CHAPTER II
THE FOOD PROBLEM

India is the seventh largest country in the world in terms of physical area and the second largest in terms of its population. It has a geographical area of 3.27 million square kilometres, the distance measuring 3,219 kilometres from North to South and 2,977 kilometres from East to West, lying between latitudes 8°4' and 37°6' North and longitudes 68°7' and 97°25' East.

It had a population of 562.5 millions in 1972 having about 14% of the total world population; the growth rate of its population at 2.3% per annum is one of the highest in the world. Nearly four-fifth (82.7%) of the total population is rural based, almost entirely (81.6%) actually depending on agriculture for its livelihood and it has one of the highest densities in the world at 312 persons per square mile. The per capita product was worth $110 in 1969, ranking one of the lowest in the world, the highest being of U.S.A. at $4,240 and it had a growth rate of 1.1%, the rate also falling in the lower region, as against 3.2% of U.S.A. and much higher in the case of many other countries. The net domestic product in 1969-70 at current prices was Rs. 31,968 crores out of which about half was contributed by the agricultural sector. The share of agriculture in the national economy remains predominant, the rural bias visible everywhere. It is the mainstay of the Indian economy contributing about one-half of the National Income, the per capita income being one of the lowest in the world. It contributes 72.1% workers to the total work-force.
of the country and some sort of employment to more than four-fifth of the people. While only 10% of the world's land is under cultivation, in the case of India it is around 50%, but in spite of this, the availability of land in 1964 was 35 acres per capita, falling in between 6 in Japan and 320 in Congo. More revealingly a sample survey on the constitution of land-holdings in 1959 showed that one-fifth of agricultural population had no land, one-fourth had less than one acre and their share was only a little more than one per cent of the land; conversely one per cent households owned approximately one-fifth of the total areas. The position since then has deteriorated on account of fragmentation of existing land holdings. The availability of foodgrains was 16.6 ozs. per capita per day in 1960, the availability being strikingly low nutritionally, keeping in view the fact of preponderance of foodgrains to the extent of almost 30% in the Indian diet. Foodgrains constitute two-thirds of the total agricultural production and among them rice, wheat, maize, jowar, bajra and barley dominate. The total production of foodgrains in 1973-74 was 104.6 million tonnes, the total area under foodgrains 315.2 million acres, and the growth rate of production during 1960-61 to 1971-72 decade being 2.64%.

These selected economic indicators show that the Indian economy, in comparison with the developed nations of the West, presents a state of chronic under-development with all its characteristic manifestations; poverty is rampant; incomes are low; production is inefficient; land
population ratio precarious; and a large section of people suffering from mal-and-nutrition.

1. The Nature of Poverty

A rate of growth of population faster than the growth of national output and individual incomes, coupled with large-scale under-and-disguised-employment in the agricultural sector, has been responsible for the creation and perpetuation of a state of active poverty for the bulk of the Indian population. Some recent studies have estimated that the people living in object poverty constitute 40 to 50 per cent of the total population, the estimates differing on account of differences both in the conception of the nature of poverty and its extent (as is evident from the Table II.1).9

The situation becomes gloomier if it is realised that the amount of Rs.15/- to Rs.37/- per month per capita, as means of survival, including food, clothing and shelter is extremely low from any point of view. Discussion of nutritional aspects of diet and nutritional adequacy of food for the population in such a situation seems to be a cruel joke. Such an extremity of poverty excludes any consideration of nutrition, at least in the near future, for the bulk of the population, which instead of providing an impetus and incentive to increased production, provides ideal conditions for increasing the intensity of hunger and breeding and reduces the resources for, as also the rate of, economic growth. The result has been that India has been trapped in a vicious circle of poverty and stagnation and the quicksands of economic under-development.
### TABLE II.1

**Extent of Poverty in India**

(million and percentage)

<table>
<thead>
<tr>
<th>Year</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
<th>Severe Destitution</th>
<th>Poverty</th>
<th>Rural</th>
<th>Rural</th>
<th>Rural</th>
<th>Urban</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1957-58</td>
<td>184.2</td>
<td>6.0</td>
<td>190.2</td>
<td>131.1</td>
<td>211</td>
<td>212</td>
<td>(63.2)</td>
<td>135.0</td>
<td>42.0</td>
<td>177.0</td>
</tr>
<tr>
<td>1960-61</td>
<td>184.2</td>
<td>6.0</td>
<td>190.2</td>
<td>131.1</td>
<td>211</td>
<td>(38.0)</td>
<td>(59.4)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1963-64</td>
<td>200.5</td>
<td>5.0</td>
<td>205.5</td>
<td>161.6</td>
<td>221</td>
<td>224</td>
<td>(67.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1964-65</td>
<td>174.4</td>
<td>5.0</td>
<td>179.4</td>
<td>202</td>
<td>(44.6)</td>
<td>(59.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1967-68</td>
<td>200.5</td>
<td>6.0</td>
<td>206.5</td>
<td>166.4</td>
<td>215.5</td>
<td>(53.0)</td>
<td>(50.6)</td>
<td>(40.0)</td>
<td>(50.0)</td>
<td>(41.2)</td>
</tr>
<tr>
<td>1969-70</td>
<td>218.3</td>
<td>6.0</td>
<td>224.3</td>
<td>215.5</td>
<td>215.5</td>
<td>(41.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:**
1. P.D. Ojha, A configuration of Indian Poverty—Inequality and Levels of Living.
3. EPW Da Costa, A portrait of Indian Poverty, Challenge of poverty in India.
Food Shortages

This was not the situation if we glance through the pages of economic history of India. Times have been when in India civilization flourished, affluence ruled and people prospered. There was a time when it was a land where milk and honey flowed and households were plentiful with food. This picture started changing during the Mughal and the British periods of alien rule, when food shortages emerged, especially in times of scarcities due to famines on account of pestilence, disease and war. And famines were quite a regular and periodic occurrence.

The British period, with its policy of exploitation initiated by the rulers, started a steady decline of the level of economic sustenance of a people dependent on agriculture for its livelihood in its entirety. The onset of the twentieth century, in the context of an expanding population, a continuing mental apathy towards material things and an indifference to modernization, found the situation gradually converting into that of insufficient production, un-economic holdings, lower income levels and falling rates of economic growth, in short a stage of subsistence agriculture and chronic food shortage. The vagaries of nature had the major role in this.

Baljit Singh found that since 1911-12 almost every alternate year food shortages occurred on account of crop failures, that there was serious diminution every ten years in gram, nine years in maize and barley and six in wheat and that in 30 years the diminution in wheat and rice, the main cereals, occurred eleven times, creating serious food shortages.
The economic history of India till the advent of Independence has been thus the "story of the growth of commerce and the stagnation of agriculture; of growing prosperity of the commercial classes and increasing poverty of the rural masses; of rising prices and stationary wages; of increasing export of foodgrains and the existence of endemic state of hunger among a substantial portion of the country's rural population." By the time freedom was won the Indian economy had been completely transformed from a food surplus economy into a frequently food deficit economy— the deficit tending to become a chronic malady.

The post-independence era of planned economic growth, with the avowed objective of the conversion of a "Slow-moving society trapped for centuries in a cycle of poverty, tradition, ignorance and disease" into "a fast-moving society engaged in a planned development towards a healthy, educated citizenry of a welfare state", has been able to move the economy from the bullock-cart to the bicycle stage but that is hardly a matter of national gratification. The brief statistical picture presented earlier indicates that every conscious step forward towards economic development has been negated largely by the two unconscious steps taken towards population growth. The phenomenal expansion of India's population during the last forty years has resulted in a serious distortion of the production-population ratio and has seriously jeopardized all attempts at amelioration. Inspite of a remarkable 70% increase in food production and 150% in Industrial production since
independence the average Indian feels little or nothing of the benefit of the development, mainly because the population has been increasing at an increasing rate, until today every year, 13 million persons are added to the population.  

Not that the population growth in itself is bad or that it cannot be supported in any circumstances. Not also that India is resource-wise incapable of supporting its population. It is true, however, that the high pace of population growth presents, and has presented, enormous pressures and constraints on national efforts and resources, and with the extent of poverty being so wide and the level of poverty line so low, the maintenance of economic balance in the wake of such increase has been extremely difficult. In theory, with rapid development of technology causing productivity to rise fast, a high rate of population growth could be so absorbed by the economy as to continually raise standards of living. In practice, however, the difficulties of achieving rapid expansion of utilizable resources and progress in technology tend to strictly limit the desirable rate of growth of a population.  

India, thus today, is in the midst of a population explosion, with a rate of growth of its numbers being as high as 2.3% per annum. It is passing through such a phenomenal rate of demographic expansion that, if uncontrolled the present level of population which it has taken 2000 years to reach, would be doubled in a little more than a quarter of a century. The population expansion thus poses a serious threat to any policy of food
and creates a problem which is real, immediate and very important.

2. The Problem of Production

The problem of production has been the problem of raising adequate production of foodgrains, which constitute the bulk of Indian diet, and on which devolves the responsibility of feeding the major part of the Indian population. The production of foodgrains, as is the case with other agricultural production, traditionally depends since the Vedic times on the complex ecology of climate, topography and soils related to the behaviour of the monsoons and as 85 per cent of the rains are brought with the onshore monsoon in India.

Climatically, the country is hot and humid. The weather in the plains is hot in summer and cold in winter and in hills, cool in summer and very cold in winter. The year is divided into four seasons, namely Summer (April-June), Spring (July-October) Winter (November-February) and Autumn (February-March). Rains come twice, once during the rainy season after summer and thence during the winter season. The amount and distribution of rainfall are not uniform in time and space. In addition, is the factor of extreme uncertainty. The Indian sub-continent, being a part of the monsoon belt of Asia, exhibits the monsoonal domination in agriculture in a stronger form than any other part of this area because of her location and altitudinal alignments. Of all the weather elements, rainfall in India is the dominant single weather parameter and climatic hazard that affects plant growth and crop production because of its insecurity, variability.
and for major parts, its meagreness. The ways in which rainfall characteristics affect agriculture are interesting, as their operation is more subtle, since crops can be affected by moisture conditions particularly during critical phases like germination, shooting, stalking and heading, and at maturing and harvesting.

Geographically, the tract is divided into (i) the mountainous with Himalayas in the North and Vindhya in the Centre, (ii) the plateaus with the Deccan plateau in the middle and the south, (iii) the sub-mountainous, such as Shivaliks in the North, Aravallis in the Centre and the Western Ghats in the South, (iv) the plains most suitable for agriculture, chiefly the Ganges plains of North India and the Deccan Plains & (v) the deserts of Rajasthan. The major rivers are Ganges, Yamuna and Brahmaputra with their tributaries in the North, the Cauvery, Mahanadi, Krishna and Godavari with their tributaries, of in the South, Indus (Ravi) in the North-West and the Narmada and Tapti in the mid-West. The rivers supplement rains in providing water for agriculture. Thus, There are the Indo-Gangetic Plains extending from West Bengal in the East to the Punjab in the West being the most fertile regions, whereas the Deserts of Rajasthan are the least.

Thus, But for a modest area in the North fed by rivers and with fertile soils, the rest of the country, through based on agriculture is dependent largely on monsoons for the meagre out-put that it can produce and to a certain extent soil nutrients.

While no action can be taken to change the location of fields of cultivation, nor much action
to change the geographical features of an area, a better configuration of land and water resources can be attempted by the taming of the rivers and the shaping of the landscape so as to produce a richer harvest.

Soils largely determine agricultural practices since the return from the land are initially dependent upon the capacity of its soil to supply requirements for the successful growth of crops, in terms of water nutrients and root zone. The fertility of soil is dependent on its quality and texture as also its suitability to particular crop and availability of re-charging facilities in terms of inputs and nutrients. The type of soils available in India are alluvial, sandy, black, red, laterite and miscellaneous. Different crops are suitable for different soils because of their peculiar properties. The suitability, to give better results and higher yields, has to be supplemented, at periodic intervals in the shape of water and fertilizer. The lack of water, or lack of adequate quantity of water, may make the soil barren or may reduce its capacity to produce; the absence of fertilizer may affect adversely the potentialities of productivity of soil and in extreme cases may also lead to uneconomic cultivation. But for the fertile Indo-Gangetic plains in the North, Soils do not easily respond well to agricultural operations.

The Problem of Production: The problem of production is the problem of manipulation of controllable determinants of production, of improving the fertility of land, of assuring timely and adequate water supply, of
improving agricultural practices of increasing productivity in short of changing of the agricultural landscape. As we shall see in detail in later chapters, while the population has been growing very fast, the growth rate increasing from Plan to Plan, the progress of foodgrains production shows violent fluctuations and sudden declines, and if compared with certain peaks in between, shows a disquieting rate of growth. The yields in various foodgrains, except in wheat, have also shown a sluggish tendency, after a certain length of time, the overall rate of growth of foodgrains production not being either according to planned rate or commensurate with the rate of growth of the increasing population. Domestic production of foodgrains, therefore, has been continually supplemented with the import of foodgrains, so as to avoid human misery and death due to hunger and shortage. It is on this bed-rock of subsistence agriculture that the national objective of food self-sufficiency has a number of times collapsed.

3. Problem of Self-Sufficiency:

The problem in attaining self-sufficiency in food for the country is the problem of adequate availability of food for a growing population from indigenous production; the problem of food policy and administration aiming at this has been the difficulty in making available adequate food supply. Availability of food means the total supply of food through private sources and Govt. agencies, at a given period of time.
period to a given people, present or prospective, for its consumption, the sources of supply being indigenous production and/or imports. In the context of India, due to the excessive preponderance of foodgrains in the Indian diet, it refers primarily and largely to the supply of foodgrains. Food surpluses or shortages occur in India, not because of changes in the stock or supply of foodgrains substitutes like milk, meat and fruits, but because of the increase or decrease in the stock situation of foodgrains. The position of availability does not refer to an abstraction in time and numbers; it means supply of foodgrains to the population of the country obtaining at a particular period or periods. It is not the timing or the quantum of supply to a part of the country, but the total supply in the entire country. Thus, it is concerned with the marketing, storage and distributional aspects only as levers for regulating the total supply; it does not include those in its situational context. It further refers only to the supply of foodgrains as are available for human consumption, and not the total supply which includes, or may include, foodgrains for seed, food and wastage. By its very nature, it includes the supply both from indigenous production, as also, if necessity so arises, from imports; the production of foodgrains is only a part of the story of availability of foodgrains. Still further, the supply may be a result of individual efforts or Govt. policies or both; availability accepts the complementary roles of private and public measures. And finally, the assessment of availability has to be both in terms of its quantitative...
adequacy as also qualitative adequacy, the former referring to bare physical quantity—the latter to the nutritional value derivable therefrom.

The total, per capita and per AHE quantitative availability of foodgrains during the last four decades (Table 11.2) shows that

(1) While the total availability of foodgrains in the country declined from 52.7 million tonnes in 1931 to 45.5 million tonnes in 1951, it took gradually upward trend, rising to 63.7 million tonnes in 1961 at the end of a decade of planning and then to 89.3 in 1971, the end of the second decade, the pace of increase being almost the same and the total addition being only a little more than half over the 1931 level.

(2) While the population increased from 279.0 million in 1931 to 553.0 in 1971 in spite of the partition of country in 1947, showing a very fast rate of growth during the sixties. The domestic production of foodgrains on the other hand which declined from 61.0 in 1931 to 43.1 million tonnes in 1951 showed a sizable increase to 105.1 million tonnes in 1971, but since it did not move in proportion to the increase in population sizable imports had to be resorted to bridge the gap in availability of foodgrains during the fifties as well as the sixties.

(3) The per capita availability of foodgrains declined from 510 gms. per day in 1931 to
### TABLE II.2

**Availability of Foodgrains**

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (millions)</th>
<th>AME Value</th>
<th>Total AME Population (million)</th>
<th>Total Production (m.tens)</th>
<th>Imports (m.tens)</th>
<th>Net availability (mill.tens)</th>
<th>Net availability per day (mill.tens)</th>
<th>Per capita availability per day (grams)</th>
<th>PER AME availability (grams)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1931</td>
<td>279.0</td>
<td>0.76</td>
<td>211.14</td>
<td>61.0</td>
<td>1.0</td>
<td>52.7</td>
<td>144.4</td>
<td>510</td>
<td>684</td>
</tr>
<tr>
<td>1941</td>
<td>318.7</td>
<td>0.76</td>
<td>241.73</td>
<td>56.2</td>
<td>0.4</td>
<td>48.1</td>
<td>132.6</td>
<td>416</td>
<td>549</td>
</tr>
<tr>
<td>1951</td>
<td>361.1</td>
<td>0.76</td>
<td>274.08</td>
<td>48.1</td>
<td>4.8</td>
<td>45.5</td>
<td>125.0</td>
<td>346</td>
<td>456</td>
</tr>
<tr>
<td>1961</td>
<td>439.2</td>
<td>0.75</td>
<td>328.89</td>
<td>71.9</td>
<td>3.5</td>
<td>63.7</td>
<td>174.5</td>
<td>397</td>
<td>530</td>
</tr>
<tr>
<td>1971</td>
<td>558.0</td>
<td>0.75</td>
<td>403.64</td>
<td>105.1</td>
<td>N.A.</td>
<td>89.3</td>
<td>244.6</td>
<td>431</td>
<td>607</td>
</tr>
</tbody>
</table>

**Source:**
as low as 346 gms per day in 1951 reflecting the deteriorating food supply situation in the country and even in 1971 the per capita availability was only slightly more than the 1941 level of 415 being only 431 gms. per day. The share of domestic production in the per capita availability also showed a similar decline in spite of the sizeable increase in production. The imports increased in response to the deteriorating internal supplies from domestic production. Further since there was no compensational increase in foodgrains substitutes, this meant lowering of the subsistence level.

On account of the change in the age-structure, AME value decreased from 0.76 persons in 1931 to 1951 to 0.75 in 1961 and further to 0.73 in 1971 indicating a decline in the rate of demand for food, which indication was not possible if only per capita demand was calculated. Correspondingly the total AME increased from 274.06 in 1951 to 408.64 in 1971. Thus numerically the population increased by 279.0 millions from 1931 to 1971, showing a 100% increase, but in AME value instead of rising to 422.28, in view of changes in age and sex structure, it actually was 403.64 in 1971, that is an increase of 91% only reducing correspondingly the prospective demand for food.

The per AME availability indicates an improvement in the situation as against
that indicated by the per capita figures; the situation improved substantially from 456 gms in 1851 to 560 gms. in 1971. Compared with the demand of 600 gms. per A.P.E per day, however, the only time when availability exceeded the demand after 1951 was the marginal excess at a level of 607 gms. in 1971.

Qualitative Availability of Food

4. The Nutrition Gap

Coming to the qualitative aspect of availability of food, two serious problems are posed—first of identification of an adequate diet and second of measurement of the extent of its absence. Framing of specifications of a calorifically or nutritionally adequate diet, even when linked to calorific values of food stuffs, is an extremely difficult task, complicated by dietary habits, nature of work, and levels of living. Attempts, have, however, been made by various authorities to prescribe a balanced diet for an adult Indian per day as under:

<table>
<thead>
<tr>
<th>Food stuffs</th>
<th>Nutrition Advisory Body</th>
<th>Baljit P.V. Singh</th>
<th>Sukhatma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cereals</td>
<td>14</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Pulses</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Sugar</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Vegetables</td>
<td>10</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>Fruits</td>
<td>3</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Milk</td>
<td>10</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Oil &amp; Ghee</td>
<td>2</td>
<td>1,5</td>
<td>2</td>
</tr>
<tr>
<td>Fish, Meat &amp; Eggs</td>
<td>3+1 egg</td>
<td>3+3 egg</td>
<td>2-3</td>
</tr>
<tr>
<td>Starchy Roots</td>
<td>3 mm</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>43.5</td>
<td>32.0</td>
</tr>
</tbody>
</table>
We see, thus, that while Baljit Singh considered 32 ozs. (i.e. 905 gms.) to be the quantitative requirement of an adult, P.V. Sukhatme considers 885 gms. of foodstuffs, including milk, as essential for a nutritionally adequate meal per adult per day which should be sufficient to release required number of calories between 2250-2500, as assessed by the F.A.C. Earlier estimates were much higher and unrealistic. P.V. Sukhatme's figures are more realistic in view of the quantitative consumption involved and have been adopted.

Coming to the second problem of assessment of the extent of under or malnutrition, we again find several studies conducted to find this out. Sir John Mathew estimated that "only 30 per cent people in India were adequately nourished, 20 per cent were badly nourished and 41 per cent were poorly nourished," i.e. 61 per cent or two-thirds of the people were insufficiently nourished. The Nutrition Advisory Committee's surveys have revealed that caloric intake of some 33 per cent of families is below requirements. While Dr. Radha Kamal Mukherji estimated India's food supply in 1938 to be 280.4 billion calories, against the total food need amounting to 321.6 billion calories, the estimates of the extent of hunger calculated by Pandurang Sukhatme in 1965 (who also made an assessment of the supplies of food items necessary to improve the current level of nutrition to minimum and medium targets), show that the current consumption level for India in respect of food items and nutritional values is much less than the advanced countries of the West.

The non-availability of adequate food-grain substitutes, coupled with low income levels.
and ignorance of nutritional values of various foods has led to preponderance of foodgrains in the Indian diet. The dietary surveys by the Indian Council of Medical Research (1935-48) showed that the percentage of calories derived from cereals was 32.4 per cent in agricultural workers and 72.9 per cent in industrial workers. The all India Agricultural Labour Inquiry 1950-51 (page 41) found the percentage of expenditure on cereals to be 85.3 per cent and the Family Budget Inquiry of 1951 estimated it to be 43 per cent for rural workers. In its Labour Statistics of Labor Statistics (Geneva: 1957) International Labour Organisation estimated it to be 77 per cent in 1956-57. In spite of regional, sectional and income differences, the predominance of foodgrains in the Indian diet is self-evident and rough estimate today is that they constitute 2/3 of the Indian diet. The average diet in India amounts to just over 0.33 kilograms per person per day and consists predominantly of cereals. In the developed countries, not only the quantity of cereals is larger, but there are four times as much fruits, vegetables and milk and nearly six times as much meat, fish and eggs.

Since supply of foodgrains and its substitutes has been generally less than the demand, the problems of under-nutrition and malnutrition are ever present. A large part of India's population does not get enough food and a larger part does not get the right type of food necessary to sustain a healthy and active life. While there are many food deficient areas in the world, India ranks among the top few. In the conditions of sizeable
shortage of supply of foodgrains substitutes like milk, fruits, vegetables and fats and the consequent preponderance of cereals in the Indian diet, the possibility of achieving a nutritionally adequate food packet for the nation in the near future is a bleak proposition. A subsistence level of food consumption is hardly a desirable aim for a welfare state. The only achievable and reasonable alternative seems to be to aim at providing a calorifically adequate diet, consisting of a reasonably sufficient quantity of foodgrains which could quantitatively be a substitute for the shortfall in the quantity of foodgrains substitutes.

Calorific Self-Sufficiency

In the process of calculation of a six calorifically sufficient diet and consequently foodgrain demand of an AIE keeping in view his calorific requirements for normal work, the first step is to determine the calorific requirement itself. The FAO worked out the calorific requirement for a normal adult Indian as between 2250-2500 calories per day. On this basis an average of 2400 calories per day has been assumed to be required by an AIE. The next step is to work out the calorific value of foodgrains. In this respect assistance has been taken from the table of food values of foodgrains prepared by Central Nutrition Research Laboratory Konnaor, while keeping in view the consumption ratio trend evidenced by the production of foodgrains and reported as under:
<table>
<thead>
<tr>
<th>Commodities</th>
<th>Calories per Oz. or 23.3 gms.</th>
<th>Consumption A</th>
<th>Trend of Availability of Protective Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice &amp; Wheat flour</td>
<td>100</td>
<td>66%</td>
<td>Baljit Singh (1947)</td>
</tr>
<tr>
<td>Coarse grains &amp; others</td>
<td>95 to 102</td>
<td>20%</td>
<td>P. V. Sukhatme (1965)</td>
</tr>
<tr>
<td>Pulses</td>
<td>-</td>
<td>14%</td>
<td>gms. (converted into gms. approx.)</td>
</tr>
</tbody>
</table>

On this basis, if the entire requirement of 2400 calories were to be met by foodgrains alone the requirement of foodgrains per A.M.E. per day would have been 680 gms. Since however, milk, fruits, and vegetables, and other protective foods, being more of vitamins, carbohydrates and minerals and less of calories, also are available, necessary deductions have to be made for these.

The trend, evidenced by studies carried out by Baljit Singh and P. V. Sukhatme, indicates that the per capita availability of protective foods has declined over the years.

<table>
<thead>
<tr>
<th>Cereals &amp; Pulses</th>
<th>19.12</th>
<th>510</th>
<th>440</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sugar</td>
<td>1.57</td>
<td>44</td>
<td>45</td>
</tr>
<tr>
<td>Veg. &amp; Fruits/Milk/ Oil &amp; Ghee/butter-milk</td>
<td>4.48</td>
<td>127</td>
<td>80</td>
</tr>
<tr>
<td>Fish, Meat, Eggs</td>
<td>0.36</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>31.41</td>
<td>336</td>
<td>728</td>
</tr>
</tbody>
</table>


In view of the declining trend it seems to be very difficult to improve the present level of supply of protective foods and the improvement in
their level in any case is not expected beyond what it was in 1947 as per the calculations made by Saljit Singh. In 1965, Sukhatme calculated that the total calories available were 1970 per adult person (in which we find that the contribution of foodgrains (100 calories per 28.3 gms. comes to about 1600) and if the desired level were to be taken to be 2400 calories a day, with hardly any improvement in the availability of protective foods, the entire burden of the balance 430 calories, required for a calorically-sufficient diet, has to be borne by the foodgrains. The conversion of 430 calories in terms of gms. results in a figure of about 120 gms. Thus, the total requirement of foodgrains at 2400 calories per day minus the calories supplied by foodgrains substitutes, which are taken to be approximately between 350 and 400, comes to about 550 gms. per adult person.

Reverting back to the range of calorific requirement worked out by FAO, at 2250-2500 gms per adult per day and the extreme difficulty of pinpointing exactly the levels of calorific sufficiency as well as availability of protective foods, two norms have been worked. The level of 550 gms. is considered to be the absolute minimum requirement whereas that of 600 gms. as desirable for a calorifically sufficient food packet necessary for normal work. These are not to be confused with the nutritionally adequate diet which implies the availability of vitamins, proteins, carbohydrates etc. through such foodgrains substitutes as milk, fruits and vegetables, meat, fat, etc. As against this, as
After all this discussion, can you summarize or establish that how many calories will be needed per adult per day, and what type of food they should come from? Then establish that how many calories for food grains mean how many grain per day, and from your can establish food grain requirement for Indian population at various dates. This would be very useful and definite for your future discussion.

5. The Problem:

The problem of food in India, thus, is the problem of ensuring adequacy, both quantitatively and qualitatively, of availability of food for a rapidly growing mass of people. In view of the constraints of resources, the shortfalls in availability of foodgrains substitutes and the impossibility of continuance of large foodgrain imports, it inevitably turns into a problem of adequate increase in indigenous production of food-grains, simultaneously with an optimal decrease in the rate of population growth. It is, thus, both a problem of food sufficiency and self-sufficiency as also of population control. Food shortage and rapid population growth are separate but inter-related problems. The solutions, likewise, are separate but unrelated. The choice is not to solve one or the other; to solve both is an absolute necessity. The current tendency to think of food production and fertility control as alternative solutions to a common problem is dangerously misleading.

A food policy, therefore, requires on the one hand the control of the growth of population, and on the other the impetus to the growth of production so as to enable the production-population curves to move in opposite directions in the shortest possible time to produce a stage of optimum population and self-sufficiency in food.

A steady rate of economic and cultural growth is more vital for a nation's prosperity than a small
or diminishing rate of population growth. The ideal is reached when the two trend lines begin to diverge away from each other, particularly when the economic growth line continues to show a comfortably steady upward trend while the population growth line shows first a steeply descending followed by a very slow upward crawling, almost level trend. 24

The Necessity of Self-Sufficiency:

It is in the context of lean availability, increasing population and slow rate of growth of production that the food production the objective of self-sufficiency in food set up by India has to be viewed. 2 And it is in the context of such important factors like the scarcity of foreign exchange, the uncertainties of availability of ample food in the world market and the possibilities of compromising national sovereignty in exchange for food aid that the logic of self-sufficiency for India as a national objective has to be understood and appreciated. To this may be added the near-impossibility of creating an international authority capable enough of taking decisions regarding the optimal size of the populations in relation to food production in particular countries or regions and powerful enough of enforcing, in the pursuance of such decisions, transfer of excess populations or the products of sustenance from one area to another on the pattern of the present day national sovereign governments, unlike the United Nations or the Food & Agricultural Organisations which dare not venture into such sensitive fields. The burden of the imbalances in food-population equilibrium in an under-developed country like India has thus inevitably to be borne by India herself. The necessity and the urgency of speeding up the efforts and the activities towards the achievement of the objective in the shortest span of time needs no better justification than the appreciation of these constraints.
References


17. Statement compiled from: (i) Columns 2, 3 & 4- Baljit Singh, Population & Food Planning in India (Hind-Kitab Ltd., Bombay, 1974), pages 25 and 108; (ii) columns-Report of National Feed Congress, Freedom from Hunger Campaign, Ministry of Food and Agriculture, Govt. of India, May, 1970), p. 7. This was also adopted by the Congress as realistic.


