Central Budgetary Subsidies in India

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Preface

This study has been undertaken by the National Institute of Public Finance and Policy at the instance of the Ministry of Finance, Government of India.

The study team consists of Surender Kumar, Tapas K. Sen and N. J. Kurien. Opinions and analyses here are those of the authors. The members of the Governing Body of the National Institute of Public Finance and Policy are in no way responsible for these.

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List of Abbreviations

ADR	:	Adjusted Depreciation Rate
APL	:	Above Poverty Line
APM	:	Administered Price Mechanism
AUWSP	:	Accelerated Urban Water Supply Programme
BCs	:	Backward Caste
BPL	:	Below Poverty Line
CACP	:	Commission on Agricultural Costs and Prices
CGE	:	Computable General Equilibrium
CIF	:	Cost Insurance Freight
CSO	:	Central Statistical Organisation
CSS	:	Centrally Sponsored Schemes
CST	:	Central Sales Tax
DAP	:	Di-Ammonium Phosphate
DP	:	Discussion Paper
EAS	:	Employment Assurance Scheme
ERC	:	Expenditure Reforms Commission
ESMAP	:	Energy Sector Management Assistance Programme
FCI	:	Food Corporation of India
FO	:	Fuel Oil
FOB	:	Free on Board
FS	:	Food Subsidies
GDCF	:	Gross Domestic Capital Formation
GDP	:	Gross Domestic Product
GoI	:	Government of India
GRP	:	Group Retention Pricing
HYVs	:	High Yielding Varities
IAY	:	Indira Awas Yojana
IFFCO	:	Indian Farmers Fertilizer Corporation Limited
IMF	:	International Monetary Fund
IRDP	:	Integrated Rural Development Programme
JRY	:	Jawahar Rozgar Yojana
LADs	:	Local Area Developments
LDO	:	Light Diesel Oil
LNG	:	Liquefied Natural Gas
LPG	:	Liquefied Petroleum Gas
LRAC	:	Long Run Average Cost
LRMC	:	Long Run Marginal Cost
LSHS	:	Low Sulphur Heavy Stock
MMBTU	:	Million British Thermal Units
MOP	:	Muriate of Potash
MoP&NG	:	Ministry of Petroleum and Natural Gas
MP	:	Member of Parliament
MS/HSP	:	Motor Spirit/High Speed Diesel
MSP	:	Minimum Support Price
NAFED	:	National Agricultural Cooperative Marketing Federation
NPCs	:	Nominal Protection Coefficients
NPK	:	Nitrogen, Phosphate, Potash
NREP	:	National Rural Employment Programme

NRP	:	Normative Referral Price
NRRDA	:	National Rural Roads Development Agency
NSDP	:	National Slum Development Programme
NSSO	:	National Sample Survey Organisation
OECD	:	Organisation for Economic Corporation and Development
OMCs	:	Oil Marketing Companies
PDS	:	Public Distribution System
PMGSY	:	Pradhan Mantri Gram Sadak Yojana
R&D	:	Research and Development
RD	:	Rural Development
RHS	:	Rural Housing Schmem
RLEGP	:	Rural Landless Employment Guarantee Programme
RP	:	Retention Prices
RPS	:	Retention Pricing Scheme
RRP	:	Rural Roads Programme
SCs	:	Schedule Caste
SGRY	:	Sampoorna Grameen Rozgar Yojana
SGSY	:	Swaranjayanti Gram Swarozgar Yojana
SHGs	:	Self Help Groups
SJSRY	:	Swarna Jayanti Shahari Rozgar Yojana
STs	:	Schedule Tribe
TE	:	Triennium Average Ending
TPD	:	Tonne Per Day
TPDS	:	Targeted Public Distribution System
UNDP	:	United Nation Development Programme
WB	:	World Bank
WLPGA	:	World Liquefied Petroleum Gas Association
WTP	:	Willingness to Pay

Chapter 1

Introduction

1.1 Introduction

The fiscal reforms program initiated in India in 1991 aimed at reducing fiscal imbalances and improving allocative efficiency by minimizing the distortions in relative prices arising from budgetary and fiscal imprudence. Containment and targeting of subsidies constituted an important element of the reform program. Besides considerable discussion on budgetary subsidies, a more comprehensive approach was adopted in a study carried out at the National Institute of Public Finance and Policy (NIPFP) at the instance of the Planning Commission in 1991 (Mundle and Rao, 1991). The study adopted a broader definition of subsidies as the *unrecovered costs* of 'non-public' goods and services provided by the government. Following a similar approach, another study was carried out in 1997 (Srivastava and Sen, 1997) and formed the basis of the Discussion Paper placed by the Government of India in the Parliament (Government of India, 1997, henceforth DP 1997). The estimates of explicit and implicit subsidies in the DP emanating from the central and state budgets were further classified into those belonging to merit and non-merit categories to chart out the course for reforms. Although extensive discussion took place following the DP, hardly any effective policy measure was taken either to contain or to target the subsidies, except the modifying of then existing food subsidies to build in some amount of targeting.

The subsequent updates on the estimates, brought out by the NIPFP, also critiqued the subsidy regime in India as being unduly large, non-transparent, mostly input-based and poorly targeted. All these studies have argued that the proliferation of subsidies in India flowed from an undue expansion and growth of government activities in the provision of 'non-public' goods. In India, government had extended itself into various social and economic sectors, not necessarily afflicted by market failure as in the cases of defence and maintenance of law and order. In many of these sectors, costs tended to be very high and cost recoveries poor, resulting in worrisome growth of budgetary subsidies. Therefore, containment and targeting of subsidies was identified as a critical element of fiscal reform strategy. This was to serve the following objectives:

- remove economic distortions, thereby improving economic efficiency and growth;
- reduce budgetary burdens and release precious resources;
- achieve redistributive objective (where subsidies favor the better-off)
- improve the environment by realigning the incentive structure to favor environmentally sound practices (where subsidies are environmentally pervasive).

Providing minimum consumption entitlement to the poor by subsidizing the items consumed by them and those that enhance their capability is an extremely important welfare measure. If the objective is pure redistribution, admittedly, making direct transfer payment is a more effective instrument. However, the objective, in most cases, is enabling the consumption of the poor and vulnerable and enhancing their capability. In such cases, subsidy becomes a legitimate policy for application. In this study, we have taken the approach that subsidies are not bad, *per se*. They are legitimate instruments to improve the welfare of society by encouraging the consumption of goods and services with significant

positive externalities (such as education, healthcare etc.) and to provide minimum consumption entitlements to the poor and vulnerable section. The primary concern, however, is to examine the policies and implementation mechanisms by proper targeting and finding ways and means to reduce resource distortions. This report revisits the subsidy issue but focuses only on the central government budgetary subsidies.

The present study deals with three pertinent questions, viz., *what* to subsidize, *how much* to subsidize *and how* to subsidize. Accordingly, the report proceeds to (i) estimate the implicit and explicit central budgetary subsidies for 2002-03 and 2003-04; (ii) examines three major types of subsidies at the level of the Government of India (GOI); and (iii) suggests some reform with respect to these three types of subsidies.

The present chapter is organized as follows: Section 1.2 discusses the meaning of subsidies and in Section 1.3 the classification of goods into different categories in described. In Section 1.4 we present the organization of the study.

1.2 Definition of Subsidies

There is considerable ambiguity in the concept of subsidy. A subsidy in its simplest form is negative indirect tax – a reverse flow (transfer) from the government to the public – or an income/consumption supplement for individuals. Subsidies, like indirect taxes, may thus be lump sum, proportional (*ad valorem* or specific) or progressive. The subsidy alters relative prices and/or places additional resource (consumption) entitlements with the recipients.

Conceptually, subsidy may be taken to mean three different things. The first refers to the term used in consumer parlance, the explicit budgetary subsidies. The second is the concept used in National Accounts and this implies the converse of indirect taxes. The third is the concept used to refer to unrecovered costs of providing non-public goods. The concept was first used in the Mundle and Rao (1991) study and subsequent work that followed in NIPFP including the work done for the Discussion Paper in 1997. This definition of subsidy provides the most comprehensive estimate and would include both subsidies to the consumers (in the form of income supplement and below cost provision) as well as to the producers (including those to cover production inefficiencies).

The unrecovered cost essentially represents the difference between the cost of providing the service and the costs recovered from the consumers of the service through user charges. The difference can arise because: (i) the cost of providing the service is higher than the efficiency cost, (ii) the service is provided at lower than marginal social cost to encourage its optimal consumption, (iii) it is found to be desirable to charge lower than marginal social cost to encourage its consumption by the poor and vulnerable sections and (iv) its supply is designed inefficiently and user charges at optimal rates cannot be collected due to political reasons. The critical issue for policy is to eliminate the last component and ensure that the subsidy is managed and targeted effectively to reach intended groups.

1.3 Classification of Goods

Over the years, the area of market failure has expanded and most of the governments provide not only the pure public goods but also private and quasi-public

goods. Therefore, in the context of budgetary subsidies, it is useful to distinguish between different kinds of goods, viz., public goods, private goods and club goods or congestible goods (Srivastava et al., 2003). Public goods are identified by the twin characteristics of non-rivalry and non-excludability. Non-rivalry implies that the consumption by one user does not reduce the quantity available to another and non-excludability implies no individual consumer can be excluded from the consumption of the good. Defence and law and order are examples of public goods. In the case of private goods, the consumer is identifiable and the extent of his consumption is measurable. There are many other commodities in today's world those do not clearly fall into the exclusive categories of pure public or pure private goods. They have varying degrees of publicness and therefore belong to an intermediate category. A conceptual category is that of 'club' goods or congestible goods like roads or swimming pools, which relate to goods that are non-rival for small groups but become rival when the group of users becomes large. In the case of congestible goods, user charges are leviable, although these may be varied according to groups of consumers rather than individual consumers.

Government expenditure in India is broadly classified into three categories of services: general, social and economic. In general services, expenditures like organs of state, fiscal and administrative services, justice, jails and police are included. These services are in the nature of public goods. The market cannot supply these although sometimes services can be individualized. In most cases, individuals cannot be charged for services according to the extent of their consumption. In such cases, these have to be financed by taxation. Although some services within the category of general services may be individually chargeable, it is difficult to disentangle public and private elements and charge for the latter.

In India, governments, both central and state actively participate in the provision of a range of non-public goods under the head of social and economic services where users or groups of users are identifiable and user charges can be levied. Budgetary subsidies arise when the budgetary cost of providing the good/service is more than the recovery made from the user/beneficiary of the service, the difference being financed by the taxpayers. Clearly, some subsidies are less justifiable than others are. So, the pattern of tax financing and financing through user charges of a particular service is an important policy matter.

The criterion of 'externality' determines whether and to what extent the concerned service should be subsidized. In DP 1997, services were classified into merit and non-merit categories. While the merit goods deserve subsidization, there is no case for subsidizing non-merit goods. However, in the case of merit goods, one still needs to determine the desirable degree of subsidization. Given that some services such as higher education were put in the non-merit category in the DP 1997, which may deserve some subsidization; it was felt that an intermediate category might be needed. Thus, even if elementary education and higher education may both require subsidization, the degree of subsidization may be much higher for elementary education. In Srivastave and Amar Nath (2001) and Srivastava et al. (2003), budgetary subsidies on goods and services provided by the central government were classified into three categories, viz.; (I) Merit I; (ii) Merit II; and (iii) Non-Merit. These broadly refer to categories of services with the desired high, intermediate and low (or zero) degrees of subsidization. The distinction between these is made on the basis of the extent of externality associated with the good/service. The exact degree of subsidization ultimately needs to be determined for each service separately. The right degree of subsidization depends on the elasticities of social and private demand, the

extent of externality, the associated cost (supply) functions, and the relative preferences (weights) given by the society to distributional objectives. Since quantifying the relevant parameters often proves to be difficult, the society has to exercise a collective judgement. In this study, as was done in the earlier NIPFP studies, a three-part classification of government services has been followed, as follows:

Merit I: elementary education, primary health centres, prevention and control of diseases, social welfare and nutrition, soil and water conservation, ecology and environment.

Merit II: Education (other than elementary), sports and youth services, family welfare, urban development, forestry, agricultural research and education, other agricultural programmes, special programmes for rural development, land reforms, other rural development programmes, special programmes for north-eastern areas, flood control and drainage, non-conventional energy, village and small industries, ports and light houses, roads and bridges, inland water transport, atomic energy research, space research, oceanographic research, other scientific research, census surveys and statistics, meteorology.

Non-Merit: All others

In this study, expenditures incurred on anti-poverty interventions in urban and rural areas are analyzed separately. Similarly, while transfer payments are excluded from the scope of the subsidy estimates, we provide a brief discussion of these expenditures.

Subsidies and Transfers

Transfers are straight income supplements to individuals that need to be distinguished from subsidies. An unconditional transfer to an individual would augment his/her income and would be spent on all goods and services according to the income elasticity of demand. On the other hand, subsidy on a good or a service reduces the relative price of *that* good or service and thus increases its consumption. In this sense, transfers and subsidies can be considered respective obverses of direct and indirect taxes. Even when subsidy is one hundred percent, i.e., the good is supplied free of cost; it should be distinguished from an income transfer (of an equivalent amount). Transfer payments can be better targeted at specific income groups as compared to free or subsidized goods. Also, income transfers tend to increase consumption of various goods and services in line with the individual's preferences; in contrast, price subsidies focus on the consumption levels of specific goods (e.g., education, health, and food). However, subsidized prices also have associated income effects leading to an increase in the consumption of other (non-subsidized) goods.

1.4 Organization of the Study

The report is organized as follows. Chapter 2 presents the estimates of central government budgetary subsidies for 2002-03 and 2003-04 and places these in perspective by comparing the present estimates with the earlier estimates. The following three chapters analyze subsidies in the food, fertilizer, and petroleum sectors in India, which account for the major portion of government subsidies. Each chapter presents the estimates of the

magnitude of subsidies in that sector and discusses the implications. Chapter 6 discusses the major centrally sponsored poverty alleviation schemes in India. The final chapter summarizes the analyses by identifying the principal motives for subsidies in each sector and suggests alternatives that could target the objectives more cost-effectively.

Chapter 2

Budgetary Subsidies: Volume and Composition

2.1 Introduction

Subsidies account for a significant part of government expenditure, but only a part of these subsidies is visible in the government budget in India. Any program of fiscal reforms should address the issue of reducing their size and increasing their efficacy. Apart from explicit subsidies on food, fertilizer and petroleum, a substantial part of subsidies remain hidden in the provision of social and economic services provided by the government. While, in principle, it may be possible to recover the costs of providing these services from their consumers, at least in the case of some services, overwhelmingly large portions of these remain unrecovered. These implicit subsidies not only add to fiscal pressure, but also adversely impact on equity and efficiency.

The present chapter is organized as follows. In Section 2.2, we discuss the magnitude of explicit central budgetary subsidies in India. In Section 2.3 we provide comprehensive estimates of central budgetary subsidies. In line with the discussion in the previous chapter, we keep the general services (taken to be representative of pure public goods), other major heads of similar nature, and inter-governmental transfers out of the scope of the estimation of subsidies. The reason for leaving out the last-mentioned is simply that any government transfer can strictly be called a subsidy only if it goes to the non-government sector (including non-departmental public undertakings); inter-governmental transfers do not qualify as subsidies on this criterion.[1] They would, however, count as subsidies at the time they are spent by the recipient government under various services. With these exclusions, Central budgetary subsidies may then be classified into social and economic categories, each of which may be sub-divided into merit and non-merit groups. The merit category is further subdivided into merit I and merit II categories. Thus, this chapter presents a three-way classification of subsidies separately for social and economic services. It also provides comparisons with estimates of subsidies for some earlier years, for which the available estimates are based on a similar concept of subsidy.

2.2 Explicit Central Budgetary Subsidies

Table 2.1 provides growth rates of the major explicit subsidies in the central government budget for selected periods. The main explicit subsidies relate to food, fertilizer, and interest payments.[2] There was deceleration in total subsidy growth until the first half of the 'nineties, when they actually decreased; an increasing growth in the two successive periods thereafter can be observed.[3] Within the 'nineties, however, the growth rates increased in the case of fertilizer subsidy and interest subsidies in the latter half.

[1] It is important to note that the bulk of central expenditures on poverty alleviation schemes get excluded from the scope of this study for this reason. However, given the importance of these schemes in judging the impact of central expenditures on the poor, we deal with these schemes in a separate chapter.

[2] Petroleum subsidies were off-budget before 2002.

[3] This is at least partly because of the now explicit petroleum subsidies. Of course, it is still not fully reflected in the budget since a part of the subsidy burden is borne by the nationalized oil companies. Also, food subsidies have grown fast in the first half of the current decade.

Interest subsidies have been more than a thousand crore of rupees in 1996-97, 1998-99 and 1999-00. In recent years, petroleum subsidies are becoming an important item. In 2002-03 budget, petroleum subsidies were shown explicitly for the first time and they amounted for Rs. 5225 crore. In 2003-04 the petroleum subsidies accounted for Rs. 6573 crore and are estimated at Rs. 3500 crore in 2004-05[4] (Table A2.1).

Long-term trends of the explicit Central subsidies as percentage to GDP are shown in Table A2.1. Explicit subsidies accounted for about 2 percent of the GDP in 2002-03 and 2003-04(BE). Aggregate explicit subsidies relative to net revenue receipts peaked in the year 1990-91, then fell until 1999-00 (except for the year 1998-99), and rose again thereafter. Starting with modest amounts, both food and fertilizer subsidies have grown at rates far higher than the inflation rate.

Table 2.1: Explicit Subsidies of the Centre: Period-Wise Trend Growth Rates

(Percent)

Period	Food Subsidies	Fertilizer Subsidies	Interest Subsidies	Total Subsidies*
1980-90	18.67	29.66	17.46	21.06
1990-00	16.91	12.84	17.52	9.19
1991-95	23.74	4.28	-34.57	-1.04
1995-00	16.53	19.46	112.84	18.99
2000-04	32.71	-3.72	31.34	24.84

Source (Basic Data): *Central Budget Documents,* various issues

Note * Total subsidies include petroleum subsidy, grants to NAFED for MIS/PPS, export subsidies, subsidy on railways, debt relief to farmers and others.

2.3 Comprehensive Estimates of Central Budgetary Subsidies

Measurement and Estimation of Subsidies

Explicit subsidies provide only a limited idea of the overall volume of budgetary subsidies. To this we have to add implicit subsidies by estimating unrecovered costs of public provision of goods/services that are not classified as public goods. In these cases, it should be possible to recover, at least in principle, the cost of providing services according to the extent of their consumption.

Subsidies are measured here as unrecovered costs of governmental provision of goods/services that are not classified as public goods. In particular, the goods/services under reference are those that are categorized as social services and economic services. The unrecovered costs are the differences between the cost of providing the service and cost recovery. The cost of providing the service comprise of three elements: (i) current costs; (ii) annualized capital cost (opportunity cost of funds used for capital assets and imputed depreciation costs); and (iii) opportunity cost of funds invested in the form of equity or loan for the service (including those given to the Public Sector Enterprises). (For details on the methodology see: Mundle and Rao, 1991; Srivastava and Amar Nath, 2001)

The parameters used for estimating the adjusted depreciation rate (ADR) are indicated below. For estimation of the long-term parameters, the sample used extends

[4] In view of the persistent rise in international prices of petroleum crude, this could well be much higher.

from 1950-51 to 2002-03 for the calculations of 2002-03 and from 1950-51 to 2003-04 for the calculations for 2003-04.

i. Average inflation rate: 8.29 percent per annum for 2002-03 and 2003-04. This is calculated for the implicit price deflator of gross domestic capital formation (GDCF) in the public sector;
ii. Average growth rate for nominal investment: 13.49 percent per annum for 2002-03 and 2003-04. This is calculated as compound growth rate with reference to gross capital formation by the central government; and
iii. Average life of a capital asset: 50 years.

In deriving the base capital stock figure, only1/3rd of investment in three previous years has been taken into account, since all investments do not start giving service from the next year.

The estimated ADRs used for 2002-03 and 2003-04 are 5.08 and 5.09 percent per annum, respectively. Apart from depreciation, we also need the effective interest rate to indicate the opportunity cost of funds. This is used in the case of all categories of capital expenditure, i.e., loans and advances, equity investment and own capital expenditure on the functional head. The effective interest rate is the average interest rate on aggregate Central government internal borrowing in the year concerned. This is estimated to be 10.80 percent for 2002-03, and 10.10 percent for 2003-04.

Broad Magnitudes

Total subsidies were comprehensively estimated at Rs.103546 crore for 2002-03 and Rs. 106663 crore for 2003-04.[5] These amounted to 4.19 and 3.85 percent of GDP at current market prices, and 44.68 and 40.55 percent of net revenue receipts of the central government for these years respectively. Tables 2.2 and 2.3 provide the broad aggregates of the different categories of subsidies. Subsidy on social services in the central budget amounted to Rs. 20306 crore, while subsidy in economic services is estimated at Rs. 83240 crore for 2002-03. Social service subsidies in the central budget amounted to Rs. 24475 crore whereas subsidies in economic services are estimated at Rs. 82189 crore for 2003-04.

The scheme of classification of merit and non-merit subsidies was discussed earlier. Merit subsidies amounted to only Rs. 35818 crore, whereas a much larger share, amounting to Rs. 67729 crore had gone to non-merit subsidies in 2002-03. In 2003-04 merit subsidies rose to about Rs. 48757 crore, while non-merit subsidies claimed a much smaller share of the toatal, amounting to Rs. 57906 crore. Also, in 2002-03 and 2003-04, subsidies amounted to 71.38 and 80.74 percent of fiscal deficit respectively at the central level. Thus, if no subsidy were given, *ceteris paribus*, the amount of borrowing could have been reduced by 71 percent in 2002-03 and 81 percent in 2003-04 by the central government.

[5] The 2002-03 estimates are primarily based on the published figures (Finance Accounts of the Government of India), while 2003-04 use unpublished, provisional data kindly supplied by the Controller General of Accounts, Ministry of Finance, Government of India.

Table 2.2: Central Budgetary Subsidies 2002-03

	Cost (Rs crore)	Subsidy (Rs crore)	Recovery rate (%)	Subsidy as Percentage of Revenue Receipts	Subsidy as Percentage of GDP	Subsidy as Percentage of Fiscal Deficit
1. Social Services	20805.2	20306.05	2.40	8.76	0.82	14.00
a. Merit	12177.6	12117.07	0.50	5.23	0.49	8.35
b. Non -Merit	8627.6	8188.97	5.08	3.53	0.33	5.64
2. Economic Services	147221.4	83240.12	43.46	35.92	3.37	57.38
a. Merit	24374.9	23700.58	2.77	10.23	0.96	16.34
b. Non -Merit	122846.5	59539.54	51.53	25.69	2.41	41.04
3. Merit (Total)	36552.5	35817.65	2.01	15.46	1.45	24.69
4. Non-Merit (Total)	131474.1	67728.51	48.49	29.23	2.74	46.69
Total	168026.61	103546.17	38.38	44.68	4.19	71.38
Memo items						
Revenue Receipts	231748					
GDP	2469564					
Fiscal deficit	145073					

Note: The figures of cost and subsidy are inclusive of surplus sectors.
Source (Basic Data): Finance Account of the Union Government and National Income Accounts, CSO.

Table 2.3: Central Budgetary Subsidies 2003-04*

	Cost (Rs Crore)	Subsidy (Rs crore)	Recovery Rate (%)	Subsidy as Percentage of Revenue Receipts	Subsidy as Percentage of GDP	Subsidy as Percentage of Fiscal deficit
1. Social Services	24971.82	24474.61	1.99	9.30	0.88	18.53
a. Merit	16208.73	16134.06	0.46	6.13	0.58	12.21
b. Non -Merit	8763.09	8340.55	4.82	3.17	0.30	6.31
2. Economic Services	155143.51	82188.55	47.02	31.25	2.96	62.22
a. Merit	33678.94	32622.77	3.14	12.40	1.18	24.69
b. Non -Merit	121464.57	49565.77	59.19	18.84	1.79	37.52
3. Merit (Total)	49887.67	48756.84	2.27	18.54	1.76	36.91
4. Non-Merit (Total)	130227.66	57906.32	55.53	22.02	2.09	43.83
Total	180115.34	106663.16	40.78	40.55	3.85	80.74
Memo-items						
GDP(2003-04)	2772194					
Revenue Receipts	263026					
Fiscal deficit	132103					

Note: The figures of cost and subsidy are inclusive of surplus sectors.
Source (Basic Data): Controller General of Accounts, Ministry of Finance, Government of India.
* Provisional

Central Subsidies: An Inter-Temporal Comparison

Comprehensive estimates of central budgetary subsidies using a broadly similar methodology are now available for eight years in the time span of 1987-88 to 2003-04. Five previous studies provide estimates for six years. The first in the series was that by Mundle and Rao (1991). Subsequent studies are by Tiwari (1996), Srivastava and Sen, (1997), Srivastava and Amar Nath (2001), and Srivastava et al. (2003). Including the

present study, in all, estimates for eight years have become available. These years are 1987-88, 1992-93, 1994-95, 1995-96, 1996-97, 1998-99, 2002-03, and 2003-04.

Table 2.4 shows a time profile of estimated central budgetary subsidies for these eight years over the sixteen-year period from 1987-88 to 2003-04. Because of differences in the methodology of estimation, the estimates are not strictly comparable. However, in broad terms, a similar approach of measuring budgetary subsidies in a comprehensive way was used in these studies. There is a greater comparability in the last five estimates. In 1987-88, central budgetary subsidies were estimated to be 4.53 percent of GDP. In 1992-93, these increased to 4.92 percent of GDP. One major factor for this increase may have been the salary revisions following the recommendations of the Fourth Central Pay Commission. It would be evident that in 1994-95, subsidies in the central budget fell to 3.49 percent of GDP in 1996-97. Thereafter, the subsidies show a sharp increase to 4.59 percent in 1998-99 but decline marginally to 4.19 percent in 2002-03 and 3.85 percent in 2003-04. It is seen that although in the middle of the 1990s the subsidies were contained, they increased sharply in the later part of the decade following the pay revision. Thus the attempts to contain and target subsidies appear to have yielded hardly any result over the sixteen-year period.

Central budgetary subsidies were estimated at Rs. 103546 crore for 2002-03, and Rs. 106663 crore in 2003-04. Thus, in a span of one year, subsidies appear to have increased by Rs. 3117 crore. There are two possible reasons. First, the explicit subsidies (food, fertilizer, etc.) increased by a margin of Rs. 1680 crore from a figure of Rs. 45189 crore in 2002-03 to Rs. 46869 crore in 2003-04 (Table A2.1). Moreover, both total implicit costs and subsidies in social services has increased from Rs. 20805 and 20306 crore respectively in 2002-03 to Rs. 24972 and 24475 crore respectively in 2003-04. The recovery rate in social services is 2.4 percent in 2002-03 that declined to 1.99 percent in 2003-04.

The recovery rate in economic services actually went up from 43.46 percent in 2002-03 to 47.02 percent in 2003-04. In terms of the merit and non-merit categories, the recovery rate in the merit category is relatively low at 0.5 percent for social services, and 2.77 percent for economic services in 2002-03; these rates were 0.46 percent and 3.14 percent respectively in 2003-04 (Tables 2.5 and 2.6). Thus, recovery rates in the case of merit services (total) have risen to some extent in one year.

Subsidies in social services were Rs. 20306 crore in 2002-03 and increased to Rs. 24475 crore in 2003-04, thereby implying an increase of 20.53 percent. The average decrease in subsidy estimates for economic services, comparing the 2003-04 magnitudes with those for 2002-03, work out to 1.3 percent. A sharp increase in petroleum sector subsidy is indicated. In the case of petroleum, the increase over the year is 55.22 percent. The large increase in postal subsidies probably reflects the high salary intensity of this sector. This sector has experienced a 163 percent increase in the 2003-04 subsidy levels over those of 2002-03. In technical education, sports, arts and culture the increase in subsidy was 118 percent.

Table 2.4: A comparison of Budgetary Subsidies: selected Years

Year	Subsidies	Revenue Receipts	Fiscal Deficit	GDP at Market Prices	Subsidies as Percentage of		
					Revenue Receipts	GDP	Fiscal Deficit
1987-88 (M-R)	16065	37037	27044	354343	43.38	4.53	59.40
1992-93 (Tiwari)	36829	74128	40173	748367	49.68	4.92	91.68
1994-95 (NIPFP)	43089	91083	57703	1012770	47.31	4.25	74.67
1995-96 (NIPFP)	42941	110130	60243	1188012	38.99	3.61	71.28
1996-97 (NIPFP)	47781	126279	66733	1368208	37.84	3.49	71.60
1998-99 (NIPFP)	79828	149485	113348	1740935	53.40	4.59	70.43
2002-03 (NIPFP)	103546.17	231748	145073	2469564	44.68	4.19	71.38
2003-04 (NIPFP)	10663.16	263026	132103	2772194	40.55	3.85	80.74

Sources: 1. Mundle and Rao (1992), Tiwari (1996), Srivastava, *et.al.* (1997), Srivastava and Amar Nath (2001) Srivastava et al. (2003).
2. Revenue Receipts, Fiscal Deficit, and GDP: Central Statistical Organization and Economic Survey 2003-04.

Classification into Merit and Non-Merit Categories

As mentioned in the previous chapter, subsidies have been divided into two main categories, merit and non-merit. The merit subsidies have been further divided into Merit I and Merit II groups. Tables 2.5 and 2.6 provide group-wise totals of the subsidies. The share of non-merit subsidy in total subsidies was 65 percent in 2002-03 and 54 percent in 2003-04. Merit I subsidies were estimated at Rs. 6146 crore (5.9 percent of the total) in 2002-03; the share of Merit I subsidies in 2003-04 was a higher 6.8 percent. Merit II subsidies accounted for Rs. 29671 crore (about 29 percent of the total) in 2002-03 and Rs. 41548 crore (about 39 percent of the total) in 2003-04. The pattern shown by the recovery rate indicates that Merit I group has an average recovery rate of 0.04 percent in both of the years whereas the Merit II group has an average recovery rate of 2.41 percent in 2002-03 and 2.64 percent in 2003-04. The non-merit group shows an average recovery rate of 48.49 percent in 2002-03, if surplus sectors are included and it has increased in 2003-04 to 55.53 percent. This provides the basis for working out the scope of additional recoveries by looking at the difference between category-wise desired subsidy rates and the actual subsidy rates.

Table 2.5: Classification of Subsidies: Merit and Non-Merit Categories 2002-03

Service	Cost			Receipts	Subsidy	Recovery rate (%)
	Current	Capital	Total			
Social services	**18321.41**	**2483.80**	**20805.21**	**499.16**	**20306.05**	**2.40**
Merit I	5258.08	301.67	5559.75	2.56	5557.19	0.05
Merit II	6211.47	406.38	6617.85	57.97	6559.88	0.88
Total Merit	11469.55	708.05	12177.60	60.53	12117.07	0.50
Non-merit	6851.86	1775.74	8627.60	438.63	8188.97	5.08
Economic services	**110220.12**	**37001.28**	**147221.4**	**63981.28**	**83240.12**	**43.46**
Merit I	535.93	53.185	589.12	0	589.12	0
Merit II	15979.85	7805.94	23785.79	674.32	23111.47	2.83
Total Merit	16515.78	7859.125	24374.91	674.32	23700.59	2.77
Non-merit	93704.34	29142.155	122846.49	63306.96	59539.53	51.53
Social and Economic Service	**128541.5**	**39485.08**	**168026.61**	**64480.44**	**103546.17**	**38.38**
Merit I	5794.01	354.855	6148.87	2.56	6146.31	0.04
Merit II	22191.32	8212.32	30403.64	732.29	29671.35	2.41
Total Merit	27985.33	8567.175	36552.51	734.85	35817.66	2.01
Non-merit	100556.2	30917.905	131474.1	63745.59	67728.51	48.49

Note: As in Table 2.2.
Source: As in Table 2.2.

Table 2.6: Classification of Subsidies: Merit and Non -Merit categories 2003-04 (Provisional)

Service	Cost			Receipts	Subsidy	Recovery Rate (%)
	Current	Capital	Total			
Social service						
Merit I	6062.01	315.25	6377.26	2.65	6374.61	0.04
Merit II	6871.65	2959.82	9831.47	72.02	9759.45	0.73
Total merit	12933.66	3275.08	16208.74	74.67	16134.07	0.46
Non-Merit	7685.76	1077.33	8763.09	422.54	8340.55	4.82
Total Social services	**20619.42**	**4352.41**	**24971.83**	**497.21**	**24474.62**	**1.99**
Economic Services						
Merit I	831.99	2.72	834.70	0.00	824.70	0.00
Merit II	26785.93	6058.31	32844.24	1056.17	31788.07	3.22
Total Merit	27617.92	6061.02	33678.94	1056.17	32622.77	3.14
Non -Merit	89017.88	32446.69	121464.57	71898.80	49565.77	59.19
Total Economic services	**116635.80**	**38507.71**	**155143.51**	**72954.97**	**82188.55**	**47.02**
Social and Economic services						
Merit I	6893.99	317.97	7211.96	2.65	7209.31	0.04
Merit II	33657.58	9018.13	42675.71	1128.19	41547.53	2.64
Total Merit	40551.58	9336.10	49887.67	1130.84	48756.84	2.27
Non-Merit	96703.64	33524.03	130227.66	72321.35	57906.32	55.53
Total subsidy	**137255.21**	**42860.13**	**180115.34**	**73452.18**	**106663.16**	**40.78**

Note: As in Table 2.3.
Source: As in Table 2.3.

As indicated in Tables 2.5 and 2.6, among the social services, in Merit I group, receipts were virtually zero in all the categories barring social welfare and nutrition. In the Merit II group of social services, for secondary and higher education, technical education, family welfare and urban development, the receipts were fairly small. The recovery rate for the Merit II group as a whole was higher than for the Merit I group in social services in both of the study years. In the non-merit social services, the recovery rate was about five percent in both the years and the volume of subsidy was Rs. 8189 crore in 2002-03 and Rs. 8341 crore in 2003-04. The aggregate volume of subsidies under the non-merit services in the social category, however, was less than the sum of the Merit I and Merit II group subsidies.

Among the economic services, the Merit I group consists of soil and water conservation and ecology and environment. In both years, recoveries were zero and the total cost translated into subsidies. Merit II group of economic services accounted for a larger amount. The total volume of subsidies in this group was Rs. 23111 crore in 2002-03 and Rs. 31788 crore in 2003-04. However, the non-merit group subsidies in the economic services accounted for a much larger volume of subsidies. It was nearly 2.5 to three times as large as the subsidies in the Merit II group in 2002-03, although in 2003-04 this multiple was only a little higher than 1.5. The total volume of non-merit subsidies in the economic services was Rs. 59540 crore in 2002-03 and Rs. 49566 crore in 2003-04. However, in this group, the average recovery rate was 51.53 percent in 2002-03, which increased to 59.19 percent in 2003-04.

Central Subsidies According to Major Heads

In Tables 2.7 and 2.8, subsidy estimates according to major heads are indicated. In the social services, centre's participation is limited. Most of the social sector expenditures pertain either to the Union Territories that figure in the central budget or meant for departmental transfers to the state governments. In the education sector, subsidy estimates are upto minor heads. The total amount of subsidy in general education was Rs. 7503 crore in 2002-03 and Rs. 8591 crore in 2003-04. In technical education, sports, art and culture, it was Rs. 2095 and Rs. 4562 crore in 2002-03 and 2003-04 respectively. Except for information and broadcasting where the recovery rate was 8.23 percent in 2002-03 and for broadcasting and publicity where the recovery rate was 80.39 percent in 2003-04, in most other instances in the social services, the recovery rates were close to zero. The overall recovery rate in social services was 2.4 and 1.99 percent in 2002-03 and 2003-04 respectively.

Table 2.7: Central Budgetary Subsidies 2002-03

(Rs crore)

Social and Economic Service Budget-code		Cost			Receipts	Subsidy	Recovery Rate (%)
		Current	Capital	Total			
	Social Services, of which	**18321.41**	**2483.80**	**20805.21**	**499.16**	**20306.05**	**2.40**
2202	General Education	7474.72	32.02	7506.74	3.52	7503.22	0.05
2202-01	Elementary Education	4090.73	12.24	4102.97	0.18	4102.79	0.00
2211	Family Welfare	786.68	3.06	789.74	15.79	773.95	2.00
2216	Housing	2223.13	755.76	2978.89	150.52	2828.37	5.05
2220	Information and Broadcasting	1164.63	821.55	1986.18	163.47	1822.71	8.23
2230	Labour and Employment	726.60	0.00	726.60	4.18	722.42	0.58
2210-01-05	Medical	1636.48	96.23	1732.71	81.35	1651.36	4.69
2210	Medical and Public Health	2253.28	124.75	2378.03	102.73	2275.30	4.32
2202-04-05	Other General Education	307.96	3.41	311.37	1.3	310.07	0.42
2250	Other Social services	8.17	12.51	20.68	0.05	20.63	0.24
2210-06	Public Health	299.79	-9.10	290.69	1.25	289.44	0.43
2202-02	Secondary Education	1292.67	8.49	1301.16	0.45	1300.71	0.03
2235-2236	Social welfare and Nutrition	506.56	32.37	538.93	2.38	536.55	0.44
2203-2204-2205	Technical Education, Sports, art and culture	2032.99	100.33	2133.32	38.58	2094.74	1.81
2202-03	University and Higher Education	1783.36	7.88	1791.24	1.59	1789.65	0.09
2217	Urban Development	7.81	283.21	291.02	0.26	290.76	0.09
2215	Water supply and sanitation	985.38	76.63	1062.01	1.58	1060.43	0.15
2225	Welfare of Scs, STs and other BCs	151.46	241.61	393.07	0.00	393.07	0.00

Table 2.7: Central Budgetary Subsidies 2002-03 (contd.)

(Rs crore)

Social and Economic Service Budget-code		Cost			Receipts	Subsidy	Recovery Rate (%)
		Current	Capital	Total			
	Economic services, of which	**110220.12**	**37001.28**	**147221.4**	**63981.28**	**83240.12**	**43.46**
2402-2515	Agricultural, Rural Development and Allied activities	35402.75	4107.32	39510.07	437.87	39072.20	1.11
3451-3475	General Economic services	5291.99	219.30	5511.29	593.23	4918.06	10.76
2851-2885	Industry and Minerals	13166.71	10319.41	23486.12	2439.59	21046.53	10.39
2701-2702	Irrigation	334.24	55.09	389.33	19.03	370.30	4.89
2802	Petroleum	5225.47	516.33	5741.80	3038.59	2703.21	52.92
3201	Postal	4001.39	161.52	4162.91	4009.65	153.26	96.32
3401-3435	Science Technology and Environment	4645.86	694.85	5340.71	112.49	5228.22	2.11
3051-3075	Transport	4761.88	5853.69	10615.57	560.09	10055.48	5.28
	surplus sectors						
3225	Satellite and communication	3403.44	1013.34	4416.78	5541.02	-1124.24	125.45
3001-3003	Railways	29968.45	7408.20	37376.65	42741.47	-5364.82	114.35

Source: As in Table 2.2.

Table 2.8: Central Budgetary Subsidies 2003-04 (Provisional)

(Rs crore)

Social and Economic Service		Cost			Receipts	Subsidy	Recovery Rate (%)
		Current	Capital	Total			
Budget-code	**Social services, of which**	**20619.42**	**4352.41**	**24971.82**	**497.21**	**24474.61**	**1.99**
2202	General education	8554.86	40.46	8595.32	4.37	8590.96	0.05
2221	Broadcasting	1001.47	54.34	1055.81	4.30	1051.51	0.41
2202-01	Elementary education	5064.49	12.37	5076.86	0.18	5076.67	0.00
2211	Family welfare	1258.24	0.24	1258.48	18.22	1240.27	1.45
2216	Housing	2456.07	790.22	3246.29	124.75	3121.53	3.84
2220	Information and Publicity	207.02	20.69	227.71	183.06	44.65	80.39
2230	Labour and Employment	796.09	1.13	797.22	5.42	791.80	0.68
2210-01-05	Medical	1258.24	0.24	1258.48	18.22	1240.27	1.45
2210	Medical and Public health	2460.93	131.05	2591.97	103.40	2488.58	3.99
2202-80	Other General education	69.75	3.33	73.08	1.02	72.06	1.40
2250	Other social services	9.40	13.92	23.31	0.00	23.31	0.00
2210-06	Public health	611.80	26.87	638.67	26.92	611.75	4.21
2202-02	Secondary Education	1404.95	16.65	1421.60	0.49	1421.11	0.03
2235-2245	Social welfare and Nutrition	448.96	38.57	487.52	2.43	485.10	0.50
2203-2205	Technical Education, sports Art and culture	2116.98	2493.73	4610.71	49.06	4561.65	1.06
2202-03	University and Higher Education	2015.67	8.11	2023.78	2.67	2021.11	0.13
2217	Urban Development	6.05	437.76	443.81	0.56	443.25	0.13
2215	Water Supply and sanitation	1236.98	79.13	1316.12	1.61	1314.51	0.12
2225	Welfare of SCs. STS and other BCs	66.35	251.17	317.53	0.04	317.49	0.01
	Economic services, of which	**116635.80**	**38507.71**	**155143.51**	**72954.97**	**82188.53**	**47.02**
2402-2553	Agriculture, Rural development and Allied activities	47199.22	3820.73	51019.95	440.75	50579.20	0.86
3451-3475	General economic services	2413.88	347.20	2761.08	821.93	1939.15	29.77
2851-2885	Industry and Minerals	15011.62	7793.28	22804.90	3987.86	18817.04	17.49
2701-2702	Irrigation	355.30	59.42	414.72	9.56	405.17	2.30
2802	Petroleum	6901.49	493.35	7394.84	3198.79	4196.05	43.26
3201	Postal	4520.31	138.96	4659.26	4256.93	402.33	91.36
3401-3435	Science Technology and Environment	5025.91	737.84	5763.75	131.65	5632.10	2.28
	Surplus sectors (excl. railways)	3447.59	369.86	3817.45	9920.63	-6103.18	259.88
	Port and light house	391.33	282.66	673.99	699.00	-25.01	103.71
	Total communications	3056.26	87.20	3143.46	9221.63	-6078.17	293.36
	Railways	21403.16	7087.43	28490.58	44911.49	-16420.91	157.64

Source: As in Table 2.3.

For economic services, the estimated subsidy was Rs. 83240 crore in 2002-03 and Rs. 82189 crore in 2003-04. Here the recovery rate was 43.46 percent in 2002-03, which rose to 47.02 percent in 2003-04. As already noted, petroleum used to be surplus sector in the earlier studies. It has now emerged for the first time as a subsidy sector where the estimated subsidy amounted to Rs. 2703 crore in 2002-03, increasing to Rs. 4196 crore in 2003-04. Within economic services, agriculture and allied activities, and industries and minerals accounted for the largest portions of subsidies followed by energy. Science, technology and environment also had large subsidies.

In the economic services, centre's role in irrigation and flood control is limited and subsidies in irrigation amounted to only Rs. 370 crore in 2002-03 and Rs. 405 crore in 2003-04. The entire current expenditure and a large portion of capital expenditure on irrigation remain unrecovered. In the case of the power sector, total receipts were more than total current expenditure and it was primarily the annualized capital costs that remained unrecovered. As already noted, the 'industry and minerals' sector accounted for the second largest component of subsidies in economic services in both the years. The overall recovery rate here was only 10.39 and 17.49 percent of the total costs for the years 2002-3 and 2003-04 respectively. In the residual category of general economic services, subsidies amounted to Rs. 4918 crore with a recovery rate of only 10.76 percent in 2002-03 and Rs.1939 crore with a recovery rate of 29.77 percent in 2003-04. Railways and telecommunications were two important surplus sectors in which not only the costs were fully recovered but also a substantial surplus was generated.[6]

Tables 2.9 and 2.10 give the relative shares of different services/heads in total subsidies. The social services accounted for around 20 percent of the total subsidies and the remaining about 80 percent was accounted for by the economic services. General education as a whole claimed 7.25 and 8.05 percent of the subsidies whereas technical education, sports, art and culture accounted for 2.02 and 4.28 percent in 2002-03 and 2003-04 respectively. Medical and public health had a share of about 3 to 3.5 percent. Thus, education and health together had a share of about 12 to 15 percent of total subsidies. These are the cases, where due to the high degree of externalities, subsidies are most justifiable.

Structure of Costs

An analysis of the structure of costs can help identify cases where current costs are relatively more important when compared to the annualized capital costs. This will help in understanding further the causes of increase in subsidies. Tables 2.11 and 2.12 provide the share of current cost vis-à-vis the annualized capital costs. In the case of social services, the share of current costs was 88.06 and 82.57 percent whereas in the case of economic services, it was 74.87 and 75.18 percent in 2002-03 and 2003-04 respectively. However, within the economic services, the share of current costs was relatively high for agriculture and allied activities and postal services. For the postal services, current costs were as high as 97 percent. For railways also, the share of current costs was nearly 75 percent in 2003-04. The high salary intensity of both postal services and railways probably explains this feature.

[6] It may be recalled that the estimates relate to transactions reflected in the general budget only.

Table 2.9: Relative Shares of Individual Services in Total Subsidies 2002-03

Budget Code	Service/Heads	Relative share in Total Subsidies
	Social services	**19.61**
2202-01	Elementary education	3.96
2215	Family welfare	0.75
2202	General Education	7.25
2220	Information and Publicity	0.05
2230	Labour and Employment	0.70
2210-01-05	Medical	1.59
2210-2211	Medical, Public Health and Family Welfare	2.93
2202-04-80	Other General Education	0.30
2250	Other social services	0.02
2210-06	Public health	0.59
2202-02	Secondary education	1.26
2235-45	Social welfare and Nutrition	0.52
2203-05	Technical Education , Sports, Art & Culture	2.02
2202-03	University and Higher Education	1.73
2215	Water supply and sanitation	1.02
	Economic Services	**80.39**
2402-2553	Agriculture, rural development and allied activities	37.74
2801	Power	4.39
3451-3475	General Economic services	4.75
2851-2885	Industry and Minerals	20.33
2701-2711	Irrigation and Flood control	0.36
3201	Postal	0.15
3401-4535	Science Technology and Environment	5.05

Source: As in Table 2.2.

Table 2.10: Relative share of Individual services in Total subsidies 2003-2004 (Provisional)

Budget-code	Services /Heads	Relative share in total subsidies
	Social services	**22.95**
2202-01	Elementary education	4.76
2211	Family Welfare	1.16
2202	General education	8.05
2220	Information and Publicity	0.04
2230	Labour and Employment	0.74
2210-01-05	Medical	1.76
2210-2211	Medical, Public health & Family Welfare	3.49
2202-04-80	Other General education	0.31
2250	Other social services	0.02
2210-06	Public health	0.56
2202-02	Secondary Education	1.33

Table 2.10: Relative share of Individual services in Total subsidies 2003-2004 (Provisional) (contd.)

Budget-code	Services /Heads	Relative share in total subsidies
2235-2245	Social welfare and Nutrition	0.45
2203-2205	Technical Education, sports, Art and culture	4.28
2202-03	University and Higher Education	1.65
2215	Water Supply and sanitation	1.23
	Economic services	**77.05**
2402-2553	Agricultural Rural development and Allied activities	47.41
2801-2810	Power	4.86
3451-3475	General economic services	1.82
2851-2885	Industry and Minerals	17.64
2701-2711	Irrigation and Flood control	0.38
3201	Postal	0.38
3401-3435	Science Technology and Environment	5.28

Source: As in Table 2.2.

In the energy sector, the share of current costs was limited to only 42.67 and 34.00 percent in 2002-03 and 2003-04 respectively. The very high increase in subsidy in this sector between 1996-97 and 1998-99, therefore, should be explained in terms of factors affecting the capital component of costs.

Table 2.11: Structure of Costs: Selected Heads 2002-03

	Cost (Rs. Crore)			Share in Total (%)	
	Current	Capital	Total	Current	Capital
Social Services	**18321.41**	**2483.80**	**20805.21**	**88.06**	**11.94**
General Education	7474.72	32.02	7506.74	99.57	0.43
Medical and Public Health	3039.96	127.81	3167.77	95.97	4.03
Information and Broadcasting	1164.63	821.55	1986.18	58.64	41.36
Economic Services	**110220.12**	**37001.28**	**147221.40**	**74.87**	**25.13**
Agriculture and allied activities	35402.75	4107.32	39510.07	89.60	10.40
Energy (2801+ 2810)	3774.70	5072.07	8846.77	42.67	57.33
Industry and Minerals	13166.71	10319.47	23486.12	56.06	43.94
Transport(excluding railways)	4761.88	5853.69	10615.57	44.86	55.14
Postal	4001.39	161.52	4162.91	96.12	3.88
Social and Economic services	**128541.53**	**39485.08**	**168026.61**	**76.50**	**23.50**

Source: As in Table 2.2.

Table 2.12: Structure of Costs: Selected Heads 2003-04 (Provisional)

Social and Economic services	Cost (Rs crore)			Share in Total (%)	
	Current	Capital	Total	Current	Capital
Social Services	**20619.42**	**4352.41**	**24971.82**	**82.57**	**17.43**
General Education	8554.86	40.46	8595.32	99.53	0.47
Medical and Public Health	2460.93	131.05	2591.97	94.94	5.06
Information and Broadcasting	1208.50	75.03	1283.52	94.15	5.85
Economic services	**116635.80**	**38507.71**	**155143.51**	**75.18**	**24.82**
Agriculture ,Rural Development & allied	47199.22	3820.73	51019.95	92.51	7.49
Energy (2801+2810)	3291.63	6389.27	9680.90	34.00	66.00
Transport(excluding railways)	4356.89	4015.76	8372.56	52.04	47.96
Postal	4520.31	138.96	4659.26	97.02	2.98
Industry and minerals	15011.62	7793.28	22804.90	65.83	34.17
Social and Economic services	**137255.22**	**42860.12**	**180115.34**	**76.20**	**23.80**

Source: As in Table 2.3.

Transfers to Individuals

We had excluded identified transfers to individuals from the subsidy estimates. Transfers are interpreted as the converse of direct taxes just as subsidies are the converse of indirect taxes. The total transfers in the two groups amounted to Rs. 1341 crore in 2002-03 of which the social services accounted for only 261 crore. Most of this expenditure was in social security and welfare schemes. A very small part comprised scholarships. The total transfers in the two groups amounted to Rs. 1404.68 crore in 2003-04 of which the social services accounted for 297.44 crore. Tables 2.13 and 2.14 provide the details of transfers to individuals according to heads.

Table 2.13: Transfers to Individuals 2002-03

	(Rs crore)
Social services	**260.83**
General education	1.46
Secondary Education	0.08
University and Technical education	0.75
General	0.63
Technical Education	0.18
Social Security and welfare	257.62
Relief on account of Natural calamities	0.11
Economic Services	**1080.06**
Crop Husbandry	0.03
Railways	27.87
Postal Services	1052.16
Social and Economic services	**1340.89**

Source: As in Table 2.2.

Table 2.14: Transfers to Individuals 2003-04 (provisional)

	(Rs crore)
Social services	**297.44**
General education	1.67
Secondary education	0.19
University and Technical education	0.81
General	0.67
Technical education	0.52
Social Security and welfare	295.25
Economic services	**1107.24**
Crop Husbandry	0.03
Postal Services	1107.21
Social and Economic Services	**1404.68**

Source: As in Table 2.3.

Chapter 3

Food Subsidies

3.1 Food subsidies in India

Rationing and public distribution of food started in 1939 as a wartime measure, and state interventions in this area have continued to date. The system of food subsidies in India actually comprises three elements, all of which is not necessarily termed as food subsidies internationally. The first element is a farmers' subsidy, which is conceptually the difference between the price paid by the Food Corporation of India (FCI) to the farmers and other agencies, and the notional market price that would have prevailed in the absence of these purchases. The second element is a subsidy to the FCI to defray the expenses of handling, storage and transport of foodgrains, including those of maintaining a buffer stock and storage and transit losses. All this together may be called the administrative costs. The third element (which is generally called food subsidy in the international literature) is the consumer subsidy, conceptually equal to the hypothetical market price that would have prevailed had there been no public intervention minus the price charged by the public distribution system (PDS). This can be written as

$$FS = (P^p – P^*)Q^p + C^a + (P' - P^c)S, \qquad \ldots\ldots(1)$$

where FS = food subsidies, P^p is purchase price, P^* denotes hypothetical market price for farmers, Q^p is quantity of grains purchased, C^a is what we have called administrative costs above,[7] P' is the market price for consumers, P^c is the PDS sale price, also known as issue price and S is the sale from the PDS. The three terms in equation (1) denote the three elements of subsidies outlined above.

However, in the government accounts, what is termed food subsidies is a little different. This can be written as

$$FS = (P^p Q^p + C^a) - P^m S'. \qquad \ldots\ldots(2)$$

The term within parentheses in equation (2) is called the economic cost of foodgrains to the government. This is the sum of acquisition cost (which is P^pQ^p plus costs incidental thereto) and distribution costs. P^m is the average sale price received by the FCI (this is a weighted average of PDS sales and the sales through other channels) and S' is the total sales through all channels (that may include some at a zero price). It can be easily checked that if the entire foodgrains procured by FCI were sold through PDS alone (so that $Q^p = S$, $S = S'$ and $P^c = P^m$), and if P^* equaled P', then both equation (1) and (2) converge. It would be instructive to be able to actually break down the total subsidies into the components as outlined in eqn. (1), but the empirical estimation must be preceded by the estimation of a hypothetical market price in the absence of the procurement and PDS operations. This requires specifying and estimating a full scale model of the foodgrain sector that is beyond the scope of this limited exercise.

[7] Strictly speaking, the entire C^a cannot be called a subsidy; only the excess over normal trading margin would be conceptually a part of the subsidy. However, since the government accounts count all the administrative costs as a part of the subsidy bill, we abstract from this distinction by what amounts to an admittedly unrealistic assumption that traders' margin equals zero, in the interest of conformity.

The purchase prices of the FCI are communicated to it through instructions from the government. The government notifies the prices at the harvest time taking into account the recommendations of the Committee on Agricultural Costs and Prices (CACP). CACP determines the minimum support price (MSP) to recommend broadly on the basis of cash costs, some imputed costs like wages of family labour and returns to owned capital, and an overall rate of return. In practice, the notified purchase prices have been consistently higher than the MSP recommended by the CACP in recent years.

An official committee also recommends the volume of buffer stocks to be maintained for the purposes of food security. This amount, plus the amount needed to run the PDS, constitutes the minimum operational stocks of the FCI. However, the purchases of the FCI are open-ended in that it has to accept all the grains that are sold to it at the declared purchase price. For several years now, the purchases of FCI have been much larger than the minimum required, resulting in mounting stocks. In principle, a similar system should be at work regarding several agricultural products and food items, but in practice, the system operates for only wheat and rice.[8]

PDS includes a huge network of exclusive retail outlets through which foodgrains are supplied to the consumers at the prescribed issue prices. From June 1997 the earlier universal and uniform subsidy system was changed into a targeted PDS (or TPDS), to make the greater part of the subsidies available to the poor. Consumers below the poverty line (BPL) paid a price lower than those above the poverty line (APL), and the quantity of foodgrains that the BPL families were entitled to was also higher than the APL families.

India is not unique in the matter of providing either producer subsidies or consumer subsidies. Such subsidies are publicly provided in several countries including the developed countries. Data from OECD countries on budgetary subsidies for agriculture and allied operations – producer and consumer subsidies taken together – taken as a ratio of GDP of the concerned countries (source: International Monetary Fund) indicate that the USA, the European Union, Canada, Australia, Mexico and Japan had subsidy levels of 7.6, 8.9, 5.2, 3.2, 4.9 and 0.4 per cent respectively for the period 2000-03 on an average. These numbers are not strictly comparable to the figures given in Table 3.1, but do indicate the fact that subsidy levels are fairly high in countries other than India, and in some cases, substantially higher in totality. Such high levels of subsidy in countries with large foodgrain surpluses make a mockery of free trade in foodgrains, and the international 'market' price. Further, any attempt to economise on food subsidies through cheap imports instead of large scale public procurement operations has the risk of discouraging domestic production, increasing reliance on imports and subsequent rise in import prices. In the present context, the policy of protecting the domestic farmers through the policy of tariff walls is probably unavoidable. Within the domestic market so segregated, however, the subsidies to producers need not be at the present levels and can be pegged back to some extent through rationalization of the relevant policies.

[8] There are some other schemes of smaller magnitude (in terms of current levels of expenditure) like the market support operations of NAFED and a scheme for subsidy to small and marginal plantations for insurance against product price fluctuations. While these schemes have the potential of snowballing into substantial burdens on the budget unless capped at a given level, the present report does not deal with these schemes.

Table 3.1: Growth of Food Subsidies in India

Year	Food Subsidy* (Rs crore)	Annual Growth (%)	As % of GDP
1990-91	2450	--	0.43
1991-92	2850	16.33	0.44
1992-93	2800	-1.75	0.37
1993-94	5537	97.75	0.64
1994-95	5100	-7.89	0.50
1995-96	5377	5.43	0.45
1996-97	6066	12.81	0.44
1997-98	7900	30.23	0.52
1998-99	9100	15.19	0.52
1999-00	9434	3.67	0.49
2000-01	12060	27.84	0.58
2001-02	17499	45.10	0.77
2002-03	24176	38.16	0.98
2003-04 (RE)	25800	6.72	0.93

* Other than that on sugar

Source: Budget documents, various issues, Economic Survey, 2003-04 and CSO.

3.2 Need for Reform: Some Issues

The primary motivation of reform originates from the fact that the food subsidy bill for the Government of India (GOI) is rising more or less continuously as a percentage of the GDP (Table 3.1). It rose from Rs. 6,066 crore in 1996-97 (0.44 per cent of the GDP) to more than Rs. 25,000 crore (0.91 per cent.) in 2003-04. The growth in food subsidy was particularly high during the period 2000-03, at about 35 per cent per annum on an average. The growth sharply decelerated in 2003-04 to about 4 per cent, but is expected to rise again by about 10 per cent in the current financial year. The size of the food subsidy bill has already reached a level that is a significant proportion of the total expenditures of the GOI, which is now under the fiscal constraints imposed by the Fiscal Responsibility and Budget Management Act (FRBM). While this does not necessarily imply that food subsidies must be reduced, it does provide an impetus to rationalize the entire system to reap maximum possible savings. It is also necessary to assess the benefits of the existing system to facilitate a choice between various possible combinations of expenditure programs; such a choice is a necessity for any government expenditure system working within an effective budget constraint.

The main benefits of food subsidies for the society as a whole relate to the resultant food security provided to the citizens, particularly the poor, through the availability of cheap foodgrains. Further, the system aims to continue providing incentives to the farmers to keep foodgrains production at a level that would be required to maintain food security for the country. Thus, a key aspect of the system is the consumer price: primarily the PDS issue price, but also the non-PDS price faced by those who either do not get the benefit of the PDS, or cannot meet their entire demand from the PDS. PDS prices, however, have risen by 66 and 61 percent (BPL price: wheat and rice respectively) between 1997-98 and 2003-04 (Table 3.2). During the same period general price level, represented by the consumer price index for agricultural labor, rose by 26 percent only. Offtake of wheat and rice together from the PDS declined from 17 million tonnes in 1997-98 to about 14 million

tonnes in 2001-02, even after inclusion of the offtake on account of the Antyodaya scheme run by the GOI from 2000-01. Sharp reductions in APL prices in 2001-02 and 2002-03 reversed this trend, but offtake is still less than a third of the allocations. Besides the price factor, and some restrictions on PDS access applicable to certain sections of APL consumers in some States, factors like poor quality of grains and shift in consumer preferences in favor of a more diversified dietary pattern were probably responsible for the low offtake compared to availability. There is some evidence for the claim that consumer subsidies are not as important as they used to be (Chand, 2003 and Virmani and Rajeev, 2001) barring specific groups of poor persons.

Table 3.2: Relative Rise in Issue Prices – 1997-98 to 2003-04

Year	Consumer Price Index (Agr Lab)	Cumulative rise (%)	Rise in Issue Price			
			Wheat (BPL)		Rice (BPL)	
			Price* (BPL)	Cumulative rise (%)	Price* (BPL)	Cumulative rise (%)
1997-98	264	--	250	--	350	--
1998-99	293	10.98	250	0.00	350	0.00
1999-00	306	15.91	250	0.00	350	0.00
2000-01	305	15.53	415	66.00	565	61.43
2001-02	309	17.05	415	66.00	565	61.43
2002-03	324	22.73	415	66.00	565	61.43
2003-04	332	25.76	415	66.00	565	61.43

Source: Basic data are from Economic Survey, 2003-04
* Prices are in Rs. per quintal.

A common strategy to reduce the burden of food subsidy without affecting the interests of the poor is to build in specific features that target the poor. The government made an explicit attempt at targeting in 1997-98 by introducing the Targeted PDS or TPDS. Despite this, there are indications that there are both inclusion and exclusion errors. The most recent complete evidence on this aspect is probably dated, as it relates to the year 1986-87, but is perhaps a good starting point. Parikh's (1994) detailed analysis brought out the startling conclusion that "for every rupee spent less than 22 paise reach the poor in all States, excepting in Goa, Daman and Diu where 28 paise reach the poor". A more recent study by Dutta and Ramaswamy (2002) estimated that only 25 percent and 32 percent of the food subsidies reach the targeted groups in Maharashtra and Andhra Pradesh respectively. On the other hand, there are wide disparities in PDS penetration in different States. States like Kerala and Tamil Nadu cover a large part of their population – both poor and non-poor – but in States like Bihar and Orissa having the largest percentage of poor in their population, the coverage of PDS is dismally small.

Table 3.3: Foodgrain Stocks Relative to Buffer Stock Norms: Wheat

Beginning of January	Minimum Norm	Actual Stock	Excess	Excess as % of Minimum Norm
1992	7.7	5.3	-2.4	-31.2
1993	7.7	3.3	-4.4	-57.1
1994	7.7	10.8	3.1	40.3
1995	7.7	12.9	5.2	67.5
1996	7.7	13.1	5.4	70.1
1997	7.7	7.1	-0.6	-7.8
1998	7.7	6.8	-0.9	-11.7
1999	8.4	12.7	4.3	51.2
2000	8.4	17.2	8.8	104.8
2001	8.4	25	16.6	197.6
2002	8.4	32.4	24	285.7
2003	8.4	28.8	20.4	242.9
2004	8.4	12.7	4.3	51.2

Source: (Basic Data): *Economic Survey, 2003-04* and earlier issues

Note: 1998 onwards, figures are provisional

Table 3.4: Foodgrain Stocks Relative to Buffer Stock Norms: Rice

Beginning of January	Minimum Norm	Actual Stock	Excess	Excess as % of Minimum Norm
1992	7.7	8.6	0.9	11.7
1993	7.7	8.5	0.8	10.4
1994	7.7	11.2	3.5	45.5
1995	7.7	17.4	9.7	126.0
1996	7.7	15.4	7.7	100.0
1997	7.7	12.9	5.2	67.5
1998	7.7	11.5	3.8	49.4
1999	8.4	11.7	3.3	39.3
2000	8.4	14.2	5.8	69.1
2001	8.4	20.7	12.3	146.4
2002	8.4	25.6	17.2	204.8
2003	8.4	19.4	11.0	131.0
2004	8.4	11.7	3.3	39.3

Source: (Basic Data): *Economic Survey, 2003-04* and earlier issues

Note: 1998 onwards, figures are provisional

In recent times, the paradox of mounting stocks of foodgrains (Tables 3.3 and 3.4) and reported starvation deaths have caused considerable anguish. Dreze (2001), for example, writes: "Today, foodgrain stocks are approaching 50 million tonnes. When millions of people are undernourished if not starving, hoarding food on this scale – at enormous cost – is nothing short of implicit mass murder". Stocks reached a peak of 63 m.t. in July 2002 (against a norm of 24 m.t.). In April 2004, the stocks were at 20 m.t. against a norm of 16 m.t. The reduction of the stocks, however, was not brought about by

increasing offtake, since offtake has been 20-22 m.t. less than allocation in the last two years. Large stocks of foodgrains raise the subsidy bill through the proportionately large handling and carrying costs along with losses. Besides, withdrawing such large quantities from the market also results in rising open market prices of foodgrains, neutralizing much of the consumer benefits that the subsidy may provide (Chand, 2003). As a matter of fact, in a series of desperate policy responses to run down the stock, the government even resorted to supplying grains to exporters at BPL prices, some of which actually found their way back to the domestic market (see *Outlook*, September 27, 2004). Durable means of controlling the growth of stocks has become a major imperative in the face of declining offtake.

There are severe regional imbalances in the operation of the entire food subsidy scheme. FCI's purchase operations are mainly confined to five areas – Punjab, Haryana, Western Uttar Pradesh, Andhra Pradesh and now Chhattisgarh. While this is dictated by overall availability of surpluses, distress sales by farmers in other states are not unknown. This happens mainly because of local gluts even within a situation of overall shortage. Thus, there is a case for widening the purchase net. The implication for the present policy of purchase is that farmers of only a few States get the entire farmers' subsidy. A large percentage of these farmers are not even poor; rural poverty in all these areas barring Chhattisgarh is relatively low. With respect to the consumer subsidy, as mentioned above, most of the Northern and Eastern States have poor penetration of PDS (failures of the State governments concerned), and thus do not benefit much from the subsidy.

Table 3.5: Minimum Support/Procurement Price of Wheat and Paddy

Crop Year	Wheat		Paddy (Common)	
	MSP (Rs. per quintal)	% Change	MSP (Rs. per quintal)	% Change
1995-96	380	5.6	360	5.9
1996-97	475	25.0	380	5.6
1997-98	510	7.4	415	9.2
1998-99	550	7.8	440	6.0
1999-00	580	5.5	490	11.4
2000-01	610	5.2	510	4.1
2001-02	620	1.6	530	3.9
2002-03	620*	--	530*	--
2003-04	630	1.6	550	3.8

Source: Economic Survey, 2003-04

* One time special drought relief of Rs 10/- and Rs 20/- per quintal of wheat and paddy was given over and above the MSP.

3.3 The major problems

Most of the detailed analyses of food subsidies in India agree on one aspect of the diagnosis: a large part of the recent problems can be squarely blamed on the relatively high MSPs offered by the government (Table 3.5). In recent years, MSPs announced by the government have been higher than those recommended by the CACP, which many analysts consider to be higher than necessary as it is.[9] Thus, the *minimum* support price has effectively become the *maximum* support price, which is sucking in almost the entire

[9] See, for example, "Rethinking MSP", accessible at:
http://www.indiareacts.com/archivesspecialreports/nat2.asp?recno=27&ctg=

marketable surplus in the markets where public purchases of foodgrains are being undertaken. This is exacerbated by the open-ended nature of the purchase operations. Given low offtake, the inevitable result is the build-up of stocks. Too large a stock results in higher incidentals, freight and storage costs and grain losses. The high purchase prices as well as the other costs result in a bloated food subsidy bill.

The overgenerous MSP has had several other negative fallouts. The first is the impact on foodgrain prices. Since the issue price and the purchase price is linked, higher purchase price results in higher issue prices. Further, as a large part of the marketed surplus gets into FCI godowns, the lower supply in the open market raises prices of foodgrains there as well. These effects directly contradict the avowed objective of providing food security to the citizens, since everyone except those farmers with substantial marketed surpluses of foodgrains are adversely affected (Sen, 2001). Second, the high MSP combined with open-ended purchases by FCI has practically killed private trade in foodgrains (Chand, 2003), where incidental and storage costs are lower. While private trade cannot match FCI in terms of the gigantic scale of operations and the ability to move foodgrains to every corner of the country, their role in keeping the local markets smoothly functioning cannot be minimized. Third, the exclusive attention to wheat and rice has distorted the cropping pattern of farmers in favor of these two foodgrains alone (Chand, 2003), supported by input subsidies like in power, irrigation and fertilizers. This has had adverse environmental impacts too that are now beginning to be apparent. Finally, the concentration of FCI purchases in just two foodgrains and a few States has facilitated tax exportation by some of these States. Although necessities like foodgrains are normally kept outside the tax net, Punjab and Haryana have imposed sales tax (there are also mandi fees) on the purchases of foodgrains, essentially because the tax gets exported to consumers in other States.

There are other problems that characterize the present system of food subsidies in India. Foremost among them is the problem of growing inefficiencies in the FCI that go to raise the subsidy bill. Since all costs of FCI are automatically reimbursed in the extant system, there is no incentive at all to raise efficiency and reduce costs. To be sure, as an agent of the government, they are subject to the usual audits, but such audits are poor substitutes for proper incentives for the purpose of generating economy in operating costs. There are also considerable leakages from the system. Occasional surveys reveal the extent of such leakages that arise from the arbitrage possibilities opened up by the gap between PDS prices and market prices.[10] Since the gap is larger in the case of BPL prices, the incentive to divert their quota is unfortunately the highest. In recent times, allocating grains for export purposes at BPL prices has also caused substantial leakages, as mentioned earlier.

3.4 Policy imperatives

There is a large body of literature that discusses in detail the pros and cons of the present food subsidy system and provides policy suggestions.[11] We have summarized above the major issues; this section similarly provides a set of policy recommendations distilled from the literature.

[10] See, for example, "Corruption Stink in PDS: Survey", accessible at: http://timesofindia.indiatimes.com//articleshow/msid-396809,prtpage-1.cms?

[11] The most detailed analysis in recent times has been that by the Committee on Long Term Grain Policy, chaired by Abhijit Sen.

To begin with, the most urgent and important policy imperative is to set more realistic MSPs, particularly with respect to wheat. In keeping with the nature of a *minimum support price*, the purchase prices should correspond to that price determined by the CACP, which includes all cash costs and imputed family labor costs, but not a rate of return. Since these estimates may vary across regions, a simple average of these costs should be used as the uniform purchase price. This would provide the necessary disincentive for high cost producers with no bias in the system in favor of existing concentration of purchase operations. Further, the purchase operations should not be open-ended. At every harvest time, procurement targets should be fixed on the basis of norms and a margin of error of about 10 percent. The FCI should have the flexibility of adding to these target quantities in specific markets in case overall procurements fall short of the target in other markets. Except for such cases, FCI should suspend purchase operations once targets are achieved.

By our reckoning, this should adequately meet the primary objective of providing security to the farmers, ultimately ensuring food security from the production side. To make doubly sure, a system of price insurance may be developed (similar to the Farm Income Insurance Program introduced recently on a pilot basis), taking care to make it self-financing and without any subsidy obligation. Such a program should be in line with the purchase operations with respect to the prices, and can operate in conjunction with the purchase operations to benefit those farmers who miss out the opportunity of selling their surplus at the support price because of the closed ended purchase operations.

There have been recommendations for decentralizing purchase operations currently handled by the FCI, for example by the Committee on Long Term Grain Policy. In fact, some decentralization has already taken place in that State level agencies undertake procurement operations on behalf of the FCI in some States. However, in general, States have expressed reservations about shouldering this responsibility, mainly because of the large liquidity requirements. A scheme of cash support to the States for this purpose has been mooted, but given widespread problems with State finances, diversion of this support for other purposes cannot be ruled out. Thus, in the short run, decentralization may not be a practical option. However, this cannot be ignored as a long run objective, since it is this measure that is expected to usher in greater efficiency in the purchase and distribution operations and also distribute the benefits of the price support operations more evenly across the country. Since it is impossible to decentralize unilaterally, it is not possible to fix a time frame. In fact, a more useful approach may be to work out the details of the scheme and announce it as soon as possible, allowing States to join in at their chosen time. There does not seem to be any great advantage in simultaneous decentralization everywhere. Once the farmers of non-participating States appreciate the benefits of joining in, the political process should ensure participation of a growing number of States. Eventually, the FCI should act only as a coordinating agency in the matter of procurement with important parameters like procurement prices and aggregate stock requirements provided by the Government of India (GOI). In the meantime, the FCI should include a greater number of States in their price support operations. Some of this direct intervention by FCI will probably remain even in the long run, but the scale should be much smaller than at present. Wherever possible, this should be done with the active involvement of the State machinery, as it is done in Punjab, for example. The blueprint of the detailed organization of this scheme should not be preconceived; rather, it should evolve out of discussions between the three parties involved, the GOI, FCI and at least the States

accounting for the major part of the production of rice and wheat. However, a basic element of the system should be payment of the subsidy by the GOI upon certification of conformity to guidelines by the FCI. In this scheme, The FCI would also carry out the important responsibilities of dividing the targeted procurement among States, administering the Central pool and undertaking all inter-State movement of foodgrains.

Further, the tendency for tax exportation needs to be curbed, by appropriate legislation, if necessary. Since it is easy to identify the States that indulge in this practice, it should also be possible to work out differential purchase prices for individual States based on the basic price and maximum allowed tax[12] on the price.

The FCI itself must not be reimbursed all it spends. There should be norms relating to the costs of the various tasks it performs, and the reimbursement should be based on the norms and physical quantities. This is the only way there will be an incentive for the FCI to maintain efficiency. The only other way to achieve this objective is to strictly monitor its operations. But given the scale of its operations and the spread, such monitoring will be an enormously expensive proposition. If some of the functions of FCI can be carried out by others, it would help to trim the presently unwieldy FCI. From this point of view, some innovations may be thought of. For example, actual delivery of grain may be postponed at the time of purchase, and a small mark-up on the purchase price may be allowed for this purpose. This will reduce the burden of storage on FCI. Active participation by private traders can also relieve the burden on FCI, but necessary institutional changes, including a revision of the concerned laws, are pre-requisites. However, norm-based reimbursement of costs, if ineffective as an incentive, can pose a problem of mounting losses in FCI that in the final analysis will be government liabilities. This knowledge itself can reduce the effectiveness of the policy. To counter this, the responsibility for losses will have to be put squarely on the personnel above a given level, with general cuts in staff payments and perquisites. To balance this, costs reduced below norm-based ones may be retained and distributed among the staff as annual bonus or any other mechanism deemed fit.

On the distribution side, the main challenges are to improve PDS penetration on the one hand, and to reduce leakages on the other. The former is the responsibility of the State governments, and barring moral suasion, the Centre can do little under the present system. However, a change in the present system itself may open up possibilities. For example, if PDS entitlements can be honored in any shop and not only in the PDS outlets, then penetration can increase dramatically. But the administration of such a system can be extremely difficult. One possibility is to introduce food coupons, which has been proposed in the latest budget of the GOI.[13] This is a method that has been tried in several other countries, but the verdict on its desirability is mixed. While authors like Swaminathan (2000) do not favor targeting in general and food stamps in particular, Ramaswamy (2004) offers an arguably more balanced assessment. While there are apprehensions about higher exclusion errors under a food stamp scheme, they do not appear to be well founded, since it only involves a change from ration cards to stamps, and not in the process of identifying the recipients. There are some genuine fears about counterfeiting, but the incentive to indulge in counterfeiting can be minimized through low denominations of stamps in terms

[12] The maximum allowed tax cannot be zero as long as inter-State sale of other commodities are taxable (through the Central Sales Tax or CST). A guiding principle here could be the maximum allowed normal tax rate under the CST Act, i.e., four percent. If and when the maximum CST rate is changed, similar changes should be made in the computation of the procurement price also.

[13] A detailed blueprint is available in Virmani and Rajeev (2001); they also propose an alternative tool of smart cards.

of entitlement. The obvious advantages would include greater role of private traders that should eventually help greater penetration and reduction of FCI costs at the same time, better targeting, and reduced lumpiness in food purchases that is a serious problem for the poor under the existing system. However, there is need to be cautious in the introduction of this system because of possible unforeseen difficulties in administering this at the massive scale that characterizes PDS. Perhaps a partial substitution (e.g., only the additional subsidy given to the poor) can be tried first, while persisting with the exclusive PDS outlets.

At present, the additional subsidy for the poor (i.e., for BPL families over and above that for APL) is Rs. 195 per quintal on wheat and Rs. 265 per quintal on rice. This implies that the BPL cardholders can be given stamps/coupons worth Rs. 1.95 per Kg of entitlement of wheat and Rs. 2.65 per Kg of their entitlement of rice.[14] The poor would then pay to the PDS outlet the same price as the APL families, but partly with coupons and the rest in cash. For the PDS outlet, there will be only one price, but it will be entitled to exchange the coupons collected for cash. This would be the first step in the introduction of food stamps, eliminating the dual price system for the PDS outlets without requiring the BPL households to buy the coupons. Once this system is introduced and is judged to be working out well, the next step would be to sell the coupons to the BPL families at the current prices for foodgrains applicable for them, and they will simply exchange coupons for their quota of foodgrains at the same PDS outlet, without any cash payment to the PDS outlet. The final step would then generalize the system to any foodgrains seller, and to all ration card holders. As long as there is a significant difference between the market price and the PDS issue price, in principle the PDS outlets should be able to continue. However, those that have indulged in large scale diversion of their quota of foodgrains are likely to lose their customers in the sense that their submissions of coupons for exchange will be small. This will provide a good test of the efficiency/ honesty of the individual PDS outlets. While it is expected that at this stage some PDS outlets will become unviable because of low consumer base and die a natural death, some screening based on the number of coupons submitted in relation to their consumer base would allow concerned authorities to close down a few more. Ultimately, this process would allow only those PDS outlets to continue that are consumer-friendly, and those should be allowed to continue. They would become redundant only when the entire system of PDS is dismantled, substituted fully by the food stamp system. That decision must be conditional upon the significance of the gap between market prices and issue prices at that stage, and cannot be foreseen with any degree of confidence at this point.

Targeting the poor has been also controversial. Several authors, including the Committtee on Long term Grain Policy, have recommended going back to a single price and universal subsidy. The main argument against the two-price PDS is that it provides arbitrage possibilities within the system; it is relatively easy to divert cheaper grains meant for the poor to the non-poor within the system. Further, targeting the poor can largely exclude the population of precisely those States where the penetration of PDS is high, bringing in regional inequity and a cessation of movement of grains from surplus States to shortfall States. The widespread malnutrition in India – far more widespread than poverty – has also been cited to support universal subsidy. However, a two-price system with food stamps for the poor only can bring about uniform prices for the seller. That can meet the

[14] It would be important to ensure that inflation does not erode the value of the food coupons; this has been a major problem with such systems internationally. Appropriate revision of the exchange value of the coupons can avoid the problem.

first objection. The other objection can be met by not confining the food subsidy scheme to the poor; it can continue as it is, with smaller subsidies for the non-poor, perhaps with some clearly identifiable exclusions pertaining to the upper income groups.

International evidence cited as arguments against the introduction of food stamps typically cite the examples of countries such as Sri Lanka, Jamaica and Mexico, and the drastic fall in the number of beneficiaries in these cases. The present situation in India is actually not comparable to these because (a) in all the above cases, the major objective was to reduce consumer subsidies, while in the present case, the objective is mainly to reduce leakages and administrative costs without any reduction in actual consumer subsidies, and (b) unlike in the above cases where targeting was tightened along with the introduction of food stamps, the system of identification of the poor is not proposed to be changed. In fact, more relevant case studies would be those of Andhra Pradesh and Tamil Nadu, where food stamps were introduced and then recently withdrawn, reportedly as a result of popular dislike. However, who exactly were the losers due to the introduction of food stamps is not clear, and the political economy of these decisions has not been explored. A detailed examination of these experiences and exactly what went wrong could be helpful in taking a decision regarding the introduction of the system at this juncture. Unfortunately, this is beyond the scope of the present study.

An option that can at least conceptually be considered is that of providing cash subsidy to the identified poor, equivalent to the effective consumer subsidy for them. While this may reduce the transaction costs considerably, the primary objective may not be met to the extent it is met under even the present system. In general, this will be due to the fact that a subsidy has a substitution effect as well as an income effect, the expected net impact being a greater consumption of the subsidized commodity. In the case of an income transfer, only the income effect will operate, which is not expected to raise the consumption by the same amount. To achieve the same increase in consumption, the cost to the exchequer will have to be larger than the consumer subsidy on foodgrains.

Finally, it should be noted that the PDS has no self-targeting characteristic in its present form, except that the poor quality of the grains distributed may drive away the non-poor. This is hardly the type of self-targeting that one would advocate. It is important to maintain quality of grains under all circumstances, and this should be applicable to the purchases too. However, self-targeting could be brought in by subsidizing coarse grains consumed generally by the poor only. The difficulty with this is that no national policy with respect to an identified (and manageably small) set of grains can be suggested because of the diversity among States in this respect (Ramaswamy, 2004). Two other measures which may encourage self-targeting are:

(i) locating of PDS shops in areas where poor live and

(ii) allowing/restricting PDS grain purchases on a weekly basis rather than monthly basis. Often the very poor cannot afford purchase of monthly requirements in one go. On the other hand restricting bulk purchases will discourage the non-needy from PDS purchase.

An alternative way of building in self-targeting is through programs like ‘food-for-work’. These can be more effective targeting instruments, and need to be given due

emphasis. But, being essentially meant for able-bodied poor, such programs should be supplemented by other programs for the poor that cannot work, e.g., the old and the infirm, pregnant women, poor children and the destitute.

Chapter 4

Fertilizer Subsidies

4.1 Introduction

The objective of agricultural subsidies was to provide modern agricultural inputs like improved seeds, fertilizers and pesticides at reasonable cost to small and marginal farmers so that incomes, productivity and jobs in the rural areas can be increased. It was supposed that these input subsidies would help in holding the prices of agricultural outputs within a reasonable level, as the support/procurement prices are cost based, so that the interests of the consumers are protected. Over a period of time, the burden of fertilizer subsidies has ballooned. The fertilizer subsidies, combined with other input subsidies, account for about $ 15 billion a year whereas the combined public and private capital formation in agricultural sector amounts to less than $ 4 billion a year (Landes and Gulati, 2004). It is quite possible that such high outlays on subsidies are crowding out new investment in agriculture needed to boost productivity and efficiency. To understand whether the fertilizer subsidies are meeting their desired objectives, the following issues should be addressed:

(i) Who the actual beneficiaries are of the present fertilizer subsidy regime – farmers or the fertilizer industry, and where the burden of adjustment would fall if the government phases out the fertilizer subsidy.
(ii) How urea manufacturing would be affected from the abolishing of existing pricing system and decanalization of urea imports.
(iii) What would be the impact of phasing out of fertilizer subsidy on agricultural production.

The present chapter is organized as follows. The following section presents the existing fertilizer pricing policy. Section 4.3 discusses the magnitude of fertilizer subsidy burden and who the beneficiaries are of the present policy. Section 4.4 analyzes the likely implications of phasing out of fertilizer subsidies for Indian urea industry. Section 4.5 describes the possible impact of phasing out fertilizer subsidy on agricultural production. Section 4.6 discusses the experience of Bangladesh in the liberalization of the fertilizer sector. Section 4.7 concludes the chapter.

4.2 Existing Fertilizer Pricing Policy

In order to control the fluctuations in fertilizers prices, the Government of India regulates this market through a pricing system known as Retention Pricing Scheme (RPS). The RPS was first introduced for nitrogenous fertilizers in November 1977. This was extended to complex fertilizers in February 1979. The RPS is essentially a cost plus approach with some norms for capacity utilization and conversion coefficients. The plant specific retention prices (RP) are revised every quarter so that price increases in plant inputs can be taken into account. The retail price of fertilizers is fixed and is uniform throughout the country. The difference between the retention price (adjusted for freight and dealer's margin) and the price at which the fertilizers are provided to the farmer is paid back to the manufacturer as subsidy. Transportation costs are also compensated based on equated freight computed on a normative basis.

The consumption of fertilizers trebled from 6.06 million tonnes in 1981-82 to 18.07 million tonnes in 1999-00, declining marginally to 17.5 million tonnes in 2003-04 (Table A4.1). The growth rate of fertilizer consumption at 5.83 per cent per annum during the decade of the 1990s was however, significantly lower than that in the 1980 (8.4 per cent per annum). While the consumption of fertilizers was bolstered, the subsidy bill also skyrocketed.

The fertilizer subsidy bill has ballooned from a mere Rs 500 crore in 1980-81 to more than Rs. 6000 crore by mid nineties and to Rs. 12662 crore (BE) in 2004-05. The RPS has generally been considered to be the harbinger of the exploding fertilizer subsidy bill. Further, it has left the fertilizer producers with little incentive to raise efficiency. The scheme has also been unable to exercise control over the practice of understating plant capacities, thus allowing plants to claim excess subsidy by misreporting (inflating) utilization levels. Therefore, it would be inappropriate to refer the fertilizer subsidy as purely a farmer's subsidy as it is benefiting (and protecting) the inefficient in the fertilizer industry also.

It was only in the aftermath of the economic crisis of 1991 that any serious attempt was made to reform RPS with a view to rationalize the fertilizer subsidies. However, even prior to this, several committees had been periodically suggesting the reform of the RPS, but nothing concrete emerged during the 1980s. Government decontrolled the imports of complex fertilizers such as di-ammonium phosphate (DAP) and muriate of potash (MOP) in 1992 and extended a flat rate concession on these fertilizers. The flat rate concession on indigenous DAP was Rs. 3254 per tonne and on imported DAP, this was Rs. 2134 per tonne in the year 2003-04 (Times of India, September 9, 2004). The concession rate for MOP during this time was Rs. 2800 per tonne. It shows that the flat rate concession benefiting indigenous DAP manufacturers has been much higher than those for importers of DAP. But urea imports continue to be restricted and canalized. Thus, flat rate concessions are provided on imported and indigenous fertilizers on the one hand while on the other hand urea is subsidized under the umbrella of RPS.

The Government of India constituted a high-powered committee to review the existing RPS and suggest a new pricing policy for urea under the chairmanship of C. H. Hanumantha Rao in January 1997. The committee found that the existing unit-wise RPS conceals producer inefficiencies substantially. The committee recommended a Normative Referral Price (NRP) system in place of RPS. Under the NRP system the price of urea is to be determined on the basis of long run average cost (LRAC), which is the long run marginal cost (LRMC) of the industry. It was assumed that the uniform NRP based on LRMC would bring competition in the industry, improve energy efficiency and reduce the fertilizer subsidy bill. The committee was also in favour of deregulation of fertilizer industry. According to Gulati and Narayanan (2003) however, even if all the recommendations of the committee were implemented, they would reduce the subsidy burden by merely Rs. 485 crore.

In 2000, the Expenditure Reforms Commission (ERC) submitted its report on fertilizer subsidies. The ERC has suggested phasing out of the unit-wise RPS in four stages over a period of six years and its replacement with the group concession scheme.

The new urea pricing policy for the industry suggested by the ERC came into effect from 1 April 2003. The new scheme is to be implemented in three stages. The first stage was to be from 1 April 2003 to 31 March 2004 with the second stage of two years from 1 April 2004 to 31 March 2006. The modalities for the third stage were to be decided after reviewing the implementation of the earlier two stages. In the new pricing policy, there would be six groups based on vintage and feedstock for determining the concession for the respective groups. These would comprise pre- and post-1992 gas based units, pre- and post-1992 naphtha based units, fuel oil or low sulfur heavy stock based units and mixed energy based units. The mixed energy based units would include gas-based units that use alternative feedstock or fuel, up to 25 per cent on 1 April 2002. The concession rates were to be determined in two steps. In the first, the weighted average retention price and dealer's margin of the units in various groups were to be computed as on 1 April 2002. Units having exceptionally high or low retention price with a deviation of 20 per cent were to be treated as outliers in their respective groups. In the second step, the final weighted average group retention price, after excluding outliers, were to be computed. After the commencement of stage I, no reimbursements of investment were to be made for improving operations or mopping up of gains due to operational efficiency. Moreover, under the new scheme, there would be no capping on production of urea and the use or sale of by-products such as ammonia was also to be permitted.

The Group Retention Pricing (GRP) recommended by the ERC was also recommended by several other committees in the past. Unfortunately, the GRP suffers from almost all the deficiencies of RPS and inhibits technological and managerial innovations and adoptions.

4.3 Magnitude of Fertilizer Subsidy: The Beneficiaries

As a percentage of GDP, the fertilizer subsidy expanded from 0.23 percent in early 1980s to a peak of 0.93 percent in 1989-90. Then it started to decline and was 0.77 percent of GDP in 1990-91. It further declined to 0.53 percent of the GDP in 1993-94 and then reversed its trend. It had reached almost 0.68 percent of the GDP in 1999-2000 but has declined since and was estimated at 0.43 percent of the GDP in 2003-04. In absolute figures, the quantum of fertilizer subsidies is however increasing at an alarming rate. With the fertilizer subsidy at around Rs. 12662 crore in 2004-05 (BE), it is imperative to look at the story behind these numbers before any attempt is made to assess the subsidy regime.

The Beneficiaries of Fertilizer Subsidy

The huge burden of fertilizer subsidy has given rise to considerable debate in the literature on whether these subsidies are going to farmers or to fertilizer industry or to someone else, in a way that cannot be easily observed. Gulati and Narayanan (2003) examine this issue of incidence. They analyze the issue by posing a counterfactual: if there were free trade of fertilizer, what would have been paid by the farmers for the imported fertilizers? This requires estimation of farm-gate costs of imported fertilizers, comprising of the c.i.f. price, dealers' margin and all the handling expenses (marketing and transportation) from the ship to the market from where the farmer buys fertilizers. The difference of the counterfactual price of plausibly imported fertilizers with the price that the farmers actually pay would provide an idea of the implicit subsidy that the farmers' group is receiving. In other words, the difference between the hypothetical farm-gate cost of imported fertilizers and the actual price paid by the farm, multiplied by the quantity of

fertilizers consumed is the value of fertilizer subsidy accruing to the farmers. The difference between the government's allocation under fertilizer subsidy and the plausible subsidy received by the farmers would be the share of subsidy to the industry (which may also be interpreted as the inefficiency cost of domestic production of fertilizers).

Table 4.1 provides the estimates of fertilizer subsidy going to farmers and the industry. These results reveal that the industry share in central government fertilizer subsidy decreased from 75.46 percent in the triennium average ending (TE) 1983-84 to 24.38 percent in TE 1992-93 and later declining to –27.83% in TE 1995-96. A negative estimate in this context indicates that the fertilizer industry was being implicitly taxed. This was because the import parity prices were so high during these years that if the fertilizer industry were selling fertilizer at the import parity prices, it would have earned higher profits. This implicit taxation of the fertilizer industry disappeared thereafter. By TE 1998-99, the farmers' share had declined to 90 percent and in 1999-2000, the farmers' share was only 46 percent of the central government fertilizer subsidy bill. The reason was the decline in the import parity price of fertilizer. As the import parity prices of the fertilizer were fluctuating during 2000-01 to 2002-03, the share of farmers in fertilizer subsidy was between 49 and 64 percent of the budgeted amount. Overall, for the entire period of 1981-82 to 2002-03, the share of farmers in central government fertilizer subsidy was 62 percent and the industry's share was 38 percent with some fluctuations.

Table A4.2 provides estimates of the Nominal Protection Coefficients (NPCs) of fertilizers; here it may be noted that except in 1986-87, the weighted average of NPCs of N, P and K fertilizers always remained below unity. This indicates that the farmers faced a lower (domestic) price than what they would have paid under free trade. The trend in NPCs reveals that the weighted average NPC for the 1980s was higher than that in the 1990s, corroborating that the farmers were indeed subsidized to a greater extent during the 1990s than they were in the 1980s. These estimates are based on certain assumptions[15] regarding the exchange rate, India's position in world fertilizer market, subsidized feedstock market and ruling prices for the agricultural output etc. The assumptions, in brief, are these:

(i) The official exchange rate has been used in the calculations of c.i.f. prices.
(ii) India's entry into the world market as an importer of fertilizers would not have affected the world prices.

[15] For the details of these assumptions see Gulati and Narayanan (2003).

Table 4.1: Farmers' Share in Fertilizer Subsidy

Particulars	TE '83-4	TE '86-7	TE '89-90	TE '92-3	TE '95-6	TE 98-9	TE 99-00	TE 00-01	TE 01-02	TE 02-03	1999-00	2000-01	2001-02	2002-03	Average of triennium averages
Per tonne subsidy going to farmers on import parity basis															
Urea (Rs/tonne)	258	590	700	2002	3669	3033	1936	1800	1932	3049	1098	2269	2430	4450	
DAP (Rs/tonne)	-347	243	93	231	-562	1701	2441	2201	1651	1669	2330	1128	1495	2383	
MOP (Rs/tonne)	438	512	1037	1212	786	2639	3516	3857	3913	3815	4042	3885	3811	3750	
Total subsidy on (N+P+K) (Rs crore) (*per tonne subsidy X consumption)*	165.4	842.4	1761.6	3777.2	6977.9	8702.9	7531.7	7520.9	6820.1	6852.3	6121.8	8126.6	6211.9	6218.5	
Fertilizer subsidy as given in the budget (Rs crore)	674	1916	3318.7	4995	5458.7	9697.3	11586	12497	12830	12085	13244	12651	12595	11009	
Share of budgetary subsidy going to farmers (%)	24.54	43.97	53.08	75.62	127.83	89.75	65.01	60.18	53.26	56.68	46.22	64.24	49.32	56.49	61.87

Notes: (i) Average refers to the period 1981-2 to 2000-1.
(ii) TE '83-4 is triennium average ending 1983-4 and so on.

Source: Gulati and Narayanan (2003) upto 2001 and updated onwards by authors.

4.4 Phasing out of Fertilizer Subsidy and its likely Impact on Urea Industry

Presently, urea is the only fertilizer material that is under the retention price scheme; therefore, any discussion of rationalization of fertilizer subsidy should primarily address the urea industry. Here it should also be noted that although the import cost of urea per unit basis was considered competitive, the Indian policy of transparent tendering system for urea imports always demonstrated a urea price hike on the international market, whenever India entered its bid. The international fertilizer prices are determined more by the demand and supply situation, than by production costs. The cost competitiveness of urea units in a deregulated scenario for imports is a function of two factors – the domestic cost of production and the international price of urea. This section will discuss the competitiveness of Indian urea industry on the basis of economic costs of production and thereby the issue of self-sufficiency of the country in this sector.

An important reason for the high cost of domestic production in India is that a significant proportion of domestic capacity is naphtha or fuel-oil/LSHS based. The cost of these feedstocks is much higher than natural gas. Since raw material and power and fuel costs form around 64% of the sales revenues of the Indian fertilizer industry, higher feedstock costs seriously undermine the cost competitiveness of domestic manufacturers. Therefore, there is some emphasis on a shift to cheaper options like liquefied natural gas (LNG). The natural gas resources in India are limited. However, the liberalization in the exploration of natural gas has paid dividends and significant gas reserves have been discovered in Krishna-Godavari Basin, estimated at 7 trillion cu. Ft and projected price of around US$ 3 per MMBTU. This is going to encourage setting up of new urea plants based on indigenous natural gas.

According to U. S. Awasthi of IFFCO, a grassroots fertilizer project in India having 1750 tpd and 3000 tpd capacity of ammonia and urea plants respectively is expected to cost Rs. 19 billion. This can compete with imported urea price of US$ 110/tonne without any custom duty provided natural gas price at coastal location is US$ 2.5/MMBTU and for inland location it could be US$ 3/MMBTU inclusive of transportation cost.[16]

The price of urea in the international market fluctuates between a figure as low as US$ 70/tonne to around US$ 200/tonne and usually hovers at around US$ 150/tonne. Given the cost structure of 1990s, about 66, 57 and 41 percent segment of the urea industry become economically unviable at US$ 140, 160 and 180/tonne respectively (Gulati and Narayanan, 2003). The feedstock wise comparison of retention prices with the import parity price suggests that in the event of opening up of the fertilizer sector to imports, the gas based plants would survive, whereas the others, particularly the naphtha based plants would not (Gulati and Narayanan, 2003).

Here the question is whether the computation of retention price is based on the concept of economic costs of urea production. The present procedure of computation of retention price suffers from two problems:

[16] http://www.iffco.nic.in/applications/Brihanspat.nsf/o/f3677f128c6203a665256c94001de046/$file/fai_seminar.pdf

(i) The retention prices are based on the assessed level of production and do not reflect the cost profile of the production units (C. H. Hanumantha Rao Committee).
(ii) The issue of feedstock pricing (Gulati and Narayanan).

The assessed level of production of a unit is the capacity at which the units recover their costs. This capacity is derived from the total ammonia availability, and consumption norm of ammonia per tonne of urea. The Hanumantha Rao Committee re-computed the retention prices on the basis of actual average production of the preceding three years (1994-96). These re-estimated retention prices were 13 percent lower for gas based units, 22 percent lower for naphtha based units and 18 percent lower for FO based units than what were worked out under the RPS formula in the urea industry. Moreover, the Committee argues that if one takes these re-estimated retention prices as the relevant costs, then about 80 percent of the production would be economically viable at import parity price of US$ 151/tonne. It may be noted that in that exercise the Committee used the administered market prices of feedstock rather than economic prices.

Gulati and Narayanan used the 'opportunity cost' principle for pricing of feedstock to convert the financial costs of urea production by each plant into its economic costs. They computed the resource costs for all the urea plants in the country as of 1996. They found that the gas based plants that were considered to be low cost turned out to be higher cost plants when resource cost is considered. This was because resource cost adjusts for the concessional pricing of the feedstock gas which the retention prices do not. It was observed that 68 percent of actual production was economically viable at the import parity price of US$ 180/tonne of urea. It indicates that with the decanalization of urea imports, at the import parity price of US$ 180/tonne, almost 32 percent of urea production would not be able to compete unless costs are reduced.

Therefore, to determine the competitiveness of Indian urea industry vis-à-vis import of urea both the issues of assessed production capacity and economic costs of feedstock should be investigated simultaneously. However, a one shot decontrol can impart a heavy blow to the urea industry. About one third of the existing urea production may be knocked off at an import parity price of US$ 180/tonne, if the existing structure of capital costs is taken at its face value. If interest of the industry is to be kept in mind, for the sake of self-sufficiency, an appropriate flat rate subsidy explicit to industry may have to be given. The level of this flat rate subsidy would depend upon the degree of 'self-sufficiency' the policy makers are aiming at (Gulati and Narayanan, 2003).

4.5 Phasing out of Fertilizer Subsidy and its likely Impact on Foodgrain Production

From the above discussion of the burden of fertilizer subsidies and its likely beneficiaries, it can be inferred that more than one third of the total fertilizer subsidy bill actually goes to benefit the fertilizer industry. Therefore, the obvious question to ask is: if the Government of India were to phase out the fertilizer subsidy, then how would it affect the output of foodgrains? Given that the price elasticity of fertilizer demand has been estimated at –0.3, the demand for urea may drop sharply from its existing level of consumption (at 18 million tonnes) if, *ceteris*

paribus, the prices of urea were doubled.[17] Assuming the response function of grain to N of 4:1, it would imply a loss of about 10 million tonnes of foodgrain output (Gulati and Narayanan, 2003). The ERC also estimated that an increase in farm-gate price of urea to import parity price without an increase in procurement price would lead to a fall in foodgrain production of about 13.5 million tonnes.[18] These estimates of decline in foodgrain production are based on the condition that other things remain constant. However, they would not remain the same. These aspects need special attention.

First, some studies, for example Desai (1986), have shown that fertilizer use and application in India is more dependent on technological and non-price factors in comparison to price or agro-economic variables. These factors include irrigation facilities and availability, cropping pattern, spread of high yielding varieties (HYVs), the extent of development in fertilizer distribution facilities and availability of credit facilities. Irrigation is the strongest factor affecting the use of fertilizers and thus has a very significant impact on foodgrain production. This would therefore also help minimize loss of output due to decontrol of fertilizer prices. Variation in such non-price factors explains why despite fertilizer prices being uniform across the country, its use and adoption has varied substantially across different regions. This implies that a reduction in subsidy effected through an increase in urea prices may not translate into lower production through declines in fertilizer use, particularly if the non-price factors are conducive to fertilizer use.

Second, if fertilizer use and application were responsive to fertilizer prices, then the most significant aspect to change would be the consumption composition of N, P and K. The role of balanced nutrients cannot be overemphasized. In the past, fertilizer pricing has induced a highly deviant use of N, P and K components as compared to their prescribed norms. In 2003-04 the N, P and K ratio is estimated to be 6.5:2.5:1 as against 10:2.9:1 in 1996-97 (Table 4.2), whereas the desirable ratio is 4:2:1. It is possible that the correction in prices would encourage a balanced application of fertilizers. In fact, the increase in foodgrain production due to favourable mix of fertilizer nutrients could well be in excess of any reduction in foodgrain production that a negative price elasticity of demand in partial equilibrium analysis might indicate (Desai and Vaidyanathan, 1995).

[17] The Gulati and Narayanan (2003) estimates are based on following assumption: if one adds about Rs. 1000 to the import parity price of Rs. 6400/tonne ($ 160/tonne @ $1 = Rs. 40 in 1996-97), and Rs. 600/tonne to domestically produced urea, then the equilibrium farm gate price works out to be Rs. 7400/tonne.

[18] The estimates of the Expenditure Reforms Commission are based on these assumptions: A c.i.f. price of urea at $ 165/tonne @ Rs. 46/$ in first week of August 2000 plus handling and distribution cost of Rs. 1100.tonne, and fertilizer use elasticity of –0.3. A decline in urea consumption of 5.4 million tonnes would result, leading to a decline in foodgrain production.

Table 4.2: Consumption of Fertilizers

('000 tonnes of nutrients)

Years	N	P	K
1960-61	7.2	1.8	1.0
1970-71	6.5	2.0	1.0
1980-81	5.9	1.9	1.0
1990-91	6.0	2.4	1.0
1995-96	8.5	2.5	1.0
1996-97	10.0	2.9	1.0
1997-98	7.9	2.9	1.0
1998-99	8.5	3.1	1.0
1999-00	6.9	2.9	1.0
2000-01	7.0	2.7	1.0
2001-02	6.5	2.7	1.0
2002-03	6.5	2.5	1.0
2003-04	6.5	2.5	1.0

Source: *Economic Survey 2003-04*

Third, since the procurement prices are cost-based, it is possible that increase in procurement prices would also partially offset the negative impact of fertilizer price increase on foodgrain production. It depends upon (a) the share of fertilizer cost in gross revenue and (b) the ratio of marketed surplus to production. Gulati and Narayanan (2003) estimated that procurement prices would increase by 28 percent if the negative impact of increased fertilizer prices were to be offset. Obviously, such high increase in procurement price has serious implications for foodgrains stock management. Given the high foodgrains stock with government procurement agencies in recent years, large increases in procurement prices may be quite inconceivable. Under such circumstances, an alternative could be to distribute fertilizers to targeted cultivator households alone (small and marginal) in the form of tradable coupons.[19] The tradable coupons would protect even farmers with negligible marketable surplus. By distributing 120 kgs of fertilizers at subsidized prices (NPK in the ratio of 8:3:1) in the form of tradable coupons to all cultivator households, the poor and marginal farmers who would not need the fertilizer allotted to them could trade their coupons (Government of India, 2000).

Fertilizer Subsidy versus Public Investment in Agriculture

To find the implications of fertilizer subsidy versus public investment in agriculture, we utilize the results of a computable general equilibrium (CGE) model used by Storm (1994). Storm prepared the CGE model for India's Seventh Plan period. The model has nine sectors; of these, five are agricultural (rice, wheat, other food crops, commercial crops and other agriculture), one represents suppliers of fertilizer, two are industrial (consumer and basic industries) and one represents the service sector. Static (one period) and inter-temporal (multi-period) simulations are generated. In the case of multi-period simulations, inter-temporal adjustment takes place through non-agricultural investment, investment in irrigation, adaptive

[19] For the details of the impact of the introduction of tradable coupons scheme on production, marketable surplus etc, see Government of India (2000).

(Nerlovian) adjustment of area allocation among crops, and indexation of non-agricultural wages.

In the model, three income categories, viz., agricultural income, non-agricultural wage income and non-agricultural mark-up income are distinguished, respectively to three economic agents, viz., farmers, non-agricultural wage earners and non-agricultural profit earners, who have different behaviour patterns such as propensity to save and different partial controls over the system.

Separate private investment demand functions are specified for agricultural and manufacturing. Private agricultural investment in real terms responds positively to terms of trade between agriculture and manufacturing, as also public investment, with one-year lag. Public investment and its allocation are treated as policy variables. Exports and competitive imports are treated as exogenous.

Table 4.3: Annual Marginal Returns per Rupee Expenditure (in constant prices)*

(Rs.)

	Increase in Income and Output Due to One Extra Rupee of Public Expenditure on		
	Public Agricultural Investment	**Fertilizer Subsidization**	**Public Foodgrain Procurement**
Short run			
GDP at factor cost	1.52	3.63	0.86
Agricultural Income	1.53	1.27	3.17
Non-agricultural wage income	-0.16	1.16	-1.34
Non-agricultural mark-up income	0.45	1.16	-0.41
Revenue public enterprises	-0.29	0.04	-0.55
Rice production	0.03	0.37	0.21
Wheat production	0.03	0.35	0.28
Other food production	0.01	0.07	0.01
Commercial crop production	0.05	0.57	0.05
Medium run			
GDP at factor cost	5.28	3.14	3.58
Agricultural Income	2.85	0.30	5.73
Non-agricultural wage income	1.22	1.37	-0.96
Non-agricultural mark-up income	2.30	0.90	1.18
Revenue public enterprises	-1.08	0.57	-2.36
Rice production	0.37	0.34	0.40
Wheat production	0.25	0.30	0.53
Other food production	0.02	0.08	0.01
Commercial crop production	0.62	0.65	0.12

*Marginal returns are expressed in constant prices, with base year 1985-86.
Source: Storm (1994)

The most interesting aspect of Storm's analysis is that of the estimation of the annual marginal returns per rupee of public expenditure through different policy channels (Table 4.3). An additional rupee allocated to public agricultural investment would have generated extra real GDP at factor cost worth Rs. 5.3 per year on an average during the period 1985-89. It can also be seen that, although an extra rupee spent on fertilizer subsidization does have the highest aggregate cost-benefit ratio in the short run, its marginal returns decline in the medium run. In contrast, the marginal returns to increased public procurement are significantly larger in the

medium than in the short run. Table 4.3 also shows the income-distributional implications of each of the three policy alternatives. The marginal returns to an extra rupee allocated to public procurement largely accrue to agriculturalists, while its marginal returns are negative for non-agricultural wage earners and public enterprises – both in the short and the medium run. This result underlines the important distributional consequences of higher procurement prices and fertilizer subsidies. Table 4.3 also gives a clear indication of the differential impact of agricultural policies across crops, both in the short and medium run. In the short run, for all crops, the marginal returns to an increase in fertilizer subsidization are considerably larger than those to the other public expenditure policy options considered. In the medium run, however, the returns to increased fertilizer subsidization are more or less comparable to those of increased public investment. For rice and wheat (the most price-responsive crops), the medium-run marginal returns are largest for a rise in public procurement. Finally, for all three policies considered, the marginal returns are lowest in other food crops. This finding is not surprising in view of the sector's relatively low price responsiveness and low irrigation coverage.

In terms of growth, public investment in irrigation thus proves more effective than the instruments of price policy considered in the analysis. This is because, given the relatively small price elasticities of fertilizer demand and the relatively limited response of yield levels to fertilizer input, higher agricultural prices tend to have a larger effect on demand (via increased agricultural income) than on crop outputs and, hence, lead to economy-wide inflation. This, in turn, reduces demand for non-agricultural goods and hinders non-agricultural output and income growth. To be more effective, any attempt at raising medium-run agricultural growth should aim at raising the sector's price responsiveness, which requires changing the structural conditions for agricultural growth. This often suggests, as the results indicate, an expanded program of public agricultural investment, particularly in irrigation.

4.6 Experience of Bangladesh

The experience of Bangladesh in the liberalization of agricultural inputs provides some interesting lessons for developing countries. The market liberalization measures in agriculture in Bangladesh made a significant contribution in achieving remarkable success in emerging as a marginally self-sufficient producer of rice. The chronology of reforms in the agricultural input markets is presented in Table 4.4. Liberalization of fertilizer and the irrigation equipment markets was the dominant feature of the reform that produced a substantial impact on production. Throughout the entire process of reform, a carefully designed mechanism of monitoring was working to identify emerging problems and solve them in time.

Table 4.4: Step-by-step Liberalization of Agricultural Input Markets, Bangladesh

Actions	Time Span	Remarks
(A) Fertiliser market		
1. BADC withdrew from retail and wholesale markets at Thana levels, the primary distribution points	1978-1983	This was done at Chittagong Division first. Vigorous response from traders
2. Licensing requirement was abolished and restriction on movement removed (except 5 mile border zones with India)	1982-1983	
3. Deregulation of fertilizer price	1982-1984	Real competition started
4. Allowing private traders direct purchase from factory gates and port points	1989	Vigorous response from traders
5. Free import from world market	1992	Good response, but fear of oligopoly persists
(B) Irrigation devices		
1. BADC sold all its low-lift pumps to private parties backed by special credit arrangements for purchases	1980-1982	Good response from farmers
2. BADC sold all its tube-wells for irrigation for farmers and cooperatives; sale supported by special credit arrangements for purchasers	1983-1985	Good response from farmers
3. Restriction on import of engines and pumps withdrawn	1988	Drastic fall in prices of engines
4. Standardization restrictions limiting makes and models removed	1988	Drastic fall in prices of engines
(C) Power tillers, pesticides, and seeds		
1. Restriction on power tiller import and standardization requirement removed	1989	Modest response
2. Restriction on import by brand names liberalized for pesticides	# 1989	Modest response
3. Except rice and wheat, all seed import liberalized	1990	Modest response

Source: Ahmed, 1995

Ahmed (1995) carried out an analysis of the impact of liberalization of agricultural inputs market in Bangladesh and found that the impact of liberalization on fertilizer consumption and irrigated area was positive. This positive impact on irrigation and fertilizer in turn resulted in a positive impact on rice production. In Bangladesh the process of liberalization of agricultural inputs markets started in 1984-85 and completed by 1992-93. Table 4.5 demonstrates the impact of liberalization process.

Table 4.5: Annual Rate of Change (%) in Variables of the Model

Variable	Period 1 1975-1984	Period 2 1985-1992
Rice production	2.09	3.19
Rice area irrigated	5.42	20.49
Dry land rice area	0.12	-3.85
Rice price (nominal)	11.52	3.76
General price index	10.43	6.97
Fertilizer price (retail)	15.69	0.58
Fertilizer price (factory-gate)	14.69	4.42
Fertilizer price (world)	4.67	0.23
Fertilizer consumption	9.0	10.04
Diesel price	20.14	1.31
Short-term credit	28.83	-7.0
Long-term credit	52.67	19.98
Public expenditure on water control	16.57	9.12

Source: Ahmed, 1995

Ahmed (1995) also analyzed the net effect of the input market reforms, defined as the difference between the scenarios with and without reforms for the year 1992-93, as presented in Table 4.6. Liberalization of the agricultural input markets of Bangladesh could be credited with the remarkable success in rice production. It was estimated that the production of rice could had been 20-32% lower than the level of 1992-93, depending on the rice price that would had prevailed under alternative scenarios. The the lower bound of this range of the estimated impact of market reform related to a real rice price level 19% higher that the actual 1992-93 prices. The the upper bound related to the actual 1992-93 price levels. The lower contribution of reform (20%) to increased production implied a loss to consumers not accounted in the production benefit of reform while the higher contribution of reform entailed no loss to consumers. The bottom line conclusion is that Bangladesh, without the market reforms would have reverted back to the situation of regular food crisis and high prices, as was the case historically (Ahmed, 1995).

Table 4.6: Estimated Production of Rice and Use of Inputs, 1992/1993

	Reform status	Production (1000 tons)	Use of fertiliser (1000 tons)	Irrigated area (1000 acres)
(a)	With market reform	18388	2,594	6,208
(b)	Without market reform (version 1)	13938	1,526	3,728
(c)	Without market reform (version 2)	15332	1,685	3,833
Net effect of reform [@] (%)				
Version 1 (a-b)		32	70	67
Version 2 (a-c)		20	54	62

[@] Net effect is calculated by deducting the without-reform level from the with-reform level and dividing the difference by the without-reform quantity. The result is expressed as a percentage.

Source: Ahmed, 1995

It is evident that the reforms in agricultural inputs market in Bangladesh have played an important role in the increased food grain production. In addition, reforms have also led to easy

access, increased use of agricultural inputs among the farmers and improved food security conditions. However, there have been concerns about the quality and pricing aspects of agricultural inputs in Bangladesh after almost one decade of reform (Bhattacharya and Titmir, 2001). More recently, sale of low quality inputs at high price have become very frequent, emerging as a major problem. Although shortages in supply, price hike and adulteration stand true for almost for all the inputs, it is most common in the case of fertilizers. After the privatization of the fertilizer distribution system in 1991, Bangladesh has been experiencing a fertilizer crisis almost every year in varying degrees since the severe fertilizer crisis in 1995 which led to a partial reversal of reforms (Azmat and Coghill, no date).

The problem of sale of low quality inputs at high prices therefore is undermining the positive impact of the reforms, affecting their potential to improve the socioeconomic conditions of the farmers and also threatening their sustainability. The farmers are being cheated by buying low quality inputs which is leading to a decline in soil fertility having no or adverse effect on agricultural production, whilst also paying exhorbitant prices. These negative impacts on the environment are threatening the positive impact of reforms. Azmat and Coghill have attributed these negative impacts to weak enforcement of the regulatory framework, rule of law, accountability and lack of control of corruption – the main components of good governance.

4.7 Conclusions

The above analysis reveals that the burden of fertilizer subsidies is growing and the RPS has generally been the main culprit for the ballooning fertilizer subsidy bill. A substantial part of fertilizer subsidies is used up in subsidizing inefficiency of the fertilizer industry. Farmers and industry have been subsidized in the ratio of 62:38 (average of 1981-82 to 2002-03). The analysis also shows that if urea segment of the fertilizer industry were totally decontrolled, their imports de-canalized and if urea subsidies were phased out, this would cut down the demand for urea and the foodgrain production would drop. The question of phasing out of fertilizer subsidies is shown to be quite complicated in view of its economy-wide effects. There is no denying the fact that in the short run marginal returns on fertilizer subsidy are higher than those on to other policies like public investment and procurement, but the returns decline in the medium term. From the medium term perspective, the public investment in agriculture seems to be a better policy option as compared to fertilizer and procurement subsidy.

Some more recent evidence is provided by an ongoing study using econometric analysis by Shenggen Fan, Sukhadeo Thorat and Neetha Rao. They show that an additional rupee of fertilizer subsidy would have raised agricultural GDP by only 74 paise in the 1990s. This has declined from Rs. 5.27 for the 1960s. Further, spending a million rupees as fertilizer subsidy would bring only 33.5 persons out of poverty. In contrast, comparable figures for one of the alternative policy options of agricultural R & D for the same period are Rs. 6.93 and 323 persons. Clearly, the returns to fertilizer subsidy in terms of growth or poverty reduction do not justify further increases; the policy imperative is to whittle it down to more reasonable levels.

Chapter 5

Petroleum Subsidies

5.1 Introduction

The recent spurt in crude oil prices has created enormous pressure on the Indian economy. The international price of oil has breached the $50 mark, though it has shown a declining trend, of late. In market economies that meant an equivalent increase in the domestic prices of the petroleum products. However, in India, the prices of petroleum products like LPG, kerosene that are used by different strata of society are subsidized. Presently LPG and kerosene are subsidized to a significant extent. Because of easy availability and substantial scope for misuse, subsidy on such products of mass consumption attracts the middlemen to divert such products for unintended uses at a substantial cost to the public exchequer.

There has been concern about the subsidies because administered price fixation is often done in a manner that is not transparent. It also ignores sound economic principles of efficiency and sometimes equity too. These subsidies are supposed to be open ended. There is even doubt whether the benefits have accrued to those who were to be the real beneficiaries. The petroleum subsidies are significant; however, they are far from progressive.

The present chapter is organized as follows: Section 5.2 provides a description of the pricing procedure of petroleum products and the magnitude of petroleum subsidy burden. Section 5.3 discusses who the beneficiaries are of the present policy. This section leans heavily on the analysis of Gangopadhyay et al. (2004). Section 5.4 presents the results concerning the impact of rationalization of kerosene and LPG subsidies based on the estimates of the UNDP/ESMAP (2003) study. Section 5.5 discusses the challenges to increased domestic use of kerosene and LPG, while international experience is presented in Section 5.6. Section 5.7 concludes the chapter.

5.2 Petroleum Prices and Subsidy Burden

As part of the energy sector reforms, the government has attempted to bring prices for many of the petroleum products (naphtha, furnace oil, LSHS, LDO and bitumen) in line with international prices. The most important achievement has been the linking of diesel prices to international prices and a reduction in subsidy. However, LPG and kerosene, consumed mainly by the domestic sector, continue to be heavily subsidized.

Retail selling price of petrol and diesel for the consumers is calculated by taking into account:

(i) Basic price at refinery level on import parity basis
(ii) Freight upto depots
(iii) Marketing cost and margin
(iv) State specific irrecoverable levies

(v) Excise duty
(vi) Delivery charges from depot to retail pump outlet
(vii) Sales tax and other local levies
(viii) Dealers' commission

The basic selling price of petrol and diesel are uniform at all refinery locations throughout the country. As per the existing arrangement between the oil marketing companies (OMCs) and refineries, the element at (i) is revised on fortnightly basis depending upon the prevalent international prices. The marketing costs and margins, dealers' commission, delivery charges within free delivery zones are also uniform. The prices at various locations vary depending upon the distance from the refinery, rate of sales tax and other local levies.

Although the OMCs were granted freedom to fix retail selling prices of petrol/diesel on fortnightly basis, in reality, the prices were revised after informal clearance from Ministry of Petroleum and Natural Gas (MoP&NG). Hence, there was no price escalation/revision of petrol and diesel from the period January 01, 2004 to June 16, 2004 although the ruling prices of crude and products in international market were abnormally high during this period.

In order to mitigate the hardship of oil companies, the government has worked out a new methodology with effect from August 01, 2004 allowing OMCs limited freedom to revise the prices of MS/HSD within a price band. The concept of price band is based on the principles of rolling average prices of these products in the international markets. Accordingly, oil companies are permitted to carry out autonomous adjustments in prices with a band of ± 10 percent of the mean of rolling average C&F prices of last 12 months and last quarter, i.e. three months.

In the case of breach of this band, the OMCs have to approach the government to modulate the excise duty rates so that the spiraling prices prevailing in the international markets do not cause undue hardships to the consumers. The government has twice modulated the rates on petrol and diesel in the recent past. The excise duty on petrol was reduced from 30% to 26% effective June 16, 2004 and again from 26% to 23% effective August 19, 2004. Similarly, the excise duty on diesel was reduced from 14% to 11% effective June 16, 2004 and again from 11% to 8% effective August 19, 2004. The government has also reduced the customs duty on petrol and diesel effective August 19, 2004 by 5% and the revision in the prices of petrol and diesel upto the band were last carried out on August 01, 2004. Consequent to these changes the selling prices of petrol and diesel were revised (increased) by the OMCs (by the approval of MoP&NG) on November 05, 2004.

The current price of kerosene at Rs. 9.01 a litre has remained unchanged since March 2002 when the international price stood at $23.65 a barrel. In October 2004, as the price per barrel averaged $58.29, a rise of 147% since April 2002.This makes a gap of Rs. 11.28 between the international and domestic prices which the government has been subsidizing. International LPG prices have shot up to $467 a tonne in October 2004 from $194 in April 2002, when an LPG cylinder was selling for Rs. 240.45 in Delhi. Thus, while international prices have risen by 140% during this period, the domestic recent hike in LPG cylinder price by Rs. 20 makes it dearer by only 17% and there remains a subsidy of Rs. 130.15 per LPG cylinder (Times of India, November 07, 2004).

In a gazette notification issued in November 1997, the government set a timetable for the staged phase-down of subsidies on kerosene and LPG. The stated policy called for the retention of smaller universal price subsidies: 33.3 percent for kerosene and 15 percent for LPG for household use. The subsidy phase-down was originally planned to be completed by the time of sector deregulation in April 2002, but has fallen behind schedule. The government later decided that the subsidy on domestic LPG and PDS kerosene would be provided on a specified flat rate basis from the Consolidated Fund from April 1, 2002. In this situation, the government reimburses the firms for the cost of subsidy. The cost to the government is now carried as a line item in the budget and is called the petroleum subsidy. Earlier, the profits or losses from the cross subsidization constituted the so-called oil pool deficit and was carried out on the books of the state owned oil companies.

Petroleum subsidy has been registering very high increases over the years. In the 2002-03 budget it was for the first time that the petroleum subsidies were mentioned explicitly. The subsidy for the petroleum sector was the second highest subsidy after that on food. For LPG and kerosene, the government subsidy were Rs. 5225 crore. In 2003-04 the petroleum subsidies accounted for Rs 6573 crore and is estimated at Rs. 3500 crore in 2004-05. As per a formula worked out by the petroleum ministry last year, the subsidy bill is shared equally between the upstream and downstream oil companies and the government. In interpreting these numbers it is important to note that they are inclusive of all government taxes, including import duties on kerosene and LPG. Another consideration is that about one-half of the kerosene and one-third of the LPG consumed are produced locally. These subsidy figures thus represent an upper bound rather than the actual costs to the government and oil companies.

As a part of reforms in the oil sector, the stated goal of the government is to reduce (not to eliminate) the kerosene and LPG subsidies. Table 5.1 provides the estimates of government subsidy given on different petroleum products. From the table it is evident that diesel subsidies were discontinued in 2000-01. The subsidies on kerosene alone reached more than Rs. 8100 crore in 1999-2000 and started to decline subsequently. Similarly, subsidy on LPG increased until 2000-01 and started to decline after that. The government is committed to its 2002 target, whereby subsidies in the prices of LPG and kerosene should be reduced to 15% and 33.33% of import parities. But the recent hike in international crude oil prices has again led to rising pressure on public exchequer as kerosene and LPG prices are still under government control.

Table 5.1: Subsidies on Major Petroleum Products (Rs. Crore)

Product	1993-94	1994-95	1995-96	1998-99	1999-00	2000-01	2001-02	2002-03
Kerosene-Domestic use (PDS)	3773	3740	4190	5770	8151	7522	5310	3018
HSD	575	430	2180	0	5070	8845	0	0
LPG – Packed – Domestic	1261	1410	1630	2600	4493	6724	5830	3691
Naphtha/FO/LSHS-Fertiliser use	772	850	1200	0	0	0	0	0
Bitumen-Packed	126	110	120	0	0	0	0	0
Paraffin Wax	89	20	40	0	0	0	0	0
Total	**6596**	**6560**	**9360**	**8370**	**17714**	**23091**	**11140**	**6709**

Source: Petroleum Statistics, Ministry of Petroleum and Natural Gas, Govt. of India, 2004.

5.3 The Beneficiaries of Petroleum Subsidies

To know whether the benefits have accrued to those who were to be the real beneficiaries of these subsidies, we follow Gangopadhyay *et al* (2004). They analyze the usage of subsidized fuels using household consumption expenditure surveys from the National Sample Survey Organization (NSSO). The NSSO consumption surveys are nationally representative and cover over 100,000 households in both urban and rural sectors. They use the 50^{th} and 55^{th} rounds of the consumption expenditure survey of the NSSO conducted in 1993-94 and 1999-2000.

Here it should be noted that the subsidies on both kerosene and LPG are universal. The subsidized kerosene is distributed through the public distribution system (PDS) and LPG is sold by dealers working with state-owned oil companies. About 95% of the LPG market belonged to the subsidized supplies by the state owned oil companies in 1999-2000 (UNDP/ESMAP, 2003). The kerosene subsidy comes with a quantity constraint as well: household are allotted quotas that vary by the state and sector they live in and whether they have an LPG connection or not. For LPG, there is no such quantity constraint.

Tables 5.2 and 5.3 provide the fuel usage pattern in rural and urban India for cooking and lighting purposes. From Table 5.2 it is evident that even in 1999-2000 an overwhelming 86% of all rural households used biomass as their primary fuel for cooking and only 5.4 % and 2.7% of the households use LPG and kerosene for as their primary fuel in rural areas. On the other hand, in urban areas the percentage of households using LPG, kerosene and biomass are 44.09, 21.67 and about 25 respectively. In contrast, kerosene is used for lighting purposes in rural areas by 50% of the households whereas this figure is only 10% in urban areas. These figures reveal two things. *First*, the subsidies for kerosene and LPG, which can be termed as modern fossil fuels, predominately accrue to the urban sector. *Second*, despite subsidizing for decades, they have failed to shift the fuel consumption pattern away from biomass in rural areas. An important reason for this may be that the subsidized fuels are simply not available to the poor.

Table 5.2: Primary Cooking Fuel Usage, %age of households

Code	Primary Cooking fuel	1999-2000	
		Rural	Urban
1	Coke, coal	1.52	4.12
2	Firewood and chips	75.44	22.44
3	Gas (coal, oil or LPG)	5.40	44.09
4	Gobar gas	0.31	0.50
5	Dungcake	10.61	2.06
6	Charcoal	0.04	0.14
7	Kerosene	2.70	21.67
8	Electricity	0.08	0.40
9	Others	2.67	0.74
10	No cooking arrangement	1.09	4.24

Source: Gangopadhyay et al. (2004)

Table 5.3: Primary Lighting Fuel Usage, %age of households

Code	Primary lighting fuel	1999-2000	
		Rural	Urban
1	Kerosene	50.49	10.23
2	Other Oil	0.25	0.11
3	Gas	0.06	0.12
4	Candle	0.08	0.04
5	Electricity	48.35	88.86
6	Others	0.11	0.06
7	No lighting arrangement	0.47	0.32

Source: Gangopadhyay et al. (2004)

The NSSO consumption expenditure surveys show that in 1999-2000 about 95% of rural households and 89% of urban households had access to PDS kerosene. But the relevance of kerosene subsidy to a household depends on whether it uses kerosene. Table 5.4 shows the percentage of households that use kerosene in each expenditure decile group and for the sector as a whole. From this table it is evident that the proportion of kerosene users declines as total consumption expenditure increases but the decline is small in rural areas. It shows that the universal kerosene subsidy may be progressive in urban areas (unless it is so large that it distorts the fuel preference in a significant way) but not in rural areas where kerosene use is equally prevalent among all expenditure groups. Gangopadhayay et al. (2004) show that the about three fourth of rural households and one half of urban households accessed the PDS for kerosene. They also find the cases where there are instances of households who want the kerosene subsidy but are unable to access PDS kerosene. Moreover, they show that in rural sector the usage of PDS kerosene is quite uniform across all expenditure deciles, but in urban sector the participation rate drops off in the higher expenditure deciles. It implies that the targeting achieved in the urban sector in the distribution of kerosene subsidy is largely because the higher expenditure groups do not use kerosene, but in rural areas the scope of this kind of targeting is very limited as all the expenditure groups use kerosene.

Table 5.5 provides the evidence for the sources of kerosene supply. From this table, it is evident that about 61% of the households in rural sector that use kerosene depended exclusively on the PDS, whereas the percentage of households that use kerosene and dependent on PDS is 46. Thus the drop in participation rate in PDS among higher expenditure groups is not only because of richer group shift out of kerosene but also because they shift out of PDS kerosene. Table 5.6 presents the estimates of per capita monthly consumption of subsidized kerosene among expenditure deciles by sectors. Gangopadhyay et al show that urban areas consumed 20% more subsidized kerosene than rural areas in per capita terms. They find that rural kerosene subsidy is regressive. Moreover, they reveal that the kerosene subsidy is uniformly distributed among all expenditure deciles in rural areas but in the urban sector, the lower expenditure deciles receive a greater share of the subsidy. Therefore the urban subsidy on kerosene is to some extent self targeted.

Table 5.4: Proportion of Households that use Kerosene by Sector and Decile Group

Expenditure Decile[a]	Rural, 1999-2000	Urban, 1999-2000
1	0.96	0.92
2	0.98	0.93
3	0.97	0.88
4	0.97	0.85
5	0.97	0.79
6	0.96	0.73
7	0.95	0.64
8	0.94	0.58
9	0.93	0.47
10	0.85	0.33
All	**0.95**	**0.71**

[a] Expenditure deciles consist of equal proportions of households (10%) ranked by total households expenditure corrected for inter-state price differentials.
Source: Gangopadhyay et al. (2004)

Table 5.5: Sources of Kerosene for Households: 1999-2000

Sector	Percentage of kerosene using households buying from PDS alone	Percentage of kerosene using households buying from market alone	Percentage of kerosene using households buying from PDS and market
Rural	61	20	19
Urban	46	32	22

Source: Gangopadhyay et al. (2004)

Table 5.6: Monthly per capita consumption of subsidized Kerosene: All households, 1999-00

(Liters)

Expenditure Decile[a]	Rural: All households	Urban: All households	Rural: PDS consuming households	Urban: PDS consuming households
1	0.37	0.63	0.50	0.92
2	0.43	0.76	0.54	1.08
3	0.46	0.85	0.58	1.24
4	0.49	0.89	0.62	1.33
5	0.52	0.87	0.66	1.39
6	0.58	0.81	0.73	1.43
7	0.64	0.69	0.80	1.33
8	0.67	0.80	0.85	1.81
9	0.73	0.48	0.93	1.40
10	0.81	0.30	1.12	1.40
All	**0.57**	**0.71**	**0.73**	**1.30**

[a] Expenditure deciles consist of equal proportions of individuals (10%) ranked by per capita expenditure corrected for inter-state price differentials.

Source: Gangopadhyay et al. (2004)

Given the price differential of PDS kerosene and market kerosene, it is often believed that a sizeable portion of kerosene supplied through the PDS is illegally diverted to market. It is generally believed that the diverted kerosene is used to adulterate diesel on account of price differential between these two fuels. But it is very hard to get reliable estimates of leakage because of its underground nature. Gangopadhyay et al. (2004) provide the estimates of kerosene diverted to market from the PDS supply by comparing the aggregate kerosene supplies through the PDS as reported in official figures with aggregate household consumption of PDS kerosene. Table 5.7 reports these figures for 1993-94 and 1999-2000. This table shows that 50% of government supplies never reached the intended groups. This figure is remarkably stable between the years 1993-94 and 1999-2000. In 1999-2000, the kerosene subsidy bill was Rs. 78 billion and these leakage figures suggest that the households obtained at most only half of that amount.

Table 5.7: Kerosene consumption and Leakages: '000 tons

	Aggregate supplies of PDS	Aggregate household consumption of PDS Kerosene	Leakage	Leakage as % of supplies (%)
1993-94	8704	4428	4276	49
1999-00	10731	5254	5377	50

Source: Gangopadhyay et al. (2004)

Table 5.8 reports the percentage of households that use LPG by sector and expenditure decile groups. From this table it is evident that the LPG is not a favoured cooking fuel in rural areas. Even in the highest expenditure decile only 29 percent households use LPG for cooking purposes. But in urban areas, the majority of households in each of the deciles 6-10 chose LPG

for cooking purposes. The reason of choice as a cooking fuel of LPG may be dependent on the availability of biomass; as biomass is easily available in rural areas, majority of the households even in the highest expenditure decile is not using LPG. In the urban sector, access to LPG is easier in comparison to access to some type of biomass. Moreover, in the urban sector in lower expenditure deciles, LPG is not the majority choice due to the lumpiness in the cost of buying LPG. LPG is sold in a cylinder of 14 kilograms, which is roughly a month's supply at a time.

Table 5.8: Percentage of Households that use LPG

Expenditure Deciles[a]	1999-2000	
	Rural	**Urban**
1	0	7
2	0	15
3	1	25
4	1	35
5	2	43
6	3	54
7	4	58
8	8	62
9	14	69
10	29	78
All	**6**	**45**

[a] Expenditure deciles consist of equal proportions of households (10%) ranked by total household expenditure corrected for inter-state price differentials.
Source: Gangopadhyay et al. (2004)

Table 5.9 reports the monthly per capita consumption of LPG by sectors and expenditure deciles. The first two columns present the results for all the households in both the sectors by expenditure deciles and the last two columns present the per capita LPG consumption ignoring the households whose consumption of LPG is zero. From this table it is evident that the per capita expenditure on LPG and expenditure deciles are positively related. This table also reveals that more households in higher expenditure deciles use LPG than lower expenditure deciles, and when they use it, they use a greater quantity in per capita terms. Here it should be noted that the disparity between urban and rural consumption is large.

Table 5.9: Monthly per capita consumption of LPG-All Households (kgs)

Expenditure Decilea[a]	All		LPG using Households	
	Rural	Urban	Rural	Urban
1	0.00	0.12	3.28	1.56
2	0.00	0.25	1.05	1.74
3	0.01	0.44	1.32	1.89
4	0.02	0.71	1.61	2.28
5	0.03	0.94	1.94	2.24
6	0.04	1.28	1.61	2.47
7	0.07	1.67	1.68	2.59
8	0.16	1.95	1.84	2.79
9	0.25	2.44	1.91	3.12
10	0.82	3.30	2.56	3.72
All	**0.14**	**1.31**	**2.18**	**2.78**

[a] Expenditure deciles consist of equal proportions of households (10%) ranked by total household expenditure corrected for inter-state price differentials.

Source: Gangopadhyay et al. (2004)

Table 5.10 displays the distribution of LPG consumption by sector and expenditure deciles. In the rural areas, 50% of subsidy goes to top expenditure decile. In the urban areas also the higher expenditure deciles obtain more of LPG subsidy. Here it should be noted that in urban areas in top five deciles the distribution of LPG subsidy is more evenly distributed in comparison to the rural areas. Moreover, from this table it is also evident that the distribution of LPG subsidy is in favour of urban areas in comparison to rural areas as they obtain substantially higher quantities of LPG.

Table 5.10: Distribution of Subsidized LPG by Expenditure Decile

Expenditure Deciles[a]	Rural		Urban	
	Consumption (kg.)	As % of sectoral total	Consumption (kg.)	As % of sectoral total
1	52916	0	4511636	1
2	467238	0	9114228	3
3	762306	1	17183652	6
4	1614442	2	23020697	8
5	2872509	3	29704120	10
6	3586543	4	36887906	12
7	7001074	7	39672402	13
8	11882598	12	42298686	14
9	21412281	22	47816501	16
10	46674765	48	54177950	18
All	**96326671**	**100**	**304400000**	**100**

[a] Expenditure deciles consist of equal proportions of households (10%) ranked by total household expenditure corrected for inter-state price differentials.

Source: Gangopadhyay et al. (2004)

Table 5.11 presents the figures of subsidized LPG diverted to market. This table reveals that the NSS estimates are within 5% of the official aggregates indicating that the problem of leakage is not serious in the case of LPG.

Table 5.11: Leakages in LPG Consumption: ('000 tons)

	Aggregate consumption	Aggregate household consumption
1993-94	2423	2552
1999-00	4974	4808

Source: Gangopadhyay et al. (2004)

5.4 Impact of Rationalization of Kerosene and LPG Subsidy

UNDP/ESMAP (2003) conducted a study with the primary objective of facilitating access to clean fuels, given the significant health and social benefits of switching away from traditional biomass. This study has found the price subsidy on kerosene and LPG as ineffective in expanding the uptake of these fuels as primary household fuels among the poor, and fiscally unsustainable. This study recommends phasing out the price subsidies on kerosene and LPG and fostering a vibrant, open and competitive market for these fuels, given the social objectives. This study is based on the NSSO's 55th round of consumption survey data.

UNDP/ESMAP (2003) studies the impact of reducing the kerosene subsidy by two-thirds and eliminating LPG price subsidy as the starting case for dismantling the administered price mechanism. This scenario is compared to seven other scenarios, including the complete elimination of the kerosene subsidy; giving Rs. 100 per month to households classified as below the poverty line (BPL) as well as to all households; eliminating the kerosene subsidy only for households above the poverty line (APL); retaining the LPG subsidy for BPL households; increasing the number of kerosene dealers; and eliminating the LPG subsidy but retaining the kerosene subsidy. *The results of this model, however, should be used with caution, as the model does not appear to be robust.*

Table 5.12 reports the impact of reducing kerosene subsidy by two thirds and eliminating the LPG subsidy (under the scenario named "reduced subsidy"), and several variations on this reference case for the rural sector. UNDP/ESMAP finds that the reduced subsidy case has a larger impact on the consumption of PDS kerosene and LPG than on other energy sources. It finds that eliminating the kerosene subsidy altogether (case A) further reduces PDS kerosene consumption. Eliminating the kerosene subsidy only for APL households and reducing it by two-thirds for BPL households (case B) has a comparable effect to that of case A. Keeping the same prices as in case A but giving Rs. 100 per month to BPL families (case C) has little impact: there is a slight increase in the consumption of all energy sources relative to case A but the increase is very small compared to the difference with the base case. A transfer payment of Rs. 100 per month to all households (case D) has a larger impact than case C, with more LPG and market kerosene being purchased. Moreover, it finds that eliminating the LPG subsidy only for the APL households in case E is no different from case A, since BPL households do not typically use LPG

as observed in the previous section. Eliminating the kerosene subsidy and retaining the LPG subsidy actually increases LPG consumption, which suggests that higher income rural households would switch from kerosene to LPG. In the last scenario (case G), if the kerosene subsidy is retained and the LPG subsidy is eliminated, the opposite happens: kerosene consumption remains the same as the base case and the LPG consumption falls markedly.

Table 5.13 presents the model simulation results for the urban sector. A comparison between tables 5.12 and table 5.13 reveals that in the reduced subsidy scenario and in cases A-E, the fall in the consumption of PDS kerosene, market kerosene and LPG is greater, and the increase in the consumption of wood much greater, in urban areas than in rural areas. The pattern with respect to kerosene and LPG may reflect the fact that a significantly greater proportion of households use kerosene and LPG in urban areas, and BPL households respond more to price increases. Although the fall in wood consumption in rural areas with subsidy reduction seems questionable, it is possible that wood consumption rises more in urban areas because of a greater reliance in these areas on kerosene and LPG for cooking, for which wood can be considered as a substitute. The case of transfer payment of Rs. 100 per month in case A and case C produces similar results for both the urban and rural areas.

The only difference between the reduced subsidy scenario and case B is that in the latter APL households pay an extra Rs. 2 per litre for PDS kerosene. Urban APL households respond to this price increase by increasing LPG consumption at the cost of kerosene. Comparison of case C and D reveals that APL households may spend a little of the extra Rs. 100 on LPG, but not on kerosene. Case H suggests that the effect of reducing the kerosene subsidy could be partially compensated by increasing the number of PDS kerosene dealers, although LPG consumption falls slightly.

The key findings of UNDP/ESMAP (2003) analysis can be summarized as follows:

- Increasing the prices of kerosene and LPG by reducing subsidies causes a greater reduction in the use of PDS kerosene, market kerosene, and LPG in urban areas than in rural areas, probably on account of the greater use of kerosene and LPG for cooking by low and middle income households in urban areas.

- With respect to possible compensatory measures, a cash transfer to the poor of Rs. 100 per month did not much change fuel selection. Using cleaner fuels apparently is not a top priority of poor households, especially not of those that have access to free or cheap biomass.

- If PDS kerosene is preserved, increasing the number of PDS kerosene dealers may be one way of lowering the transaction cost of buying PDS kerosene and of reducing leakage.

Table 5.12: Percentage Change in Energy Consumption in Rural Areas

Energy	Rs	A	B	C	D	E	F	G	A	B	C	D	E	F	G
	Relative to the base (1999-00 actual) case								Relative to RS						
Total Kerosene	-11	-15	-14	-14	-13	-15	-15	0.2	-3.8	-3.1	-3.4	-2.4	-3.8	-4.0	13.0
PDS Kerosene	-14	-18	-17	-18	-17	-18	-18	0.3	-4.7	-3.8	-4.5	-3.9	-4.8	-5.0	16.0
Market Kerosene	-4.1	-5.7	-5.6	-5	-3.2	-5.7	-5.8	0.1	-1.7	-1.5	-0.9	1.0	-1.7	-1.8	4.5
LPG	-33	-32	-32	-32	-29	-32	5.7	-36	1.4	1.4	1.7	5.8	1.7	57.0	-4.1
Firewood	-0.9	-1.3	-1.2	-0.7	0.3	-1.3	-1.6	0.3	-0.4	-0.3	0.2	1.2	-0.4	-0.8	1.3
Electricity	4.8	6.3	6.2	6.8	10	6.3	6.7	-0.4	1.5	1.3	2.0	5.1	1.5	1.9	-4.9

RS (reduced subsidy) - PDS kerosene price increases by Rs4 per liter and LPG cylinder price increases by Rs 124

A- PDS Kerosene price increases by Rs 6 per liter and LPG cylinder price increases by Rs 124

B- PDS Kerosene price increases by Rs 4 per liter for BPL, Rs 6 per liter for APL, and LPG cylinder price increases by Rs 124 for all households

C- Same as A but Rs 100 per month is given to BPL households

D- Same as A but Rs 100 per month is given to all households

E- PDS Kerosene price increases by Rs 6 per liter for all households and LPG cylinder price by Rs 214, only for APL households

F- PDS Kerosene price increases by Rs 6 per liter and LPG subsidy is retained in full

G- PDS Kerosene subsidy is retained in full and LPG cylinder price increases by Rs 214

Source: UNDP/ESMAP (2003)

Table 5.13: Percentage Change in Energy Consumption in Urban Areas

Energy	Rs	A	B	C	D	E	G	H	A	B	C	D	E	G	H
	Relative to the base case								Relative to RS						
Total Kerosene	-14	-19	-18	-19	-19	-19	0.8	-9.8	-6.2	-4.9	-6.0	-6.1	-6.3	4.8	17.0
PDS Kerosene	-19	-26	-24	-26	-26	-26	0.9	-14	-8.5	-6.6	-8.5	-8.8	-8.5	6.4	25.0
Market Kerosene	-7	-11	-10	-11	-10	-11	0.6	-4.7	-3.8	-3.0	-3.3	-3.2	-3.8	3.0	8.7
LPG	-36	-35	-35	-34	-33	-33	-40	-36	2.0	1.7	2.3	4.1	3.6	-0.3	-6.2
Firewood	4.3	5.7	5.1	6.0	5.6	5.7	0.3	3.8	1.3	0.7	1.6	1.2	1.3	-0.5	-3.9
Electricity	-2.1	-2.1	-2.1	-1.7	0.1	-2.1	-1.4	-5.3	0.0	0.0	0.5	2.3	0.1	-3.2	0.7

RS (reduced subsidy) - PDS kerosene price increases by Rs4 per liter and LPG cylinder price increases by Rs 124

A- PDS Kerosene price increases by Rs 6 per liter and LPG cylinder price increases by Rs 124

B- PDS Kerosene price increases by Rs 4 per liter for BPL, Rs 6 per liter for APL, and LPG cylinder price increases by Rs 124 for all households

C- Same as A but Rs 100 per month is given to BPL households

D- Same as A but Rs 100 per month is given to all households

E- PDS Kerosene price increases by Rs 6 per liter for all households and LPG cylinder price by Rs 214, only for APL households

F- PDS Kerosene subsidy is retained in full and LPG cylinder price increases by Rs. 214

H- Same as RS, and in addition the number of PDS kerosene dealers in increased by 10 percent

Source: UNDP/ESMAP (2003)

5.5 Challenges to Increased Domestic Use of Kerosene and LPG

When considering the increased use of hydrocarbon fuels for domestic purposes, the main challenge we discern relate to the provision of equitable household access to the clean fuels while simultaneously ensuring availability. In a recent study on household energy consumption in rural Rajasthan, Parikh et al. (2003) have sought opinions of households that were not using kerosene at the time of survey were asked for the reasons for not using clean fuels.[20] In conformity with national findings, they find that the use of kerosene and LPG is very low in rural Rajasthan. Out of those 10% of all households that use clean fuels, only one percent exclusively use clean fuels for cooking, whereas the other households use them along with bio-fuels. Kerosene is mainly used for lighting in 89% of the households. Generally, it is assumed that clean fuels are not used because they are not affordable because of high price and low purchasing power of the poor households. However, Parikh et. al, find that there are convincing and important reasons other than affordability for not using kerosene such as lack of availability as presented in Table 5.14.

Table 5.14 suggests that about 68% of the households cite non-availability as the reason for not using clean fuels, while about 66% of the households do not use clean fuels because they are expensive. About 22% of the households are not interested in changing the fuel used and a small percentage of households cite other reasons. Thus, Table 5.14 reveals that in the rural areas of Rajasthan non-availability of kerosene restricts its use more than non-affordability.

Table 5.14 Reasons for not using kerosene for cooking

Reason for not using	% of households
Not available	67.54
Expensive	65.83
Not interested in changing the fuel in use	21.83
Changes food taste	9.61
Afraid of using	7.62
Never thought of such option	6.14
Not convinced of the advantages	2.44
Wood smoke works as a repellent for insects	2.16
Fuel used for cooking helps in heating the house	1.25
Wood smoke increases the life of thatched roof	1.25
Base: households not using the kerosene for cooking	1,759

Note: Each question was separately answered "yes" or "no"
Source: Parikh et al. (2003)

Parikh et al (2003) also estimated willingness to pay (WTP) to assess the preference patter and demand and thereby, the size of the market of kerosene. WTP was focused on knowing how rural consumers would behave if they were offered a set of options. The survey shows that at the ration price of Rs. 4/litre (at the time of survey) almost all the sampled households (99%) are willing to purchase an additional quantity of kerosene. About 34% of all households and 65% of the households that are already using kerosene for cooking were willing

[20] Parikh et al. (2003) conducted a survey to assess the current energy consumption pattern and health impact of environmental pollution in the rural areas of Rajasthan covering 11,955 individuals in 1989 households in 13 villages in 3 districts during the period end-April to mid-June 2000.

to pay Rs. 13/litre (whereas the market price of kerosene was Rs 12/litre at that time). Moreover, they find that in 2000 about 86% of the households using fuel-wood gather it and the remaining 14% purchase it, whereas in 1996 only 2% of households used to purchase fuel-wood as reported in ESMAP (2001), indicating an increase in the commercialization of fuel-wood in rural Rajasthan. Expenditure on fuel-wood purchase is an important issue that indicates potential for penetration of kerosene and LPG. If fuel efficiency is considered, it is more cost-effective to purchase kerosene and LPG than fuel-wood (ESMAP, 2001). If households can afford to purchase fuel-wood, they will be better off purchasing clean fuels. Therefore, it may be that commercial fuels are not available easily or the initial investment required is so high, as in the case of LPG, as to discourage households from using clean efficient fuels.

A household inability to pay for the costs involved in LPG use is experienced in several ways. The up-front costs of an LPG connection (deposit) and stove together constitute one hurdle. Here the household's income would affect its perception of costs, because smaller its resources, the higher would current expenditure seem in relation to future savings. The fuel costs also undermine the use of LPG; these are high not only in relation to collectible biomass, but because larger minimum quantities usually have to be bought at each refill. It is also a fact that at present the poorest sections of the population cannot consider LPG even at subsidized rates. Even if financing facilities were easily available, repayment would be difficult without increased income accruing. Although micro-credit/small loans for productive purposes are repaid even by poor households through the returns they obtain, it could be difficult to repay a loan for household convenience alone.

The overwhelming belief in the fuel choice decision is that the income of the household is the single largest determining factor in the choice of fuel. This belief results in the concept of the energy ladder which holds that poor households use bio-fuels such as wood, twigs and dung cakes and move on to primitive fossil fuels such as coal and coke or kerosene with rise in income and finally transcend to LPG or electricity with further rise in income. There are several factors that may prevent this steady climb along the energy ladder or sometimes hasten it. First, the problems of availability as evidenced locally can prevent or hasten the switching from one fuel to another. The price of the cooking device associated with each fuel can be a very important factor that often slows down the movement upwards along the energy ladder as lumpy investments in ovens are necessary before a family can move away from simple kerosene or primus stoves or earthen bucket-type ovens to LPG burners or ovens. Certainly, women bear the main responsibility in gathering firewood and cooking and how much time the woman of the house is able to devote to this activity may determine the choice of a fuel. In particular, if the women join the workforce, then there is a likelihood of switching to easier-to- use fuels such as LPG.

5.6 International Experience

It is useful to learn from the experience of other countries that have attempted to promote the use of clean fuels for household sector. Countries that subsidize LPG include Brazil, Cameron, Côte d'Ivoire, Ghana, India, Senegal and Venezuela.

Brazil has been successful in providing LPG to about 90 % of its households. The main reason for this extent of adoption appears to be the controlled price of LPG through cross-

subsidies from other petroleum products. This was proved in 2002, when deregulation led to increases in LPG prices and some lower-income rural households switched back to fuel-wood. To counteract this, an assistance program began, providing low-income families with subsidies towards LPG purchase. In addition, smaller cylinders of only 2 kg each have been made available facilitating use among lower income households (WLPGA and UNDP, 2002). Another reason for the Brazilian success in extending LPG use is a dependable system of distribution and replacement of cylinders (UNDP et al., 2000, Ch. 10). Brazil is said to have 26,000 such vendors serving 35 million households (Barnes and Halpern, 2000). However, about 81 % of Brazilian families live in urban areas (IBGE, 2001); the distribution problems found in largely rural countries would not be encountered here.

About 60 % of the LPG consumption in West Africa is concentrated in four countries-Cameroon, Côte d'Ivoire, Ghana, and Senegal, where demand has grown significantly during the 1990s. Factors that have contributed to the increase in LPG use in the case of Senegal, where the highest growth has been recorded, include subsidized LPG to small cylinders of 6 kg each, and also new participants in the market who have adopted aggressive marketing strategies (WB and WLPGA, 2002). In both Senegal and Côte d'Ivoire, price subsidies available on small cylinders have not been extended to larger bottles, emphasizing the assistance to lower-income households (WLPGA and UNDP, 2002). However, despite the subsidy, consumers in Côte d'Ivoire have not switched to 6 kg cylinders: less than 10 percent of LPG was sold in the subsidized 6 kg bottles in 1999. Similarly in Senegal, the urban poor still find subsidized LPG expensive and are using charcoal. The government of Senegal is now in the process of phasing out its LPG subsidy entirely because of its high fiscal cost (UNDP/ESMAP, 2003).

Kerosene merits special consideration because it is used for lighting by the poor. However, no developing country government has been able to develop a successful kerosene subsidy scheme to be a model for others. Sizable subsidies have to be given to induce the poor to use kerosene, but a large kerosene price subsidy leads to massive leakage, adulterations and high fiscal cost. A coupon scheme, which in principle can allow better targeting and be effective for some goods, does not seem to prevent or significantly reduce kerosene leakage as illustrated by the experience of Nepal (UNDP/ESMAP, 2003). In another example, kerosene was heavily subsidized in Peru from the 1950s until 1991, when the subsidy was withdrawn. During this period, kerosene became the cooking fuel of choice among many households. Subsidized kerosene was not rationed, and a substantial amount was diverted to the automotive diesel sector or was smuggled out of the country. As in India, petroleum product subsidies in Peru amounted to billions of dollars by the late 1980s, eventually leading the government to withdraw the subsidy and liberalize the market. Today, significant private sector participation has made LPG available at competitive prices in large and medium-size cities, with the result that LPG has become the fuel of choice (UNDP/ESMAP, 2003).

In the Philippines, the opening of the market in 1996 encouraged several oil companies to invest there. Since 1997, more than 100 bottling plants have been built and the demand, almost entirely for the household sector, has risen by about 40 % (WB and WLPGA, 2002). In the People's Republic of China, the shift up the energy ladder from biomass-based fuels to LPG was spurred by the restrictions on the supply of kerosene (UNDP et al., 2000, Ch. 10). With liberalization of the market, a number of international oil companies have established

distribution and marketing operations, as joint ventures with the Chinese (WB and WLPGA, 2002). In Guatemala, where the LPG market is completely liberalized, installment payment plans to cover the purchase of a suitable stove and the cylinder deposit fee are common and are helping to facilitate the adoption of this fuel by low/middle-income families.

In summary the review of international experience indicates two points. First, no good example of an effective subsidy scheme for LPG or kerosene has been found. Subsidies to reduce the price of these fuels commonly have resulted in significant leakage and/or mis-targeting. Secondly, to expand access and improving the quality of the service it is necessary to create a dependable distribution system (increased number and dispersion of storage, bottling and refueling units) in an open competitive market.

5.7 Conclusions

The burden of petroleum subsidies is increasing at an alarming rate in India. LPG subsidy is largely used by the higher expenditure groups in the urban sector and thus regressive. With regard to kerosene, on a per capita basis the urban sector receives a larger subsidy. The limited availability of subsidized kerosene in rural area biases its use in lighting rather than cooking. Moreover, the kerosene subsidy in rural areas is also regressive as higher expenditure groups receive more subsidized kerosene than lower expenditure groups. Kerosene subsidy is also expensive as about half of the subsidized kerosene supplies is diverted and never reaches the intended groups. These arguments suggest that the LPG and kerosene subsidies are ineffective in serving the desired objectives. Therefore, one may recommend the removal of LPG subsidy; a more cautious approach could be justified in the reduction of kerosene subsidies since 50% of rural households use kerosene primarily to light their homes.

In the policy options, cash transfers seem to be one of the alternatives. Cash transfer to the poor to compensate for subsidy reduction or elimination does not appear to be a suitable strategy for inducing a shift in cooking fuels use toward hydrocarbons. UNDP/ESMAP (2003) indicates that the urban poor and all rural households conversely may use more wood if a modest amount of cash is given to them. An alternate approach may be to halt the sale of kerosene through the ration shops. All sales of kerosene should be made through the retail markets. Small distributors of fuels should be encouraged and a coupon should be issued only to poor ration card holders that will entitle them to purchase kerosene from a retailer at the subsidized price (Alam et al., 1998). It would discourage diversion of subsidized kerosene to other sectors.

Generally, it is assumed that clean fuels are not used because they are not affordable because of high price and low purchasing power of the poor households. However, it is not affordability but non-availability that is restricting the use of clean fuels by poor rural households. Thus, the approach that may be sustainable in the long run for the purposes of expanding access and improving the quality of service is to create an open and competitive market with clearly defined and well-enforced rules and regulations for all participants.

Chapter 6

Major Centrally Sponsored Poverty Alleviation Schemes

6.1 Introduction

Government subsidies can be powerful welfare augmenting instruments of public policy. This beneficial potential, however, is maximum when they are transparent, well targeted and suitably designed for practical implementation. This chapter examines the major poverty alleviation programmes which account for a substantial share of Central government subsidies from this perspective.

Out of over 200 Centrally Sponsored Schemes (CSS), six are in the domain of Rural Development (RD) and the principal objective of these is poverty alleviation. In terms of financial outlays, these six schemes account for almost a third of a total. The budget estimates for the six CSS under RD for 2004-05 is Rs 11322 crore out of corresponding total for all CCS of about Rs 36000 crore. Out of the six CSS under RD, four, viz., Sampoorna Grameen Rozgar Yojana (SGRY), Swaranjayanti Gram Swarozgar Yojana (SGSY), Pradhan Mantri Gram Sadak Yojana (PMGSY) and Rural Housing Scheme (RHS) are the principal ones which account for almost 98 per cent of the financial allotment for the current financial year.

Compared to the physical and financial dimensions of the centrally sponsored poverty alleviation schemes in rural areas, such schemes sponsored by the Centre in urban areas are of much smaller dimension. Swarna Jayanti Shahari Rozgar Yojana (SJSRY) initiated in 1997 has both self-employment component and wage employment component for the urban poor with a total annual outlay of just about Rs 100 crore per year. However, the Ministry of Urban Development administers a number of other schemes for the benefit of the urban poor. Two such schemes, namely, National Slum Development Programme (NSDP) and Accelerated Urban Water Supply Programme (AUWSP) have been taken up for discussion and analysis in this chapter.

The design of the four major CSS under RD, their objectives, operational details and the criteria for allocation of funds among the States and within States among the districts and villages are briefly described in the following paragraphs. It is followed by a brief critical analysis of their performance.

6.2 Sampoorna Grameen Rozgar Yojana (SGRY)

Various rural wage employment programmes including Food for Work programme have been in operation as centrally sponsored programme since 1970s. From the beginning of the 8th Plan (in 1980) National Rural Employment Programme (NREP) and from 1983 onwards Rural Landless Employment Guarantee Programme (RLEGP) were in operation. In 1989 they were merged to introduce Jawahar Rozgar Yojana (JRY). Subsequently, a separate wage employment scheme known as Employment Assurance Scheme (EAS) was introduced parallely with JRY in 1993. These two schemes were implemented with some minor modifications throughout the

1990s. In 2001, these two schemes were merged to start Sampoorna Grameen Rozgar Yojana (SGRY) with effect from September of that year.

The objective of SGRY is provision of additional wage employment in rural areas as also food security along with the creation of durable community social and economic infrstructure. The scheme is being implemented through Panchayat Raj institutions and envisages generation of 1000 million mandays of additional employment in a year. The cash cost of each component of the scheme is shared between Centre and the States in the ratio of 75:25. Foodgrains are provided to States free of cost by the Centre. During 2003-04, Rs 4121 crore as cash component and 5 million tonnes of foodgrains were released to the states which resulted in creation of 765 million mandays of employment. Under the special component of SGRY 6.6 million tonnes of foodgrains were also released to 12 calamity affected States during 2003-04. The entire cost of foodgrain component of SGRY is borne by the Central government. The budget estimate of Central outlay for SGRY for 2004-05 is Rs 5100 crore.

SGRY is self-targetting in nature. It is open to all rural poor who are in need of wage employment and are willing to do unskilled manual work at the statutorily fixed minimum wages.

The programme is being implemented through the Panchayati Raj Institutions. The funds and foodgrains are made available to the three tiers in the ratio of 50:30:20 among village panchayats, block panchayats and district panchayats respectively.

Special safeguards to protect the interests of the weaker sections of the community and women are built into the guidelines of the programme. For example, a minimum of 50 per cent of the Village Panchayat allocation is earmarked for the creation of need based village infrastructure in SC/ST habitations. Efforts have to be made to ensure 30 per cent of the employment opportunities under the programme to women.

6.2.1 Allocation of funds/foodgrains under SGRY

Funds are to be allocated to the states in proportion to the share of rural poor in a state to the total rural poor in the country. At the district level, in the absence of data on rural poor, allocation is made on the basis of an index of `backwardness'. This index has two components. The first is the proportion of share of rural SC/ST population in a district to the total SC/ST population in the State and the second is the inverse of per capita agricultural production in the district. Equal weightage is given to these criteria while allocating funds to the districts.

Within the district the funds are allocated to the village panchayats on the basis of an index with 60 per cent weightage for SC/ST pupulation and 40 per cent weightage for total population of the village panchayat. Every village panchayat, however, will receive a minimum of Rs 25,000 per annum.

The total foodgrains meant for the programme is to be allocated to the States/ Districts/village panchayats in proportion to the cash components allocated to them.

Out of the district allocation, 20 per cent of the funds are kept at the district level. Such funds are reserved for areas suffering from endemic labour exodus/areas of distress, as per the Annual Action Plan approved by the District Panchayats/DRDAs.

As noted earlier, 30 per cent of the funds allocated to the district are passed on to the Block Samities. This is done on the basis of proportion of SC/ST population and rural population of the block with equal weightage.

6.3 Swarnjayanti Gram Swarozgar Yojana (SGSY)

Integrated Rural Development Programme, which had been in operation as a Centrally sponsored scheme for self-employment from the beginning of the 8th Plan throughout the country, was reviewed and restructured to start SGSY in April 1999. Allied programmes of IRDP like TRYSEM and DWCRA were also merged into SGSY to make it the only self-employment programme for the rural poor. Under the scheme, the poor are assisted to acquire income generating assets through a mix of bank credit and subsidy. The scheme is being implemented on a cost-sharing basis of 75:25 between the Centre and the States.

Since its inception and upto April, 2004 the Centre has provided Rs 6734 crores under SGSY to the States. Out of this, Rs 4980 crore have been utilised by the States upto April, 2004 benefiting 4.6 million poor families. The budgeted outlay by the Centre for SGSY for 2004-05 is Rs 1000 crore.

The major differences of SGSY from earlier self-employment programme is the group approach as against individual approach earlier. The rural poor are to be organised into Self Help Groups (SHGs) through the process of social mobilisation, training and capacity building and provision of income generating assets. The SHG approach is expected to build their self-confidence through community action and lead to their socio-economic empowerment.

Individual beneficiaries under SGSY are to be selected by the conerned gram sabha from among the BPL families in an open and transparent manner. The individuals so selected will be organised into SHGs and each SHG specialises in an activity or enterprise depending on the opportunities available. The group is entitled to subsidy of 50 per cent of the project cost subject to per capita subsidy of Rs 10,000 or group subsidy of Rs 1.25 lakh whichever is less.

SGSY is a credit-linked scheme and credit is the key element. Subsidy is only an enabling component and it is back-ended, credit subsidy ratio being 3:1.

6.3.1 Allocation of funds under SGSY

Statewise allocation of funds under SGSY is done in proportion to the BPL population in 1993-94. Though the latest poverty estimates available are for 1999-2000, they are not used for allocation of funds under SGSY. This is because of the fact that the 1999-2000 estimates are not strictly comparable to the earlier estimates because of the change in reference period of the survey from one month to one week.

The allocation within the State among the districts is made in proportion to the population in the absence of poverty estimates at the district level.

6.4 Pradhan Mantri Gram Sadak Yojana (PMGSY)

The nation-wide Rural Roads Programme to provide connectivity to all the villages with a population of 500 or more was introduced in December, 2000 known as PMGSY. Although the initial estimates indicated a requirement of Rs 60,000 crore, the present indications are that the programme may require Rs 1,30,000 crore. In the budget for 2003-04, diesel cess which is the source for funding this programme was increased from Rs 1 to Rs 1.50 per litre in order to provide additional funds for the programme. The National Rural Roads Development Agency (NRRDA) a registered society specially created for this purpose provides operations and management support for the programme. The outlay for PMGSY for 2004-05 as per Union Budget estimates is Rs 2468 crore. There is no counterpart funding by the States for this programme.

The primary objective of the PMGSY is to provide connectivity by way of all-weather road to all unconnected habitations in stages – all unconnected habitations of 1000 or more persons in three years and all unconnected habitations of 500 or more persons in seven years.

6.4.1 Allocation of funds under PMGSY

Statewise allocation of funds under PMGSY is done in proportion to the total unconnected habitations in the States with respect to total unconnected habitations in the country.

The States are to allocate funds under PMGSY among the districts on the following criteria: Allocate among the districts: 80 per cent of the funds on the basis of road length required for providing connectivity and 20 per cent on the basis of road length requiring upgradation under the PMGSY.

6.5 Rural Housing Schemes (RHS)

The principal rural housing scheme known as Indira Awas Yojana (IAY) aimed at providing houses free of cost to the poor families of scheduled castes and scheduled tribes, freed bonded labourers and also the non-SC/ST families below the poverty line in rural areas has been in operation from the beginning of the Seventh Five Year Plan. The scheme is funded on a cost-sharing basis of 75:25 between the Centre and the States. Till the end of 2003-04 the ceiling on construction assistance under IAY was Rs 20,000 in plain areas and Rs 22,000 in hilly areas which have been increased to Rs 25,000 and Rs 27500 respectively with effect from April, 2004. 20 per cent of the allocation is allowed for upgradation of kutcha houses for which ceiling of Rs 12500 per unit applies. Credit cum subsidies scheme for rural housing targeting rural families having an annual income of Rs 32000 was launched in April, 1999. A National Mission for Rural Housing and Habitat has also been set up to address the critical issue of housing gap in rural areas. Since the inception upto June 2004 11.4 million houses have been constructed/upgraded by incurring an expenditure of Rs 19869 crore.

The budget estimate for rural housing /IAY in 2004-05 is Rs 2500 crore in the Union Budget.

The IAY is the flagship scheme of the Ministry of Rural Development to provide houses to the poor in the rural areas. The objective of the IAY is primarily to help construction/upgradation of dwelling units of members of SC/ST, freed bonded labourers and other Below the Poverty Line non-SC/ST rural households by providing them with a lump sum financial assistance.

6.5.1 Allocation and Funding Pattern

The Statewise allocation for IAY is done in proportion to the BPL population for 1993-94 and the housing gap as per 2001 census. The IAY is funded on a cost sharing basis by the Government of India and State governments in the ratio of 75:25.

Out of the funds available under the scheme in a district, at least 60 per cent is to be utilised for construction/upgradation of the houses of SCs/STs.

The programme is being implemented by the Zilla Parishads/DRDAs and houses are to be got constructed by the beneficiaries themselves.

Allotment of dwelling units is required to be in the name of the female member of the beneficiary household. Alternatively, it can be allotted to husband and wife jointly.

6.6 National Slum Development Programme

The National Slum Development Programme (NSDP) has been implemented since 1996. The objective of this programme is upgradation of urban slums by providing physical amenities like water supply, stormwater drains, community bath, sewers, community latrines, streetlights, etc. Besides, the funds under NSDP can be used for provision of community infrastructure and social amenities like pre-school education, non-formal education, adult education, maternity, child health and primary health care including immunisation, etc. The programme also has a component of shelter upgradation.

Under NSDP the funds in the form of Additional Central Assistance are allocated to the States by the Planning Commission in proportion to the estimated slum population. There is no matching contribution by the States for NSDP. The Finance Ministry releases the funds to the State governments and the State governments release the funds to implementing agencies as per their requirements. The Ministry of Urban Development is the Nodal Ministry to monitor the progress of implementation of the programme.

The Budgeted amount in the Union Budget for NSDP during 2004-05 is Rs 341 crore.

6.7 Accelerated Urban Water Supply Programme (AUWSP)

This programme was initiated in 1993-94 to provide safe and adequate water supply to the entire population of the towns having population less than 20000 as per 1991 census. There are 2151 such small towns in the country which have less than 20000 population each.

The pattern of financing of AUWSP is on a 50:50 basis between Centre and the States. State-wise allocation of funds under AUWSP is on the basis of the following criteria:

- 50 per cent on the population of such towns
- 35 per cent on the incidence of poverty in the State
- per cent on the number of such towns
- 10 per cent on the population of such towns covered under DPAP, DDP, HADP and Special Category Hilly States.

The State governments are expected to give priority to towns with

- Very low per capita supply of potable water
- Very distant or deep water sources
- Drought prone areas
- Excess salinity, fluoride, iron and arsenic content in the water sources
- High incidence of water borne diseases.

6.8 An Assessment

By early 1970s, it was recognised that the benefits of general development programme were not reaching the poor in the country. Several special schemes were initiated to reach out to the poor. On the basis of experience they have been modified over the years. We shall briefly examine to what extent they fulfil these objectives.

The principal objective of SGRY is to provide additional employment in rural areas. The annual target of SGRY in creation of 1000 million man-days of employment which is only a fraction of the need and even this target is not being achieved. Since the scheme is self-targeting and there is a demand-supply gap some form of rationing by the implementing agencies is bound to happen. As the implementing agencies are Panchayati Raj Institutions it will be interesting to examine how the limited employment opportunities under the scheme are rationed.

SGSY enables poor families to acquire income earning assets to generate self-employment. The selection of the beneficiaries is to be done by the gram sabha in a transparent manner. The selected beneficiaries are to be organised into Self Help Groups (SHGs) to take up a common activity. The group dynamics is expected to produce better results for the beneficiaries and better record of loan repayment. The success of the SHGs, however, would critically depend on the forward and backward linkages for the activities taken up by them and the quality of their leadership and cohesiveness of the groups.

PMGSY and RHS have rather clear cut objectives- viz., connectivity to unconnected habitations and provision of dwelling units for the poor respectively. In the case of PMGSY the

annual funding is too little compared to the size of the problem implying that it will take a long time before all rural habitations are connected by all weather roads.

The Funding Pattern: All the four schemes under consideration are driven by budget support except that in the case of SGSY bank loan is the principal source of funding. While SGRY, SGSY and RHS are funded jointly by the Centre and the States in the proportion of 75:25, PMGSY is entirely funded by the Centre. Also the first three are financed by the general budgetary resources whereas PMGSY is financed by a designated share of petroleum cess.

In the case of SGSY and RHS the budgetary share of funds are given to the identified beneficiaries as grants and as such they are typically transfer payments. On the other hand workers are paid wages under SGRY and village roads are constructed under PMGSY. While the latter can be considered as public asset creation by budget expenditure the former can be considered to have an element of subsidy. The wages paid are statutory wages which may be above the market wage rates. Also foodgrain distributed as part of the wages is valued at a rate well below the economic cost to the exchequer. This implies that there may be a significant element of subsidy involved in the SGRY.

6.8.1 The Allocation Formula

Under SGRY and SGSY statewise allocation of Central funds is in proportion to the rural poor in 1993-94. Though the statewise estimates of poor in 1999-2000 are available, these are not used for allocation of funds due to certain question marks about the correctness of these estimates. The poverty estimates for 1999-2000 indicates that between 1993-94 and 1999-2000 because of the differential economic performance of the States poverty got concentrated in a few States. Indeed six large States in northern and eastern part of the country which accounted for 66 per cent of the poor in the country in 1993-94, had 74 per cent of the poor by 1999-2000. Since there is apparently no reason to believe that the latter estimates have any State bias, the use of older poverty estimates introduces a serious bias against the poor in the poorest States.

Intra-State allocation of funds under SGRY as well as SGSY are governed by formulae which appear to be fair considering the availability of district level and village level data.

Statewise allocation of PMGSY funds done in proportion to the unconnected habitations appears to be equitable. The intra-State allocation taking into consideration the road length required is even more scientific.

The allocations under RHS among the States on the basis of housing gap as per 2001 census and BPL population of 1993-94 with equal weightage appear to be fair and scientific except for the dated nature of the poverty data.

Table 6.1: Distribution of States According to Releases of Central as well as State Shares of Allocation and Expenditure on Centrally Sponsored Rural Development Programmes During 2003-2004:

States	Central releases to Central allocation (%) in 2003-04		State releases to State allocation (%) in 2003-04		Expenditure as % of Available Funds in 2003-04	
	%	Group	%	Group	%	Group
Jammu & Kashmir	143	I	127	I	61	III
Uttaranchal	110	I	129	I	50	IV
Mizoram	106	I	107	I	50	IV
Kerala	104	I	86	II	76	III
Punjab	103	I	85	II	69	III
Nagaland	98	II	40	IV	34	IV
Tamil Nadu	97	II	107	I	85	II
Gujarat	97	II	77	III	72	III
Karnataka	94	II	79	III	71	III
Maharashtra	89	II	89	II	82	II
Orissa	89	II	153	I	68	III
Jharkhand	89	II	74	III	58	IV
Madhya Pradesh	89	II	105	I	72	III
Haryana	87	II	100	I	72	III
Andhra Pradesh	84	II	87	II	74	III
Tripura	81	II	113	I	77	III
Sikkim	77	III	99	II	36	IV
Uttar Pradesh	77	III	76	III	58	IV
Assam	75	III	29	IV	75	III
Bihar	75	III	63	III	55	IV
Rajasthan	69	III	111	I	95	II
Arunachal Pradesh	67	III	81	II	50	IV
Chattisgarh	66	III	99	II	65	III
Manipur	55	IV	13	IV	16	IV
Meghalaya	52	IV	43	IV	66	III
Himachal Pradesh	50	IV	74	III	44	IV
West Bengal	50	IV	71	III	62	III
Goa	36	IV	95	II	25	IV

Note: Group Classification: 100% and above: G-I
80%-100%: Gr-II
60%-80%: Gr-III
Below 60%: Gr-IV

6.9 Allocation, Releases and Expenditure under Rural Development (RD) Programmes

We have discussed the principles followed for allocation of central funds for the four different CSS of RD. The actual releases, however, may not conform to the allocation. This could be due to a number of reasons including slow progress of implementation in some States, non-release of the share of the State, non-submission of utilisation certificates or non-compliance of some of the Central guidelines by the State governments. In case the total releases fall far short of the budget outlay for a scheme, the Planning Commission is likely to reduce the outlay for the subsequent year. To avoid this, the implementing Ministry usually reallocates the outlay

among the States informally and releases extra amounts to States which demand more funds. As a result the releases under a scheme to some States may exceed the allocation.

Releases by the States of their share of the funds may also not conform to the allocations. Some of the cash strapped States find it difficult to release their matching share due to liquidity problems. At the same time, there are States which invariably ensure releases of their share in time to ensure receipt of full allocation from the Centre without default. Also funds allocated for one year may be actually made available to the implementing agency in the subsequent year.

The unutilised funds of one year will be passed on to the subsequent year as opening balance. As a result the funds available in any year could be substantially higher than the sum of that year's releases from the Centre and the State.

Table 1 presents statewise picture of Central and State releases as well as expenditure for all CSS of RD Ministry during 2003-04. The following points are worth noting.

- Central release as a percentage of Central allocation varies from 143 in Jammu & Kashmir to a mere 36 in Goa. It is to be stressed that though backward States like Assam, Bihar, Chhattisgarh and Uttar Pradesh are entitled to large allocations on the basis of poverty, the actual releases to them are significantly lower. On the other hand, forward States like Gujarat, Karnataka, Kerala, Punjab and Tamil Nadu received a much higher share of their allocations.

- State releases to State allocation indicate that in several States the actual releases exceed the allocation. One of the reasons for this may be delayed releases of the previous year. On the other hand, in some of the fiscally stressed States like Nagaland, Assam, Manipur and Meghalaya, releases have been less than even 50 per cent of the allocation.

- Expenditure as a percentage of available funds indicate that in almost all the States the expenditure is less than 50 per cent of the available funds. Only three States, viz., Tamil Nadu, Maharashtra and Rajasthan could spend more than 80 per cent of the available funds. Most of the poorer States could spend only less than 60 per cent of the available funds.

- States have been classified into four groups on the basis of performance on each of the three criteria. Group I consists of States where actual is 100 per cent or more, Group II between 80 per cent to 100 per cent, Group III between 60 per cent to 80 per cent and Group IV below 60 per cent. Since there is no State where expenditure exceeds available resources, there is no Group I state as far as this criterion is concerned. Therefore the performance of a State could be considered as best if it is in Group I as far as the first two criteria are concerned. in Group II as far as the third criterion. Similarly, the performance of a State can be adjudged as worst if it belongs to Group IV as far as all the three criteria are concerned.

- On the basis of the above classification there is no State which can be characterised as `best' performer. At the other extreme Manipur is the only State which belongs to Group IV in respect of all the three criteria and therefore can be characterised as `worst' performer.

- Majority of the backward States where CSS of RD are most needed have performed relatively poorly in terms of the three criteria. This includes UP, Assam, Bihar and Jharkhand.

- Fiscally stressed poor States have, in the past pleaded for doing away with the matching State share as often they could not draw the Central share because of their inability to release the matching share. Table 1 indicates that this may be true for States like Bihar, Assam and Manipur. But even in their cases, the table indicates that the biggest problem is their inability to spend the available funds.

Of course, the releases and expenditures are only the inputs for attaining the objectives of the schemes. The outputs and the outcomes of these will determine the success of these schemes. Here, in the absence of data and information, we are not in a position to assess the quality of implementation of these schemes in different States.

Chapter 7

Summary and Recommendations

7.1 Central Budgetary Subsidies

The present study updates the estimates of Central Budgetary subsidies for 2002-03 and 2003-04, and highlights continuing concerns with the size, relevance and effects of these subsidies. In the last few years, the budgetary subsidies of the central government have increased sharply. This is true of explicit as well as implicit subsidies. Total central budgetary subsidies amounted to 4.25 percent of GDP in 2002-03 and 4.18 percent of GDP in 2003-04. For these subsidies, in both social and economic services, current costs dominate, but with a much larger margin in social services.

Three reasons account for the inordinate increase in the central budgetary subsidies, viz. (i) the transformation of petroleum sector from a surplus sector into a subsidy sector; (ii) an increase in the share of explicit subsidies; and (ii) increase in other input costs unaccompanied by any improvement in recovery rates.

The definition of unrecovered costs consists of three elements: the allocative subsidy which may be a genuine subsidy, producer subsidy paid to suppliers to cover their production inefficiency and distributive subsidy which arises due to lower rates of user charges. However, it is not possible to disentangle these three different elements of the subsidy without detailed estimates of cost and demand functions for all the different subsidies.

Operational inefficiency leads to higher cost of production. This creates a wedge between subsidies that are actually received by the user of the service and subsidies that are borne by the government. Government's participation in providing services is attended by several types of inefficiencies. Apart from direct costs like overstaffing, poor maintenance of assets, procedural delays, and delays in taking critical decisions, there are systemic inefficiencies. Moreover, subsidy interventions by the government distort market prices and often lead to sub-optimal use of inputs in the economy, thereby raising overall costs in the system. As a result of these and other inefficiencies, the costs associated with governmental provision of services tend to be high.

Social services being associated with strong externalities and scale economies qualify for large subsidies in comparison to economic services. While human development is legitimately a major concern of the welfare state, it may be necessary to reassess policies in this area at the micro level to temper this concern with the equally legitimate concern for the burgeoning public expenditures. This is particularly important if inadequate targeting and leakages are major problems with the subsidies. The economic services can be priced in varying degrees. There is scope for augmenting cost recovery in these services.

User charges should be linked to costs and increasing these charges would directly reduce the subsidy bill. Services need to be divided into some broad groups and broad norms for cost recovery need to be set up. A concrete plan would require fixing recovery targets in three phases:

(i) short-term (immediate increase); (ii) medium term (in a period of five years); and (iii) long term (ten or fifteen years). The long term targets would need to be determined on the basis of desired or optimum degree of subsidization worked out for broad groups of services. The short term targets should look at recovering a portion of the variable (current) costs. For example, for merit I services the recovery target can be of five percent in the short run and ten percent in the medium term with respect to current costs. Similarly, for merit II services, the recovery target can be of 30 and 40 percent of current costs, respectively, for social and economic services, and for medium term, targets of 50 and 70 percent of current costs, respectively, for social and economic services can be set. For non-merit services, targets can be set at 70 and 90 percent of current costs for short and medium terms respectively.

Subsidy reforms should aim at (i) reducing their volume relative to revenue receipts, (ii) limiting these to only Merit I and Merit II categories while eliminating the non-Merit subsidies, (iii) administering subsidies more directly to the targeted beneficiaries, thereby eliminating input subsidies and focusing more on transfers as compared to price subsidies, (iv) making these subsidies transparent by showing them explicitly in the budget, and (v) avoiding multiple subsidies to serve the same policy objective.

High costs of service provision combined with low or negligible recoveries through user charges are the two critical sides of subsidization. Costs need to be reduced, wherever viable and producer inefficiencies must be reduced. Subsidy reforms need to focus on selected sectors, which would yield maximum results and for those services for which there is considerable scope for higher recovery in the non-Merit category.

7.2 Food Subsidy

The system of food subsidies in India comprises subsidies to farmers through the support prices and purchase operations of the FCI, consumer subsidies through the PDS and subsidies to FCI to cover all its costs including those relating to maintenance of stocks. The overall food subsidy bill has grown fast in recent years, and it is traceable to what is called the 'economic costs' and other costs of FCI. It is argued that the main reason has been the high support prices, along with the inefficiencies of FCI.

Apart from these problems, PDS also suffers from leakages out of the system and poor penetration in all but a few States. The lopsidedness is also noticeable on the procurement side: only four states account for the overwhelming bulk of FCI purchases. A host of other problems emanate from the fact that support prices have been higher than necessary, as also because the support operations are confined to only two foodgrains – wheat and rice.

The primary recommendation that rather obviously follows from the brief analysis relates to the support prices: these should be kept at most at the level recommended by the CACP, excluding any rate of return. Apart from spreading out the support price operations of FCI, the issue of decentralization is examined in brief. It is felt that this is an imperative for the long term, but in the short run, this may not be feasible mainly due to problems with State governments, who are in any case reluctant to take this responsibility.

To contain FCI costs, the main recommendation is not to reimburse actual costs. Rather, the reimbursement should be based on normative costs and actual quantities involved.

With respect to PDS, the system of two prices has been criticized as encouraging leakages. For this reason as well as others, a uniform price policy and universal subsidy has been recommended earlier. We feel that the problems can be dealt with introducing food coupons/stamps. However, there are some known and unknown risks in implementing food stamps scheme; hence, it is necessary to phase it in gradually. To begin with, only the additional subsidy to the poor may be given in the form of food stamps, and they should be redeemable in both PDS as well as other shops. If it works out well, then exclusive PDS shops may gradually be discontinued, after discussing the pros and cons of this step with the State governments concerned.

7.3 Fertilizer Subsidy

The burden of fertilizer subsidies is growing and the RPS has generally been the main cause of the ballooning fertilizer subsidy bill. A substantial part of fertilizer subsidies is used up in subsidizing the inefficiencies of the fertilizer industry. Farmers and industry have been subsidized in the ratio of 62:38 (average of 1981-82 to 2002-03). The analysis also shows that if urea segment of the fertilizer industry were totally decontrolled, their imports de-canalized and if urea subsidies were phased out, this would cut down the demand for urea and the foodgrain production would drop. The question of phasing out of fertilizer subsidies is shown to be quite complicated in view of its economy-wide effects. There is no denying the fact that in the short run the marginal returns on fertilizer subsidy are the highest as compared to other policies like public investment and procurement, but the returns decline in the medium term. However, in the medium term perspective, the public investment in agriculture seems to be a better policy option as compared to fertilizer and procurement subsidy.

As indicated above, both farmers and fertilizer industry have been subsidized and therefore we need to have policy measures on both fronts to contain the burden of fertilizers subsidies. Fertilizer subsidies should be done away with in their present form. Urea imports should be de-canalized and flat rate subsidy system should be introduced with different rates of subsidy for domestic producers and importers in the short run and a single rate in medium term. To determine the flat rate subsidy for domestic producers, the urea prices should be determined according to a uniform Normative Referral Price (NRP) based on Long Run Marginal Cost (LRMC) methodology suggested by C. H. Hanumantha Rao Committee. The LRMC should be calculated with reference to natural gas based units and the naphtha based and LSHS/Fuel Oil based units may be given a feedstock cost differential reimbursement on account of their higher feedstock prices for a short period, as deemed appropriate, during which they would be expected to switch over to cheapest and most efficient feedstock. Here it should be made clear that there would be a single rate of concession across all urea units irrespective of their feedstock in the medium term. This would also require setting up a proper exit policy for some of the inefficient units. These units should be facilitated to either adopt alternative technologies or to close down.

Given the problem of domestic availability of natural gas, which is the cheapest feedstock, the government may also consider the option of setting the fertilizer plants in

countries where natural gas is available in plenty; the fertilizer produced there can be shared between the host country and India as per agreement reached.

Another reason for mounting burden of fertilizer subsidy has been the non-existence of a mechanism to increase in the farmers' price of urea at regular intervals. A system that provides for such a periodic increase is required. The estimates of an ongoing study (Fan et al) show that the benefit-cost ratio of fertilizer subsidies in India is not only declining but has become less than one in the nineties. This argument favors the reduction if not elimination of fertilizer subsidies. Therefore, in the initial phase, it would be advisable to retain the concept of farmers' prices of fertilizers but market forces could be allowed free play in the medium term. While the farmer would then be exposed to open market prices, greater efficiency would drive down the average cost. However, one segment of farmers may still need additional protection, viz., the poor and marginal farmers. Under such circumstances, an alternative could be to distribute fertilizers to targeted cultivator households alone (small and marginal) in the form of tradable coupons.

The emphasis hereafter should be only on structural improvements in the agricultural sector and improvement of the non-farm rural sector. The consumption of fertilizers need not decline, if the subsidy is progressively reduced as it is determined by a number of factors such as good seed, irrigation, technology etc. More emphasis should be have on programs such as agricultural research and development (R&D), watershed management, soil conservation, irrigation etc. to initiate the structural change.

7.4 Petroleum Subsidy

The burden of petroleum subsidies is increasing at an alarming rate in India. LPG subsidy is largely used by the higher expenditure groups on the urban sector and thus regressive. With regard to kerosene, on a per capita basis the urban sector receives a larger subsidy. The limited availability of subsidized kerosene in rural area biases its use in lighting rather than cooking. Moreover, the kerosene subsidy in rural areas is also regressive as higher expenditure groups receive more subsidized kerosene than lower expenditure groups. Kerosene subsidy is also expensive as about half of the subsidized kerosene supplies is diverted and never reaches the intended groups. These arguments suggest that the LPG and kerosene subsidies are ineffective in serving the desired objectives. Therefore, one may recommend the removal of LPG subsidy; a more cautious approach could be justified in the reduction of kerosene subsidies since 50% of rural households use kerosene primarily to light their homes.

In the policy options, cash transfers seem to be one of the alternatives. Cash transfer to the poor to compensate for subsidy reduction or elimination does not appear to be a suitable strategy for inducing a shift in cooking fuels use toward hydrocarbons. UNDP/ESMAP (2003) indicates that the urban poor and all rural households conversely may use more wood if a modest amount of cash is given to them. An alternate approach may be to halt the sale of kerosene through the ration shops. All sales of kerosene should be made through the retail markets. Small distributors of fuels should be encouraged and a coupon should be issued only to poor ration card holders that will entitle them to purchase kerosene from a retailer at the subsidized price (Alam et al., 1998). It would discourage diversion of subsidized kerosene to other sectors. But the experience in Nepal suggests that the coupon scheme does little to reduce the kerosene leakage.

Therefore, the approach that seems to be sustainable in the long run for the purposes of expanding access and improving the quality of service is to create an open and competitive market with clearly defined and well-enforced rules and regulations for all participants. This conclusion lends support to the government announcement in 2003 that the LPG and kerosene subsidies will be phased out in three years and eliminated by April 2006 (Business Standard, 2003d).

The elimination of petroleum subsidies is expected to have an impact on the structure and nature of the downstream petroleum industry. In India, only state owned oil companies have been permitted to market subsidized LPG and kerosene. This fact has stifled the growth of private sector retailers for these petroleum products by curtailing entry and competition. A market environment which encourages fair and healthy competition is the most effective way to expand the supply and availability of competitively priced kerosene and LPG. In this market environment the government must establish and enforce adequate technical and safety standards, and ensure consumer protection, especially against under-filling of LPG cylinders.

7.5 Major Centrally Sponsored Poverty Alleviation Schemes

Government subsidies can be powerful welfare augmenting instruments of public policy. This beneficial potential, however, is maximum when they are transparent, well targeted and suitably designed for practical implementation. We examined the major poverty alleviation programmes which account for a substantial share of Central government subsidies from this perspective.

Out of over 200 Centrally Sponsored Schemes (CSS), six are in the domain of Rural Development (RD) and the principal objective of these is poverty alleviation. In terms of financial outlays, these six schemes account for almost a third of a total. The budget estimates for the six CSS under RD for 2004-05 is Rs 11322 crore out of corresponding total for all CCS of about Rs 36000 crore. Out of the six CSS under RD, four, viz., Sampoorna Grameen Rozgar Yojana (SGRY), Swaranjayanti Gram Swarozgar Yojana (SGSY), Pradhan Mantri Gram Sadak Yojana (PMGSY) and Rural Housing Scheme (RHS) are the principal ones which account for almost 98 per cent of the financial allotment for the current financial year.

From the analysis of Central and State releases as well as expenditure for all CSS of RD Ministry during 2003-04, the following points are worth noting.

- Central release as a percentage of Central allocation varies from 143 in Jammu & Kashmir to a mere 36 in Goa. It is to be stressed that though backward States like Assam, Bihar, Chattisgarh and Uttar Pradesh are entitled to large allocations on the basis of pvoerty, the actual releases to them are significantly lower. On the other hand forward States like Gujarat, Karnataka, Kerala, Punjab and Tamil Nadu received a much higher share of their allocations.

- State releases to State allocation indicate that in several States the actual releases exceed the allocation. One of the reasons for this may be delayed releases of the pervious year. On the

other hand, in some of the fiscally stressed States like Nagaland, Assam, Manipur and Meghalaya, releases have been less than even 50 per cent of the allocation.

- Expenditure as a percentage of available funds indicate that in almost all the States the expenditure is less than 50 per cent of the available funds. Only three States, viz., Tamil Nadu, Maharashtra and Rajasthan could spend more than 80 per cent of the available funds. Most of the poorer States could spend only less than 60 per cent of the available funds.

- States have been classified into four groups on the basis of performance on each of the three criteria. Group I consists of States where actual is 100 per cent or more, Group II between 80 per cent to 100 per cent, Group III between 60 per cent to 80 per cent and Group IV below 60 per cent. Since there is no State where expenditure exceeds available resources, there is no Group I state as far as this criterion is concerned. Therefore the performance of a State could be considered as best if it is in Group I as far as the first two criteria are concerned and in Group II with respect to the third criterion. Similarly, the performance of a State can be adjudged as worst if it belongs to Group IV as far as all the three criteria are concerned.

- On the basis of the above classification there is no State which can be characterised as `best' performer. At the other extreme Manipur is the only State which belongs to Group IV in respect of all the three criteria and therefore can be characterised as `worst' performer.

- Majority of the backward States where CSS of RD are most needed have performed relatively poorly in terms of the three criteria. This includes UP, Assam, Bihar and Jharkhand.

- Fiscally stressed poor States have in the past pleaded for doing away with the matching State share, as often they could not draw the Central share because of lack of necessary liquidity to provide their matching amount. This may be true for States like Bihar, Assam and Manipur. But even in their cases, the biggest problem is their inability to spend the available funds.

Of course, the releases and expenditures are only the inputs for attaining the objectives of the schemes. The outputs and outcomes of these will determine the success of these schemes. Here, in the absence of data and information, we are not in a position to assess the quality of implementation of these schemes in different States.

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Appendices

Table A2.1: Explicit Subsidies in Central Budget

Year	Food	Fertilizer	Petroleum Subsidy	Grants to NAFED for MIS/PPS	Export	Subsidy on Railways	Interest Subsidy*	Debt Relief to Farmers	Others	Total	Total as %age to GDP
1971-72	47				54		5		34	140	0.3
1981-82	700	381			477	78	102		203	1941	1.2
1990-91	2450	4389			2742	283	379	1502	413	12158	2.1
1991-92	2850	5185			1758	312	316	1425	407	12253	1.9
1992-93	2800	5796			818	353	113	1500	615	11995	1.6
1993-94	5537	4562			665	412	113	500	893	12682	1.5
1994-95	5100	5769			658	420	76	341	568	12932	1.3
1995-96	5377	6735			318	388	34		520	13372	1.1
1996-97	6066	7578			397	468	1222		633	16364	1.2
1997-98	7900	9918			429	536	78		644	19505	1.3
1998-99	9100	11596			574	602	1434		1480	24786	1.4
1999-00	9434	13244			520	685	1371		438	25692	1.3
2000-01	12060	13800			621	812	111		867	28271	1.4
2001-02	17499	12595		353	616	896	210		553	32722	1.4
2002-03	24176	11009	5225	300	628	1046	765		2043	45189	1.8
2003-04 (RE)	25200	12567	6573	156	932	1228	179		776	46869	1.7
2004-05 (BE)	25800	12662	3559	193	902	1362	463		839	45780	1.5

Sources: 1. Budget Documents, Expenditure Budget, Vol. 1 (Various Issues).
2. GDP at market prices -1993-94 series: Economic survey 2003-04, GDP calculated for 2004-05.

Notes * Does not include subsidy to Shipping Development Fund Committee which was treated as grant in the economic classification in the absence of the details available then (upto 1977-78) and states and Union Territories for Janata cloth in the handloom sector which is treated as grant to states in the economic classification. Subsidy figures include subsidy for export promotion and subsidy to railways. From 2001-02 onwards the budget presents subsidy magnitudes with a modified classification.

Table A2.2: Central Budgetary Subsidies 2002-2003

Budget Code		Costs			Receipts			Subsidy	Recovery Rate (%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue Receipts	Interest & Dividends	Aggregate Receipts		
2202-2205	**Education, sports, art and culture**	9507.71	132.35	9640.06	42.10	0.00	42.10	9597.96	0.44
2202	**General education**	7474.72	32.02	7506.74	3.52	0.00	3.52	7503.22	0.05
-01	Elementary Education	4090.73	12.24	4102.97	0.18	0	0.18	4102.79	0.00
-02	Secondary Education	1292.67	8.49	1301.16	0.45	0	0.45	1300.71	0.03
-03	University and Higher Education	1783.36	7.88	1791.24	1.59	0	1.59	1789.65	0.09
-04	Adult Education	185.12	0	185.12	0	0	0	185.12	0.00
-05	Language development	59.42	0	59.42	0	0	0	59.42	0.00
-80	General	63.42	3.41	66.83	1.3	0	1.30	65.53	1.95
2203	**Technical Education**	1266.35	13.42	1279.77	3.33	0	3.33	1276.44	0.26
2204	**Sports and Youth Services**	232.02	24.73	256.75	0.46	0	0.46	256.29	0.18
2205	**Art and culture**	534.62	62.18	596.80	34.79	0	34.79	562.01	5.83
2210-2211	**Health and Family welfare**	3039.96	127.81	3167.77	134.36	0.26	134.62	3033.15	4.25
2210	**Medical & Public Health**								
-01	Urban health services - allopathy	629.50	65.50	695.00	79.72	0	79.72	615.28	11.47
-02	Urban health services-other system	22.82	0	22.82	0	0	0.00	22.82	0.00
-03	Rural Health services-allopathy	17.81	6.61	24.42	1.63	0	1.63	22.79	6.67
-04	Rural health services-ayurveda	0.52	0	0.52	0	0	0.00	0.52	0.00
-05	Medical education, Training and research	965.83	24.12	989.95	0	0	0.00	989.95	0.00
-06	Public Health	609.57	18.44	628.01	21.27	0.11	21.38	606.63	3.40
-80	General	7.23	10.09	17.32	16.10	0	16.10	1.22	92.98
2211	**Family welfare**	786.68	3.06	789.74	15.64	0.15	15.79	773.95	2.00
2215	**Water Supply & sanitation**	985.38	76.63	1062.01	1.58	0.00	1.58	1060.43	0.15
-01	Water Supply	837.11	74.10	911.21	1.58	0	1.58	909.63	0.17
-02	Sanitation	148.27	2.53	150.80	0	0	0.00	150.80	0.00
2216	**Housing**	2223.13	755.76	2978.89	75.85	74.67	150.52	2828.37	5.05
-01	Government residential buildings	350.37	519.29	869.66	52.83	0	52.83	816.83	6.07
-02	Urban housing	221.57	20.00	241.57	0	35.38	35.38	206.19	14.65
-03	Rural housing	1644.45	55.64	1700.09	0	0.03	0.03	1700.06	0.00
-80	General	6.74	160.83	167.57	23.02	39.26	62.28	105.29	37.17
2217	**Urban Development**	7.81	283.21	291.02	0.26	0	0.26	290.76	0.09
2220	Information and publicity	197.39	20.99	218.38	163.31	0.01	163.32	55.06	114.84
-01	films	42.59	12.39	54.98	12.33	0.01	12.34	42.64	22.44
-60	others	154.80	8.60	163.40	150.98	0	150.98	12.42	92.40
2221	**Broadcasting**	967.24	800.55	1767.79	0.15	0	0.15	1767.64	0.01
2225	**Welfare of SC,ST and OBC**	151.46	241.61	393.07	0.00	0.00	0.00	393.07	0.00
-01	Welfare of SC	74.20	1.21	75.41	0	0	0.00	75.41	0.00
-02	Welfare of ST	64.47	14.99	79.46	0	0	0.00	79.46	0.00
-03	Welfare of BC	6.18	0.06	6.24	0	0	0	6.24	0.00
-80	General	6.61	225.35	231.96	0	0	0	231.96	0.00
2230	**Labor & Labor welfare**	726.60	0.00	726.60	4.18	0.00	4.18	722.42	0.58
-01	Labour	676.31	0	676.31	4.18	0	4.18	672.13	0.62

Table A2.2: Central Budgetary Subsidies 2002-2003 (contd.)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue Receipts	Interest & Dividends	Aggregate Receipts		
-02	Employment services	8.2	0	8.20	0	0	0	8.20	0.00
-03	Training	42.09	0	42.09	0	0	0	42.09	0.00
2235-2236	**Social welfare and Nutrition**	506.56	32.37	538.93	2.38	0.00	2.38	536.55	0.44
2235-01	Rehabilitation	1.25	19.94	21.19	0.43	0	0.43	20.76	2.03
2235-02	Social welfare	495.95	11.94	507.89	1.95	0	1.95	505.94	0.38
2236	**Nutrition**	9.36	0.49	9.85	0	0	0.00	9.85	0.00
2250	**Other social services**	8.17	12.51	20.68	0.05	0	0.05	20.63	0.24
2202-2250	***Total Social services***	18321.41	2483.80	20805.21	424.22	74.94	499.16	20306.05	2.40
2401	***Economic Services***	110220.12	37001.28	147221.40	60670.32	3310.96	63981.28	83240.12	43.46
2401-2435	**Agriculture and allied activities**	31009.61	3632.54	34642.15	205.97	223.56	429.53	34212.62	1.24
2401	Crop Husbandry	4341.60	514.76	4856.36	59.80	0.11	59.91	4796.45	1.23
2402	Soil and water conservation	10.64	2.46	13.10	0	0	0	13.10	0.00
2403	Animal Husbandry	92.11	7.95	100.06	8.95	0	8.95	91.11	8.94
2404	Dairy Development	133.60	76.19	209.79	108.22	85.41	193.63	16.16	92.30
2405	Fisheries	75.79	25.67	101.46	4.19	0.01	4.20	97.26	4.14
2406	Forestry and wild life	328.08	19.31	347.39	11.25	0	11.25	336.14	3.24
2407	Plantations	270.77	11.24	282.01	0	0	0.00	282.01	0.00
2408	Food storage & Warehousing, of which	24299.84	1038.4	25338.24	3	0	3.00	25335.24	0.01
	warehousing	8.25	236.10	244.35	0	0	0.00	244.35	0.00
2415	Agricultural Research and Education	1298.98	0.56	1299.54	0.01	0	0.01	1299.53	0.00
2416	Agricultural Financial Institution	30.51	363.31	393.82	0	58.45	58.45	335.37	14.84
2425	Cooperation	32.57	135.67	168.24	0.19	79.58	79.77	88.47	47.42
2435	Other Agricultural programmes	86.87	1200.92	1287.79	10.36	0	10.36	1277.43	0.80
2501-2515	**Rural development**	2624.56	3.55	2628.11	0.20	0.00	0.20	2627.91	0.01
2501	Special prog for rural development	1551.23	0.00	1551.23	0.00	0.00	0.00	1551.23	0.00
-02	Draught prone areas development programme	250.00	0.00	250.00	0.00	0.00	0.00	250.00	0.00
-03	Desert development programme	185.00	0.00	185.00	0.00	0.00	0.00	185.00	0.00
-04	Integrated rural energy planning programme	0.47	0.00	0.47	0.00	0.00	0.00	0.47	0.00
-05	Waste land development	409.76	0.00	409.76	0.00	0.00	0.00	409.76	0.00
-60	Self Employment Prog	706.00	0.00	706.00	0.00	0.00	0.00	706.00	0.00
2505	Rural employment	785.18	0.00	785.18	0.00	0.00	0.00	785.18	0.00
2506	Land reforms	0.50	0.00	0.50	0.00	0.00	0.00	0.50	0.00
2515	Other rural devt programmes	287.65	3.55	291.20	0.20	0.00	0.20	291.00	0.07
2552-2553	**Special area programmes**	1768.58	471.23	2239.81	0.00	8.14	8.14	2231.67	0.36
2552	North Eastern areas	168.58	471.23	639.81	0	8.14	8.14	631.67	1.27
2553	MPs LADs	1600.00	0	1600.00	0	0	0.00	1600.00	0.00
2701-2702	**Irrigation & Flood Control**	334.24	55.09	389.33	18.81	0.22	19.03	370.30	4.89

Table A2.2: Central Budgetary Subsidies 2002-2003 (contd.)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue Receipts	Interest & Dividends	Aggregate Receipts		
2701-80	General	123.58	32.29	155.87	0	0	0.00	155.87	0.00
2702	Minor Irrigation	121.09	4.71	125.80	18.81	0	18.81	106.99	14.95
2705	Command area development	1.93	1.30	3.23	0	0.22	0.22	3.01	6.81
2711	Flood control and drainage	87.64	16.79	104.43	0	0	0.00	104.43	0.00
2801-2810	**Energy**	9243.41	7168.56	16411.97	5966.58	1476.99	7443.57	8968.40	45.35
2801	**Power**	3559.49	5018.62	8578.11	2928.03	1100.04	4028.07	4550.04	46.96
-01	Hydel Generation	0	1886.44	1886.44	4.01	224.68	228.69	1657.75	12.12
-02	Thermal Power Generation	1043.16	273.96	1317.12	1049.61	145.91	1195.52	121.60	90.77
-03	Nuclear Power Generation	1412.05	1158.36	2570.41	1486.43	25.44	1511.87	1058.54	58.82
-04	Diesel /Gas Power Generation	117.06	186.17	303.23	38.44	0	38.44	264.79	12.68
-05	Transmission and Distn.	244.18	928.13	1172.31	342.35	438.78	781.13	391.18	66.63
-06	Rural electrification	257.87	414.10	671.97	0	263.93	263.93	408.04	39.28
-80	General	485.17	171.45	656.62	7.19	1.3	8.49	648.13	1.29
2802	**Petroleum**	5225.47	516.33	5741.80	3037.9	0.69	3038.59	2703.21	52.92
2803	**Coal and Lignite**	243.24	1580.16	1823.40	0.01	325.78	325.79	1497.61	17.87
2810	**Non-conventional sources of energy**	215.21	53.45	268.66	0.64	50.48	51.12	217.54	19.03
2851-2885	**Industry and Minerals**	13166.71	10319.41	23486.12	1165.06	1274.53	2439.59	21046.53	10.39
2851-2852	**Industries**	11732.99	9068.99	20801.98	887.13	553.28	1440.41	19361.57	6.92
2851	**Village and small industries**	1192.26	204.19	1396.45	20.68	61.1	81.78	1314.67	5.86
2852-01	Iron and Steel Industries	296.39	863.47	1159.86	0.54	1.1	1.64	1158.22	0.14
2852-02	Cement & non- metallic mineral industries	14.79	76.81	91.60	8.04	1.5	9.54	82.06	10.41
2852-03	Fertiliser industries	7812.00	1134.39	8946.39	24.34	0	24.34	8922.05	0.27
2852-04	Petrochemicals industries	9.24	21.02	30.26	0	6.24	6.24	24.02	20.62
2852-05	Chemicals and pharmaceutical industries	35.65	116.82	152.47	0.14	0	0.14	152.33	0.09
2852-06	Engineering industries	161.65	457.58	619.23	0.07	37.72	37.79	581.44	6.10
2852-07	Telecommunication and electronic industries	297.93	3846.93	4144.86	8.96	0	8.96	4135.90	0.22
2852-08	Consumer industries	1036.60	1111.67	2148.27	19.69	445.62	465.31	1682.96	21.66
2852-09	Atomic energy industries	748.58	1236.11	1984.69	801.47	0	801.47	1183.22	40.38
2852-80	General	127.90	0	127.90	3.20	0	3.20	124.70	2.50
2853	**Non -Ferrous Mining and Metallic industries**	**993.78**	**105.89**	**1099.67**	**8.15**	**26.82**	**34.97**	**1064.70**	**3.18**
-01	Geological survey of India	243.93	5.66	249.59	5.47	0	5.47	244.12	2.19
-02	Other Mining and Metallic industries	749.85	100.23	850.08	2.68	26.82	29.50	820.58	3.47
2875	**Other Industries**	178.84	123.41	302.25	269.78	0	269.78	32.47	89.26
2885	**Other Outlays on Industries and Minerals**	**261.10**	**1021.12**	**1282.22**	**0.00**	**694.43**	**694.43**	**587.79**	**54.16**
-01	Industrial Financial Institutions	67.43	1008.08	1075.51	0	694.4	694.40	381.11	64.56
-02	Development of Backward areas	193.67	0	193.67	0	0	0	193.67	0.00

Table A2.2: Central Budgetary Subsidies 2002-2003 (contd.)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue Receipts	Interest & Dividends	Aggregate Receipts		
-03	Others	0	13.03	13.03	0	0.03	0.03	13.00	0.23
3051-3075	**Transport (excluding Railways)**	**4761.88**	**5853.69**	**10615.57**	**320.46**	**322.90**	**643.36**	**9972.21**	**6.06**
3051	**Ports and Light Houses**	**330.22**	**325.58**	**655.80**	**99.78**	**201.85**	**301.63**	**354.17**	**45.99**
-01	Major Ports	200.00	235.24	435.24	11.14	201.85	212.99	222.25	48.94
-02	Minor Ports	55.97	76.95	132.92	1.30	0	1.30	131.62	0.98
-03	Lighthouses and Light ships	69.79	2.80	72.59	87.29	0.00	87.29	-14.70	120.25
-80	General	4.46	10.59	15.05	0.05	0	0.05	15.00	0.33
3052	**Shipping**	**231.78**	**308.05**	**539.83**	**57.27**	**26.00**	**83.27**	**456.56**	**15.43**
-01	overseas shipping	60.72	48.52	109.24	18.96	0	18.96	90.28	17.36
-02	coastal shipping	171.06	67.64	238.70	31.73	24.61	56.34	182.36	23.60
-80	General	0	191.88	191.88	6.58	1.39	7.97	183.91	4.15
3053	Civil Aviation	242.52	150.36	392.88	3.06	12.84	15.90	376.98	4.05
3054	**Roads and Bridges**	**3491.39**	**4781.39**	**8272.78**	**96.82**	**0.00**	**96.82**	**8175.96**	**1.17**
-01	National Highways	634.75	4035.58	4670.33	72.56	0	72.56	4597.77	1.55
-02	Strategic and Border Roads	75.19	621.00	696.19	0	0	0.00	696.19	0.00
-03	State highways	0.35	19.94	20.29	0	0	0.00	20.29	0.00
-04	District and other Roads	2514.54	55.37	2569.91	0	0	0.00	2569.91	0.00
-05	Roads of Inter -state importance	0.01	0	0.01	0	0	0.00	0.01	0.00
3054-80	General	266.55	49.50	316.05	24.26	0	24.26	291.79	7.68
3055	**Road Transport**	**99.24**	**158.44**	**257.68**	**63.23**	**0**	**63.23**	**194.45**	**24.54**
3056	**Inland Water Transport**	**81.73**	**25.97**	**107.70**	**0.30**	**0**	**0.30**	**107.40**	**0.28**
3075	**Other transport services**	**285.00**	**103.90**	**388.90**	**0.00**	**82.21**	**82.21**	**306.69**	**21.14**
3201	**Postal services**	**4001.39**	**161.52**	**4162.91**	**4009.65**	**0**	**4009.65**	**153.26**	**96.32**
3252	**Satellite systems**	**759.05**	**70.97**	**830.02**	**0**	**0**	**0.00**	**830.02**	**0.00**
3275	**Other communication services**	**2644.39**	**942.37**	**3586.76**	**5541.02**	**0**	**5541.02**	**-1954.26**	**154.49**
3401-3425	**Scientific Research**	**4120.57**	**644.13**	**4764.70**	**109.33**	**3.16**	**112.49**	**4652.21**	**2.36**
3401	**Atomic energy Research**	979.36	301.14	1280.50	28.41	0	28.41	1252.09	2.22
3402	**Space Research**	1099.04	328.25	1427.29	1.99	0	1.99	1425.30	0.14
3403	**Oceanographic research**	162.82	12.09	174.91	0	0	0.00	174.91	0.00
3425	**Other Scientific Research**	1879.35	2.64	1881.99	78.93	3.16	82.09	1799.90	4.36
3435	**Ecology and Environment**	525.29	50.72	576.01	0.00	0.00	0.00	576.01	0.00
-01	Survey(Botanical)	11.28	17.00	28.28	0	0	0.00	28.28	0.00
-02	Survey Zoological	9.11	0	9.11	0	0	0.00	9.11	0.00
-03	Environmental Research	50.54	15.08	65.62	0	0	0.00	65.62	0.00
-04	Prevention and cure of pollution	388.63	0.38	389.01	0	0	0.00	389.01	0.00
-60	others	65.73	18.26	83.99	0	0	0.00	83.99	0.00
3452-3475	General Economic Services	5291.99	219.299	5511.28859	591.77	1.46	593.23	4918.059	10.76
3452	**Tourism**	144.95	69.7639655	214.713966	3.33	0	3.33	211.384	1.55
-01	Tourist Infrastructure	8.43	67.31	75.74	0.32	0	0.32	75.42	0.42
-80	General	136.52	2.45	138.97	3.01	0	3.01	135.96	2.17
3453	**Foreign Trade and Export promotion**	929.32	14.78	944.10	157.84	0	157.84	786.26	16.72
3454	**Census Survey and Statistics**	235.10	0.00	235.10	0	0	0.00	235.10	0.00

Table A2.2: Central Budgetary Subsidies 2002-2003

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue Receipts	Interest & Dividends	Aggregate Receipts		
3455	**Meteorology**	116.73	57.57	174.30	0	0	0.00	174.30	0.00
3456	**Civil Supplies**	32.52	0.00	32.52	2	0	2.00	30.52	6.15
3475	**Other General economic services**	3833.37	77.19	3910.56	428.6	1.46	430.06	3480.50	11.00
3001-3003	**Railways**	29968.45	7408.20	37376.65	42741.47	0.00	42741.47	-5364.82	114.35
3001	Policy formulation, direction & research	159.24	0.00	159.24	1673.25	0	1673.25	-1514.01	1050.77
3002	Commercial lines	29386.26	7324.07	36710.33	40939.69	0	40939.69	-4229.36	111.52
3003	Strategic lines	422.95	84.14	507.09	128.53	0	128.53	378.56	25.35

Source: As in Table 2.2.

Table A2.3: Central Budgetary Subsidies 2003-2004 (Provisional)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue receipts	Interest & Dividends	Aggregate Receipts		
2202-2205	**Education, sports, art and culture**	**10671.85**	**2534.19**	**13206.04**	**53.43**	**0.00**	**53.43**	**13152.61**	0.40
2202	General education	8554.86	40.46	8595.32	4.37	0.00	4.37	8590.96	0.05
-01	Elementary Education	5064.49	12.37	5076.86	0.18	0.00	0.18	5076.67	0.00
-02	Secondary Education	1404.95	16.65	1421.60	0.49	0.00	0.49	1421.11	0.03
-03	University and Higher Education	1753.95	8.11	1762.06	2.67	0.00	2.67	1759.38	0.15
-04	Adult Education	205.70	0.00	205.70	0.00	0.00	0.00	205.70	0.00
-05	Language development	56.03	0.00	56.03	0.00	0.00	0.00	56.03	0.00
-80	General	69.75	3.33	73.08	1.02	0.00	1.02	72.06	1.40
2203	Technical Education	1343.00	13.55	1356.55	3.89	0.00	3.89	1352.65	0.29
2204	Sports and Youth Services	242.79	2422.40	2665.19	0.84	0.00	0.84	2664.35	0.03
2205	Art and culture	531.20	57.78	588.98	44.33	0.00	44.33	544.65	7.53
2210-2211	**Health (01-05)**	**1849.12**	**104.18**	**1953.30**	**73.27**	**0.00**	**73.27**	**1880.03**	3.75
2210-01	Urban health services	747.35	72.99	820.34	72.46	0.00	72.46	747.88	8.83
2210-02	Urban health services-other system	25.34	0.00	25.34	0.00	0.00	0.00	25.34	0.00
2210-03	Rural Health services-allopathy	19.04	6.32	25.37	0.80	0.00	0.80	24.56	3.17
2210-04	Rural health services-ayurveda	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2210-05	Medical education, Training & research	1057.39	24.86	1082.26	0.01	0.00	0.01	1082.25	0.00
2210-06	Public Health	604.65	15.92	620.57	26.92	0.00	26.92	593.65	4.34
2210-80	General	7.16	10.95	18.11	3.21	0.00	3.21	14.90	17.72
2211	**Family welfare**	**1258.24**	**0.24**	**1258.48**	**17.83**	**0.39**	**18.22**	**1240.27**	1.45
2215	**Water Supply, sanitation**	**1236.98**	**79.13**	**1316.12**	**1.61**	**0.00**	**1.61**	**1314.51**	0.12

Table A2.3: Central Budgetary Subsidies 2003-2004 (Provisional) (contd.)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue receipts	Interest & Dividends	Aggregate Receipts		
-01	Water Supply	1003.77	76.73	1080.51	1.61	0.00	1.61	1078.90	0.15
-02	Sanitation	233.21	2.40	235.61	0.00	0.00	0.00	235.61	0.00
2216	**Housing**	**2456.07**	**790.22**	**3246.29**	**77.85**	**46.90**	**124.75**	**3121.53**	3.84
-01	Government residential buildings	326.09	538.71	864.80	50.42	43.30	93.72	771.08	10.84
-02	Urban housing	234.82	9.05	243.87	0.00	0.00	0.00	243.87	0.00
-03	Rural housing	1889.97	68.77	1958.74	0.00	3.60	3.60	1955.15	0.18
-80	General	5.18	173.70	178.88	27.44	0.00	27.44	151.44	15.34
2217	**Urban Development**	**6.05**	**437.76**	**443.81**	**0.56**	**0.00**	**0.56**	**443.25**	0.13
2220	**Information and publicity**	**207.02**	**20.69**	**227.71**	**183.01**	**0.05**	**183.06**	**44.65**	80.39
-01	Films	207.02	20.69	227.71	183.01	0.05	183.06	44.65	80.39
2221	**Broadcasting**	**1001.47**	**54.34**	**1055.81**	**4.30**	**0.00**	**4.30**	**1051.51**	0.41
2225	**Welfare of SC, ST and OBC**	**66.35**	**251.17**	**317.53**	**0.00**	**0.04**	**0.04**	**317.49**	0.01
-01	Welfare of SC	-0.09	1.15	1.07	0.00	0.04	0.04	1.03	3.75
-02	Welfare of ST	51.87	14.37	66.24	0.00	0.00	0.00	66.24	0.00
-03	Welfare of backward classes	4.56	0.00	4.56	0.00	0.00	0.00	4.56	0.00
-80	General	10.01	235.65	245.66	0.00	0.00	0.00	245.66	0.00
2230	**Labour and Labour welfare**	**796.09**	**1.13**	**797.22**	**5.42**	**0.00**	**5.42**	**791.80**	0.68
-01	Labour	734.42	1.13	735.55	5.42	0.00	5.42	730.13	0.74
-02	Employment services	17.96	0.00	17.96	0.00	0.00	0.00	17.96	0.00
-03	Training	43.71	0.00	43.71	0.00	0.00	0.00	43.71	0.00
2235-2236	**Social welfare and Nutrition**	**448.96**	**38.57**	**487.52**	**2.43**	**0.00**	**2.43**	**485.10**	0.50
2235-01	Rehabilitation	5.11	19.07	24.17	0.58	0.00	0.58	23.59	2.41
2235-02	Social welfare	427.68	19.06	446.74	1.84	0.00	1.84	444.89	0.41
2236	nutrition	16.17	0.44	16.61	0.00	0.00	0.00	16.61	0.00
2250	**Other social services**	**9.40**	**13.92**	**23.31**	**0.00**	**0.00**	**0.00**	**23.31**	0.00
2202-2250	***Total Social services***	***20619.41***	***4352.41***	***24971.82***	***449.84***	***47.38***	***497.22***	***24474.61***	***1.99***
2401-3003	***Economic Services***	***116635.80***	***38507.71***	***155143.51***	***70037.64***	***2917.33***	***72954.97***	***82188.54***	***47.02***
2401-2435	**Agriculture and allied activities**	**32928.33**	**2264.11**	**35192.44**	**236.94**	**179.38**	**416.32**	**34776.12**	1.18
2401	Crop Husbandry	4615.82	489.65	5105.47	64.64	0.02	64.66	5040.81	1.27
2402	Soil and water conservation	13.79	2.72	16.50	0.00	0.00	0.00	16.50	0.00
2403	Animal Husbandry	105.66	7.81	113.47	6.57	0.00	6.57	106.91	5.79
2404	Dairy Development	163.11	61.67	224.78	138.23	57.11	195.34	29.44	86.90
2405	Fisheries	52.66	35.37	88.04	1.95	0.45	2.40	85.64	2.73
2406	Forestry and wild life	403.36	20.88	424.24	10.20	0.00	10.20	414.04	2.40
2407	Plantations	415.75	8.90	424.65	1.06	0.09	1.16	423.49	0.27
2408	Food storage & Warehousing, of which warehousing	25536.164 9.17	992.6 217.54	26528.80 226.71	4.50 0.00	0.58 0.00	5.08 0.00	26523.71 226.71	0.02 0.00

Table A2.3: Central Budgetary Subsidies 2003-2004 (Provisional) (contd.)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue receipts	Interest & Dividends	Aggregate Receipts		
2415	Agricultural Research and Education	1435.65	0.53	1436.18	0.00	0.00	0.00	1436.18	0.00
2416	Agricultural Financial Institution	27.36	329.74	357.10	0.00	41.70	41.70	315.40	11.68
2425	Cooperation	43.08	92.37	135.45	0.30	79.42	79.72	55.73	58.86
2435	Other Agricultural programmes	106.76	4.31	111.07	9.49	0.00	9.49	101.58	8.55
2501-2515	**Rural development**	**12460.12**	**1078.20**	**13538.32**	**0.15**	**0.00**	**0.15**	**13538.17**	0.00
2501-02	Draught prone Areas devt programme	294.80	3.70	298.50	0.00	0.00	0.00	298.50	0.00
2501-03	Desert development programme	233.54	0.00	233.54	0.00	0.00	0.00	233.54	0.00
2501-04	Integrated rural energy planning programme	68.65	0.00	68.65	0.00	0.00	0.00	68.65	0.00
2501-05	Wasteland development	361.34	0.00	361.34	0.00	0.00	0.00	361.34	0.00
2501-60	Self Employment Programmes	797.69	0.00	797.69	0.00	0.00	0.00	797.69	0.00
2505	Rural employment	232.83	0.00	232.83	0.00	0.00	0.00	232.83	0.00
2505-60	Other Programmes	10126.86	0.00	10126.86	0.00	0.00	0.00	10126.86	0.00
2506	Land reforms	0.96	0.00	0.96	0.00	0.00	0.00	0.96	0.00
2515	Other rural devt programmes	343.46	1074.50	1417.96	0.15	0.00	0.15	1417.81	0.01
2552-2553	**Special area programmes**	**1810.77**	**478.42**	**2289.19**	**0.00**	**24.28**	**24.28**	**2264.91**	1.06
2552	North Eastern areas	128.77	478.42	607.19	0.00	24.28	24.28	582.91	4.00
2553	MPLADS	1682.00	0.00	1682.00	0.00	0.00	0.00	1682.00	0.00
2701-2702	**Irrigation**	**355.30**	**59.42**	**414.72**	**9.41**	**0.15**	**9.56**	**405.17**	2.30
2701-80	Major and Medium Irrigation - General	139.71	36.45	176.16	8.23	0.00	8.23	167.93	4.67
2702	Minor Irrigation	111.63	4.92	116.56	1.18	0.00	1.18	115.38	1.01
2705	Command area development	2.57	0.93	3.51	0.00	0.15	0.15	3.36	4.26
2711	Flood control and drainage	101.38	17.11	118.50	0.00	0.00	0.00	118.50	0.00
2801	**Power**	**3042.78**	**6287.68**	**9330.46**	**3001.86**	**1139.95**	**4141.81**	**5188.65**	44.39
-01	Hydel Generation	0	2105.03	2105.03	1.38	291.09	292.46	1812.56	13.89
-02	Thermal Power Generation	1016.41	1319.54	2335.95	1037.62	16.35	1053.97	1281.99	45.12
-03	Nuclear Power Generation	1261.09	1400.49	2661.59	1512.54	491.63	2004.17	657.42	75.30
-04	Diesel /Gas Power Generation	110.02	271.07	381.09	37.11	22.99	60.10	320.98	15.77
-05	Transmission and distribution	262.96	842.74	1105.70	406.61	241.29	647.90	457.80	58.60
-06	Rural electrification	100.00	158.99	258.99	0.00	75.78	75.78	183.21	29.26

Table A2.3: Central Budgetary Subsidies 2003-2004 (Provisional) (contd.)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue receipts	Interest & Dividends	Aggregate Receipts		
2801-80	General	292.30	189.83	482.13	6.60	0.84	7.44	474.69	1.54
2802	**Petroleum**	**6901.49**	**493.35**	**7394.84**	**3198.71**	**0.08**	**3198.79**	**4196.05**	43.26
2803	**Coal and Lignite**	**192.83**	**1441.36**	**1634.19**	**0.61**	**53.40**	**54.01**	**1580.18**	3.31
2810	**Non-conventional sources of energy**	**248.85**	**101.59**	**350.44**	**0.21**	**38.12**	**38.34**	**312.10**	10.94
2851-2885	**Industry and Minerals**	**15011.62**	**7793.28**	**22804.90**	**3697.78**	**290.08**	**3987.86**	**18817.04**	17.49
2851	Village and small industries	1367.89	210.31	1578.20	22.99	33.00	55.99	1522.21	3.55
2852-01	Iron and Steel Industries	3131.58	1999.45	5131.03	0.46	49.05	49.51	5081.52	0.96
2852-02	Cement & non- metallic mineral industries	14.29	100.23	114.53	8.82	0.00	8.82	105.71	7.70
2852-03	Fertiliser industries	8542.08	1181.79	9723.87	28.88	204.52	233.40	9490.47	2.40
2852-04	Petrochemicals industries	14.78	14.57	29.35	0.00	1.66	1.66	27.69	5.65
2852-05	Chemicals and pharma industries	26.41	226.04	252.45	0.74	0.00	0.74	251.71	0.29
2852-06	Engineering industries	234.04	1078.90	1312.93	0.00	1.78	1.78	1311.16	0.14
2852-07	Telecommunication and electronic industries	299.74	382.51	682.25	6.60	0.00	6.60	675.65	0.97
2852-08	Consumer industries	601.92	1106.36	1708.28	29.23	0.07	29.30	1678.98	1.72
2852-09	Atomic energy industries	613.60	1275.11	1888.70	735.38	0.00	735.38	1153.32	38.94
2852-80	General	165.30	218.02	383.31	2864.68	0.00	2864.68	-2481.37	747.35
2853	**Non -Ferrous Mining and Metallic industries**								
-01	Geological survey of India	146.34	50.09	196.43	11.23	0.32	11.55	184.88	5.88
-02	Other Mining and Metallic industries	72.11	36.56	108.67	2.64	0.00	2.64	106.03	2.43
2875	Other Industries								
-01	Opium and Alkaloid industries	193.22	5014.2	5207.47	322.58	0.00	322.58	4884.89	6.19
2885	**Other Outlays on Industries and Minerals**								
-01	Industrial Financial Institutions	2388.28	990.24	3378.52	0.00	432.76	432.76	2945.75	12.81
-02	Development of Backward areas	107.43	4.79	112.22	0.00	0.00	0.00	112.22	0.00
-03	Others								
3051-3075	**Transport (excl. Railways)**	**4356.80**	**4015.76**	**8372.56**	**322.69**	**648.01**	**970.69**	**7401.86**	11.59
3051	**Ports and Light Houses**	**391.33**	**282.66**	**673.99**	**115.90**	**583.10**	**699.00**	**-25.01**	103.71
-01	Major Ports	260.79	279.28	540.07	13.59	583.1	596.69	-56.62	110.48
-02	Minor Ports	57.14	0.00	57.14	2.25	0.00	2.25	54.89	3.94
-03	Light Houses and Light ships	70.87	0.00	70.87	100.06	0.00	100.06	-29.20	141.20
-80	General	2.54	3.38	5.92	0.00	0.00	0.00	5.92	0.00
3052	**Shipping**	**161.84**	**300.55**	**462.38**	**46.69**	**0.05**	**46.74**	**415.64**	47.16
-01	Overseas shipping	0.00	47.66	47.66	15.46	0.05	15.51	32.15	32.53

Table A2.3: Central Budgetary Subsidies 2003-2004 (Provisional) (contd.)

Budget Code		Costs			Receipts			Subsidy	Recovery rate(%)
		Revenue Expenditure	Capital Cost (Annualised)	Aggregate Costs	Revenue receipts	Interest & Dividends	Aggregate Receipts		
-02	Coastal shipping	161.84	62.98	224.82	22.31	0.00	22.31	202.50	9.92
-80	General	0.00	189.91	189.91	8.93	0.00	8.93	180.98	4.70
3053	**Civil Aviation**	**245.53**	**140.33**	**385.86**	**3.14**	**1.91**	**5.05**	**380.81**	1.31
3054	**Roads and Bridges**	**3416.17**	**3033.75**	**6449.92**	**86.48**	**0.00**	**86.48**	**6363.44**	1.34
-01	National Highways	543.16	3033.75	3576.91	69.92	0.00	69.92	3506.99	1.95
-02	Strategic and Border Roads	79.70	0.00	79.70	0.00	0.00	0.00	79.70	0.00
-03	State highways	0.09	0.00	0.09	0.00	0.00	0.00	0.09	0.00
-04	District and other Roads	2348.38	0.00	2348.38	0.00	0.00	0.00	2348.38	0.00
-05	Roads of Inter-state importance	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00
-80	General	444.82	0.00	444.82	16.56	0.00	16.56	428.26	3.72
3055	**Road Transport**	**111.45**	**149.14**	**260.59**	**70.03**	**0.00**	**70.03**	**190.55**	26.88
3056	**Inland Water Transport**	**5.40**	**28.96**	**34.35**	**0.44**	**0.00**	**0.44**	**33.91**	1.29
3075	**Other transport services**	**25.09**	**80.38**	**105.47**	**0.00**	**62.95**	**62.95**	**42.52**	59.69
3201	**Postal services**	**4520.31**	**138.96**	**4659.26**	**4256.93**	**0.00**	**4256.93**	**402.33**	91.36
3252	**Satellite systems**	**434.04**	**0.00**	**434.04**	**0.00**	**0.00**	**0.00**	**434.04**	0.00
3275	**Other communi-cation services**	**2622.22**	**87.20**	**2709.42**	**9221.63**	**0.00**	**9221.63**	**-6512.22**	340.35
3401-3425	**Science Technology and Environemnt**	**5025.91**	**737.84**	**5763.75**	**131.05**	**0.59**	**131.65**	**5632.10**	2.28
3401	Atomic energy Research	976.54	320.29	1296.83	30.06	0.00	30.06	1266.76	2.32
3402	Space Research	1372.65	351.87	1724.52	0.00	0.00	0.00	1724.52	0.00
3403	Oceanographical research	165.73	11.70	177.43	0.00	0.00	0.00	177.43	0.00
3425	Other Scientific Research	2126.83	53.98	2180.82	100.99	0.59	101.59	2079.23	4.66
3435	Ecology and Environment	384.16	0.00	384.16	0.00	0.00	0.00	384.16	0.00
3452-3475	**General Economic Services**	**2413.88**	**347.20**	**2761.08**	**711.73**	**110.20**	**821.93**	**1939.15**	29.77
3452	**Tourism**								
-01	Tourist Infrastructure	2.69	86.62	89.31	0.21	0.00	0.21	89.09	0.24
-80	General	138.45	2.48	140.93	3.62	0.00	3.62	137.31	2.57
3453	**Foreign Trade and Export promotion**	**1033.96**	**112.26**	**1146.22**	**157.21**	**0.00**	**157.21**	**989.02**	13.72
3454	**Census Survey and Statistics**	**271.67**	**0.00**	**271.67**	**0.00**	**0.00**	**0.00**	**271.67**	0.00
3455	**Meterology**	**122.27**	**62.82**	**185.08**	**0.00**	**0.00**	**0.00**	**185.08**	0.00
3456	**Civil Supplies**	**1.64**	**0.00**	**1.64**	**0.11**	**0.00**	**0.11**	**1.53**	6.58
3475	**Other economic services**	**843.21**	**83.02**	**926.23**	**550.58**	**110.20**	**660.78**	**265.45**	71.34
3001-3003	**Railways**	**21403.16**	**7087.43**	**28490.58**	**44911.49**	**0.00**	**44911.49**	**-16420.91**	157.64
3001	policy formulation direction research	-569.42	0.00	-569.42	2006.49	0.00	2006.49	-2575.91	-352.378
3002	Commercial lines	21752.65	7006.93	28759.59	42793.54	0.00	42793.54	-14033.95	148.80
3003	Strategic lines	219.92	80.49	300.41	111.46	0.00	111.46	188.95	37.10

Source: As in Table 2.2

Table A2.4: Classification of Central Subsidies in Economic services: Merit and Non-Merit 2002-03

(Rs crore)

Budget Code	Service	Cost			Receipts			Subsidy
		Current	Capital	Total				
	Economic service : Merit I							
3435	Ecology and Environment	525.29	50.72	576.01	0.00	0.00	0.00	576.01
2402	Soil and water conservation	10.64	2.46	13.10	0.00	0.00	0.00	13.10
	Economic service :Merit II							
2415	Agricultural Research and Education	1298.98	0.56	1299.54	0.01	0.00	0.01	1299.53
3454	Census survey and statistics	235.10	0.00	235.10	0.00	0.00	0.00	235.10
2705	Command Area Development	1.93	1.30	3.23	0.00	0.22	0.22	3.01
2711	Flood Control and Drainage	87.64	16.79	104.43	0.00	0.00	0.00	104.43
2405	Forestry and wild life	328.08	19.31	347.39	11.25	0.00	11.25	336.14
3056	Inland water Transport	81.73	25.97	107.70	0.30	0.00	0.30	107.40
2506	Land Reforms	0.50	0.00	0.50	0.00	0.00	0.00	0.50
3455	Metrology	116.73	57.57	174.30	0.00	0.00	0.00	174.30
2553	MPs Local Area Programme	1600.00	0.00	1600.00	0.00	0.00	0.00	1600.00
2810	Non-conventional Energy	215.21	53.45	268.66	0.64	50.48	51.12	217.54
2435	Other Agricultural Programmes	86.87	4.31	91.18	10.36	0.00	10.36	80.82
2515	Other Rural Development Programmes	1072.83	3.55	1076.38	0.20	0.00	0.20	1076.18
3051	Ports and Light Houses	330.22	325.58	655.80	99.78	201.85	301.63	354.17
3054	Roads and Bridges	3491.39	4781.39	8272.78	96.82	0.00	96.82	8175.96
3401-3425	Scientific Research	4120.57	644.13	4764.70	109.33	3.16	112.49	4652.21
2552	Special programmes for North -Eastern Areas	168.58	471.23	639.81	0.00	8.14	8.14	631.67
2501	Special programmes for rural Development	1551.23	0.00	1551.23	0.00	0.00	0.00	1551.23
2851	Village and small Industries	1192.26	204.19	1396.45	20.68	61.10	81.78	1314.67
	Economic Services :Non-Merit							
2416	Agricultural Financial Institution	30.51	363.31	393.82	0.00	58.45	58.45	335.37
2403	Animal Husbandry	92.11	7.95	100.06	8.95	0.00	8.95	91.11
3053	Civil Aviation	242.52	150.36	392.88	3.06	12.84	15.90	376.98
3456	Civil Supplies	32.52	0.00	32.52	2.00	0.00	2.00	30.52
2803	Coal and Lignite	243.24	1580.16	1823.40	0.01	325.78	325.79	1497.61
2425	cooperation	32.57	135.67	168.24	0.19	79.58	79.77	88.47
2401	Crop Husbandry	4341.60	514.76	4856.36	59.80	0.11	59.91	4796.45
2404	Dairy Development	133.60	76.19	209.79	108.22	85.41	193.63	16.16
2405	Fisheries	75.79	25.67	101.46	4.19	0.01	4.20	97.26
2408	Food storage and warehousing	24308.09	1274.51	25582.60	3.00	0.00	3.00	25579.60
3453	Foreign Trade and Export promotion	929.32	112.26	1041.58	157.84	0.00	157.84	883.74
2852	Industries	10540.73	8864.80	19405.53	866.45	492.18	1358.63	18046.90
2701	Major and Medium Irrigation	123.58	32.29	155.87	0.00	0.00	0.00	155.87
2702	Minor Irrigation	121.09	4.71	125.80	18.81	0.00	18.81	106.99

Table A2.4: Classification of Central Subsidies in Economic services: Merit and Non-Merit 2002-03 (contd.)

(Rs crore)

Budget Code	Service	Cost			Receipts			Subsidy
		Current	Capital	Total				
2853	Non-ferrous Mining and Metal Industries	993.78	105.89	1099.67	8.15	26.82	34.97	1064.70
3475	other General economic services	3833.37	77.19	3910.56	428.6	1.46	430.06	3480.50
2875	Other Industries	178.84	123.41	302.25	269.78	0.00	269.78	32.47
3075	Other Transport Services	285.00	103.90	388.90	0.00	82.21	82.21	306.69
2802	Petroleum	5225.47	516.33	5741.80	3037.90	0.69	3038.59	2703.21
2407	Plantations	270.77	11.24	282.01	0.00	0.00	0.00	282.01
3201	Postal	4001.39	161.52	4162.91	4009.65	0.00	4009.65	153.26
2801	Power	3559.49	5018.62	8578.11	2928.03	1100.04	4028.07	4550.04
3001-3003	Railways	29968.45	7408.20	37376.65	42741.47	0.00	42741.47	-5364.82
3055	Road Transport	99.24	158.44	257.68	63.23	0.00	63.23	194.45
3252	Satellite systems	759.05	70.97	830.02	0.00	0.00	0.00	830.02
3052	Shipping	231.78	308.05	539.83	57.27	26.00	83.27	456.56
3452	Tourism	144.95	69.76	214.71	3.33	0.00	3.33	211.38

Note: Excludes surplus sectors
Source: As in Table 2.2.

Table A2.5: Classification of Central Subsidies in Economic services 2003-04 (Provisional)

(Rs crore)

Budget Code	Service	Cost			Receipts	Subsidy	Recovery rate(%)
		Current	Capital	Total			
	Economic service :merit I						
3435	Ecology and Environment	384.16	0.00	384.16	0.00	384.16	0.00
3252	Satellite Systems	434.04	0.00	434.04	0.00	434.04	0.00
2402	Soil and water conservation	13.79	2.72	16.50	0.00	16.50	0.00
	Economic services-Merit II						
2415	Agricultural Research and Education	1435.65	0.53	1436.18	0.00	1436.18	0.00
3401	Atomic Energy research	976.54	320.29	1296.83	30.06	1266.76	0.02
3454	Census Surveys and statistics	271.67	0.00	271.67	0.00	271.67	0.00
2705	Command Area Development	2.57	0.93	3.51	0.15	3.36	0.04
2711	Flood control and Drainage	101.38	17.11	118.50	0.00	118.50	0.00
2406	Forestry	403.36	20.88	424.24	10.20	414.04	0.02
3056	Inland water Transport	5.40	28.96	34.35	0.44	33.91	1.29
2506	Land Reforms	0.96	0.00	0.96	0.00	0.96	0.00
3455	Meteorology	122.27	62.82	185.08	0.00	185.08	0.00
2553	MPs Local area Development	1682.00	0.00	1682.00	0.00	1682.00	0.00
2810	Non-conventional energy	248.85	101.59	350.44	38.34	312.10	0.11
3403	Oceanographic research	165.73	11.70	177.43	0.00	177.43	0.00
2435	Other Agricultural Programmes	106.76	4.31	111.07	9.49	101.58	0.09

Table A2.5: Classification of Central Subsidies in Economic services 2003-04 (Provisional) (contd.)

(Rs crore)

Budget Code	Service	Cost			Receipts	Subsidy	Recovery rate(%)
		Current	Capital	Total			
2515	Other Rural Development programmes	343.46	1074.50	1417.96	0.15	1417.81	0.00
3425	Other scientific research	2126.83	53.98	2180.82	101.59	2079.23	0.05
3054	Roads and Bridges	3416.17	3033.75	6449.92	86.48	6363.44	0.01
3402	Space Research	1372.65	351.87	1724.52	0.00	1724.52	0.00
2552	Special Programmes for NE areas	128.77	478.42	607.19	24.28	582.91	0.04
2501	Special Programmes for rural development	12115.70	3.70	12119.41	0.00	12119.41	0.00
2851	Village and small industries	1367.89	210.31	1578.20	55.99	1522.21	0.04
	Economic services: Non Merit						
2416	Agricultural financial Institution	27.36	329.74	357.10	41.70	315.40	0.12
2403	Animal Husbandry	105.66	7.81	113.47	6.57	106.91	0.06
3053	Civil aviation	245.53	140.33	385.86	5.05	380.81	0.01
3456	Civil supplies	1.64	0.00	1.64	0.11	1.53	0.07
2803	Coal and Lignite	192.83	1441.36	1634.19	54.01	1580.18	0.03
2425	Co-operation	43.08	92.37	135.45	79.72	55.73	0.59
2401	Crop Husbandry	4615.82	489.65	5105.47	64.66	5040.81	0.01
2404	Dairy development	163.11	61.67	224.78	195.34	29.44	0.87
2405	Fisheries	52.66	35.37	88.04	2.40	85.64	0.03
2408	Food storage and warehousing	25545.34	1210.17	26755.51	5.08	26750.42	0.00
3453	Foreign trade and export promotion	1033.96	112.26	1146.22	157.21	989.02	0.14
2852	Industries	13643.73	7582.97	21226.70	3931.87	17294.64	18.52
2701	Major and Medium Irrigation	139.71	36.45	176.16	8.23	167.93	0.05
2702	Minor Irrigation	111.63	4.92	116.56	1.18	115.38	0.01
2853	Non-Ferrous Mining and Metal industries	218.45	86.65	305.10	14.19	290.91	0.05
3475	Other general economic services	843.21	83.02	926.23	660.78	265.45	0.71
2875	Other Industries	193.22	5014.25	5207.47	322.58	4884.89	0.06
2885	Other Outlays on Industries	2495.71	995.03	3490.73	432.76	3057.97	0.12
3075	Other Transport services	25.09	80.38	105.47	62.95	42.52	0.60
2802	Petroleum	6901.49	493.35	7394.84	3198.79	4196.05	0.43
2407	Plantations	415.75	8.90	424.65	1.16	423.49	0.00
3201	Postal	4520.31	138.96	4659.26	4256.93	402.33	0.91
2801	Power	3042.78	6287.68	9330.46	4141.81	5188.65	44.39
3055	Road Transport	111.45	149.14	260.59	70.03	190.55	0.27
3052	Shipping	161.84	300.55	462.38	46.74	415.64	0.10
3452	Tourism	141.14	89.10	230.24	3.84	226.41	0.02

Note: Excludes surplus sectors.
Source: As in Table 2.2.

Table A2.6: Classification of Central Subsidies in Social Service: Merit and Non-Merit 2002-03

(Rs crore)

Budget Code	Service	Cost			Receipts			Subsidy
		Current	Capital	Total				
	Social Services;Merit I							
2202-01	Elementary Education	4090.73	12.24	4102.97	0.18	0.00	0.18	4102.79
2210-06-101	Prevention and control of disease	500.49	15.13	515.62	0	0	0	515.62
2210-03-110	Primary health centres	8.84	0.32	9.16	0	0	0	9.16
2235-2236	Social welfare and Nutrition	506.56	32.36761	538.93	2.38	0	2.38	536.55
2225	Welfare of Scs , STs and other BCs	151.46	241.61	393.07	0.00	0.00	0.00	393.07
	Social Services : Merit II							
2202-04	Adult Education	185.12	0.00	185.12	0.00	0.00	0.00	185.12
2205	Art and Culture	534.62	62.18	596.80	34.79	0.00	34.79	562.01
2211	Family Welfare	786.68	3.06	789.74	15.64	0.15	15.79	773.95
2202-80	General	63.42	3.41	66.83	1.30	0.00	1.30	65.53
2202-05	Language Development	59.42	0.00	59.42	0.00	0.00	0.00	59.42
2202-02	Secondary Education	1292.67	8.49	1301.16	0.45	0.00	0.45	1300.71
2204	Sports and Youth services	232.02	24.73	256.75	0.46	0.00	0.46	256.29
2203	Technical Education	1266.35	13.42	1279.77	3.33	0.00	3.33	1276.44
2202-03	University and Higher Education	1783.36	7.88	1791.24	1.59	0.00	1.59	1789.65
2217	Urban Development	7.81	283.21	291.02	0.26	0.00	0.26	290.76
	Social Services :non-Merit							
2221	Broadcasting	967.24	800.55	1767.79	0.15	0.00	0.15	1767.64
2210-80	General	7.23	10.09	17.32	16.10	0.00	16.10	1.22
2216	Housing	2223.13	755.76	2978.89	75.85	74.67	150.52	2828.37
2220	Information and Publicity	197.39	20.99	218.38	163.31	0.01	163.32	55.06
2230	Labour and Employment	726.60	0.00	726.60	4.18	0.00	4.18	722.42
2210-05	Medical Education , Training and Research	965.83	24.12	989.95	0.00	0.00	0.00	989.95
2250	Other social services	8.17	12.51	20.68	0.05	0.00	0.05	20.63
2210-06	Public health (less pcd)	109.08	3.31	112.39	21.27	0.11	21.38	91.01
2210-03	Rural Health Services-allopathy (less phc)	8.97	6.29	15.26	1.63	0.00	1.63	13.63
2210-04	Rural health services-other system	0.52	0.00	0.52	0.00	0.00	0.00	0.52
2210-02	Urban health services -other systems	22.82	0.00	22.82	0.00	0.00	0.00	22.82
2210-01	Urban Health services-allopathy	629.50	65.50	695.00	79.72	0.00	79.72	615.28
2215	Water Supply and sanitation	985.38	76.63	1062.01	1.58	0.00	1.58	1060.43

Note: Excludes surplus sectors.
Source: As in Table 2.2.

Table A2.7: Classification of Central Subsidies in Social Services 2003-04 (Provisional)

Budget Code	Service	Cost			Receipts	Subsidy	(Rs crore) Recovery rate(%)
		Current	Capital	Total			
	Social Services :merit I						
2202-01	Elementary education	5064.49	12.37	5076.86	0.18	5076.67	0.00
2210-06-101	Prevention and control of diseases	472.51	12.84	485.35	0.00	485.35	0
2210-03-103	Primary health centres	9.70	0.30	10.00	0.00	10.00	0
2235-2245	Social welfare and Nutrition	448.96	38.57	487.52	2.43	487.52	0.50
2225	Welfare of Scs, Sts and other BCs	66.35	251.17	317.53	0.04	317.53	0.01
	Social Services :merit II						
2202-04	Adult Education	205.70	0.00	205.70	0.00	205.70	0.00
2205	Art and Culture	531.20	57.78	588.98	44.33	544.65	7.53
2211	Family welfare	1258.24	0.24	1258.48	18.22	1240.27	1.45
2202-80	General	69.75	3.33	73.08	1.02	72.06	1.40
2202-05	Language Development	56.03	0.00	56.03	0.00	56.03	0.00
2202-02	Secondary Education	1404.95	16.65	1421.60	0.49	1421.60	0.03
2204	Sports and Youth services	242.79	24.22	267.01	0.84	266.17	0.31
2203	Technical Education	1343.00	13.55	1356.55	3.89	1352.65	0.29
2202-03	University and Higher Education	1753.95	8.11	1762.06	2.67	1762.06	0.15
2217	Urban development	6.05	437.76	443.81	0.56	443.25	0.13
	Social Services Non-Merit						
2221	Broadcasting	1001.47	54.34	1055.81	4.30	1051.51	0.41
2210-80	General	7.16	10.95	18.11	3.21	14.90	17.72
2216	Housing	2456.07	790.22	3246.29	124.75	3121.53	3.84
2220	Information and publicity	207.02	20.69	227.71	183.06	44.65	80.39
2230	Labour and Employment	796.09	1.13	797.22	5.42	791.80	0.68
2210-05	Medical Education, Training etc	1057.39	24.86	1082.26	0.01	1082.25	0.00
2250	Other social services	9.40	13.92	23.31	0.00	23.31	0.00
2210-06	Public Health (excl prev. & cont of dis)	594.95	15.62	610.57	26.92	583.65	4.41
2210-03	Rural Health services(less PHC)	-453.47	-6.52	-459.98	0.80	-460.78	-0.17
2210-04	Rural Health services-other system	0.00	0.00	0.00	0	0	0.00
2210-02	Urban Health services –other system	25.34	0.00	25.34	0.00	25.34	0.00
2210-01	Urban Health services-Allopathy	747.35	72.99	820.34	72.46	747.88	8.83
2215	Water supply and sanitation	1236.98	79.13	1316.12	1.61	1314.51	0.12

Note: Excludes surplus sectors.
Source: As in Table 2.2.

Table A4.1: Consumption of Fertilizer in nutrient terms

('000 tonnes of nutrients)

Fertilizers	1988-89	1999-2000	2000-01	2001-02	2002-03	2003-04*
Nitrogenous Fertilizers	11354	11592	10920	11310	10474	11324
Phosphatic Fertilizers	4112	4799	4215	4382	4019	1102
Potassic Fertilizers	1332	1678	1567	1667	1601	1748
All Fertilizers (NPK)	16798	18069	16702	17360	16094	17474
Percentage increase	3.77	7.57	-7.57	3.94	-7.29	8.57

* Estimated

Source: Economic Survey 2003-04

Table A4.2: Average Economic Subsidy (in Rs/tonne) on Fertilizers and Nominal Protection Coefficients

Particulars	1981-82	1982-83	1983-84	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91	1991-92
Urea (N) (46% nitrogen)											
1. c.i.f. price of urea (on ship)	1743.59	1379.74	1396.04	2000.00	2157.00	1350.00	1589.66	1940.80	2362.80	3193.85	3664.98
2. Pool handling expenses	791.36	1063.89	878.10	882.55	956.88	782.59	927.38	951.90	976.42	1000.94	1025.46
3. Dealer's margin	120.00	120.00	130.00	130.00	130.00	130.00	130.00	133.27	136.70	140.13	143.56
4. Domestic price	2350.00	2350.00	2150.00	2150.00	2250.00	2350.00	2350.00	2350.00	2350.00	2350.00	3060.00
5. Subsidy to the farmer (1+2+3-4)	304.95	213.63	254.14	862.55	993.88	-87.41	297.04	675.97	1125.92	1984.92	1774.00
Diammonium phosphat P (DAP, 18-46-0)											
1. c.i.f. price of DAP (on ship)	2240.15	2010.48	2045.48	2550.00	2487.00	2500.00	2650.95	3532.64	3787.10	3804.40	4087.16
2. Pool handling expenses	791.36	1063.89	878.10	1041.54	1163.36	840.97	996.55	1061.20	994.67	1000.94	1025.46
3. Dealer's margin	145.00	145.00	190.00	190.00	190.00	190.00	190.00	190.00	190.00	190.18	194.84
4. Domestic price	3600.00	3600.00	3350.00	3350.00	3475.00	3600.00	3600.00	3600.00	3600.00	3600.00	5040.00
5. Subsidy to the farmer (1+2+3-4)	-423.49	-380.63	-236.42	431.54	365.36	-69.03	237.50	1183.84	1371.77	1395.52	267.46
Muriate of potash K (60%) (K20)											
1. c.i.f. price of MOP (on ship)	1716.00	933.24	998.94	1200.00	1347.00	1185.00	1200.57	1832.20	2149.13	2391.18	3004.18
2. Pool handling expenses	387.53	400.96	401.97	401.92	416.02	450.99	515.04	514.99	515.00	530.50	543.49
3. Dealer's margin	90.00	90.00	95.00	95.00	95.00	95.00	95.00	95.00	95.00	95.49	97.83
4. Domestic price	1300.00	1300.00	1200.00	1200.00	1250.00	1300.00	1300.00	1300.00	1300.00	1300.00	1700.00
5. Subsidy to the farmer (1+2+3-4)	893.53	124.20	295.91	496.92	608.02	430.99	510.61	1142.19	1459.13	1717.17	1945.50
NOMINAL PROTECTION COEFFICIENTS											
N	0.89	0.92	0.89	0.71	0.69	1.04	0.89	0.78	0.68	0.54	0.63
P	1.13	1.12	1.08	0.89	0.90	1.02	0.94	0.75	0.72	0.72	0.95
K	0.59	0.91	0.80	0.71	0.67	0.75	0.72	0.53	0.47	0.43	0.47
Weighted average NPCs	0.91	0.96	0.92	0.75	0.74	1.01	0.88	0.75	0.67	0.58	0.70

Table A4.2: Average Economic Subsidy (in Rs/tonne) on Fertilizers and Nominal Protection Coefficients (contd.)

Particulars	1992-93	1993-94	1994-95	1995-96	1996-97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03
Urea (N) (46% nitrogen)											
1. c.i.f. price of urea (on ship)	3809.38	3791.37	6105.39	6976.98	6521.57	4980.11	4337.52	3741.12	5511.26	5901.89	7921.80
2. Pool handling expenses	1050.00	1000.00	1010.00	1090.00	1190.00	1190.00	1190.00	1190.00	1191.00	1191.00	1191.00
3. Dealer's margin	147.00	140.00	141.00	152.60	166.00	166.60	166.60	166.60	166.74	166.74	166.74
4. Domestic price	2760.00	2760.00	3320.00	3320.00	3490.00	3660.00	3660.00	4000.00	4600.00	4830.00	4830.00
5. Subsidy to the farmer (1+2+3-4)	2246.38	2171.37	3936.39	4899.58	4387.57	2676.71	2034.12	1097.72	2269.00	2429.63	4449.54
Diammonium phosphat P (DAP, 18-46-0)											
1. c.i.f. price of DAP (on ship)	4430.05	4269.76	6631.34	7771.41	7087.65	8730.06	10029.73	9214.24	8610.49	8978.02	10315.35
2. Pool handling expenses	1050.00	1000.00	1010.00	1090.00	1190.00	1190.00	1190.00	1190.00	1191.00	1191.00	1191.00
3. Dealer's margin	199.50	190.00	191.90	207.10	226.10	226.10	226.10	226.10	226.29	226.29	226.29
4. Domestic price	6650.00	6600.00	7753.25	9693.75	8394.00	8300.00	8300.00	8300.00	8900.00	8900.00	9350.00
5. Subsidy to the farmer (1+2+3-4)	-970.45	-1140.24	79.99	-625.24	109.75	1846.16	3145.83	2330.34	1127.78	1495.31	2382.64
Muriate of potash K (60%) (K20)											
1. c.i.f. price of MOP (on ship)	3817.05	3783.53	3970.19	4543.49	4787.95	5816.32	6600.94	6997.28	7395.38	7320.72	7460.10
2. Pool handling expenses	556.50	530.00	535.50	577.70	630.70	630.70	630.70	630.70	631.23	631.23	631.23
3. Dealer's margin	100.17	95.40	96.35	103.99	113.53	113.53	113.53	113.53	113.62	113.62	113.62
4. Domestic price	4500.00	3800.00	3786.50	4290.50	4122.00	3700.00	3700.00	3700.00	4255.00	4255.00	4455.00
5. Subsidy to the farmer (1+2+3-4)	-26.28	608.93	815.54	934.68	1410.18	2860.55	3645.17	4041.51	3885.23	3810.57	3749.95
NOMINAL PROTECTION COEFFICIENTS											
N	0.55	0.56	0.46	0.40	0.44	0.58	0.64	0.78	0.67	0.67	0.52
P	1.17	1.21	0.99	1.07	0.99	0.82	0.73	0.78	0.89	0.86	0.80
K	1.01	0.86	0.82	0.82	0.75	0.56	0.50	0.48	0.52	0.53	0.54
Weighted average NPCs	0.72	0.72	0.60	0.58	0.58	0.63	0.65	0.76	0.71	0.70	0.59

Source: Gulati and Narayanan (2003) upto 2001 and updated onwards by authors.