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# The State of Food Security Report 2012 and the Enigma of Achieving Millennium Development Goals

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## ABSTRACT

**Globally quoted and unquestioningly accepted, the State of the Food Insecurity in the world report 2012, has made significant reduction in the numbers of hungry globally at 868 million. In case of India it has made significant upward revision of hunger prevalence in 1990-92 and significant downward revision for 2010 resulting in 34.9% estimated hunger decline. In the midst of claims of robust methodological revisions, its calculations and assumptions set a dangerous precedence for the policy-makers and planners of the reluctant country governments and worst for the hungry of the world. This paper discusses the SOFI 2012, critiques the declining hunger numbers in SOFI 2012 and produces alternate data sets including independent surveys of Government of India, to counter the reduction claims. It also makes a case for greater public dialogue and engagement in such reports, their methods, metrics and numbers.**

**Keywords:** Millennium Development Goals, FAO, SOFI, food, poverty

## INTRODUCTION

The Food and Agricultural Organization (FAO) of the United Nations released its State of Food Insecurity (SOFI) in the World Report for the year 2012 on 9th October2012. The report has reversed the earlier trends in the state of food insecurity around the world by showing a steep decline in under-nutrition, especially for the developing world, that puts the Millennium Development Goal of halving hunger and under-nourishment in the Developing World by 2015 well within the range. This coup d'état against hunger has been possible by putting in place, what the FAO calls 'improvements in data and methodology' of estimating under-nourishment. SOFI 2012 puts the impact of this thus:

> "The current assessment pegs the undernourishment estimate for developing countries at slightly more than 23.2 percent of the population in 1990-92 (substantially higher than previously estimated), thus implying an MDG target of 11.6 percent for 2015. If the average annual decline of past 20 years continues to 2015, the prevalence of undernourishment in developing countries would reach 12.5 percent, still above the MDG target, but much closer to it than previously estimated[1]".

Table 1 gives the latest trends in the numbers and the proportion of under-nourished people in different regions of the world since 1990-92 as per the new methodology adopted by FAO.

**Table 1 Trends in numbers (millions) and prevalence (%) of undernourishment since 1990-92 as per the new methodology**

| World/ Different regions | 1990-92 | 1999-2001 | 2004-06 | 2007-09 | 2010-12 | Overall decline in No. (Decline in proportion of hungry population) |
|---|---|---|---|---|---|---|
| World | 1000 (18.6%) | 919 (15.0%) | 898 (13.8) | 867 (12.9) | 868 (12.5%) | -13.2 (-32.8) |
| Developed regions | 20 (1.9%) | 18 (1.6%) | 13 (1.2) | 15 (1.3%) | 16 (1.4%) | -20 (-26.3) |
| Developing regions | 980 (23.2%) | 901 (18.3) | 885 (16.8) | 852 (15.5) | 852 (14.9) | -13.1 (-35.8) |
| Southern Asia | 327 (26.8%) | 309 (21.2%) | 323 (20.4%) | 311 (18.8%) | 304 (17.6%) | -7.0 (-34.6) |
| India | 240 (26.9%) | 224 (21.3%) | 238 (20.9%) | 227 (19.0%) | 217 (17.5%) | -9.6 (-34.9) |

*Source: Compiled from figures in Table 1 and Table 1.1 in SOFI, 2012. Figures in parenthesis are the proportions of under-nutrition*

The trends in Table 1 need only be compared with the trends in Table 2, which gives under-nutrition estimates till 2008. Table 1 shows a continuous declining trend in under nutrition to a

**Table 2 Trends in numbers (millions) and prevalence (%) of undernourishment since 1990-92 up to 2008**

| World/Different regions | 1990-92 | 1995-97 | 2000-02 | 2006-08 | Change thus far (%) |
|---|---|---|---|---|---|
| World | 848.4 (16%) | 791.5 (14%0 | 836.2 (14%) | 850 (13%) | 0.2 (-19) |
| Developed world | 15.3 (-) | 17.5 (-) | 15.4 (-) | 10.6 (-) | -30.8 (-) |
| Developing world | 833.2 (20%) | 774 (17%) | 820.8 (17%) | 839.4 (15%) | 0.8 (-22) |
| Southern Asia | 267.5 (22%) | 269.0 (20%) | 307.9 (21%) | 330.1 (20%) | 23.4 (-8) |
| India | 177.0 (20%) | 167.1 (17%) | 208.0 (20%) | 224.6 (19%) | 26.9 (-4) |

*Source: FAO, 2011, Technical annexure. (FAO (2011): Technical annexure. In 'The State of Food Insecurity in the World', Rome)*

lesser or greater extent for all the regions in the world, both in absolute and proportionate terms. The decline in proportionate terms for India is a robust 34.9 percent, while in absolute terms it is 9.6 percent. Though in absolute terms the performance of South Asia and India is less than the average for the developing countries, but in proportionate terms their performance is almost equal to that of all developing countries taken together.

However, the trends published just a year back in SOFI 2011 report were much different. With the exception of the developed world, there was increase in absolute numbers of undernourished in the developing countries on the whole even as there was

a modest decrease in proportionate terms. The FAO also showed impressive performance on part of South Asia and India that is reflected in SOFI 2012 contrary to SOFI 2011 report.

The latest trends for undernourishment in the world are exceptional and most welcome, provided of course they stand the test of scientific scrutiny. The caveat of such a scrutiny becomes all the more emphatic when the results of the methodology adopted for the latest year rewrite all the estimates as far back as 1990-92.

**FAO Methodology for Estimation of Undernourishment**

The inability of a person to obtain "enough" food to lead a healthy and active life has been at the core of FAOs methodology for estimating under-nutrition. In the strictest sense the expression 'enough' includes both the quantitative and qualitative aspects of food. However, the FAO defines enough only in terms of food intake that affords – "total energy expenditure corresponding to the minimum acceptable limit of the range of body-weight for attained-height and the light physical activity norm".[2] These 'minimum dietary energy requirements (MDER) are based on the 'Human Energy Requirements' prescribed in the 2004 report of the joint FAO/WHO/UNU Expert Consultation on human energy requirements and the updated tables on Body Mass Index (BMI) released by the WHO in 2006[2].

Further for a person to be considered undernourished as per the FAO indicator, the habitual (average daily consumption) consumption of the person should be less than MDER for a period of one year. Hence:

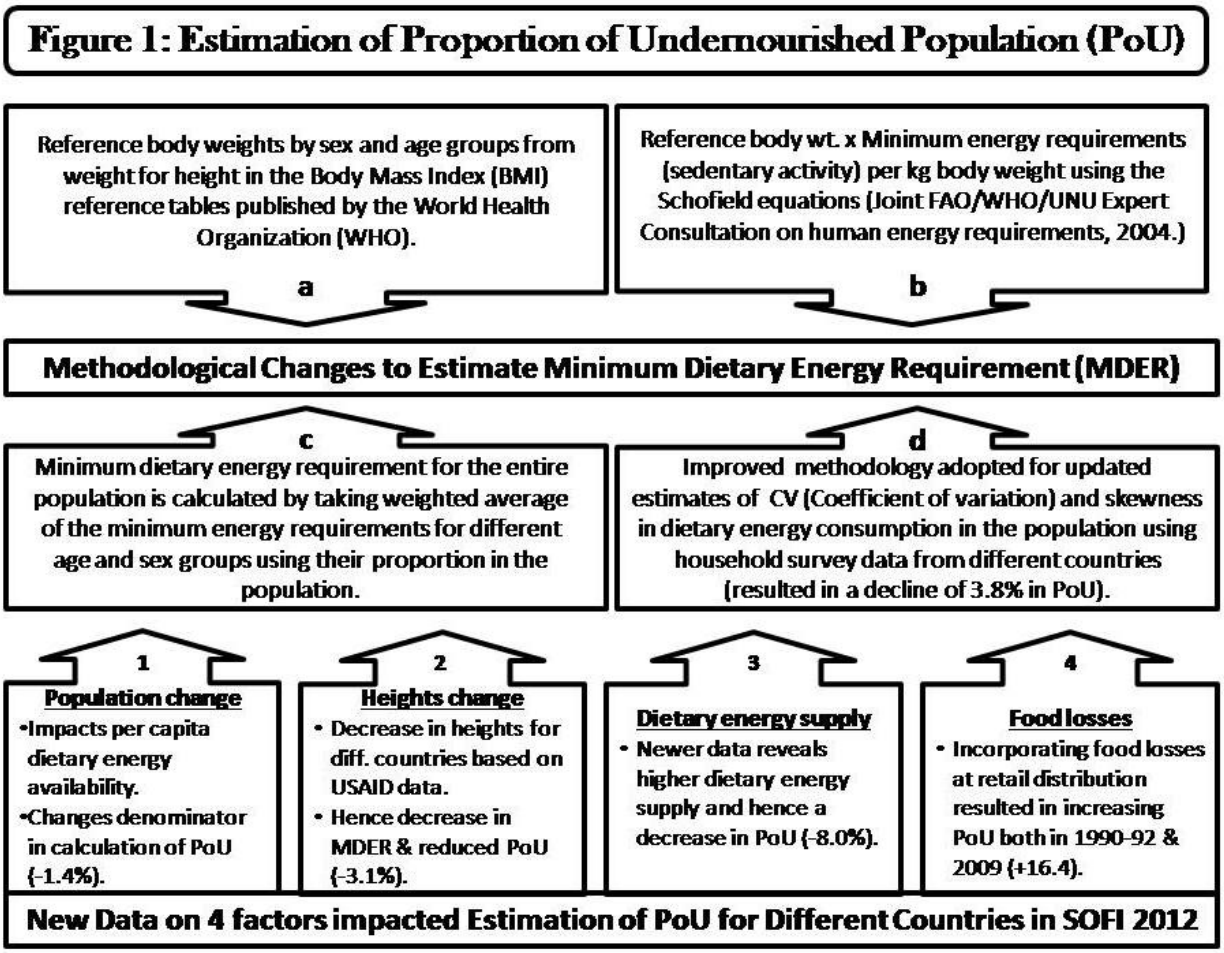
> "the FAO indicator is designed to capture a clearly – and narrowly – defined concept of undernourishment, namely a state of energy deprivation lasting over a year".[1]
>
> By FAO's own admission:
>
> *"FAO indicator is not meant to capture short-lived effects of temporary crises. Furthermore, it does not capture inadequate intake of other essential nutrients; nor does it capture the effects of other sacrifices that individuals or households may make to maintain their consumption of dietary energy."* (emphasis ours)[3].

SOFI 2012 has further adopted the under mentioned methodological innovations to *'strengthen'* its estimation of hunger in the world: [4]

1. Revised data on population of some countries that have large populations of undernourished people e.g. China and Bangladesh.
2. There is new data on demographics, anthropometry, health and household surveys which has implications for the dietary energy requirements for different countries e.g. a new USAID data set has led to downward revision for average heights of people from different countries.
3. There is new data to reveal increased food supply for different countries which has had a profound impact in reducing the extent of undernourishment, especially in the more recent years.
4. The new data on food losses at retail distribution level have had the largest impact for any one factor.
5. Refining the statistical techniques for data analysis to strengthen the methodology.

Table 3 brings out the impact of each of these factors incorporated for better assessment of under-nutrition. However, the discussion regarding these data sets in SOFI 2012 report leaves much to be desired about their robustness. The FAO itself has placed several caveats to this improved methodology as perhaps they were best placed to know its weaknesses. The caveats are[6]:

- The indicator for prevalence of under-nutrition (PoU) is based purely in terms of dietary energy availability and its variation in the population. As such it fails to capture other important aspects of nutrition.




*Notes: Estimating the minimum dietary energy requirement (MDER) for a population is central to estimating the proportion of under-nourished population. MDER is calculated through steps a, b, c and d in that order. While steps a, b and c are self explanatory, step d represents improved statistical methods at reaching MDER estimates. These statistical improvements resulted in a decline of 3.8% in the PoU for the year 2009. Boxes 1, 2, 3 and 4 represent the factors – Population change, Heights change, Dietary energy supply and Food losses respectively for which new data has been made available The figures in the brackets in theses boxes represent the extent to which this new data on respective factors has changed the PoU for the year 2009. FAO has not made available the changes in PoU effected by this new data for the years 2010, 2011 and 2012.*

- The MDER is also based on energy requirement for purely sedentary lifestyle; its direct implication being that dietary energy requirements of the poor, whose welfare ought to the central concern for such exercises, and who invariably perform hard physical labor to make a living, are nowhere reflected in these calculations. SOFI 2012 report itself states:

  > "alternative indicators could include those using a higher minimum energy requirement threshold corresponding to higher activity levels."

- The impact of short term price and other economic shocks are not captured by the PoU indicator.

**Table 3 Impact of individual data and methodology revisions on FAO estimates of undernourishment**

| | Numbers of undernourished in the developing regions (millions) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 1990-92 | 1995-97 | 2000-02 | 2005-07 | 2009 | 2010 | 2011 | 2012 |
| Numbers reported in SOFI 2011 | 833 | 774 | 821 | 839 | 866 | | | |
| 1. Population change | +24 (+2.8%) | +12 (+1.5%) | +11 (+1.4%) | -5 (-0.6%) | -12 (-1.4%) | | | |
| 2.Heights change | -21 (-2.4%) | -25 (-3.2%) | -27 (-3.3%) | -23 (-2.8%) | -27 (-3.1%) | | | |
| 3.Dietary energy supply change | +12 (+1.5%) | +10 (+1.4%) | -2 (-0.2%) | -31 (-3.8%) | -66 (-8.0%) | | | |
| 4.Food losses | +111 (+13.2%) | +114 (+14.8%) | +124 (+15.5%) | +125 (+16.1%) | +125 (+16.4%) | | | |
| 5.Methodology changes | +23 (+2.3%) | +24 (+2.7%) | -22 (-2.4) | -35 (-3.9) | -33 (-3.8) | (-2.9%) | (-2.7) | (-2.2) |
| New assessment | 980 | 909 | 905 | 870 | 853 | 852 | 852 | 852 |
| Overall changes | +17.7 | +17.5 | +10.2 | +3.6 | -1.5 | | | |

*Source: FAO (2012, p 51)*[5]

*Notes: The figures in the parenthesis represent the proportionate change in PoU affected by new data for each factor in the mentioned year, while the numbers outside the parenthesis represent the absolute change in PoU. As per the estimates of SOFI 2011 there is an overall increase of 4% in 2009 in the numbers of undernourished over 1990-92. Besides, after 1995-97 there has been a steady increase in the numbers of undernourished persons around the world. However, as per 'new assessment' after the changed methodology after incorporating newer data, there is a decline of 13% in the absolute number of undernourished in 2009 as compared to 1990-92. After 2009 the absolute number of undernourished has remained unchanged, even though this could still mean a decline in the PoU due to increase in population. If we see the overall changes, there has been an increase of 17.7% in the absolute number of under-nourished over the earlier FAO estimates for the year 1990-92, while there is a decrease of 1.5% in the absolute number of undernourished as compared to earlier FAO estimates for the year 2009. Thus not only has there been a decrease in the number of under-nourished in the later years, but this decrease becomes dramatic due to huge retrospective increase for the baseline of 1990-92.*

On account of these infirmities, FAO calls its PoU indicator as a "conservative estimate of under-nutrition[6]". There are serious concerns regarding the data sets relied upon to support the new factors included in the PoU estimation methodology. Some of these are:

***Impact of economic and food crisis of 2008-09***

The impact of the 2008-09 economic recession and the accompanying food crisis has been watered down to being "only a mild slowdown in GDP growth in many developing countries, and increases in domestic staple food prices were very small in China, India and Indonesia (the three largest developing countries)." Further – "Past estimates of undernourishment assumed that developing countries and their most vulnerable populations were much more exposed to the economic downturn[7]".

Even as such far-reaching assertions have been made, not even one study has been quoted in SOFI 2012 report to support the aforesaid assertion. To the contrary there are published reports that have evidenced the immense welfare cost of the financial and food crisis of 2008[8,9]. The later of the two studies from FAO talks of an additional 115 million people being pushed into hunger by the global food and financial crises of 2007 and 2008. But FAO does not make us privy to the evidence that impelled it to reject these estimates from FAO itself. One can well imagine the results if these 115 million were still taken into account for estimating latest PoU.

In the case of India at least the evidence does not support FAO's claim of the food and economic crisis having only a minimal impact. Figure 2 below provides the trends in the prices of essential staple food items, the expenditure required to meet the component of daily dietary calories derived from staple food items (i.e. foodgrains) and the actual daily per capita expenditure incurred on these food items.

It may be noticed from **Figure 2** that beginning from 2005 there is a steady and steep rise in the prices of staple food items and hence a rise in the required daily expenditure on staples to meet the daily dietary energy requirement to be derived from foodgrains. However, the actual daily per capita expenditure incurred by the people on staple food items both in the urban and in the rural areas has all along been much lower than the required expenditure, and this is reflected in the decreasing dietary energy intake of the people over the years as is shown in following section. Beginning from 2005 there is an increasing divergence between the required expenditure on staple food items and the actual expenditure incurred on them both for the urban and the rural consumers. This divergence has continued till as late as 2010 and probably even later (all India price data for essential commodities could be accessed only till 2010). Thus the impact of food price rise has continued to be felt till much later than the economic and food crisis of 2008. Implications of these facts can only be imagined too well and the FAO's claims of minimal impact of the economic and food crisis of 2008 do not seem to hold ground at least for India.

***New data on food losses***

The estimates of the impact of food losses are based on just one study commissioned by FAO in 2011. [10] Interestingly this study shows that food losses at every stage of the food chain are much higher in the West than in the developing world. However, the SOFI 2012 report has ostensibly taken account of food losses only in the developing regions to estimate the PoU in these regions.

Food markets in developing countries are progressively getting integrated with the international markets and the Western Food Inc. is establishing pervasive presence in the food markets of the developing world[11,12]. Many horticultural products, fruits and vegetables, as also processed food are being increasingly procured by developed countries from many

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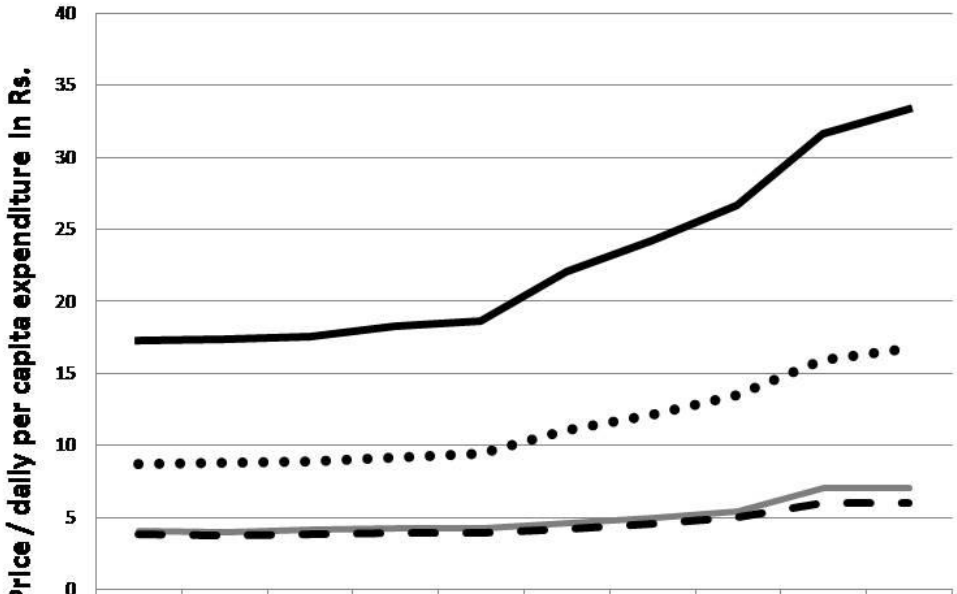


| | 2001 (57th round Jul 2001-Jun 2002) | 2002 (58th round Jul-Dec 2002) | 2003 (59th round Jan-Dec 2003) | 2004 (60th round Jan-Jun 2004) | 2005 (61st round Jul 2004-Jun 2005) | 2006 (62nd round Jul 2005-Jun 2006) | 2007 (63rd round Jul 2006-Jun 2007) | 2008 (64th round Jul 2007-Jun 2008) | 2009 (65th round Jul 2007-Jun 2008) | 2010 (66th round Jul 2009-Jun 2010) |
|---|---|---|---|---|---|---|---|---|---|---|
| Per kg price of staple foods | 17.3 | 17.4 | 17.6 | 18.3 | 18.7 | 22.1 | 24.3 | 26.7 | 31.7 | 33.4 |
| Price of staple food required daily | 8.7 | 8.8 | 8.9 | 9.2 | 9.4 | 11.1 | 12.2 | 13.5 | 16 | 16.8 |
| DPCE on staple food (Urban) | 4.1 | 4 | 4.2 | 4.3 | 4.3 | 4.6 | 5 | 5.5 | 7.1 | 7.1 |
| DPCE on staple food (Rural) | 3.9 | 3.8 | 3.9 | 4 | 4 | 4.2 | 4.6 | 5 | 6 | 6 |

**Figure 2 Trends in the prices of the staple food items, required expenditure to meet the calorie demands from these items and the actual daily per capita expenditure on staple food**

*Source: The average retail prices of staple foodgrains (Rice, Wheat, Gram and Tur daal i.e. Pigeon pea) are from the table – 'Average Retail Prices of Essential Commodities Monitored by Price Monitoring Unit (PMU) in India (2001 to 2010) at indiastat.com. The daily per capita expenditures on these food items for different years are from the household expenditure data from different NSSO (National Sample Survey Organization) rounds corresponding to the mentioned years.*

*Note: The unit price of a mixture of a kg of foodgrains was calculated by taking an average of 1 kg price of different foodgrains. The price data on pulses other than Tur was not available for all the years and hence has not been included in this calculation. Even otherwise as other pulses varieties are costlier; including their prices would have only increased the required expenditure on staple food items, thus pushing a greater number of persons into hunger on account of inability to access food. The required daily expenditure on staple foodgrains was calculated on the basis of daily quantity of foodgrains required to be consumed to meet the daily dietary energy requirement derived from foodgrains. This component of daily calorie requirement was found to be 1732 calories which is very close to the MDER norms prescribed for India by FAO. The basis of this calculation is as explained in Annexure 1.*

developing countries. Such exports are not necessarily helpful for enhancing food security of the people in developing countries and are often governed by the economic dictates, policy prescriptions buttressed by unequal power relations between the developed and the developing world. Table 4 presents the picture of this growing integration of the global food markets which is increasingly taking the developing countries in its fold and rendering their food chains liable to adverse influence of the developed country food chains. This process could only have gone further since the launch of neo-liberal economic policies in the beginning of the 1990s.

**Table 4 Processed foods export growth rates (percent per year)**

| Processed food | Global | | Developed regions | | Developing regions | |
|---|---|---|---|---|---|---|
| | 1975-85 | 1985-95 | 1975-85 | 1985-95 | 1975-85 | 1985-95 |
| Meats | 6.7 | 10.0 | 6.1 | 10.0 | 9.4 | 10.1 |
| Vegetables, oils and fats | 7.4 | 4.7 | 5.7 | 4.0 | 9.1 | 5.2 |
| Dairy products | 6.4 | 9.5 | 6.5 | 9.2 | 3.1 | 19.5 |
| Processed rice | 1.9 | 7.5 | 2.4 | 2.3 | 1.6 | 10.3 |
| Sugar | -9.4 | 9.1 | -4.1 | 13.6 | -11.1 | 6.1 |
| Beverages & tobacco | 8.3 | 11.2 | 8.7 | 10.2 | 5.1 | 19.3 |
| Other foods | 8.4 | 9.7 | 7.8 | 9.0 | 9.7 | 11.0 |
| Total processed foods | 5.3 | 9.4 | 6.6 | 9.2 | 2.8 | 9.9 |

*Source: Rae and Josling, 2003*[13]

Food wastage is a global concept and as a global aggregator wastage of food in the developed world (especially Organisation of Economic Cooperation and Development countries) could be related to food security of the people in developing world in two possible ways – first, lesser wastage would mean lesser food produced in the third world would get diverted to meet the requirement in the developed countries. Using appropriate redistributive policies this food could *potentially* be made available to improve the diets of the poor in the developing countries. Secondly, the availability of food supplies freed from the western markets due to more prudent consumption of food could *potentially* be helpful in lowering the prices of food in the international market, thereby enabling the poor net food importing countries to have access to cheaper food. The enormous wastage of food due to the business practices of the food retailers and the wasteful consumer behavior *potentially* robs the people in the third world of this food.

We use the word *potentially* because it is not necessarily so that all the food saved from wastage would automatically be available to the poor people in the third world. There are numerous instances when the governments in the industrialized world rather have their excess food stocks go waste than make them available for the hungry people in the developing world in order to maintain high prices of food in the international market. Secondly, even the governments in some developing countries e.g. India, have often preferred to allow export of foodgrains stored in their own godowns in the

name of specious arguments like letting the farmers benefit from higher international prices rather than make it available to the hungry in their own country. The simple reason for this is that in market economies food market also responds only to the purchasing power of the people, which the poor seldom command.

Nonetheless, it would have helped if a more nuanced view of the impact of food losses/wastage in the developed world on food security of the developing regions had been presented. The need for such an analysis is underlined by facts such as this that - consumer level food wastage in developed countries of Europe and North America is around 222 million tons. This is almost equal to the net food production of Sub-Saharan Africa which stands at 230 million tons[14].

Focusing on the retail level food losses in the developing countries only has other potential fallouts. In India this argument of presumed huge retail level food losses has been central argument for the push to promote multinational corporations in multi-brand retail. It is said that the modern technology and management techniques brought by the international retailers will help in reducing retail level food losses that occur due to inefficient management and limited capacities of the present small retailers. What is however conveniently ignored is the huge retail level food losses that are incurred due to the marketing techniques and methods adopted by these international retailers in the developed countries. In such a milieu FAO's singular focus on retail level food losses in developing countries alone will prove counterproductive to enhancing the food security of the people in the third world.

Food losses are more a function of industrialization of food chains[14]. FAO's own study on food wastage shows that the per capita food waste in countries of Europe and North America, which have highly industrialized food chains, is 280-300 kg per year as compared to 120-170 kg per capita in the developing countries. During the era of neo-liberal development paradigm there has been an increasing industrialization of developing country food chains, at least in big urban centers, resulting in the possibility of increasing food losses, especially during the later years due to higher market penetration of the multinational organized food retail.

***Data on dietary energy supply (DES) change***

The section in the SOFI 2012 report discussing new data on dietary energy supply states - "The FAO Statistics Division has recently published new estimates of dietary energy supply for all countries in 2009, with revisions of the entire series[5]". Whether these 'new estimates' are borne out by new data or a new methodology to estimate DES, has not been made clear in the report. What remains unexplained is – how has this new find affected changes in food availability figures as far back as 1990-92 and what prevented the availability of this data earlier? The need for these explanations couldn't be more compelling, especially as the new DES figures have decreased PoU by as much as 8 percent in 2009.

**Implications of Aforementioned Findings for Policy**

Credit where it is due, the statisticians at FAO have placed their caveats regarding the methodology used for estimation of PoU. However, this does not detract from the fact that once published, these figures become hard cast facts for policy planners around the world; especially so, if these help to justify the official policy paradigm and state's under-performance.

The disjuncture between the MDER calculated by FAO and the real life dietary energy requirements of the poor has already been indicated above. Tables 6 and 7 provide further exposition of how MDER calculated by FAO is a purely statistical measure that does not bear relationship with the living realities of the people. Table 6 below compares the FAO estimates of MDER for India and Occupied Palestinian Territories which have second lowest MDER estimates after Laos People's Democratic

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Republic. Table 7 compares longevity and mortality outcomes for India and Palestine.

**Table 5 Share of Food, Grocery and Beverage (FGB) sales in the total retail sales (billion dollars)**

| Retail sales / Financial year (Apr-Mar) | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | Growth rate* |
|---|---|---|---|---|---|---|---|
| Total retail sales | 235.7 | 246.1 | 271.6 | 321.9 | 360.5 | 407 | 12.3 |
| FGB retail sales | 161.1 | 160.5 | 176 | 203.1 | 225 | 252 | 10.2 |
| Share of FGB in total sales (%) | 68.4 | 65.2 | 64.8 | 63.1 | 62.4 | 61.9 | - |
| Organized retail sales | 7.8 | 8.9 | 10.8 | 13.2 | 18 | 25 | 26.2 |
| Organized FGB retail sales | 1.1 | 1.2 | 1.4 | 1.7 | 2.3 | 3.2 | 23.8 |
| Share of organized FGB in FGB (%) | 0.69 | 0.76 | 0.81 | 0.84 | 1.02 | 1.26 | - |
| Food** losses | 2.3% | 2.37% | 2.39% | 2.41% | 2.42% | 2.47% | 1.2 |

*Source: ICRIER Research quoted in U.S. Department of Agriculture (USDA) (2009): 'India – The Retail Food Sector, 2009', Global Agricultural Information Network (GAIN), Report No. IN1005*
***Data made available by FAO through personal correspondence.*
**Compound Annual Growth Rate (CAGR).*

Ever since British physician and demography historian Dr Tomas McKeown published his thesis on the modern rise of population in England and Whales 'Food' has come to wear the crown as the basic medicine of public health. Improved availability of food and better nutrition were shown by McKeown to be the underlying cause of rapid rise in population of England and Wales in the eighteenth and the nineteenth centuries as also for decline in the infectious diseases like tuberculosis and measles[28].

The difference in the FAO calculated calorie norms for India and Palestinian territories are self evident, yet the difference in longevity, mortality and nutrient intake outcomes (which can reasonably be expected to be influenced by dietary intake) for the two populations are in just the reverse order with a sizable margin. These are further amplified in view of the conflict situation in the Palestinian areas. Even though there may not be a perfect linear correlation between food intake, longevity and mortality, the outcomes in Table 5 are counter intuitive and queer. But as they say, there is a method in madness. These results, if not completely undoing the *relationship between food and human health*, do *render this relationship somewhat secondary* to ensuring human wellbeing. As we shall discover soon, this is a very important premise shaping public policy.

**Table 6 Minimum Dietary Energy Requirement (kcal/person/day)**

| Country | Parameter | 1990-92 | 1995-97 | 2000-02 | 2006-08 | Nature of work | Dietary allowance for a reference Indian male and female (kcal) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 1977* | | 2011** | |
| India | MDER | 1740 | 1750 | 1760 | 1780 | | Males | Females | Males | Females |
| | DES[i] | 2185 | 2275 | 2264 | 2309 | Sedentary | 2425 | 1875 | 2320 | 1900 |
| | Retail level distribution losses[ii] | 2.33% | 2.36% | 2.35% | 2.41% | Heavy | 3800 | 2925 | 3490 | 2850 |
| Occupied Palestinian Territories | MDER | 1670 | 1670 | 1670 | 1690 | | | | | |

*Source: FAO Statistics Division. Available from: www.fao.org/fileadmin/.../ess/.../List_Indicators_FSSM_2011.xls last accessed on 22nd Nov 2012.*

*Note: For some strange reason almost all the developed countries including the erstwhile countries of the Soviet Block in Europe have MDER norms in 1900s while for overwhelming number of developing countries these norms are in the series of 1700s or 1800s. This is so inspite of the fact that no such differentiation is brought out by FAO either in its methodology (FAO, 2008) for estimating MDER for the developed and the developing countries nor any discussion regarding the results.*

**ICMR (1990)[16]*

***ICMR (2011)[17]*

*[i] Dietary Energy Supply for the years 1990, 1995, 2000 and 2006 have been given in successive columns.*

*[ii] Retail level distribution losses for the years 1990, 1995, 2000 and 2006 have been given in successive columns. Retail losses for India made available by FAO vary between 2.31% and 2.48% between 1991 and 2012.*

**Table 7 Comparison of longevity and mortality outcomes between India and Palestine**

| Country | Year | Life Expectancy at Birth (Years) | Crude Death Rate | Proportion of low birth weight babies (%) | Infant Mortality Rate (Per thousand live births) | < 5 years Mortality Rate (Per thousand live births) | Maternal Mortality Rate (Per 100,000 live births) | Anemia Prevalence in Pregnant Women (%) |
|---|---|---|---|---|---|---|---|---|
| India | 1990 | 50[18] | 7.4 (2008)[20] | 30 (1984)[22] | 81[18] | 115[18] | - | 58.7 (2005-06)[26] |
| | 2010 | 65[18] | | 30 (1999)[23] | 48[18] | 63[18] | 200[18] | |
| | | | | 30 (2007)[24] | | | | |
| Occupied Palestinian Territories | 1990 | - | 4 (2011)[21] | 9 (2000)[23] | - | - | - | 38.6 (2006)[27] |
| | 2010 | 70.8 (Males)[19] 73.6(Females)[19] | | 7.3(2006)[25] | 20.6[2] | 25.1[19] | 29[19] | |

*Sources: WHO, 2012a[1]; WHO (2012b) [19]; CBHI, (2009)[20]; WHO (2012c[21]; WHO (1984)[22]; UNICEF & WHO (2004)[23]; UNICEF (2006)[24]; PCBS (2009)[25]; IIPS (2007)[26]; Khader et.al (2009)[27] Notes: The figures in parenthesis are the year of the statistic.*

***Dietary intake and the shaping of public policy in India***

SOFI, 2012 report does much favor to policy planners in India by reporting a massive 34.9 percent decline in PoU during the last twenty years. This decline is specially favorable since the period of this decline from 1990 to 2009 has also been the period of hotly contested 'Neo-liberal Economic Policies' and the

associated development policy paradigm, which is said to have led to increase in poverty and hunger despite unparalleled economic growth during the period. The policy establishment cannot find a better reason to rest on their laurels. The question then arises how to judge the veracity of these claims and draw appropriate inferences for policy? To ameliorate hunger, we need to view it in relation with its social, economic and political associates and that success in ameliorating hunger cannot be achieved apart from ameliorating societal conditions that lead to it. Given the fact that India has the largest number of hungry people in the world, changes in numbers of hungry in India has important implications for achieving the MDG-1 goal of reducing extreme poverty and hunger in the world to half by 2015.

Poverty is the spring board of hunger and malnutrition. It is perhaps in recognition of this dictum that country's political leadership pegged the definition of poverty to dietary energy intake since pre-independence[29]. In 1973-74 a committee appointed by Government of India defined the 'minimum income' for delineating poverty line as that which could be "considered adequate to ensure minimum energy requirements for an active and healthy life and also minimum clothing and shelter. It did not include expenditures on health and education, which are to be provided by the State as per the Indian Constitution." These minimum calorie norms were fixed at 2400 and 2100 kcal for the rural and urban areas respectively. It was further stated that "the minimum itself should be revised upwards with economic progress[30]".

As is evident from Tables 8 and 9, these poverty lines were observed more in their negation than adherence. Not only is it evident that there is a considerable difference in terms of MPCE, calories affordable and the proportion of poor people between the actual poverty line cut offs (adhering to the initial calorie norms) and the official poverty lines, but this gap has been progressively increasing over the years. By implication then, even the numbers of undernourished has been declining – at least statistically.

There is nothing inadvertent about these contradictions, for many researchers have pointed out these methodological inconsistencies over the years. However, policy establishment's initial response to the declining calorie consumption over the years came by way of *'superlative'* theories of 'diversification of diets.' Evidence from across the world affirms to the fact that 'diversification' of diets with increasing prosperity has always been accompanied with rising overall calorie consumption; something that is formally known as the 'Bennet's Law'. Unmindful of this, statements like - "the poor seem to have opted for some diversification in consumption providing a more nutritious diet though not necessarily adequate energy[33]" call into question the rationality of dietary preferences of Indian consumers.

The policy establishment has conveniently chosen to dilute the standards to size rather than raise the efforts to meet the required standards. And in this effort, the FAO's method of calculating the MDER has been most expedient for our policy pundits. The raging debate on the measurement and extent of poverty in India forms an important backdrop to further discussion here.

In response to a huge controversy over the submission of an affidavit by the Planning Commission to the Supreme Court in September 2011 that set the poverty line to be ludicrously low, the Commission responded that its submission was in line with the recommendations of the 'Tendulkar Committee[1]' that was constituted to suggest a new methodology for estimating poverty in the country. Just as the MDERs calculated by FAO do; the Tendulkar Committee has decoupled the anchoring of poverty lines from the earlier normative calorie norms and effectively reduced the poverty line calorie norm to 1800 calories per capita per day. The hand holding effect of FAO methodology on Indian policy establishment is evident from the following:

[1] Under the chairmanship of economist SD Tendulkar

**Table 8 The truth of rural poverty and calorie intake in India – the official and the real**

| Round No. | 28 (1973-74) | 32 (1977-78) | 38 (1983) | 50 (1993-94) | 55 (1999-2000) | 61 (2004-05) |
|---|---|---|---|---|---|---|
| ***Direct method*** MPCE giving 2400 kcal, Rs (poverty line - DPL) | 56 | 67 | 120 | 325 | 565 | 790 |
| Percent below poverty line | 72 | 65.5 | 70 | 74.5 | 74.5 (77.5)* | 87.0 |
| ***Indirect method*** Price adjusted poverty line, Rs official (OPL) | 49 | 56 | 86 | 206 | 328 | 356 |
| Percent of officially poor | 56.4 | 53.1 | 45.7 | 37.3 | 27.4 (30.4)* | 28.3 |
| Calorie intake at poverty line | 2,200 | 2170 | 2060 | 1980 | 1890 | 1820 |
| Ratio of DPL / OPL- Rs (calories)** | 1.14 (1.09) | 1.19 (1.11) | 1.39 (1.17) | 1.58 (1.21) | 1.72 (1.27) | 2.22 (1.32) |

*Source: Adapted from Patnaik, 2007, [31] Table 2*

*Notes: MPCE = Monthly Per Capita Expenditure. Direct method: This is to read directly from the household expenditure surveys conducted by National Sample Survey Organization, the monthly per capita expenditure (MPCE) level that affords a diet equivalent to 2400 kcal. Indirect method: This implies deflating the original poverty line fixed in 1972-73 with consumer price index for agricultural laborers (for rural areas) and the industrial worker in the urban areas. *The figures are alternative estimates consequent upon a change in methodology adopted by NSSO from 55th round onwards. **The ratio in parenthesis is of the calories afforded at the real and the official poverty lines.*

1. "Calorie consumption intake calculated by converting the consumed quantities in the last 30 days as collected by NSS has not been found to be well correlated either over time or across States with the nutritional outcomes observed in other specialized nutrition outcome surveys such as the National Family Health Surveys (NFHS)"
2. It is stated - "the revised minimum calorie norm for India recommended by FAO is currently around 1800 calories per capita per day which is very close to the average calorie intake of those near the new poverty lines in urban areas (1776 calories per capita) and higher than the revised FAO norm (1999 calories per capita) in rural areas in the 61st round of NSS[34]".
3. "It may be noted that although those near the poverty line in urban areas continue to afford the original calorie norm of 2100 kcal per capita per day, their actual observed calorie intake from 61st Round of NSS - is 1776 calories per capita.

This actual intake is very close to the revised calorie intake norm of 1770 calories per capita per day currently recommended for India by the Food and Agriculture Organization (FAO)[34]".

**Table 9 The truth of urban poverty and calorie intake in India – the official and the real**

| Round No. | 28 (1973-74) | 38 (1983) | 50 (1993-94) | 61 (2004-05) |
|---|---|---|---|---|
| *Direct method* MPCE giving 2,100 kcal, Rs (DPL 2,100) | 65 | 147 | 398 | 1,000 |
| % Persons below DPL | 60 | 58.5 | 57.0 | 64.5 |
| *Indirect method* Official poverty line (OPL Rs) | 56.6 | 117.6 | 285 | 538.6 |
| % Persons below OPL | 49.2 | 42.2 | 32.6 | 25.7 |
| Calorie intake at OPL | 2000 | 1905 | 1885 | 1795 |
| Ratio of DPL / OPL- Rs (calories)* | 1.5 (1.05) | 1.25 (1.10) | 1.4 (1.11) | 1.86 (1.17) |

*Source: Adapted from Patnaik, 2010, [32] Table 2. Note: The meaning of MPCE, direct and indirect method is as defined in table 6.*

And of course the experts of the 'Tendulkar Committee' couldn't have been more unmindful of the caveats placed by the statisticians at FAO. It could have been possible not to join issues with either, provided there was no cost extracted for this from the people who live by the sweat of their brow while engaging in a daily struggle for satiating their hunger. To fathom the intensity of this daily struggle, it would do some good to know how the rich in India have come to be defined.

**Table 10 Poverty status and poverty band, 2004-05**

| Poverty status | % of population | DPCE (Rs) |
|---|---|---|
| 1. Extremely poor | 6.4 | 9 |
| 2. Poor | 15.4 | 12 |
| 3. Marginally poor | 19.0 | 15 |
| 4. Vulnerable poor | 36.0 | 20 |
| 5. Middle-income | 19.3 | 37 |
| *6. High – income* | *4.0* | *93* |
| 7. Poor and vulnerable (1 to 4) | 76.8 | 16 |
| 8. All | 100.0 | 46 |

*Source: Kannan, 2010. [35] Note: DPCE = daily per capita consumption expenditure.*

What is noteworthy in Table 10 is that anyone having a daily expenditure of Rs 93 a day came to be defined as being in the high income group. This becomes even more remarkable when we see the recommendation of Justice Wadhwa Committee on the working of the Public Distribution System (PDS)[2] which recommended that anyone earning less than Rs 100 a day should be considered as poor. Given the state of affairs, nothing is left to imagination as to the extent and quality of economic access to food that people enjoy. Remaining doubts as to the feasibility of 35 percent decline in PoU in India since 1990 should be put paid to by the fact that India's best fed State – Punjab had a hunger index of 13.6 in 2008, which qualified it to be counted in the 'serious' category of classification of areas by hunger[36.] Findings on nutritional outcomes in India given in Table 11 argue for much greater seriousness in addressing the problem of hunger and under-nutrition in the country.

**Table 11** suggests either stagnation in nutritional outcomes or a halting decline, and in some cases where there has been an improvement in one parameter, it has been undone by worsening of the other. If the overall presence of under-nutrition in children less than 5 years of age was 48 percent in 2004-05 (NFHS 3), it has considerably worsened at 58.8 percent in 2011[38]. The official nihilism towards worsening hunger situation is further reflected in the fact that the government has decided to do away with the comprehensive NFHS surveys and replaced them with the DLHS (District Level Household Surveys) surveys. The DLHS surveys, with the exception of DLHS II have focused narrowly on the RCH (Reproductive and Child Health) parameters, perhaps in a hope that gone with the data on under-nutrition shall also be the problem of hunger.

An important purpose of food and good nutrition is to shore up the body's defenses against disease; good health being important to fight many disabilities resulting from poverty. If FAO's estimates regarding on decline in PoU in case of India are to be believed, then declining under-nutrition seems to have been counterproductive in so far as prevalence of infectious diseases is concerned as depicted in Table 12, though the picture in terms of mortality is mixed (Table 13). Additionally it need be kept in mind that morbidity and disease mortality statistics in India are largely generated on the basis of information available from the public sector healthcare as the for profit health sector constituting more than 80 percent of health care in the country rarely if ever feeds into public health data. Hence the figures in Tables 12 and 13 are gross under-estimations of the morbidity and mortality due to infectious diseases in the country.

## CONCLUSION

There can be little doubt that reducing under-nutrition remains among the most cherished and challenging goals for development policy around the world. The enigma of mitigating hunger is all the more so because inspite of all the technical means and productive capacities to vanquish hunger being at the disposal of mankind, this goal remains elusive as ever. What need be emphasized here is that there are no shortcuts to achieving this goal and impetuousness is least expedient. FAO remains the guiding force for governments, policy planners, civil society, researchers and academics engaged in the fight against hunger. However, the dramatic progress claimed in the SOFI 2012 report, to the extent that it reverses the entire trend till as far back as 1990 seems to be undermining the leading role of FAO in humanity's fight against hunger, especially when government's and policy planners use such claims of success more to rationalize the present state of affairs, than to change it for better.

[2] The Indian state's flagship response to the reaching food to the poor through subsidized pricing. It is recknoned to be the largest food subsidy programme anywhere in the world.

**Table 11 Nutritional outcomes through the three rounds of NFHS**

| Key Indicator | NFHS 1 (1992-93) | NFHS 2 (1998-99) | DLHS 2 (2002-04) | NFHS 3 (2005-06) | Hungama (2011) |
|---|---|---|---|---|---|
| Nutritional status of children | | | | | |
| Children under 3 years who are stunted (%) | na | 51.0 | - | 44.9 | 58.8 (0-5 yrs) |
| Children under 3 years who were wasted (%) | na | 19.7 | -49 (0-6 yrs) | 22.9 | 11.4 (0-5 yrs) |
| Children under 3 years who were underweight (%) | 51.5 | 42.7 | | 40.4 | 42.3 (0-5 yrs) |
| Nutritional status of ever married adults (15-49 yrs) | | | | | |
| Women whose body mass index is below normal (%) | na | 36.2 | | 33 | - |
| Men whose body mass index is below normal (%) | na | Na | - | 28.1 | - |
| Anaemia among children and adults | | | - | | |
| Children age 6-35 months who are anemic (%) | na | 74.2 | 47% (0-71 mts) 6yr approx | 78.9 | - |
| Ever married women aged(15-49) who are anemic (%) | na | 51.8 | | 56.2 | - |
| Pregnant women aged 15-49 who are anemic (%) | na | 49.7 | 76% (Total in adolescents 10-19 yrs) & 81% (among married in 10-19 yrs) 46% (15-44 yrs) | | - |
| Ever married men aged 15-49 who are anemic (%) | | | | | |
| Treatment of childhood diseases (children under 3 years) (%)* | | | | | |
| Children with diarrhea in the last 2 weeks who received ORS (%) | | | | | |
| Children with diarrhea in last two weeks taken to a health facility (%) | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| | na | | - | | |
| | | Na | | | |
| | | | | 57.9 | |
| | | | - | | |
| | | | | 24.3 | |
| | 17.8 | | | | |
| | | 26.9 | | | |
| | 61.9 | | | | - |
| | | 65.3 | | 26.2 | |
| | | | | | - |
| | | | | 61.5 | |
| | | | - | | |
| | | | - | | |
| | | | | | - |
| | | | | | - |

*Source: Compiled from IIPS & Macro International, 2007.* [37] **These parameters have important bearing on nutritional outcomes and hence have been included here.*

**Table 12 Incidence of infectious diseases – cases per 100,000 population**

| Disease | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| Acute respiratory infection | 1998 | 2118 | 2283 | 2547 | 2349 | 2351 | 2319 | 2398 | 2400 |
| Acute diarrheal disease | 903 | 903 | 989 | 972 | 1002 | 918 | 974 | 995 | 1018 |
| Pulmonary TB | 46 | 60 | 85 | 110 | 118 | 126 | 131 | 133 | 100 |
| Enteric fever | 48 | 47 | 56 | 64 | 63 | 71 | 73 | 82 | 93 |
| Pneumonia | 53 | 55 | 62 | 65 | 71 | 61 | 66 | 64 | 68 |
| Gonococcal | 12 | 12 | 14 | 15 | 13 | 12 | 14 | 12 | 13 |
| All viral hepatitis | 15 | 13 | 14 | 22 | 17 | 14 | 10 | 8 | 11 |
| Malaria | 200 | 176 | 176 | 177 | 166 | 161 | 134 | 133 | 133 |

*Source: National Health Profile of India, 2010, Central Bureau of Health Intelligence, Director General Health Services, Ministry of Health and Family Welfare.*

**Table 13 Mortality due to major diseases, deaths per 100,000 population**

| Disease | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|---|---|---|---|---|---|---|---|---|---|
| Acute respiratory infection | .336 | .395 | .403 | .498 | .375 | .336 | .616 | .465 | .259 |
| Acute diarrheal disease | .271 | .332 | .323 | .272 | .196 | .286 | .319 | .250 | .154 |
| Pulmonary TB | 2.049 | 2.603 | 2.961 | 3.488 | .154 | 5.803 | 5.744 | 5.783 | 5.638 |
| Enteric fever | .059 | .052 | .079 | .075 | .038 | .059 | .04 | .032 | .037 |
| Pneumonia | .372 | .389 | .392 | .334 | .321 | .3 | .306 | .338 | .252 |
| All viral hepatitis | .112 | .087 | .095 | .110 | .066 | .062 | .048 | .047 | .051 |
| Malaria | .099 | .093 | .095 | .088 | .088 | .153 | .116 | .092 | .097 |
| Japanese encephalitis | .047 | .045 | .067 | .034 | .154 | .060 | .088 | .06 | .066 |

*Source: National Health Profile of India, 2010, Central Bureau of Health Intelligence, Director General Health Services, Ministry of Health and Family Welfare.*

The State of the Food Insecurity report is truly the global reference for hunger and so is the author organization, FAO. With its influence over country governments and planning commission' mandarins, comes greater responsibility of getting the numbers right and coming clean on methodology, especially when the hunger numbers have been pared so much. The same SOFI 2012 mentions the number of hungry at intense activity level (a reality for the poor and the vulnerable) at 2.6 billion and that is the number they should have quoted rightfully instead of 868 million. That should be the global reference number for the world to keep the global efforts and ambitions on track.

Hunger is a lived experience of deprivation, almost the gold standard of policy, planning, programming and international failure. Hence hunger calculation indicators should be as close to the lived realities than statistical metrics which are inaccessible to the hungry themselves. In the meta-narrative of esoteric indicators and ivory-tower methods, it is important to democratize the hunger metrics and methods. SOFI and FAO are best-placed to initiate that. It could be done and will be a truly meaningful effort with implications beyond food and nutrition discourse. FAO's latest initiative on the "Voices of the Hungry project[3]" is one such effort and needs to be supported and its findings and applications keenly observed.

Similarly, FAO and United Nations' Environment Programme (UNEP) have launched a global campaign called Think Eat Save[4] to curb food wastage. Worldwide, about one-third of all food produced, worth around US$1 trillion, gets lost or wasted in food production and consumption systems, according to data released by FAO. Food loss occurs mostly at the production stages - harvesting, processing and distribution - while food waste typically takes place at the retailer and consumer end of the food-supply chain. The fact that retailer side of food wastage is being championed by the FAO campaign, a truly robust methodology factoring food wastage calls for calculating OECD country wastage too as part of the global aggregator and not just food insecure countries' wastage.

SOFI 2012 tagline is a positive step and that is what anti-hunger champions need to engage with i.e.

[3] http://www.fao.org/fileadmin/templates/ess/global_strategy/PPTs/NM_PPTs/EM4-5_FAO_Voices_of_the_Hungry.pdf, last accessed on 27th March 2013

[4] http://www.thinkeatsave.org/ last accessed on 27th March 2013

economic growth being a necessary but insufficient condition for hunger and malnutrition reduction. But its numbers, especially the reduced hunger numbers at 868 million needs to be engaged with caution and caveats.

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**Annexure 1**

***Direct Calories Derived From Cereals in Indian Diets***

There is variation in patterns of direct and indirect cereal consumption as a society moves up the development ladder. With rising affluence indirect consumption of cereals in the form of animal products forms a sizable part of the diets[1]. Accordingly there is lesser variation in the diets of those lower down the social ladder and poor often derive large part of their calories through direct foodgrain consumption, unable to afford the costlier animal products, vegetables and fruits. Tables 12 and 13 below give the proportion of overall calories derived from cereals in India[2].

**Table 14 Total and cereal calorie consumption by decile and quartile of per capita expenditure, rural India, 1983 to 2004–05 across different National Sample Survey rounds**

| Year | Bottom decile | Bottom quartile | Second quartile | Third quartile | Top quartile |
|---|---|---|---|---|---|
| | **Total calories** | | | | |
| 1983 | 1, 359 | 1, 580 | 2, 007 | 2, 328 | 3, 044 |
| 1987 – 88 | 1, 488 | 1, 683 | 2, 056 | 2, 334 | 2, 863 |
| 1993 – 94 | 1, 490 | 1, 659 | 2, 000 | 2, 251 | 2, 702 |
| 1999 – 2000 | 1, 496 | 1, 658 | 1, 978 | 2, 250 | 2, 707 |
| 2004 – 05 | 1, 485 | 1,624 | 1, 900 | 2, 143 | 2, 521 |
| | **Cereal calories** | | | | |
| 1983 | 1, 150 | 1, 309 | 1, 589 | 1, 738 | 1, 974 |
| 1987 - 88 | 1, 221 | 1, 359 | 1, 598 | 1, 715 | 1, 894 |
| 1993 – 94 | 1, 203 | 1, 316 | 1, 504 | 1, 591 | 1, 690 |
| 1999 – 2000 | 1, 197 | 1, 289 | 1, 591 | 1, 509 | 1, 566 |
| 2004 - 05 | 1, 189 | 1, 259 | 1, 690 | 1, 430 | 1, 471 |

*Source: Angus Deaton and Jean Dre`ze*[2]

**Table 15 All India averages for total calories and calories derived from cereals**

| Year | NSSO round | Total Calories | | Total Calories (All India) | Cereal Calories | | Cereal Calories (All India) |
|---|---|---|---|---|---|---|---|
| | | Rural | Urban | | Rural | Urban | |
| 2004-05 | 61st | 2047 | 2021 | 2040 | 1386 | 1147 | 1326 |

*Source: Compiled from Tables 1 and 3, Angus Deaton and Jean Dre`ze.*[2]

We can see from table 14 that the total calorie consumption of the bottom three quartiles in rural India is below the 2, 400 calories per day which is the cut off for determining rural poverty, while that of the top quartile is above 2, 400 calories. Thus the mean calorie consumption of the bottom three quartiles can be taken as calorie consumption of the below poverty line (BPL) while that of the top quartile as that of above poverty line (APL) for rural areas. The BPL and the APL categories in rural areas thus derive 77% and 58% of their dietary calories respectively from cereals.

Disaggregated quartile wise data for total and cereal calories for urban areas was not available. However, from table 15 we can see that overall calories derived from cereals constitute about 57 percent of the total calories in urban areas, while for the rural areas the same figure is 68 percent.

**Table 15 Energy value of different food grains grown in India**

| Category | Cereals | | Pulses | |
|---|---|---|---|---|
| Food grain | Rice | Wheat | Bengal Gram & Black Gram | Red Gram (Tur dal) |
| Weight (gm) | 100 | 100 | 100 | 100 |
| Energy (kcal) | 345 | 346 | 354 | 335 |

*Source: Gopalan et.al (1989): Nutritional value of Indian foods, NIN, Hyderabad.*
*Thus one gram of a mixture of rice, wheat, Bengal and black gram and red gram will contain:*
*(3.45 + 3.46 + 3.54 + 3.35) / 4 = 3.45 calories*

**Table 14 Recommended daily intake of energy of Indians**

| Group | Body weight (kg) | Energy allowance per day (kcal) |
|---|---|---|
| Infancy | | |
| 0 – 6 months | - | 118 kcal/kg/day |
| 7 – 12 months | - | 108 kcal/kg/day |
| Children | | |
| 1 – 3 years | 12.03 | 1240 |
| 4 – 6 years | 18.87 | 1690 |
| 7 – 9 years | 26.37 | 1950 |
| Adolescents | | |
| 10 – 12 years (males) | 35.4 | 2190 |
| (females) | 31.5 | 1970 |
| 13 – 15 years (males) | 47.8 | |
| (females) | 46.7 | 2450 |
| 16 – 18 years (males) | 57.1 | 2060 |
| (females) | 49.9 | |
| | | 2640 |
| | | 2060 |
| Ref Males (light work) | 60 | 2425 |
| (moderate work) | | 2875 |
| (heavy work) | | 3800 |
| Ref Females (light work) | 50 | 1875 |
| (moderate work) | | 2225 |
| (Heavy work) | | 2925 |
| Pregnant women | - | + 300 |
| Lactating women (first 6 months) | - | + 550 |
| | | + 400 |
| (6 – 12 months) | | or an avg. of 475/day |

*Source: Recommended dietary intakes for Indians. Indian Council for Medical Research, New Delhi, 1990*

The aggregate direct calories derived from foodgrains were calculated by the following procedure:

- The population in different age groups was divided into male and female sexes depending on the sex ratio for each age group separately for the rural and the urban areas. Age group specific sex ratios were available from indiastat.com.
- Then each sex in different age categories was further divided into below poverty line (BPL) and above poverty line (APL) categories using the proportion of poor in the rural and urban areas as per direct poverty lines shown in tables 8 and 9.
- The dietary energy requirements for BPL and APL category of each sex in each age category were fixed using the earlier dietary energy recommendations of ICMR (**Table 16**) and in accordance with the under mentioned assumptions.
- From the dietary energy requirements so fixed, direct calories i.e. derived from foodgrains were calculated for each sex in each age group using the proportions of direct calories for the BPL and APL categories as given in Tables 12 and 13 separately for the rural and the urban population.
- The aggregate per capita calories derived from foodgrains was calculated by a series of weighted averages as under:
    - First weighted average of the direct calories for the BPL and APL categories in each sex in each age group was calculated separately for the rural and urban areas.
    - Then weighted average of direct calories for each sex in each age category was calculated, followed by
    - Calculation of weighted average of direct calories required by different age groups using the proportion of each age group in the rural and urban population separately.
    - Finally the all India per capita direct dietary energy requirement was calculated by taking a weighted average of the direct dietary energy requirement for the rural and the urban population using their proportions in the country's total population.

To make the aforementioned calculations some reasonable assumptions were made as follows:

- Since age group wise sex ratios were not available separately for rural and urban areas, these have been assumed to be the same as the age group wise sex ratio of the overall population. Accordingly, the per capita daily calories for each age group has been calculated by taking the weighted average of per capita calorie requirement for males and females in each age group for both rural and urban areas.
- The BPL to APL ratio of male and female population in each age group for rural and urban areas is presumed to be the same as the overall BPL to APL ratio for rural and urban population respectively.
- Poor people invariably have to do hard manual labor for a living. Hence, the daily calorie requirement for the BPL population is accordingly taken to be 3800 and 2925 calories respectively for males and females (table 1). Given the hardships of the rural life even the APL population in rural areas has to do moderately heavy work, while those in urban areas may get by doing light work. Accordingly, the daily calorie requirement is 2875 and 2225 calories for APL males and females respectively in the rural areas, while that in the urban areas is 2425 and 1875 calories for males and females respectively (**Table 1**).
- While calorie requirements for adults may vary by the level of activity, for children and adolescents requirements have been taken as those necessary to meet their physiological needs for maintaining bodily functions and to meet their growth needs. Since the physiological needs should ideally be the same for all children, no difference has been made between the children from rural or urban or the BPL and APL categories.

These generalizations are not incontestable and leave a chance for exceptions. For example there is chronic unemployment and under employment on a large scale, especially among the poor, for which reason it may be said that the assumption of daily calorie requirement commensurate to heavy work for BPL adults may overestimate the average per capita calorie and food grain requirement. But this is not

necessarily true because let alone the energy required for income earning work, the hardships entailed even for such routine activities of daily life like arranging for water, fuel, food and other daily necessities can make them quite energy intensive for poor.

The weighted average of the direct calories for rural and urban areas was calculated to be = 1732 kcal. Therefore the required average per capita foodgrain requirement = 1732 / 3.45 (calories derived from 1 gm of a mixture of rice, wheat, gram and tur daal) = 502 gm per day.

## REFERENCES


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