

Modernisation of Public Distribution System in India through Computerisation

NC Saxena

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1 PDS

With a network of more than 4 lakh Fair Price Shops (FPS) claiming to distribute annually commodities worth more than Rs 15,000 crore to about 16 crore families, the PDS in India is perhaps the largest distribution network of its type in the world. Despite the fact that growth of foodgrain production in the period 1989-2004 was lower than the increase in population during the same period, procurement of cereals on government account went up, suggesting a decline in poor people's consumption and their purchasing power. This may have happened because of the structural imbalances (high MSP, rising capital intensity, lack of land reforms, failure of poverty alleviation programmes, no new technological breakthrough in agriculture, etc.) created in the economy, as well as due to production problems in less endowed regions (erratic rainfall, soil erosion and water run-off, lack of access to credit and markets, poor communications) which led to a dangerous situation of huge surplus in FCI godowns during 2000-03 coupled with widespread hunger. PDS thus became a mechanism both for disposal of surplus grain with government and for augmenting consumption of the poor. Since 2004, high economic growth and falling per capita production have swung the pendulum on the other side, leading to grain shortages, high open market prices, and consequently imports.

PDS is operated under the joint responsibility of the central and state governments, with the former responsible for procurement, storage, transportation (upto the district headquarters) and bulk allocation of foodgrains. The state governments are responsible for distributing these foodgrains to consumers through a network of Fair Price Shops. This responsibility includes identification of families below poverty line (BPL), issue of BPL cards, and supervision and monitoring of the functioning of the Fair Price Shops. States are also responsible for movement of foodgrains from the district headquarters to the PDS shop, which requires storage at the sub-district level. As food was always a non-plan subject, such an infrastructure is often weak in the northern states.

Until 1992, the PDS had universal targeting, being available to all consumers. GoI introduced a revamped PDS (RPDS) in 1992 in limited areas, primarily drought prone, tribal and hilly, and remotely located. The RPDS was a purely location targeted scheme, being available to all in the selected area. This has been substituted in 1997 by the Targeted PDS (TPDS), specifically aimed at BPL people in all parts of the country. State-wise BPL quota is fixed on the basis of the adjusted poverty share determined by the Planning Commission based on official poverty lines in 1993-94, adjusted for growth in population in the interim. There would have been two implications, if the 1999-00 survey

was used as the basis for determining the number of eligible households in each state. First, poorer states would have got higher allocation (but these states have poor capacity for lifting), and a very large number of poor people would have lost their status as BPL in states where poverty has sharply declined (Andhra, Tamil Nadu etc).

Under TPDS each poor family was entitled to 10 kgs of foodgrains per month at specially subsidised prices. The allocation of foodgrains for the BPL families was increased to 20 kg wef April 2000, and to 25 Kg. per family per month with effect from July, 2001. It was further increased to 35 kg in 2003-04, which corresponds to 84 kg per annum per unit, taking the average size of family as five. The central issue price for wheat and rice has remained unchanged since April 2000.

The additional allocations are being made at APL rates from December, 1997 subject to availability of foodgrains in the central pool and the constraints of food subsidy. The BPL/APL rates (Rs/kg) have been as follows since 1997:-

Table 1: BPL/APL rates (Rs/kg)¹

Category	Date	Wheat	Rice (common)
BPL	1.6.1997	2.5	3.5
-do-	1.4.2000	4.15	5.65
APL	1.6.1997	4.5	5.5
-do-	1.4.2000	6.1	7.95

1.1 Antyodaya

According to the National Sample Survey about 5% of the total population in the country sleeps without two square meals a day. This section of the population can be called as “hungry”. In order to make TPDS more focused and targeted towards this category of population, the “Antyodaya Anna Yojana” (AAY) was launched in December, 2000 for one crore poorest of the poor families. AAY contemplates providing them foodgrains at a highly subsidized rate of Rs 2/ per kg. for wheat and Rs 3/ per kg for rice. The States/UTs are required to bear the distribution cost, including margin to dealers² and retailers as well as the transportation cost. Thus the entire food subsidy is being passed on to the consumers under the scheme. The scale of issue that was initially 25 kg per family per

¹ Information in Tables and Figures, wherever source is not indicated, is based on the Monthly bulletins issued by the Department of Food, GOI from time to time.

² In actual practice, none of the states give margin to the dealers, thus forcing them to corrupt practices.

month has been increased to 35 kg per family per month with effect from 1st April, 2002. The AAY Scheme has been expanded in stages each time by 50 lakh households; in 2003-2004, August, 2004 and the third in May 2005, thus bringing the total number of beneficiaries to 2.5 crore households, which is about 38% of the BPL households.

According to the Food Ministry, there should have been 6.5 crore BPL (including AAY) cards in 2000, but the actual number of cards in 2007 was 7.8 crore BPL and 2.4 crore AAY. Similarly against the figure of 18.03 crore households in the country (as per the population projections, as on 01-03-2000 of the Registrar General of India), the total number of ration cards issued is around 22.32 crore.

1.2 Offtake by states

The overall lifting under TPDS (including Antyodaya) and welfare schemes such as SGRY and MDM schemes has shown considerable improvement in the last two years, at least on paper. The percentage offtake of BPL/AAY foodgrains as percentage of allocation has gradually improved since 2001-02 from 59% to 78% in 2006-07.

Table 2: Production, Procurement & Offtake of Foodgrains (in mT)

	1997- 98	2001- 02	2002- 03	2003- 04	2004- 05	2005- 06	2006- 07
Food Subsidy in billion Rs	79	176	240	270	290	235	242
Production of foodgrains	192.3	212.9	174.8	213.2	198.4	208.6	211.8
Procurement of foodgrains	23.6	42.6	40.3	34.5	41.4	42.2	36.0
Distribution through ration shops, incl AAY	17.0	13.8	20.1	24.2	29.7	31.4	31.6
Disposal through other welfare schemes, such as SGRY, NFFW	2.1	8.9	11.4	13.5	10.6	9.7	5.1
Open market sale	0.06	5.6	5.66	9.66	0.25		
Subsidised exports	0	4.7	12.46	10.31	1.0		

Table 2 shows that large amounts of grain, equivalent to some 28 million tonnes from 2001 to date, were exported from India, at almost BPL prices. This fuels the widespread notion that the GoI was feeding the poor of other countries (often cattle), instead of those at home. Had the amount exported been used for welfare schemes like SGRY, MDM, Annapurna, etc, the number of people benefited could have more than doubled.

The breakup of PDS offtake during 2004-05 to 2006-07 between BPL, APL, and AAY is given in Table 3

Table 3: Allocation and off-take of foodgrains under TPDS (000 tonnes)

	Allotment			Off-take			% Off-take		
	RPI	API	AAY	RPI	API	AAY	RPI	API	AAY
2003-04									
Rice	12657	19795	2505	9079	1074	2382	71	10	95
Wheat	9913	25163	2050	6774	2251	1783	68	9	87
2004-05									
Rice	11925	19771	3427	10078	3385	3207	84	18	93
Wheat	9347	25454	2633	7423	3344	2264	79	13	86
2005-06									
Rice	11800	23270	4989	9680	4709	4717	81	21	94
Wheat	7300	21447	3079	5962	3503	2726	82	16	88
2006-07									
Rice	12502	24639	6261	9470	5947	5832	76	24	93
Wheat	5503	6004	3107	4769	2791	2830	87	46	92

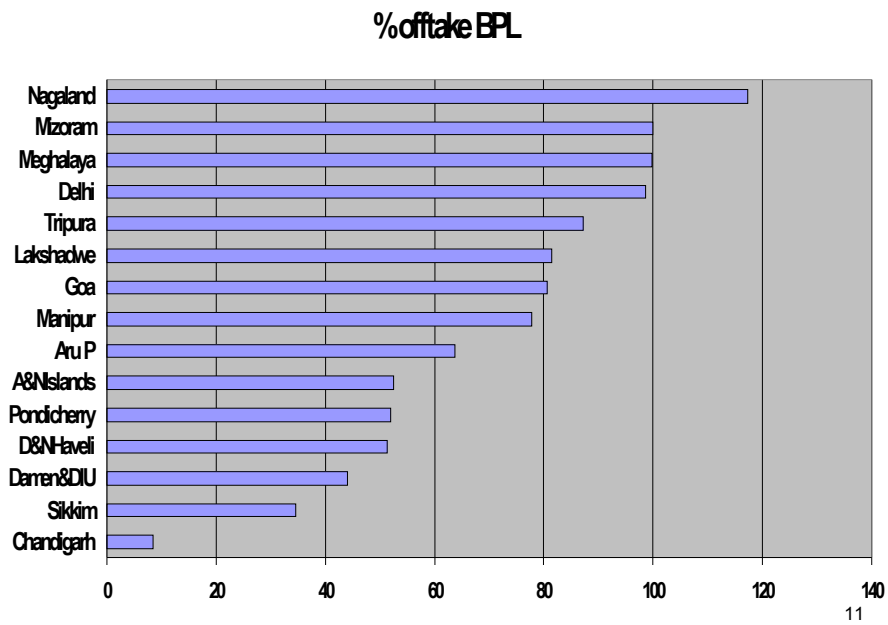
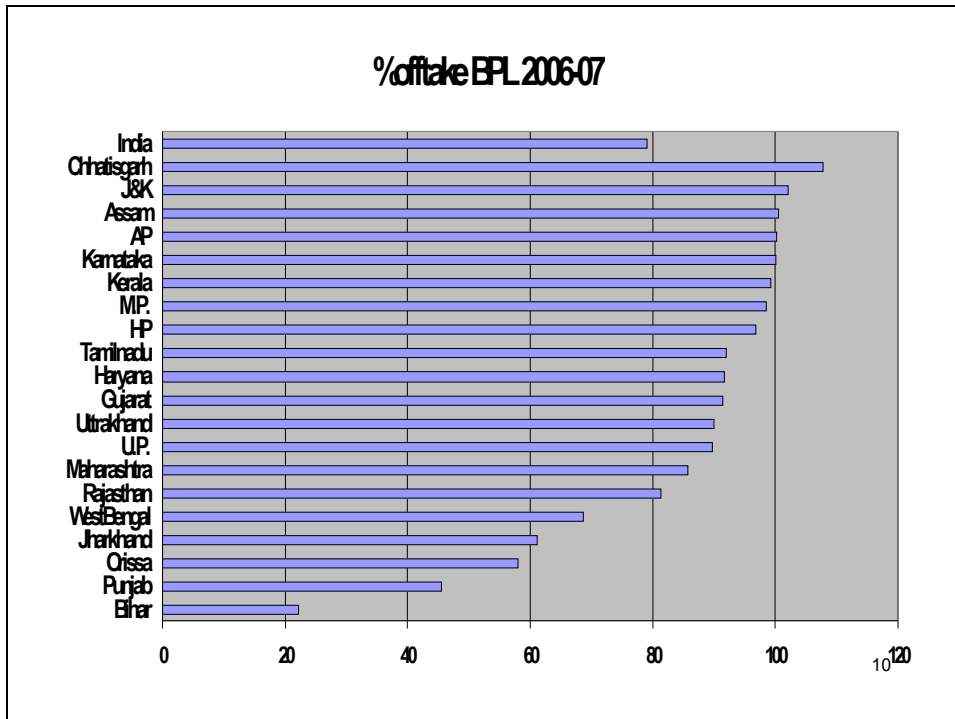
Almost 60% of the offtake for APL category was confined to the five states of AP, Karnataka, TN, WB, and Assam. The APL allotment for some of the poorer states and their lifting (in 000 tonnes) in 2006-07 was as follows:

Table 4: Offtake of APL by poorer states (in 000 tonnes) in 2006-07

State	APL allotment	Offtake	% offtake
Bihar	1307	9	0.7
Jharkhand	190	13.9	7.3
MP	1042	137	13.1
Orissa	839	138	16.4
UP	3843	326	8.5
Rajasthan	1338	161	12.0

Taking out the APL offtake, the distribution of 22.9 MT of foodgrains in 2006-07 translates to providing the full quota of 84 kg per unit per annum to more than 27 crore units, which covers almost the entire BPL population according to 2004-05 survey. This is presuming that the grain actually reaches them.

However, not all states lift their entire quota, Bihar and Orissa being the worst defaulters, lifting less than half their allotment. In 2006-07, they lifted only 22% and 58% of the allotted food grains for the BPL category.



The reasons for poor lifting in Bihar and Jharkhand are:

1. Inadequate storage capacity with FCI, which has godowns only in less than 50% districts

2. The State Food Corporation (SFC; the two states have a common SFC) on its part does not have sufficient godowns located in different blocks where foodgrain can be stored for supply to the dealers. The mobile vans, meant to bring the foodgrains from the godowns to the shops are all in need of repair or there is no driver or no fuel. The SFC is in an extremely poor financial shape. There is no working capital to purchase the PDS commodities from the FCI; it is the PDS dealers who have to advance the money every month. There are districts in which the SFC still needs to pay 12-24 months salaries to the depot managers and other corporation staff members.
3. Allocations from GoI are valid only for a month, and if the state government is not able to lift within that time, its quota lapses. It could be increased to a quarter.
4. The villagers are poorly informed, and certainly not in advance. This means that the poorest among them may not have sufficient cash ready available when the foodgrains arrive in the shop.
5. The PDS dealer will only transport so much as he expects to sell within one or two days. In short, there is a physical access problem, in the sense that the commodities may come with irregular intervals or not at all. There is also a problem of economic access, in the sense that the poorest people do not have cash ready at the moment the stocks arrive.

The problem of lack of infrastructure and shortage of funds with government parastatals is not unique to Bihar, most states except the few in west and south suffer from these handicaps. GoI should first ensure that adequate infrastructural capacity is available at the district and block levels, otherwise wasting scarce resources through leakages helps only contractors and corrupt government staff, and does not in any way help the poor. Another study claimed that each fair price dealer has to “maintain” on an average nine government functionaries. It is significant that the allocation of poorer states such as UP, Bihar and Assam got more than doubled, as a result of shifting to TPDS, yet due to poor off-take by the states and even poorer actual lifting by the BPL families, the scheme has not made any impact on the nutrition levels in these states.

Some other general problems associated with the scheme besides illegal diversion are

- The poor do not have cash to buy 35 kg at a time, and often they are not permitted to buy in instalments.
- Low quality of foodgrains

- Weak monitoring, lack of transparency and inadequate accountability of officials implementing the scheme
- Price charged exceeds the official price by 10 to 14%
- The shop does not open for more than 2-3 days in a month, and the card holders are not allowed to lift their quota of previous months, or in instalments during a month.

1.3 Evaluation

All is not well with the Public Distribution System in India. The different weaknesses in the targeted public distribution system (TPDS) include ration cards being mortgaged to ration shop owners, large errors of exclusion of BPL families and inclusion of above poverty line (APL) families, prevalence of ghost BPL cards with weaknesses in the delivery mechanism leading to large scale leakages and diversion of subsidised grains to unintended beneficiaries, section of the APL households holding BPL cards actually not lifting their ration quota and thus a part of the entitlement of these households leaking out of the PDS supply chain.

There are significant inclusion and exclusion errors in possession of BPL ration cards, as shown below:

Table 5: Possession of ration cards by type, and socio-economic status, 2004/05

	% of HH that possess ration card	% of HH that possess BPL card	% of HH that possess APL card	% of HH that possess AAY card
Poorest	77.3	44.2	28.2	4.9
Q2	81.6	40.5	38.4	2.7
Q3	83.3	40.0	41.6	1.8
Q4	84.9	30.5	52.7	1.7
Richest	87.5	16.8	70.1	0.6
Rural	84.8	38.7	43.2	2.9
Urban	78.8	20.8	57.0	1.0

Source: World Bank 2007³

The Table clearly shows that almost half of the poor are left out from the appropriate category of ration cards.

³ World Bank 2007, Social Protection for a Changing India, Human Development Unit, South Asia World Bank, New Delhi

A study was conducted in 1999 by the Tata Economic Consultancy Services to ascertain the extent of diversion of commodities supplied under PDS from the system. At the national level, it was assessed that there is 36% diversion of wheat, 31% diversion of rice and 23% diversion of sugar. The diversion is more in the Northern, Eastern and North Eastern regions. Diversion is comparatively less in the Southern and Western regions. As extreme cases 64% diversion of rice is estimated in Bihar and Assam. In the case of wheat 100% diversion is estimated in Nagaland and 69% in Punjab.

A Planning Commission study (2005) finds that about 58 per cent of the subsidized foodgrain issued from the Central Pool does not reach the BPL families because of identification errors, non-transparent operation and corrupt practices in the implementation of TPDS. There are errors of wrong inclusion of ghost cards and non-BPL households; only about 57% of the BPL households are covered by it. Over 36% of the budgetary subsidies on food is siphoned off the supply chain and another 21% reaches the APL households. Only about 42% of subsidized grain issued from the Central Pool reaches the target group. The FPSs are generally not viable because of low annual turnover and they remain in business through leakages and diversions of subsidized grains.

The responsibilities for storage, transport and distribution within districts are contracted out to “fair price” shops and the associated contractors. This has created substantial scope for fraudulent practices due to large gap between market prices and prices in fair-price shops. Even then the cost of handling of food grains by public agencies is very high. According to the study, for one rupee worth of income transfer to the poor, the Govt spends Rs 3.65, indicating that one rupee of budgetary consumer subsidy is worth only 27 paise to the poor. Thus the cost of income transfer to the poor through PDS is much higher than that through other modes.

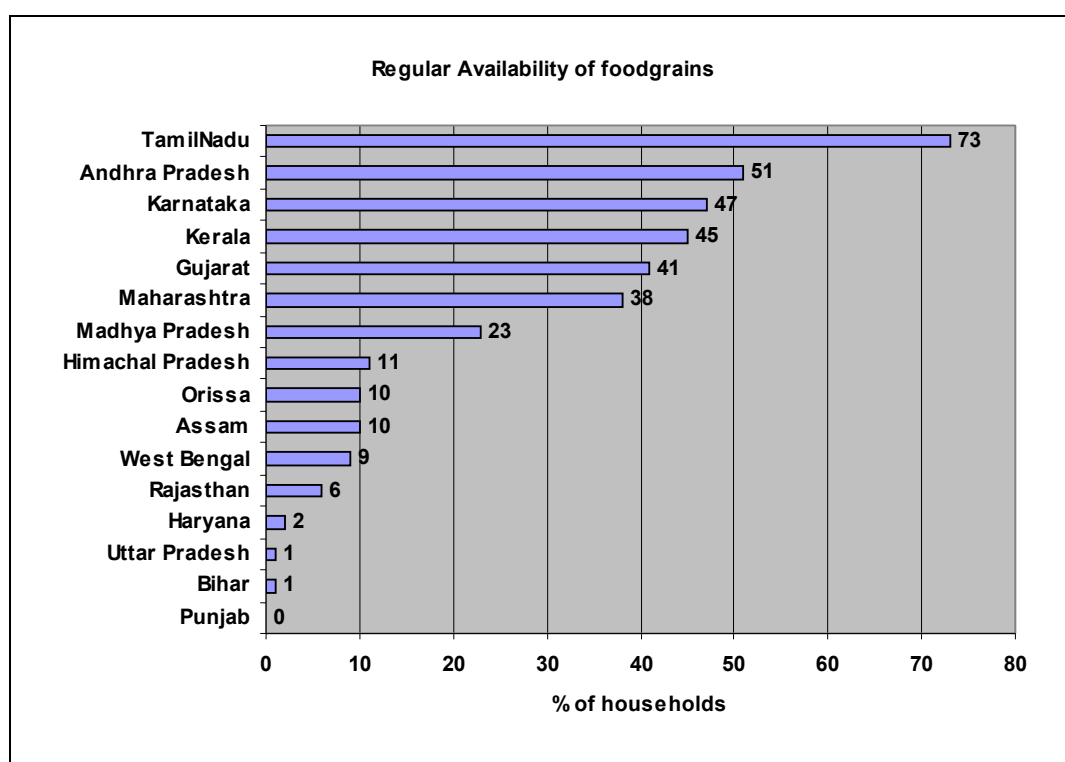
Another evaluation by ORG in September 2005 reported 39% diversion of rice and 53% diversion of wheat.

Average foodgrain consumption from PDS in 1993-94 and 1999-00 was estimated by NSSO. It showed that whereas average lifting from PDS per person in Kerala was 4.58 kg per month, it was only 0.15 kg in Bihar and 0.29 kg in UP.

A study (EPW Nov 26, 2005) for Madhya Pradesh shows that the selection of AAY beneficiaries is generally fair, and the scheme is directed at genuinely poorer households. However, in some districts such as Tikamgarh only 2% of the BPL families had yet been identified for Antyodaya cards. When compared with their entitlements, they received 17% less. Often they found the shop closed, or when it was open they did not have cash.

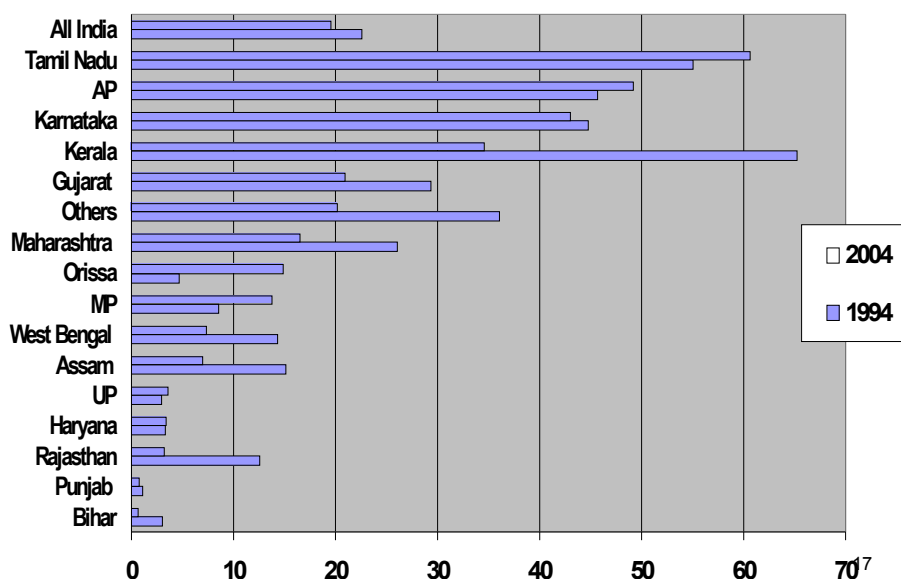
Despite orders government permitting staggered lifting, shopkeepers insist on the entire quota to be lifted in one instalment.

An All-India study carried out by a renowned agency (Public Affairs Committee, Bangalore) and published in the *Economic and Political Weekly*, 28th February, 2004, showed that although the percentage of households reporting the use of ration cards is high, only one-fourth of the rural and one-fifth of the urban households reported the regular availability of staple foodgrains at the ration shop. Regular availability is reported by more than half of all rural households in the four southern states, viz. Andhra Pradesh, Karnataka, Kerala and Tamil Nadu. Regular availability is reported by 2 per cent (or less) of the users in the states of Bihar, Haryana, Punjab and Uttar Pradesh.



In terms of access to PDS grains nationally, between one fifth and one quarter of households reported purchasing PDS grains, with some drop between 1994 and 2004. Household access in some states – most notably Bihar, UP, Rajasthan, and MP - has remained consistently very low to the point where it cannot be considered a significant program in household welfare terms in several very poor states (World Bank 2007).

% Households with access to PDS



2 Suggestions for improvement

2.1 Policy and procedural reforms

The following procedural reforms may help in improving both the offtake of PDS rations and availability for the poor:

Improving procedure for selection of BPL – The present procedure for selection of BPL beneficiaries is opaque, bureaucratic, and does not involve gram sabhas. The basis on which village wise cap on the maximum number of entitled beneficiaries is fixed, is not clear and not well defined. A white paper should be prepared on the subject, and clear policy laid down by the Ministry of Rural Development.

Reducing paper work and transaction costs: Due to cumbersome procedures, often there is a time difference of several days between the FPS dealer depositing his bank draft and the grain being released to him. This unnecessarily blocks the money of the dealer. It is suggested that the dealer should deposit advance directly in the bank account of the SFC/FCI, and there is no necessity of the bank draft being handled physically. The SFC/FCI should put its account number on the web so that anyone can see which dealer has deposited, when, and how much. On the same page SFC/FCI should issue an electronic release order. On the same day SFC/FCI should issue a manual release order too, as not all shop keepers will have computer facility at present. This will bring transparency in the entire operation, and anyone can see where delay is taking place.

Fixation of APL quota – The norm for release of APL quota should be transparent and realistic. Some states, such as Bihar, Jharkhand and UP are not being released the APL quota on the ground that they did not lift it in the past when the market price was low. This policy favours the southern states which have been subsidising the APL quota out of state funds, and punishes the poorer states (see Table 4).

Leakages in APL quota – One of the main reasons for the black marketing of the APL quota is the fact that GOI does not release full quota as per the number of APL cards, which gives a handle to the dealer to refuse supplies on the ground that the limited quota has already been lifted. In case GOI does not release full quota for APL, the cardholders' entitlement should be reduced accordingly, and this fact must be given due publicity. In other words, there should be foodgrain for each APL card, though the quantity may be much less than 35 kg. A better option is to increase the number of BPL cards from 7.8 to 12 crores, and abolish the APL category. Including AAY, this policy would cover almost 70 to 75% of the population. If the entitlement is reduced to 25 kg per card, the total requirement of foodgrains would be $14.5 \times 12 \times 25 = 43.5$ mT, which is feasible.

Elimination of Ghost Ration Cards – All card holders must be photographed, and their details along with their photographs should be in the public domain. This will make it easy for the civil society or consumers to check the list.

There should be only one annual order from the district indicating quota of each dealer, so that the dealer does not have to wait every month for the district to issue allotment order. Government should also issue just one order in the beginning of the year in which quota of all the dealers can be mentioned.

Making it obligatory for dealers to sell non-cereal items: Dealers should be asked to improve their viability by selling items of mass consumption other than wheat and rice. They should be encouraged to do so by issuing a specific order to that effect. Gujarat has made FPS multi-product shops, but no such order exists in many states. The dealers' psychology is that "everything is prohibited unless specifically permitted".

Making SFC transport grain to the FPS: SFC should be asked to transport foodgrains up to the shop, and if necessary, state government should either give some subsidy to the SFC, or partly increase the retail issue price by about 0.10 Rs per kg.

Selecting FPS dealer: In many states the selection needs approval by the Minister or a committee of MLAs and thus the process is highly subjective and opaque. There is no involvement of civil society or consumers in the selection, nor involvement for them in operation of FPS. FPS should be allotted to people who are already running a viable shop in the area. This will ensure that the shop remains open on all working days. The

present system of choosing unemployed youth etc. acts against the interests of the consumers, as the selected candidates do not possess entrepreneurial capabilities, and end up by selling the shop to others. In Delhi most dealers run more than ten shops, although the shop may be in some one else's name. The existing shopkeeper may be given a year's time to start selling other items, and the annual turn over from those items should be at least twice from the allotted foodgrains. If he/she fails to fulfil this condition, his licence may be cancelled.

Reduce control of inspectors over shops: Whereas government should set up and strengthen transparent arrangements for social audit, it may be desirable to remove some of the irritants, such as no distribution can take place unless the arrival of the stock has been verified by the Inspector. The Inspectors should on the other hand meet the consumers regularly and collect Report Cards from them as regards satisfaction.

Take photographs of the stock in the shop: Supply Inspectors should be supplied with cheap digital cameras so that they can show the stocks at the FPS along with that day's newspaper and consumers, and send it to their superiors with a copy to the dealer. This would show that the grain had actually reached the shop, which often does not happen in the rural areas.

Oversight by citizens – There should be quarterly meeting of the dealer with all consumers which should be attended by senior staff. A list of responsible citizens should be prepared in the open meeting (its photographs should be taken to record the size of the gathering). These people should be permitted to inspect the shop (preferably in group of two or three people, so as to avoid the complaint of favouritism).

Involve civil society – Many states have a large number of reputed NGOs. Their list may be prepared in a transparent manner, and localities/villages may then be divided amongst them. They should be authorised to inspect the shops, meet the people and take their grievances to the higher authorities.

Develop grievance redressal mechanism – State Governments should provide a free toll number, where complaints can be registered online. The entire operation should be outsourced and web-enabled, so that anyone could see how many complaints have come from each shop, and how many been satisfactorily disposed off.

Launch a drive to cover the poorest – A large number of homeless and poor living in unauthorised colonies in urban areas have been denied ration cards, and are thus not able to avail of PDS, despite being Indian citizens. A drive should be launched in collaboration with civil society to cover them in a timebound manner with ration cards, preferably Antyodaya cards.

Provide cash subsidy – The economic price of foodgrains in FCI godowns (which is the cost to government after adding storage and transport) is between 9 to 11 Rs per kg. It is distributed to the consumers at Rs 2 to 6=50 per kg. Thus the Government spends about 2 to 8 Rs per kg on PDS. Since the entitlement is 35 kg per month, there is a subsidy of Rs 70 to 300 Rs per family per month. In certain urban areas government should try to give the subsidy amount as cash to the consumers and ask them to buy grain in the open market. People should be asked to open a bank account and the amount should be centrally transferred from the bank without involving any intermediary or bureaucracy. The results of the pilot experiment should be carefully analysed before extending it.

To sum up, procedural and policy reforms should be encouraged. Banking and Information technologies have advanced rapidly and should enable governments to bring transparency and speed in all applications without extra expenditure. They are like low hanging fruits which can be picked up easily.

2.2 Computerisation

In addition, computerisation can help in modernising the PDS. A number of states are already innovating in PDS implementation, and improved performance can be seen in some cases. The southern states as usual have led the way on many reforms intended to address the issues above, and increasingly even poorer states have introduced changes in policies and implementation mechanisms to address the problems of PDS.

We first describe the efforts made by GOI to modernise the PDS system.

2.3 Pilot Project on Smart Ration Cards in Public Distribution System/ Computerization of PDS Operations

The Working Group of the Planning Commission on the PDS and Food Security in their report on the 10th Five Year Plan (2002-2007) in January 2002, recommended the introduction of a food credit card system in which customers can buy subsidized foodgrains from the market and retailers can claim subsidy from the Government. In a meeting taken by Secretary (F&PD) on 9.12.2002, it was decided that these credit cards would be in the nature of ‘Smart Cards’ and the project was named ‘Pilot Project on Smart Cards under PDS’.

The Planning Commission sanctioned an amount of Rs 13.20 crore under the 10th Five Year Plan period (2002-07) for the Pilot Project and Rs 4.4 crores and Rs 1.5 crores during the Annual Plan 2002-2003 and 2003-04 respectively, for implementation of the Smart Cards as a Central Sector Scheme. NIC was the nodal agency for providing

technical support for software development. For the Annual Plan 2005-06, an amount of Rs 1.25 crore was approved for completing the pilot project.

The scheme was to introduce Smart Cards in place of the ration cards so that the present manual system of making entries etc. will be done electronically. It was an innovation to improve upon the existing ration cards. The Smart Card will have personal details of all the members of the family including their entitlement and the entire network of PDS from Taluk to State level will be linked. With this kind of system in place, the objective of the Smart Card Scheme of checking diversion of foodgrains and arresting the problem of bogus ration cards was expected to be met, leading to strengthening of PDS and improvement in delivery.

Initially the Smart Card Scheme was to be implemented in one district in each of the States of Madhya Pradesh (Vidisha district), Himachal Pradesh (Kangra district) and Kerala (Thiruvananthapuram district) on pilot basis in two phases. The first phase included computerization of all PDS operations at the Taluk, district and State level to establish an authentic and standardized database as a backend operation. After completion of the first phase, a decision regarding the front-end technology, which may be either food credit/debit card or smart ration card, was to be taken in the second phase.

However, the pilot work on the scheme has not been successful because of lack of administrative will, low acceptability in the field, high costs involved and problems like poor infrastructure and high maintenance costs. The pilot project was accordingly dropped in 2005-06. A new scheme 'Computerisation of PDS Operations' with a token provision of Rs 5 crore was introduced in 2006-07. As the scheme was approved only in February 2007, no release of funds was done in 2006-07. There is a Budget provision of Rs 15 crore for the scheme in the Annual Plan 2007-08.

The computerization of PDS operations would be an improvement on the existing system of ration cards. The new system will have personal details of all members of the family including their entitlement and the entire network of PDS from Taluk to State level will be linked. With this kind of system in place, the objectives of Food Credit Card Scheme of checking diversion of foodgrains and eliminating the problem of bogus ration cards are expected to be met, leading to strengthening of PDS and improvement in delivery.

Another scheme introduced during the Eleventh Five Year Plan (2007-12) to strengthen the PDS aims at taking effective measures to curb diversion and leakages through Global Positioning System (GPS), Radio Frequency Identification Device etc. The Budget provision for this scheme is Rs 1 crore for 2007-08.

2.4 State Level Innovations for Strengthening TPDS⁴

Andhra Pradesh

- To overcome the difficulty of errors of inclusion and exclusion of targeted families under TPDS, an objective criterion has been formulated to identify the BPL families. A fool proof model of Iris technology of Multi-functional Smart Card System based on private-public partnership has been developed and implemented on pilot basis.
- Initiated an innovative scheme of introducing ration cards to the beggars of the State.

Delhi

- To eliminate the duplicate/bogus ration card holders, Delhi Government had undertaken a major campaign for renewal of APL cards from August 2004 to July 2005 and weeded out 15 lakhs duplicate/bogus ration cards. Also, initiated the computerization of the Department of Food and Supplies of Delhi.

Gujarat

- To ensure an efficient delivery mechanism, State Government has initiated 'time-module' for delivery mechanism of foodgrains to the people. It made compulsory for all Mamlatdars to issue permit to Fair Price Shop Keepers from 1st to 5th of the month, made compulsory for the fair price shop owners to lift the foodgrains from godowns of the Corporation from 6th to 10th of the month, thus the foodgrains made available in every fair price shops on 11th of the month onwards.
- To eliminate the malpractices, the State Government via Order started checking 20% of the FPS of each taluka at the time of distribution of food grains.
- The Government has initiated a Roaming Ration Card System (RRS) to the migrant BPL and Antyodaya card holders. It is a web based application to be accessed by authorized officials and is linked with the existing ration card database for production of RRS. Pilot Scheme had been tried and operated in a successful manner and up-scaling is in process for all Districts.

Karnataka

- Planning Commission's survey had estimated an inclusion-error of 40% and an exclusion-error of 22% in Karnataka's BPL allocation of foodgrains. The State has initiated a fresh survey with acceptable and measurable criteria to eliminate

⁴ Based on Planning Commission's draft chapter on Food Security for the XI Plan

the distinct "creamy-layer," while enlarging the set of those eligible to draw subsidized rations. The survey is nearly complete.

- To tackle the diversion of foodgrains, Government of Karnataka intended to implement food coupons through "information delivery kiosks", which are results of Public-Private Partnership floated by individuals who will attempt to deliver e-services to the Government in villages.

Kerala

- To increase the economic viability of Fair Price Shops (FPS), the State Government has converted the FPS into "Multi Shops" by allowing the sale of essential commodities. The scheme has been implemented in all the Districts and the FPS selected were named as 'Sabari Stores'.
- Kerala Ration Dealers Welfare Fund has been set up to assist the dealers in terms of medical treatment, children's education, pension etc.

Madhya Pradesh

- Fair price shops were taken out of private hands and handed over to Cooperatives. 100 % FPS were run by Cooperatives and presently the state experiences a better availability of foodgrains.
- To address the financial shortage of FPS, a pilot credit plan implemented by MPSCSC, an agency of PDS for two districts where off-take of PDS was low due to the credit problem. A significant improvement in offtake (100 %) in PDS has been noticed after the credit arrangements.
- To improve the monitoring mechanism and coordination among different agencies, State level video Conference is being held by the Food Department every week on Wednesday. It has accelerated the speed of work.

Maharashtra

- In view of the Planning Commission's recommendations and the Orders of the Supreme Court, it has been resolved that the FPS and the retail kerosene licences in the State shall be handed over to Self Help Groups in a phased manner. A High Power Committee and a Working Group to review the proposed Scheme have been constituted.

Rajasthan

- To improve the delivery mechanism and to ensure that the real beneficiaries receive the foodgrains, State Government introduced a new system of 'Ration

Tickets'. This has reduced the off take of BPL by 28,858 MT of foodgrains in a period of 5 months, which according to the State Government is by way of prevention of foodgrains diversion.

Uttar Pradesh

- Uttar Pradesh has decided to take up e-district pilot project in six districts by August 2008 in Ghaziabad, Gautam Buddha Nagar, Rae Bareli, Sitapur, Gorakhpur and Sultanpur districts.
- The scheme would be extended to the other districts once the success of the pilot project in the six districts has been evaluated.
- Objective of the programme was to take 10 types of public services to the people.
- The services include issuance of certificates for proof of income, birth, death, caste and marriage and different types of pension, revenue related matters and other utility services. It also includes procuring identity cards, land revenue and pension records and services related to the public distribution system (PDS) and licences.

The above information is based on a report written by the Planning Commission. Recently the Ministry of Food & Consumer Affairs has also compiled the progress towards computerization in some states, which is given in the following chart:

	State	Application	Department	Deployment Status
	Gujrat	Ration Card Computerization PDS – it is a web based centralized application to modify the Ration card database. (under implementation)	Food ,Civil Supplies and Consumer Affair Department Govt. of Gujarat.	Ration Card is implemented up to block (Taluka) level. Ration Card data of whole state is up to date. Implemented in all 225 Taluks.
	MP	e-PDMS – A web based application through State Server to capture FPS wise monthly data on allocation, offtake and sales	Deptt. Food, Civil Supplies and Consumer Protection.	Implemented at State and all 48 districts since 2003.
	Tamil Nadu	Family Card Maintenance System PDS allotment System Fair price shop software Web based System for off take Monitoring(Weekly)	Civil Supplies and Consumer Protection Deptt.	Implemented on pilot basis in north Chennai District Consisting of 7 zones. FPS Software : Implemented on pilot basis in 1 shop. 1 PC and 1 DMP made available
	Kerala	Tetra-PDS (Targeted Efficient Transparent Rationing and Allocation PDS)	Directorate of Civil Supplies	RCMS 3.0 implemented in one city Rationing Office. RCMS 2.0 implemented in all remaining TSO (68 locations) Allocation 1.0-Pilot at one

				location Civil Supplies portal- hosted at NIC
	Orissa	e-FCS- Online Monitoring of Food and Civil Supplies	1) Food Supplies and Consumer Welfare Department	State / District level hosted at http:// Ori .nic.in/fscw However the software is not being used by the State Govt.
	Meghalaya	AAY Scheme->PDS System	FCS Deptt.	Software for issue of Bar coded coupons (printed by Government Press) for AAY families in one district only. No linkage & digitization of data.
	AP	House Hold Card Application Software modules developed Food and Civil Supplies such as issue of release order to FPS, Monitor off take of food grains. Stock and Accounting Package for APCSC	Civil Supplies Department	Card has photo and iris identification, linked to bar coded coupons. Implemented in all districts of AP Stock and Accounts package is in use from last 2 years and up to date data is available

				Food and Civil Supplies package was in use various district for a period of about 1 year.
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2.5 Strengthening of PDS through Smart Cards

It is obvious that an automated computerised system will not only monitor the movement of the grains but will also ensure that there is no human intervention in the maintenance of records. The objectives of computerisation are many, such as:

- To ensure that the lifting, and transport of the foodgrains to FPS and its delivery to the beneficiary is transparent and monitored at each stage
- To eradicate diversion and leakages of the foodgrains
- To ensure that the right kind of ration cards are issued to the public without delay
- To eliminate bogus ration cards, and
- To make the supervisory staff more accountable to the consumers and to the objectives of the PDS

Computerisation is also needed at the FCI and State Corporation godowns from where stocks are released. Weight of the stocks issued from the godowns should be automatically recorded in the computer, so that no fudging is possible by the staff. Electronic weight bridge should be connected to a website indicating the truck number, exact weight of the bags, etc.

Certain jobs have to precede computerisation:

1. Door to door verification of ration cards
2. Checking the names with other data base, such as electoral cards
3. Taking of digital photographs and affixing it to the card
4. Interface both in the local language and English

This should be done by a professional organisation, and not by the department. However government should ensure that the scheme is publicised, people are aware of it, and fully participate in the creation of a genuine data base.

As Smart Cards are expensive, some states, such as AP & Rajasthan tried a system of Bar coded coupons to help the consumer in lifting his quota in instalments. A common problem is that the FPS dealer enters the card holder's name without giving him any ration, and then diverting it in the black market. The coupon system will mean that the dealer's next instalment would be released to him against the coupons actually submitted by him by the consumers. In cities, it may also entitle the consumer to lift his quota from any shop, thus encouraging competition amongst the dealers. This is being suggested for

Sikkim in the DPR sent by the state. The problem however is how to reach these coupons every month to the consumers, especially in far flung rural areas. Another danger is that the consumers may sell these coupons at a discount for liquor, or other pressing consumption needs.

A better alternative would be to issue computerised cards. Various types are currently being tried:

1. Machine readable cards
2. Biometric cards
3. Visual crypto cards

Machine readable cards are like any ATM credit cards. This could be an identity card and can be used for various purposes. There are three types of such cards; magnetic strip cards, cards with bar code, and smart cards.

Smart cards are the most preferred form of machine-readable cards. It needs a machine reader at each FPS, which will record the transactions and that will be the basis for the shop keeper's next quota. Even private dealers can be encouraged to supply foodgrains to the card holders at the specified price, and the amount of subsidy (to be calculated every month) can be directly credited to the shop keeper's bank account. This will obviate the need for supplying foodgrains from the FCI to the private shopkeeper. However installing machines at each FPS may be expensive.

Biometric cards – Here the consumer has to place his finger on the censor of the machine for verification of the identity of the user. A data base of all card holders along with their (including family members) finger prints should be created, so that no person can have two cards in his name.

This will eliminate the use of bogus cards. The machine kept at the shopkeeper should have a confirmation system, only when the consumer is satisfied he would put his finger on the censor confirming the transaction. This will ensure that the shop keeper does not fabricate the records. The machine can also be connected to a digital weighing machine. The digital weight of the grains would be transmitted to the machine reader as well as on the card. However the machine would require electricity to run.

Machine readable cards – These are being used in Karnataka. Like bank lockers, it uses two keys, one known to the dealer, and the other only to the consumer. Only a combination of the two will complete the transaction. In order to reduce the costs, visual decryption has been developed. By placing the FPS licensee's decoder transparency sheet on the ration cards, a unique number or pattern emerges, which helps in ensuring that the

card was actually brought to the shop. This ensures that no entry can be made in the dealers' records against a ration card unless that card has been actually been presented at the shop. The technology is cheap, but its success is still to be affirmed. The grid printed on the card can be photocopied, and thus misused. It takes some time for the dealer to complete the operation, and thus increases his burden. As the cards are made on the basis of the existing database, the problem of ghost cards cannot be eliminated.

Smart cards in food programs

Existing systems in other developing countries make use of smart cards and POS in the following way:

- the individual beneficiary receives the card from the welfare/Ministry office where it is “recharged” with the relevant information and the amount of rations he/she is entitled to.
- once the individual goes to the private shopkeeper with the card, the transaction is promptly recorded both on the card and on the POS device that each shop keeper maintains.
- the transaction is backed up on the handheld device (POS) for upload on the central database and for being transmitted to the bank to reimburse the shopkeeper. Such duplicate storage is to ensure that data is not lost in the interim period. Such mechanism allows for a decentralized processing of transactions when there is no online access to the main database as is the case in India.
- once every week or fortnight, the shopkeeper would take the handheld device (or the information contained in it) to a central agency (e.g. a Bank or the concerned Ministry office) to upload all the transactions to the centralized system and to be compensated for the transactions undertaken during that period, preferably transferring money to the shopkeeper's bank account.

Smart card systems are not new to India or to the region. Several small-scale experiments are already in operation. For example, ICICI has instituted a smart card system for health insurance. One notable small scale private initiative is that of Swayam Krishi Sangam (SKS) in operation in one of the poorest districts of Andhra Pradesh (Medak). The card is being used essentially as electronic passbook to record all the transactions for micro-finance loans. In neighboring Bangladesh, smart cards have been introduced by various institutions, notably Grameen Bank and BRAC, largely for channeling micro-finance activities, but also for other activities. In Pakistan, the National

Identity Card is serving also as a smart card inasmuch as it is used not only for casting votes, but for other purposes such as scholarships.

Source: World Bank 2007

2.6 Multi-Application Smart Cards (MASCs)⁵

From the point of view of the state governments, introduction of smart cards cannot be for PDS only. To be financially viable and politically attractive it has to be applicable to a large number of services. Many Departments of the Central Government, notably the Ministry of Rural Development, are in the process of developing web-enabled systems that provide information about Government programmes to beneficiaries and also details of the benefits received by the targeted beneficiaries. Easy access to such information is the most effective means to empower the beneficiaries and their well-wishers/representatives. Such web-enabled systems can also be used for the PDS.

Multi-Application Smart Cards (MASCs) is one of the technological break-throughs of recent times. MASCs facilitate simplification of procedures and enhancing the efficiency in administering various schemes. The application of this technology cuts across usage: from Government to citizens, Government to other agencies and between agencies to citizens. The National e-Governance Policy initiated by the Department of Information Technology, GOI, fully recognises the significance of this technological revolution and

⁵ Based on the report of the XI Plan working group on integrated smart card system, Planning Commission

the need for tapping its potential for various applications in the Government to citizens interface. Smart card technology has the required strength, speed, authenticity and efficiency for the process of delivery of Government services to citizens. On the-spot availability of proof of identity, authentic transaction history and entitlement details are required at the point of service delivery.

The smart card would have memory partitioned into distinct modules representing different entitlement groups for which free services or implicit/explicit subsidies are given. These include PDS & nutrition, energy (kerosene, LPG, electricity), education services, health services, civic amenities & services (drinking water, latrines/sanitation), employment (NREGS) and farming (fertilizer, irrigation water, MSP). These separate modules could in principle be managed by the Ministry/Department under which the group falls. They would be responsible for setting up and maintaining the back-end financial and data base system that is vital to eliminating errors of omission and commission and improving delivery efficiency. These Departments/Ministries would control the entry of data into their own module of the smart card.

Any subsidy received by any individual would be entered on his/her smart card when the goods or service is delivered/charged for by the authorized supplier (e.g. the FPS, kerosene/LPG dealer, fertilizer outlet). The rules and regulations for delivery of subsidy and its re-imburement to the goods/service supplier would be defined by the concerned Department. The data entered on the smart card should, however, be accessible by all monitoring/evaluation agencies so that they can put together a picture of what subsidies are being received by whom as well as those who are not receiving a subsidy for which they are eligible.

The integrated smart card system (consisting of front-middle-back end) is completely consistent with different models of delivery of subsidies and transfers. Thus the food subsidy could:

- a) Continue to be delivered through the existing Fair Price System in which foodgrains is delivered by FCI through State Food Departments,
- b) Be delivered through FPS plus any other authorized food shops, or
- c) Delivered through any shop in the country that signs up and registers with the concerned Department (with no FCI supply), or
- d) Be converted into a pure cash subsidy.

It will also allow other innovations/experiments such as the division of the PDS food entitlement between the Head of household and his/her (non-earning) spouse or transfer

of entire household entitlement to the housewife/mother. Similarly, different models can be used for Kerosene supply and fertilizer supply to farmers. In other words, the precise model for delivery of the subsidy or income transfer to individuals/households can be decided separately and/or modified overtime.

Public-private-partnership - There could be public-private partnership whereby such applications could be used for linking government services to the citizens and/or involving banks and other related institutions in delivering various services. Public-private-partnership on MASCs could be the joint efforts of the government as well as the private sector in implementing the government welfare/subsidy schemes. Government agencies can focus on:

- Defining standards of technology and data definitions
- Defining protocols for inter-services and inter-application communications
- Identification of norms/criteria for selection of card-holders
- Develop back-ends for data gathering, processing and storage

Private Sector agencies can deliver

- Production of cards and related products
- Distribution of cards & subsequent maintenance
- Delivery of services such as transactions and payments that use these cards
- Building a network of service providers that accept these cards
- Infrastructure for access to back-ends & gateways

Certain common fields from the unique ID data base can be accessed through the same common identifier for all these applications.

To sum up, TPDS, targeting around 400 million people and budgeted around for Rs.25,000 crore annually, is affected by targeting errors (both inclusion and exclusion errors), spurious beneficiaries, diversion and pilferage and even location specific availability. Although the introduction of modern tools such as smart cards may not be a panacea for all these evils, it can solve many of the problems particularly that of pilferage and spurious beneficiaries.