Total Requirement (in mn. MT)	0.002	0.004	0.001	0.022		
Subsidy Required (in Rs cr.)	2.67	8.93	0	6.89	18.49	1,849
<b>Year – 3: Targeting Households with Pregnant Women, Under-1's and Under-2's</b>						
Total Estimated Households	1,11,612	1,11,612	1,11,612	1,11,612		
Total Requirement (in mn. MT)	0.003	0.007	0.002	0.033		
Subsidy Required (in Rs cr.)	4.02	13.39	0	10.33	27.74	2,774

**Table 8: Year-wise subsidy implications for HPUT – 1 District v/s 100 Districts**

14. The fortificant used in Rajasthan comprises 30 ppm iron (compound is  $\text{Fe}_2\text{SO}_4$ ), 1.3 ppm folic acid and 0.01 ppm Vitamin  $\text{B}_{12}$   
15. Cost based on a pilot for Fortified Rice in Gajapati, Odisha in the MDM scheme.

### 4.3 Subsidy Considerations for Food Items

#### Subsidy implication for targeting HPUT:

The proposed basket for HPUT, for the 1000 day period, consists of 5 kg pulses, 2 kg edible oil, 1.5 kg iodised salt and 25 kg fortified wheat flour or fortified rice.

For HPUT, the proposed strategy recommends that the central government provide the subsidy support for oil and pulses, while the state governments provide the additional subsidy required for fortified flour:

	Central Government	State Governments	Total
Year-1 (in Rs Cr.)	580.38	344.39	924.77
Year-2 (in Rs Cr.)	1,160.76	688.78	1,849.54
Year-3 (in Rs cr.)	1,741.14	1,033.17	2,774.31

**Table 9: Subsidy-share of Central and State Governments - HPUT<sup>16</sup>**

	Oil	Pulses	Iodised Salt	Fortified Flour
Total Annual Requirement (in mn. MT)	0.585	1.463	0.439	10.243
Yearly Subsidy by Central Government (in Rs cr.)	877.94	2,926.45	0.00	0.00
Total Yearly Subsidy by State Governments (in Rs cr.)	0.00	0.00	0.00	3,160.45
Average Cost per District (in Rs cr.)	1.37	4.57	0.00	4.94

**Table 10: Central and State Governments' Subsidies – AAY Households covering all 35 States/UT<sup>18</sup>**

#### Subsidy implication for targeting AAY Households:

The proposed basket for AAY households consists of 5 kg pulses, 2 kg edible oil, 1.5 kg iodised salt and 35 kg fortified wheat flour<sup>17</sup> or fortified rice. The details of subsidy required for targeting 24.3 million households and the expenditure breakup for Central and State Governments are as follows:

- The annual estimated subsidy to be extended by the central government (for pulses and edible oil) would be Rs 3,804.39 cr (USD 634 million).
- The annual estimated subsidy to be extended by State Governments (for fortified wheat flour) would be Rs 3,160.45 cr (USD 526.7 million).
- On average an annual subsidy (both from State and Centre) of Rs 10.88 cr (USD 1.8 million) would be required for investment per district for AAY households.

16. (i) The monthly household entitlement of fortified staples has been taken to be 25 kg for estimating total requirement and subsidy. In case a state decides to target only the HPUTs, estimations must take into account the entitlements of AAY households that have HPUTs along with priority households. (ii) The state-level subsidy requirement for fortified flour is for the nine states, which have 100 HBM districts. It would vary on yearly basis as per the number of districts in the respective states.

17. The total requirement of fortified wheat flour, the associated subsidy and the household spending, would depend upon the combination in which the cereals (rice and wheat) are issued to beneficiaries in different states

18. The annual subsidy by the state government for fortified flour would depend on the number of AAY households in the state and also the preferred staple. The range of spending is expected to be Rs 0.16 cr (Lakshadweep) – 530.63 cr. (Uttar Pradesh). The percentage of the AAY population targeted in Uttar Pradesh and Lakshadweep is 16.79 % and 0.005 %, respectively.

	Oil	Pulses	Iodised Salt	Fortified Flour	Fortified Rice
Range of Economic Cost (Rs per quintal)	9,701 to 13,386	4,152 to 6,113	300 to 700	1,714	2,477
Subsidy by Central Government (Rs per quintal)	1,500	2,000	Nil	Nil <sup>19</sup>	Nil <sup>20</sup>
Subsidy by State Government (Rs per quintal)	Nil	Nil	Nil	308.56 <sup>21</sup>	250
Range of Issue Price to the Household (in Rs per kg)	82 to 119	22 to 41	3 to 7	2	3

**Table 11: Issue Prices to beneficiaries**

For HPUT the annual subsidy cost per district, is estimated to be Rs 9.24 cr (USD 1.54 million) for the first year, Rs 18.5 cr (USD 3 million) for the second year and Rs 27.74 cr (USD 4.6 million) in the third year. Per district, the annual estimated subsidy requirement for AAY Households is Rs 10.88 cr (USD 1.8 million).

#### 4.4 Determination of Issue Price

The issue prices of the additional commodities have been calculated using the formula: Issue Price = Economic Cost – Subsidy.

#### 4.5 Monthly Household Expenditure

The estimated monthly household expenditure for AAY Households ranges between Rs 349 and 524 (USD 5.80 – 8.70) and for HPUT between Rs 329 – 504 (USD 5.40 – 8.40). The difference is due to the greater staples entitlement of AAY households as stipulated in the NFSA.

Commodity	Issue Prices (Rs/kg)	AAY Household		HPUT	
		Quantity Allocated per household (in kg)	Monthly Expenditure (in Rs)	Quantity Allocated per household (in kg)	Monthly Expenditure (in Rs)
<b>Pulses</b>	22 to 41	5	110 to 205	5	110 to 205
<b>Edible Oil</b>	82 to 119	2	164 to 238	2	164 to 238
<b>Iodised Salt</b>	3 to 7	1.5	5 to 11	1.5	5 to 11
<b>Fortified Flour</b>	2	35	70	25	50
<b>Total</b>		<b>349 to 524</b>		<b>329 to 504</b>	

**Table 12: Monthly Expenditure per Household in the Target Groups**

19. In case of Rajasthan, the Central Government would contribute Rs 1205.42/quintal towards 'wheat'. However, this contribution would not extend to 'fortified wheat flour'.

20. In case of Odisha, the Central Government would contribute Rs 1926.61/quintal towards rice. However, this contribution would not be towards 'fortified rice'.

21. These have been adopted from the stakeholder consultation with Government of Rajasthan and West Bengal.

#### 4.6 Utilisation of Efficiency Savings from TPDS Best Practice Solution Implementation

WFP in partnership with the Ministry of Consumer Affairs, Food and Public Distribution developed the TPDS Best Practice Solution. The Solution when fully implemented leads to savings in the amount of approximately Rs 8.1 – Rs 12.9 cr (USD 1.35 - 2.15 million) per district.<sup>22</sup>

The total annual subsidy implications for implementing the nutritionally enhanced TPDS food basket, vis-a-vis the potential savings in one district have been depicted in table 13.

WFP and the Ministry of Consumer Affairs, Food and Public Distribution encourage state governments to consider adopting the TPDS Best Practice Solution to reform the State TPDS. WFP is advocating States to use the resultant cost savings from the increased efficiency of the TPDS value chain for increasing the nutritional value of the food basket.

Year	Centre Subsidy (in Rs Cr.)		State Subsidy (in Rs Cr.)		Total Subsidy (in Rs Cr.)	Potential Savings (in Rs Cr.)	Additional Subsidy (in Rs Cr.)
	AAY HH	HPUT	AAY HH	HPUT			
Year-1	5.94	5.80	4.94	3.44	20.12	8.10-12.90	7.22-12.02
Year-2	5.94	11.61	4.94	6.89	29.38	8.10-12.90	16.48-21.28
Year-3	5.94	17.41	4.94	10.33	38.62	8.10-12.90	25.72-30.52

**Table 13: Efficiency Savings Accrued and Expenditure Incurred for nutritionally enhancing the food basket in one District**

22. The general district is based on the assumption that it has an average population of 1.5 million people, 300,000 ration cards, 630 FPS and three warehouses.



## Concluding Notes

Nutrition interventions are the best investment for ensuring healthy future generations, on which robust and growing economies can be built. This TPDS based strategy for enhancing the nutritional value of the food basket, increases protein and micronutrient intake with the inclusion of additional pulses, edible oils and fortified foods for two identified high priority groups—households with pregnant women and children up to two years (HPUT), i.e. within the critical first 1000 day window of opportunity and AAY households.

Internationally, there are significant efforts directed towards the universal consumption of iodised salt and iron, or iron and folic acid fortified wheat flour. Cost-benefit analyses of these efforts are currently available mostly for a few developed countries. They signify measurable decreases in Loss of Disability-adjusted Life Years (DALYs), i.e. the life years lost in terms of educational achievement or work productivity due to illness and disease.

In India, although no such cost-benefit calculations currently exist, a study undertaken in Gujarat<sup>23</sup> assessed the implications of wheat flour fortification on cost and anaemia levels as well as DALYs. It revealed that among TPDS beneficiaries iron deficiency was reduced by 94%. The study also confirmed that the introduction of fortified wheat flour through all the three major national food-based social safety nets was 'very cost effective'. Based on the findings of this study, it was projected that the introduction of fortified flour through social safety nets in India could reduce micronutrient deficiencies in more than 200 million people.

The investment proposed in targeting HPUT and AAY will reap immense health-related benefits in the short and long term. The benefits will include reduction in the overall spending on public health, improved school attendance and academic performance and ultimately increased economic productivity on the individual level as well as for India as whole.

India has long borne a large portion of the weight of the under-nutrition problem of the world. It is exigent that proactive investments are made to address this issue of under-nutrition.

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23. Source: Fiedler et al, 2012.FNB,33,11-30

## Annex: List of the 100 High Burden Malnutrition Districts

Sl. No.	Common Districts	States
1	Golaghat	Assam
2	Karimganj	Assam
3	Nagaon	Assam
4	Buxar	Bihar
5	Darbhanga	Bihar
6	Jamui	Bihar
7	Madhepura	Bihar
8	Madhubani	Bihar
9	Muzaffarpur	Bihar
10	East Champaran	Bihar
11	Purnia	Bihar
12	Saharsa	Bihar
13	Samastipur	Bihar
14	Sitamarhi	Bihar
15	Supaul	Bihar
16	Jashpur	Chhattisgarh
17	Kawardha	Chhattisgarh
18	Mahasamund	Chhattisgarh
19	West Singhbhum	Jharkhand
20	Barwani	Madhya Pradesh
21	Chhindwara	Madhya Pradesh
22	Damoh	Madhya Pradesh
23	Datia	Madhya Pradesh
24	Dewas	Madhya Pradesh
25	Dindori	Madhya Pradesh
26	Guna	Madhya Pradesh
27	Hoshangabad	Madhya Pradesh
28	Jhabua	Madhya Pradesh
29	Katni	Madhya Pradesh
30	Mandsaur	Madhya Pradesh
31	Neemuch	Madhya Pradesh
32	Panna	Madhya Pradesh
33	Raisen	Madhya Pradesh
34	Rajgarh	Madhya Pradesh
35	Ratlam	Madhya Pradesh
36	Shajapur	Madhya Pradesh
37	Sheopur	Madhya Pradesh
38	Shivpuri	Madhya Pradesh
39	Sidhi	Madhya Pradesh
40	Tikamgarh	Madhya Pradesh
41	Ujjain	Madhya Pradesh
42	Umaria	Madhya Pradesh
43	Vidisha	Madhya Pradesh
44	West Nimar	Madhya Pradesh
45	Baudh	Orissa
46	Dhenkanal	Orissa
47	Gajapati	Orissa
48	Kalahandi	Orissa
49	Koraput	Orissa
50	Malkangiri	Orissa

Sl. No.	Common Districts	States
51	Ajmer	Rajasthan
52	Alwar	Rajasthan
53	Baran	Rajasthan
54	Barmer	Rajasthan
55	Bikaner	Rajasthan
56	Dausa	Rajasthan
57	Dhaulpur	Rajasthan
58	Dungarpur	Rajasthan
59	Jaipur	Rajasthan
60	Jhunjhunu	Rajasthan
61	Karauli	Rajasthan
62	Rajsamand	Rajasthan
63	SawaiMadhopur	Rajasthan
64	Sirohi	Rajasthan
65	Tonk	Rajasthan
66	Udaipur	Rajasthan
67	Kanpur Dehat	Uttar Pradesh
68	Aligarh	Uttar Pradesh
69	Allahabad	Uttar Pradesh
70	JP Nagar	Uttar Pradesh
71	Auraiya	Uttar Pradesh
72	Azamgarh	Uttar Pradesh
73	Baghpat	Uttar Pradesh
74	Banda	Uttar Pradesh
75	Barabanki	Uttar Pradesh
76	SantRavidas Nagar	Uttar Pradesh
77	Bulandshahr	Uttar Pradesh
78	Chandauli	Uttar Pradesh
79	Chitrakoot	Uttar Pradesh
80	Etawah	Uttar Pradesh
81	Faizabad	Uttar Pradesh
82	Farrukhabad	Uttar Pradesh
83	Fatehpur	Uttar Pradesh
84	Ghazipur	Uttar Pradesh
85	Hardoi	Uttar Pradesh
86	Hathras	Uttar Pradesh
87	Kaushambi	Uttar Pradesh
88	SantKabir Nagar	Uttar Pradesh
89	Mainpuri	Uttar Pradesh
90	Moradabad	Uttar Pradesh
91	Muzaffarnagar	Uttar Pradesh
92	Siddharth Nagar	Uttar Pradesh
93	Kushinagar	Uttar Pradesh
94	Pilibhit	Uttar Pradesh
95	Rae Bareli	Uttar Pradesh
96	Rampur	Uttar Pradesh
97	Shahjahanpur	Uttar Pradesh
98	Unnao	Uttar Pradesh
99	Haridwar	Uttaranchal
100	TehriGarhwal	Uttaranchal





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