SERVICE DELIVERY

6. Fertiliser Supply

DFID

The purpose of these *Key Sheets* is to provide DFID Natural Resource Advisers with an easy and up-to-date point of reference on issues relating to development in the natural environment.

The sheets are designed for those who are managing change and who are concerned to make well-informed implementation decisions. They aim to distil theoretical debate and field experience so that it becomes easily accessible and useful across a range of situations. Their purpose is to assist in the process of decision-making rather than to provide definitive answers.

The sheets address three broad sets of issues:

- Service Delivery
- Resource Management
- Policy Planning and Implementation

A list of contact details for organisations is provided for each sub-series.

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Overview of the debate

Over the past 5 years the debate about fertiliser supply has focused on:

- The equity and efficiency effects of fertiliser subsidies.
- The extent to which the removal of subsidies reduces demand for fertiliser.
- The 'mining' of nutrients from soil and role chemical fertilisers can play (either contributing to or helping to reverse the process).
- Pre-conditions for the effective privatisation of fertiliser supply.
- The environmental impacts of fertiliser production and use.
- The relative decline in fertiliser use in Africa vis-à-vis other continents and the effects this is likely to have on food security.

Key issues in decision-making

Donors and international agencies have played a key role in determining fertiliser use and fertiliser policies in developing countries, particularly in Africa. They initially encouraged the provision of universal subsidies, then insisted upon subsidy withdrawal as part of economic adjustment programmes. At the same time they have funded fertiliser imports and directly supplied fertiliser as a stand-alone intervention or as part of broader rural development projects. They remain concerned about levels of fertiliser use both for aggregate food supply reasons and because of the environmental impacts of soil nutrient depletion. In some cases the polluting effects of fertiliser itself are also a concern.

Despite this concern, there is little agreement about best practice in fertiliser supply. The withdrawal of fertiliser subsidies has had mixed effects. In some places subsidy removal together with liberalisation of supply has increased demand for fertiliser. In others the rise in prices – and lower than expected benefits of liberalisation – has significantly reduced demand. The costs of fertiliser subsidies has often been far higher than initially anticipated (as in India). Equally, though, subsidies have underpinned impressive advances in agricultural development (as in Indonesia). Macro-economists tend to favour their withdrawal but few agricultural specialists are wholeheartedly opposed to them. Considerations with respect to subsidies include:

- Who benefits from fertiliser subsidies? (Rich or poor farmers? Farmers who grow particular crops? Fertiliser producers? Consumers?) Is the allocation of national resources to these groups acceptable/desirable?
- How high are the expected returns to the use of fertiliser? (In areas where returns are lower the removal of subsidies is more likely to reduce demand – however, these may be the poorest areas.)

Bilateral donors cannot support the costs of universal subsidies. However, they might be able to invest in targeted subsidies to benefit farmers in particular areas. Unfortunately, the targeting of subsidies remains poorly understood. More research on the feasibility and costs of targeting and more creative thinking about cost effective ways of increasing the demand for fertiliser in the absence of large-scale subsidies is required. One of the problems that must be faced is that the use of fertiliser is less attractive in the more marginal areas which donors interested in poverty reduction might wish to target (because of lower average returns and far greater risk).

In the immediate future, donors can help to ensure that countries have meaningful national fertiliser policies in place. Stable policies are important if private traders are to invest in fertiliser supply. It is more appropriate for donors to assist with the development and implementation of national policy than to become involved in importing fertiliser themselves. Donor imports may undermine domestic production/import capacity and distort the incentives to private trade. Donor fertiliser consignments tend to be irregular and often of unsuitable types, hence inefficient.

Once national policies are established, assistance may be required to create stable demand and to improve the efficiency of fertiliser use (which should further increase demand):

- How well do farmers, and those supplying production advice, understand chemical fertiliser use and the interactions between chemical and inorganic fertiliser?
- Would better soil analysis facilities encourage more efficient fertiliser use?
- Is more research required on response rates to fertilisers of various types, including local and organic fertilisers, in different areas and for different crops – including crop mixes and intercrops – so that recommendations to farmers can be fine-tuned?

DFID financed research

- Evaluation of soil fertility constraints to smallholder agriculture in the semi-arid tropics (University of Nottingham/NRSP - start 1993)

DFID project experience

- Bangladesh: Soil fertility and organic matter dynamics in floodplain rice ecosystems (NRSP - start 1997)
- Kenya: Manure management to enhance organic fertiliser quality (NRSP/ILRI - start 1996); Maintenance of soil fertility and organic matter (NRSP/ Reading/KARI - start 1992)
- Pakistan: Fertiliser supply credit scheme (Oxfam - start 1993)
- Malawi: Supplementary Inputs Programme (ActionAid - start 1995)

UK and other expertise

- ***FAO***
- ***International Fertilizer Development Center***
- ***IFPRI***
- ***University of Bath***

Fertiliser Supply *continued*

- Is adequate attention being paid to understanding overall nutrient balances and the interactions between different nutrients? (Often attention is focused on N, P and K and the contribution made by micro-nutrients is neglected.)
- Is the generation of fertiliser recommendations based on adequate on-farm research with farmers so that recommendations are adapted to farmers' circumstances and constraints?

Fertiliser demand must be considered in the context of other inputs (in particular the use of HYVs) and output prices:

- Can the links between credit agencies and fertiliser suppliers be improved?
- Can the risks of fertiliser use be reduced (and the attractiveness of lending to farmers be increased) by investing in measures to stabilise output prices (eg. grain storage depots/collection points).

Bottlenecks on the supply side may be the single most important factor behind low usage, especially in sub-Saharan Africa:

- Are prices unnecessarily high because of poor infrastructure and the lack of rural feeder roads?
- Would domestic fertiliser producers – where these exist – benefit from technical support to increase production efficiency resulting in lower consumer prices? Are domestic producers supplying appropriate types of fertiliser?
- Is poor handling and late supply by merchants reducing the effectiveness of fertiliser application? Is this due to lack of knowledge?
- Does the public sector hold large stocks of fertiliser? How do these affect private sector readiness to invest in fertiliser supply?
- Are continuing donor imports distorting local markets?
- Is there adequate credit and foreign exchange available to would-be private merchants? Is financing/foreign exchange available on equal terms to all such people? (Privileged access by a few can result in damaging monopolies.)
- Can farmers' organisations and cooperatives be encouraged to become involved in supplying fertiliser to members?

Finally, effective development of the fertiliser sector over the longer term will require appropriate regulation. Poor industry standards and misguided regulation in the early stages of development can have adverse effects on longer-term demand:

- How is the fertiliser industry regulated?
- Are there unnecessary import restrictions in place?
- Are there any independent sources of information on application rates and suitability to local conditions? (Manufacturers/distributors may recommend over-use and thereby lower effectiveness.)
- Is there a testing service to help ensure that quality is maintained? Is there any recourse for farmers who are supplied with inferior quality fertiliser?
- Can farmers' organisations be encouraged to offer a testing or arbitration service to their members?

Seminal literature

Bumb, B. & C.A. Baanante (1996) *The Role of Fertilizer in Sustaining Food Security and Protecting the Environment to 2020.* Food, Agriculture and the Environment Discussion Paper 17. Washington DC: IFPRI.

Larson, B.A. & G.B. Frisvold (1996). 'Fertilizers to Support Agricultural Development in sub-Saharan Africa: What is Needed and Why'. *Food Policy*, Vol. 21, No 6. pp. 509-525.

Lele, U., R.E. Christiansen & K. Kadiresan (1989*) Fertilizer Policy in Africa: Lessons from Development Programs and Adjustment Lending 1970-87.* MADIA Discussion paper No. 5. Washington D.C.: World Bank.

Shepherd, A. (1989) 'Approaches to the Privatization of Fertilizer Marketing in Africa'. *Food Policy*, Vol.14, No. 2. pp.143-154.

Key Sheets are available on the Internet at: www.odi.org.uk/keysheets/ or through DFID's website

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