India's dairy development and Operation Flood

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Martin Doornbos and his colleagues have now published two articles in *Food Policy* on India's dairy development scheme, Operation Flood (OF).[1] These have arisen from a research project jointly sponsored by the Institute of Social Studies (The Hague) and the Indo-Dutch Programme on Alternatives in Development, and they summarize a series of working papers soon to be published in book form.[2] While acknowledging the contribution made by the team of Dutch and Indian writers assembled for this project, I wish to dissent from their overall conclusions that OF is an expensive failure and, as a model development strategy, may even be counter-productive in consolidating 'a distorted political economy'.

The debate about India's 'white revolution' has been fierce. With no prisoners being taken on either side. Passion is no substitute for rigorous argument, however, and ironically the acrimonious polarization of the issues has further clouded matters which lacked clarity in an already impressionistic literature with a weak fieldwork base. The most recent paper by Doornbos and colleagues is, by contrast, informed with a careful and moderate tone. A balanced and objective glow suffuses their argumentation, although strictly speaking this is not representative of the views of their contributors. Of the 21 working papers published to date, not one expresses even qualified support for OF, and most are highly critical. The present short paper seeks to redress this imbalance by highlighting some of the positive aspects of the project, while at the same time recognizing that several criticisms are justified.

Dependent development?

OF was sired by the National Dairy Development Board (NDDB) and Indian Dairy Corporation (IDC) out of European Community food aid. As an infant project it continued to be nurtured by surplus skimmed milk powder (SMP) and butter oil (BO) and even now, as it approaches maturity, further donated commodities are being requested as sustenance.[3] Is this dependence or, as claimed by the public relations wing of the EC Commission, is it 'the intelligent use of food aid'?[4]

This is not the place to rehearse the history of OF. Suffice it to say that the NDDB, which was originally critical of imports of dairy products for their destabilizing effect upon prices in the Indian market, was eventually persuaded of the logic of receiving gifted SMP and BO which would be recombined and sold as liquid in the metropolitan markets. The counterpart funds generated could then be used for various aspects of dairy development in rural India. SMP and BO proved particularly valuable because they represent a convenient way of storing an otherwise highly perishable good, and can easily be reconstituted to boost supplies during the lean season (April-August). Dairy aid has come from various donors, most recently predominantly the EC (see Table 1).

Table 1. Dairy aid to Operation Flood (thousand tonnes).

	SMP	BO
1970–77	124	40
1978–85	242	86.7
1988–94[a]	75	25

Notes: [a] proposed amount.
Sources: Commission of the European Communities, see text, *op cit*, Ref 3, p 9; Commission of the European Communities, *Report from the Commission to the Council and the European Parliament on the Implementation of India's Operation Flood II*, COM(86)138 final, Brussels, Belgium, 1986, Annex 1.

Detractors of OF suggest that India has become dependent upon these imports as a means of subsidizing the urban retail price of milk and its products, mainly to the benefit of relatively wealthy consumers. Doornbos et al concede that imports represent the equivalent of only about 1% of the total throughput of the Indian dairy industry, but then claim the proportion for the formal cooperative sector to be nearer one-third of its output.[5] The latter figure is misleading as the last three years' available data show. Between 1982/83 and 1984/85 India imported 169,000 tonnes of SMP and 35,000 tonnes of BO, the combined equivalent of about 1,210,000 tonnes of whole milk. This represents about 17.7% of OF's total throughput in the same period, a proportion which is predicted to fall to 3% by the end of OF III (1985-90): hardly the stuff of abject dependence.[6]

More convincing, perhaps, is the argument that imported milk products have somewhat depressed domestic prices, by up to 10% according to Lipton.[7] The IDC sets a pool price for EC and indigenous SMP which amounts in effect to a subsidy to the large metro dairies and urban consumers. In addition, the state politicians who control retail prices in cities such as New Delhi and Calcutta set them at an artificially low rate. Jha considers that combined low urban retail and rural farmgate prices 'offend against the principle of social justice' and are counter-productive because they have a disincentive effect upon production.[8] Yet these problems are not insuperable. As indigenous SMP increases its share of the market – it already represents about 70% of SMP consumption – there is bound to be an upward economic pressure on the pool price. Urban consumers are a powerful lobby for the maintenance of low retail prices, and obviously most would support a continued policy of cheap milk for poor people (usually a 'toned' low fat product). However, the experience of one of India's major cities, Bombay, has shown that a higher retail price can be both acceptable to wealthier consumers and, at the same time, encourage producers, who get a better deal.

The most worrying aspect of the dependence argument is the increased use of exotic genetic material to upgrade the yields of nondescript Indian cattle. The OF authorities

have supported the current fashion for cross-breeding, using imported animals and semen. The logic is that domestic cattle would take decades of selective breeding to reach acceptable yields and the cross-breeding option offers a short-cut. The proportion of exotic blood is usually kept to one-third or less, but there have been numerous complaints: that cross-bred animals suffer heat stress in the summer; that they are more susceptible to disease; that males make poor draught beasts (a crucial consideration in the non-mechanized sector); and that their higher milk yields are won at the cost of substantially greater inputs of feedingstuffs. There are disturbing echoes of the green revolution here. Instinctively one feels that the development of the buffalo, a hardier native and a cheaper alternative, must be a better bet.

A flood or a trickle?

Doornbos et al are sceptical that the amount of milk procured by OF represents a real achievement. They point out that OF so far controls only 5-10% of the Indian milk market and suggest that 'the readiness of Indian farmers to join milk cooperatives and to supply increasing quantities of milk to them seems to have been grossly overestimated ...'[9] It is true that many of OF's original targets in retrospect appear to have been overoptimistic, but there have been several factors making their accomplishment difficult. Most important among these has been the problem of local politics. State governments have responsibility for dairy development, and negotiations about the geographical extensions of OF under phase II of the project have taken longer than anticipated. One-quarter of the state perspective plans still awaited acceptance in 1983, four years late. It is hardly surprising, then, if OF II's targets were underachieved in 1985. In view of Jha's contention that 'the Anand pattern was accepted without any genuine commitment' by some state governments, one wonders whether these targets will be reached by 1990 in some regions.[10]

Table 2. Operation Flood's basic statistics.

	1970	1975	1981	1987	1990
Functional OF cooperatives (thousands)	1.3	3.0	13.3	38.6	50.0
Members (millions)	0.25	–	1.74	4.91	10.02
Annual average milk procurement (million litres/day)	0.52	0.87	2.56	8.12	13.20
OF milch animals (million)	–	–	–	5.45	15.28
OF milksheds	5	15	39	167	176

Source: National Dairy Development Board, various documents.

As Table 2 shows, OF's record has been remarkable given the constraints. Not all the cooperatives listed are new and it can be argued that much of the milk has simply been diverted from other marketing channels (and possibly some from rural consumption). However, the fact remains that nearly five million people are now committed to cooperative dairy enterprise and that an average of eight million litres per day pass through a system which is freer of adulteration and contamination than the informal sector. The scale of OF is now very impressive and a tribute to the organizational skills of

its staff.

OF performs a balancing function in both time and space. Surplus milk is made into SMP in the flush season and reconstituted along with the imports in the lean season. There is also a National Milk Grid (NMG) which allows the transport of milk to deficit states – mainly by rail and sometimes over distances of up to 600km. These facilities, along with the everyday reception and processing plant, are essential features of the OF strategy. Criticism has mistakenly focused on the use in the past of foreign machinery: indigenous technology is increasingly used where available. An altogether more significant issue is the appropriateness of the level of technology chosen. One might think from reading George or Alvares that modernization of any kind is wrong for the Indian dairy trade and that small-scale rural processing, coupled with the informal sector marketing channel for liquid milk, will serve Indian dairying well in the 1990s.[11] This is a conservative and short-sighted view: the dominance of inefficient, traditional dairy structures led to widespread shortages in the 1960s. OF is a radical departure which plans for the expansion of both rural production and urban consumption. In addition one should remember that any technology can be judged 'appropriate' only in context. The agenda of development may occasionally require state-of-the-art technology to be employed in order to circumvent bottlenecks which hinder the general advance of social and economic well-being. Food systems are among the key subsystems of developing economies in the sense that their performance can have profound and wide-reaching effects, and among the most sensitive are those devoted to valued perishable commodities. Here we are arguing that milk is a special case. I can only approve of capital-intensive investment replacing informal sector employment where the long-term benefits which accrue to society outweigh the short-term disbenefits.[12] This argument is predicated on the assumption that among the beneficiaries will be needy rural producers and poor urban consumers.

Critics of OF are also keen to argue that the project is geographically selective. They point to the success of Gujarat in particular, the home of the original Anand cooperative, and suggest that OF is biased in favour of a few such relatively prosperous regions with the greatest potential. According to Singh and Sharma the 'OF II authorities have completely overlooked the problem of regional inequality ... The implementation of the programme as such may further aggravate the problem of regional imbalances in India.'[13] It is true that under OF I (1970-81) 18 of the 'best' milksheds were chosen to enhance supplies to Delhi. Bombay. Calcutta and Madras, and that in the expansion under OF II (1978-85) and OF III (1985-90) it is intended 'to prioritize investments in those functional areas and milksheds which best achieve the project targets. To achieve this. investments will be speeded up by building rural milk processing capacity in milksheds where the milk procurement builds up faster.[14] This is not to deny that the scheme could become truly nationwide in the future. In the short term it is unreasonable, on the one hand, to accuse the OF authorities of overreaching themselves with unrealistic targets and of being unable to mobilize sufficient rural production, while on the other hand denying them the right to limit the spatial extent of the project to areas from which they expect a viable response. No doubt there are geographical subtleties in the structure of the programme that would repay detailed analysis.[15]

A poverty programme?

A considerable quantity of vitriol has been poured on OF's record by its reviewers, but none more corrosive than the accusation that this has been a programme that has failed the poor: the main beneficiaries are said to be the larger rural producers and the urban middle-and upper-income bracket consumers. As such OF is taken to perpetuate or even exacerbate the *status quo ante* of intolerably high levels of extreme poverty in Indian society.

Table 3. The socioeconomic composition of milch animal owning groups, April 1984: cooperative members (%).

	Operational land holding (acres)					
	Landless	‹2.51	2.51–5.00	5.01–10.00	›10.00	Total
Scheduled castes and tribes	7.60	4.85	2.20	1.01	0.63	16.29
Backward castes	7.34	11.10	8.32	4.81	2.91	34.48
Others	5.70	12.66	11.78	9.88	9.20	49.22
All (n = 2.3 million)	20.64	28.62	22.29	15.70	12.75	100.00

Source: National Dairy Development Board, *Operation Flood Phase III,* Anand, India, 1985, p 49.

Three issues arise here. The first concerns the membership of the village milk producers cooperatives which are the basic building blocks of OF's structure. Table 3 shows that in 1984, 71.55% of members were small and marginal farmers or landless agricultural labourers (SAMFAL). 50.77% came from the scheduled tribes or scheduled and backward castes, and 41.41% fell into both categories. Comparison with Table 4 suggests that, while there is no significant difference from the socioeconomic composition of non-member milk producers in the same areas, the participation of needy people in OF is by no means negligible and has more than accomplished the target of two-thirds of OF producers in the SAMFAL category set in 1971 by the National Commission on Agriculture.[16] It is true, nevertheless, that the SAMFAL own fewer animals per head than medium and large farmers (Table 5) and that their smaller percentage in milk also give meagre yields. As a result their remunerations are low, but – judging from the millions of people volunteering to become cooperative members – worth having. The average gross receipt in 1985-86 was Rs 1845 for a year's supply of milk, with an additional Rs 400 or so in bonuses and the value of any local sales.[17]

Table 4. The socioeconomic composition of milch animal owning groups, April 1984: non-members (%).

	Operational land holding (acres)					
	Landless	‹2.51	2.51–5.00	5.01–10.00	›10.00	Total
Scheduled castes and tribes	8.84	5.11	2.44	1.15	0.74	18.29
Backward castes	7.28	11.39	8.26	4.70	2.69	34.32
Others	5.11	12.44	11.29	9.58	8.98	47.39
All (n = 3.6 million)	21.23	28.94	21.99	15.43	12.41	100.00

Source: See Table 3.

Table 5. Milch animal ownership (%) by land holding groups, April 1984.

	Operational land holding (acres)					
	Landless	‹2.51	2.51–5.00	5.01–10.00	›10.00	Total
Ordinary cows	5.06	8.56	7.90	6.21	8.49	36.22
Cross-bred cows	0.98	2.08	1.31	0.97	1.11	6.45
Ordinary buffaloes	7.91	11.13	10.69	9.39	9.27	8.96
Upgraded buffaloes	1.60	1.56	1.66	1.89	2.25	48.39
All milch animals (n = 9.0 million)	15.55	23.33	21.56	18.46	21.12	100.02

Source: See Table 3.

The second issue affecting the poor is their role in the administration of OF. The assertion is frequently made that the project is a classic example of a hierarchical, bureaucratic structure imposed from above and from the centre, in this case the centre being Anand in Gujarat, in which the real power is vested in an elite of technocrats. The large modern dairies in particular are seen as whited sepulchres, remote from the everyday experience of ordinary country folk. Once more, there is a grain of truth here. The technocratic profile of OF has been high so far, but this was the inevitable consequence of a rapid expansion of processing capacity and the establishment of a network of input services.

Whether one approves of this ‘high-tech’ approach or not, it does not preclude the involvement of the producers in decision making. The plan for OF was one of devolved participation in which the members own their village cooperative, with one of their number acting as secretary, and have a democratic franchise to elect their own management committee which would in turn send a delegate to sit on the district union committee. In theory the dairy managers and other bureaucrats are therefore the employees of their milk suppliers. Although India has a democratic tradition, participation rates in real decision making by poor people are low. It would be surprising if OF was any different, but there is some positive evidence. An extensive village survey conducted on behalf of the NDDB in April 1984 showed that in the southern state of Tamil Nadu 6.88% of cooperators were either present or past members of their village cooperative management committee and, of these, 69.93% were SAMFAL. Although this suggests that SAMFAL were underrepresented, since they form 82.54% of cooperative members as a whole in that state. they nevertheless took two-thirds of the committee

seats – a substantial portion by any reckoning.[18] Their actual role in decision making is reported to be restricted but growing. There are centuries of ingrained bias against backward and scheduled castes to overcome, and OF cannot offer an overnight solution.

Third, there is the issue of nutrition. The commercialization of dairying has encouraged producers to sell all or most of their milk for cash. Several writers have speculated, although without any strong empirical evidence, that this has had deleterious effects upon the nutritional status of the vulnerable groups within the household. There is particular concern about women and small children, and also those agricultural labourers without animals of their own who may previously have been paid for their work partly with the by-products of village processing, e.g. the buttermilk left after ghee manufacture. To counter this hypothetical draining of rural nutrients, the OF authorities have for some time now recommended to their constituent milkshed unions that they sell a minimum of 25% of their procurement locally.

In an attempt to reach the mass of slum dwellers, OF is opening the relatively new channel of urban bulk-vending booths. These are located widely throughout the major cities and by the end of 1986 were responsible for 2.28% of total sales, with another 9.61% sold loose.[19] Under OF 111 greater emphasis will be given to the sale of cheap, toned milk for the lower end of the market.

Anand or not Anand?

The structure of the 'Anand model' is well known and will not be described further here.[20] Its attempted replication throughout India is a major plank of the OF strategy, but that very replicability has been questioned. Joshi for instance has reminded us of the many advantages of central Gujarat which are absent elsewhere:

- Good road and rail connections with major cities, which helped to open up the Bombay market in the 1950s (now replaced by exports to New Delhi and Calcutta).
- Experience with modern dairy technology from an early date.
- The large proportion of high-yielding buffaloes, fed on crop residues from the prosperous local agriculture.
- A long history of cooperation, stretching back to 1905.
- The leadership of the Patidar caste, who have a worldwide reputation for entrepreneurship.[21]

To this list we might add the political climate, which was favourable in Gujarat in the late 1940s. The Kaira District Cooperative Milk Producers' Union (KDCMPU) had several powerful friends who rendered valuable assistance at various times. Politicians in other states are tangibly less enthusiastic about OF, however. Ironically the aspect they seem to approve of least is the democratic structure of the Anand cooperative model, which gives power to elected boards rather than to state dairy development agencies. The full adoption of the model in *sensu stricto* has been delayed in several states where the local government insists on making its own political appointments to key managerial positions.

Several alternative cooperative models have been suggested, but the truth is that for large-scale application OF is as good as any and better than most. Doornbos et al provide the best discussion of this and – rather than choosing between the Anand model and its rivals – they suggest a mix of varied institutional approaches, each geared to the vastly complex reality of India's geographical variations of ecological and socioeconomic conditions.[22] This would, however, need further layers of bureaucracy, with local, autonomous projects being monitored by a new national body not committed to any one model in the way that the NDDB/IDC are wedded to Anand. Another problem would be in ensuring the level of farmer participation and control which is at least theoretically possible in OF. There is no reason to suppose that other types of dairy cooperative would be more successful in delivering both economic and administrative power to India's ultra poor.

A more attractive alternative is a series of modifications to OF's existing structure, making it more flexible in its application to local circumstances. First, in some states it should be possible to initiate a spatially differentiated procurement system. Where urban markets could be supplied from a restricted radius, for instance, investment should be concentrated there in order to reduce transport costs from, and the need for expensive processing plant in, distant parts of the milkshed. There remains a problem close to cities of competition from dudhias (middlemen), but if OF cannot beat them through the quality of its services to the farmer and other benefits then it is not performing adequately. Producers further afield could then be more appropriately organized around small-and medium-sized factories producing traditional dairy products such as ghee, without necessarily threatening much local employment. Some writers have suggested that a full range of modern dairy products could be produced at the village scale using intermediate technology, although quality control and standards of sanitation would be constraints.[23]

The initiatives of the NDDB in the vegetable oil, fruit and vegetable. and fishing industries indicate that a broadening of OF's cooperatives product-base might be desirable, depending on the local potential. For the poorest people small-livestock husbandry, e.g. goat herding, may be a more suitable commitment, involving a less risky and less 'lumpy' investment than dairying.

Finally, OF has eschewed involvement in the organization of credit for its cooperative members. The reasons given – scope for mismanagement and corruption – are valid enough, but a closer integration with the credit-granting agencies should be possible and is certainly desirable. Detailed descriptions of potential benefits and pitfalls in a tribal area of Gujarat are given by Baviskar and Savara.[24]

Conclusion

Much of the criticism of OF has been exaggerated and misplaced. One cannot believe that a large-scale project with a variety of elements can be 'all bad'. OF is not perfect: what major development project ever has been? But not to be good for everything does not make OF 'good for nothing'.

The Anand model does allow for a combination of top-down planning and bottom-up participation. The latter is not just window dressing, but a genuine commitment to the interests of producers. While the welfare of poor people is not the primary concern of the scheme, they have come forward in their millions to dispose of their milk, and will derive some benefits. A political economy of OF might emphasize the distress sales which extract a surplus in favour of the 'subsidized' urban consumer and draw the producers – a majority of whom are comprised of the SAMFAL group – into the commercialized food system. Yet such an analysis would ignore the established facts that the process of commercialization in Indian agriculture is far from new and that milk itself underwent commoditization in peri-urban regions several decades ago. What is new is the long-distance nature of the NMG and a switch in many inaccessible rural areas from home consumption and small-scale manufacture of traditional dairy products to the sale of liquid milk. This has established a flow of cash into cooperators' pockets which they *may* decide to spend on grains, pulses and other foods which are cheaper sources of nutrition than milk.

My general conclusion is one of guarded optimism. Some policy changes are desirable, especially those concerning exotic cattle genes, the transfer pricing of SMP in favour of urban consumers, and the need for a more sophisticated geographical awareness of the implications of policy alternatives. This type of project, which seeks fundamentally to restructure whole subsystems of the rural economy. will take at least 20 or 30 years to reach its basic goals but, given the political will on the part of the Government of India and the state authorities, OF will prove a great boon to both urban consumers and rural producers.

Endnotes

[1] 'M. Doornbos, P. van Stuijvenberg and P. Terhal, 'Operation Flood: impacts and issues', Food Policy, Vol 12, No 4, November 1987, pp 376-383. See also P. Terhal and M. Doornbos, 'Operation Flood: development and commercialization', Food Policy, Vol 8, No 3, August 1983, pp 235-
239.

[2] ISS-IDPAD Working Paper Series on Dairy Aid and Development (1985-86). Of 29 provisional titles 22 have been published to date. Two books are due for publication in 1988.

[3] Commission of the European Communities, *Report of the Commission Services to the Council and European Parliament on Community Support to India s Dairy Industry Development*, Commission Staff Paper SEC(87)1365, Brussels, Belgium, 1987.

[4] "Commission of the European Communities, *Operation flood: the Intelligent Use of food Aid*, Brussels, Belgium, 1986.

[5] Doornbos et al, op tit, Ref 1, 1987, p 377.

[6] Indian Dairy Corporation, *Operation Flood: a Progress Report*, Baroda, India, January 1986.

[7] M. Lipton, 'Operation Flood and other EC aid to India', in M. Caliewaert, ed, *India and the EC*, Centre for European Policy Studies, Brussels, Belgium, 1985, pp 108-108.

[8] L.K. Jha, S.K. Rau, I.Z. Bhatty, N.N. Dastur, P. Bhattacharya and A.R. Shirali, *Report of the Evaluation Committee on Operation Flood II,* Government of India, Ministry of Agriculture, Department of Agriculture and Cooperation, New Delhi, India, 1984, p 59.
[9] Doornbos et al, *op cit*, Ref 1, 1987, p 378.
[10] Jha, op cit, Ref 8, p 78.
[11] George, *Operation Flood: an Appraisal of Current lndian Dairy Policy,* Oxford Universrty Press, New Delhi, India, 1985: C. Alvares, *Another Revolution fails,* Ajanta, New Delhi, India, 1985.
[12] It is interesting to note here that Doornbos *et al* recognize that OF's expansion 'has not led to significant overall loss of employment in the informal sector' *(op cit,* Ref 1, 1987, p 380).
[13] S. Singh and R.K. Sharma, 'Some implications of area choice in the Operation Flood II programme', *Economic and Political Weekly,* Vol 16, 1981, A15-28.
[14] National Dairy Development Board (NDDB), *Operation Flood Phase III,* Anand, India, 1985, p 19.
[15] Some useful regional monographs have been published: D.R. Shah, *An Economic Analysis of Co-operative Dairy Farming in Gujarat,* Somaiya, Bombay, India, 1985; M.M. Jain, *Growth Pattern of Dairy Subsector in Rajasthan,* Himalaya, Bombay, India, 1986; H. Alderman, *The impact of*
Co-operative Dairy Development in Karnataka, World Bank, Washington DC, USA, 1986; and G. Mergos and R. Slade, *The Impact of Dairy Development: a Case Study from Madhya Pradesh,* World Bank, Washington DC, USA, 1986.
[16] *Report of the National Commission on Agriculture 1976: Part VII, Animal Husbandry,* Government of India, Ministry of Agriculture and Irrigation, New Delhi, India, 1976, p 162.
[17] At April 1988, £l = Rs23.8. AK. Joseph, 'Operation Flood - the people's programme', in Indian Dairy Association, *Dairying in India: XXI Dairy Industry Conference, Anand,* New Delhi, India, 1966, pp 37-43.
[18] National Dairy Development Board, unpublished data.
[19] Indian Dairy Corporation, *Monthly Progress Report on Operation Flood,* Baroda, November 1986.
[20] See Indian Dairy Corporation, *Operation Flood: a Reality,* Baroda, 1983.
[21] V.H. Joshi, 'Operation Flood: constraints and potentialities in Saurashtra', *ISS/ IDPAD Working Papers on Dairy Aid and Development,* No 6, 1986, pp 5-8.
[22] M. Doornbos *et al,* 'Operation Flood as a food strategy: socio-economic implications and issues for research', I*SS/IDPAD Working Papers on Dairy Aid and Development,* No 2, 1985.
[23] M.R. Bachman, 'Appropriate methods of milk processing in developing countries', in A.J. Smith, ed, *Milk Production in Developing Countries,* Edinburgh University Press, Edinburgh, UK, 1985, pp 99-105.
[24] B.S. Baviskar, 'Dairy development in a tribal area in Gujarat', *ISS/IDPAD Working Papers on Dairy Aid and Development,* No 8, 1986*;* M. Savara, 'Organized dairying in the tribal areas of Surat district, *ISS/IDPAD Working Papers on Dairy Aid and Development,* No 9, 1986.