



TOGETHER
for a sustainable future

OCCASION

This publication has been made available to the public on the occasion of the 50th anniversary of the United Nations Industrial Development Organisation.



TOGETHER
for a sustainable future

DISCLAIMER

This document has been produced without formal United Nations editing. The designations employed and the presentation of the material in this document do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations Industrial Development Organization (UNIDO) concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries, or its economic system or degree of development. Designations such as “developed”, “industrialized” and “developing” are intended for statistical convenience and do not necessarily express a judgment about the stage reached by a particular country or area in the development process. Mention of firm names or commercial products does not constitute an endorsement by UNIDO.

FAIR USE POLICY

Any part of this publication may be quoted and referenced for educational and research purposes without additional permission from UNIDO. However, those who make use of quoting and referencing this publication are requested to follow the Fair Use Policy of giving due credit to UNIDO.

CONTACT

Please contact publications@unido.org for further information concerning UNIDO publications.

For more information about UNIDO, please visit us at www.unido.org

21050

Distr.
LIMITED

ITPD.16(SPEC.)
28 April 1995

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ORIGINAL: ENGLISH

Workshop on Policy Environment Conducive to the
Growth of the Fertilizer Industry in the Developing Countries

New Delhi, India, 30 November - 2 December 1994

REPORT*

* This document has not been edited

V.95-53528

CONTENTS

	<u>Paragraphs</u>	<u>Page</u>
I. INTRODUCTION	1 - 3	3
A. Background and Objectives of the Meeting		
Background	4 - 7	3
Objectives	8 - 9	4
Expected outcome	10	4
II. CONCLUSIONS AND RECOMMENDATIONS	11 - 12	5
Macroeconomic Policy	13	5
Pricing Policy	14 - 20	5
Marketing Policy	21 - 22	6
Trade Policy	23 - 25	6
Investment Policy	26 - 29	7
Technology and Supply Policy	30 - 32	8
Environmental Policy	33 - 43	8
Human Resource Development	44	10
Regional Cooperation	45	10
Industrial Cooperation	46	10
ANNEXES		
I. Agenda		11
II. List of participants		13

I. INTRODUCTION

1. The twin challenges of feeding the growing population and preserving the resource base mandate that fertilizer use should continue to grow, especially in the developing countries, during the 1990s and beyond. In order to sustain growth in fertilizer use, fertilizer supplies must be ensured at the farm level. However, such growth in fertilizer use should be environmentally-friendly.

2. The growth in fertilizer use and supply depends on several factors including technical, institutional, infrastructural and policy related. A conducive and stable policy environment is the most critical factor. In order to identify important components of a conducive policy environment, UNIDO organized a workshop on "Policy Environment Conducive to the Growth of the Fertilizer Industry in Developing Countries", New Delhi, 30 November to 2 December 1994. The workshop was organized by the Fertilizer Association of India, New Delhi.

3. Eleven participants from 8 countries and one international organization participated in the workshop. In addition to country presentations, the workshop also discussed the UNIDO discussion paper on "Policy Environment Conducive to the Growth of the Fertilizer Industry in the Developing Countries". The workshop also included a field trip to the National Fertilizer Ltd. plant at Panipat and IFFCO's adopted village and Farmers Service Centre at Karnal.

A. Background and Objectives of the meeting

Background

4. The Industrial Cooperation and Consultations Service (ICC) provides a means through which the United Nations Industrial Development Organization (UNIDO), can promote the industrialization of developing countries. This is achieved primarily through the identification of opportunities for industrial cooperation. To this end, ICC arranges contacts, discussions, sharing of experiences, and eventually agreements and industrial partnerships between developed and developing countries and among developing countries themselves. In this regard the aspects of investment, transfer of technology and the involvement of industry-related institutions and enterprises are specially emphasized.

5. The world fertilizer industry has made significant progress in the last two decades particularly in reducing energy consumption; in using highly productive equipment of advanced design; in introducing computer-based production monitoring and control systems, preventive maintenance and solid state instrumentation; and in fostering cleaner technologies to protect the environment. Environmental degradation of agricultural systems and rural settlements, due in part to indiscriminate use of agrochemical products, has become a major concern in the world. Therefore, there is a pressing need to redefine the policy and operation

environment to enable the ecologically sustainable and long term growth of the fertilizer industry.

6. UNIDO Consultation on the Fertilizer Industry held at Yamoussoukro, Cote d'Ivoire in 1988, recommended that policy guidelines be established for an integrated approach to food production, including the optimal use of agrochemicals in particular fertilizers. In 1990, an expert group meeting convened at Dakar, Senegal examined the creation of an appropriate environment for the wider utilization of phosphate rocks in the developing countries. In 1991, a workshop on appropriate strategies for fertilizer technology and development held at Lakore, Pakistan reviewed available technological options for the fertilizer industry, and recommended the need for policy readjustments to spur the growth of this sector in order to meet the growing demand of agriculture for agrochemicals in general and fertilizers in particular. In 1992, Agenda 21 stressed the need for an ecologically sustainable development of industry in general and of the chemical industry in particular, specially concerning pollution abatement and the use of cleaner technologies.

7. To further the ecologically sustainable growth of the fertilizer industry, UNIDO is convening two workshops. The first workshop, focusing on policy environment, held in New Delhi, India from 30 November to 2 December 1994. The second, concentrating on the operational environment at plant level, will also be held at a later date in India. Both workshops are cosponsored by the Fertilizer Association of India (FAI) which groups together all India fertilizer producers and which has extensive experience in all aspects of the fertilizer industry including fertilizer policies, technology development, production know-how, equipment manufacture, and fertilizer distribution and application to agriculture.

Objectives of the workshop

8. The objectives of the first workshop were to provide industry, governments, industry associations and other interested parties with assessed up-dated information on:

- a) analysis of critical factors and policy options to create an enabling environment for the ecologically-friendly growth of the fertilizer industry;
- b) identification of needs and constraints in participating countries and the sharing of experiences on possible ways to overcome them;
- c) recommend key issues for further in-depth discussion and identify technical cooperation and industrial partnership needs.

9. The occasion of the workshop was taken to visit an Indian fertilizer plant and a rural community where India's modern fertilizer policies have been applied.

Expected outcome of the workshop

10. The workshop was expected to provide the participants and UNIDO with concrete policy options to spur the ecologically-friendly growth of a fertilizer industry that meets the needs of agriculture, for food and non-food production, and with specific proposals to promote technical cooperation.

II. CONCLUSIONS AND RECOMMENDATIONS

11. Both country presentations and UNIDO discussion paper highlighted the importance of a stable and conducive policy environment to sustain environmentally-friendly growth in fertilizer use and supply. Ad hoc and short term policy changes are inimical to the health and growth of the fertilizer industry.

12. A proper sequencing and phasing of various policies, during the reform process is essential to minimize the adverse impacts of policy changes on fertilizer use and supply. In most areas, policy changes should be introduced gradually, because policy changes introduced in a "big-bang" manner tend to become catastrophic in the short run and unsustainable in the long run.

Macroeconomic Policy

13. Foreign exchange shortages and devaluation of domestic currency have a significant adverse impact on fertilizer use and supply in the developing countries. Macroeconomic policy should, therefore, ensure adequate and timely supply of foreign exchange and a stable exchange rate for the growth of the fertilizer industry.

Pricing Policy

14. The pricing policy should be formulated in such a way that it provides incentive to both farmers and suppliers (producers and importers).

15. The case for fertilizer subsidies should be evaluated in the broader context of food security, regional development, environmental protection and fiscal prudence. If it is socially desirable to remove fertilizer subsidies, it should be done in a gradual manner. This should be accompanied by the development of credit support. Further, fertilizer and crop prices should be changed in such a way that fertilizer use remains profitable during the removal phase.

16. International prices remain highly volatile and introduce risk and uncertainty in both fertilizer use and production. Since fertilizer use is a critical component of the food security strategy in many developing countries, a reasonable degree of stability in fertilizer prices may imply that domestic prices should not be linked to international spot prices.

17. In the past, many developing countries have followed pan-territorial pricing to promote equity in fertilizer use and, therefore, have controlled fertilizer prices at the farm level. Although such policies have been useful in promoting rapid growth in fertilizer use, they proved a mixed blessing, because they have also encourage inefficiencies, rent seeking groups and fiscal and administrative burdens. Furthermore, by manipulating fertilizer supplies, one can create gentle pressures to ensure fertilizer supplies to all parts of the country at a reasonable price. Hence, free market pricing at the wholesale and retail levels may be relatively more desirable, because competitive market pressures can generate more efficient and equitable distribution of fertilizers.

18. The cost-plus pricing has been the norm in most countries, but such system does not provide incentive in resource use and capital investment. A normative pricing system with built-in incentives for performance improvements should be adopted. Again, this system should be continuously monitored to prevent misuse of the system.

19. Not all countries are rich in natural gas and other raw materials needed for fertilizer production. The price of natural gas is generally higher in energy-importing countries than that in energy-exporting countries. For comparing efficiency of the industry across countries, a uniform raw material price should be used. This issue is tied to the strategic importance of the fertilizer industry in the overall socioeconomic goals of food security and environmental protection.

20. Many countries have deregulated fertilizer prices without deregulating crop prices. Such asymmetric deregulation is not desirable to promote the growth of the fertilizer industry. Both crop and fertilizer prices should be deregulated so that incentive to use fertilizer is maintained.

Marketing policy

21. In many developing countries, fertilizer marketing and distribution is under public sector monopoly. In order to promote competitive marketing systems, private sector should play a greater role in fertilizer marketing and distribution, whereas public sector should perform regulatory and quality control functions and develop anti-trust measures to prevent monopolistic developments.

22. Since developing institutional and physical infrastructures and management skills is a slow and time-consuming process, a gradual move towards privatization is desirable. Further, privatization should proceed in steps. First, efforts should be focused on retail marketing and then on wholesale marketing. Once private sector is well established and highly competitive, fertilizer imports should be privatized.

Trade policy

23. Most developing countries created parastatals for monopoly procurement and imports of fertilizers. Such arrangements have a definite advantage over large number of small importers because they can benefit from economies of scale in bulk imports. However, when the market is fairly large, such monopolistic arrangements can also create inefficiencies and rent-seeking behaviour. Hence, in large markets, such monopolistic arrangements should be replaced by limited competition among a small number of large importers. On the other hand, in small markets, there is little harm by keeping such arrangements, but their activities must be constantly monitored to improve efficiency.

24. Several countries have restricted the imports and exports of fertilizers for the reasons explained above. In many cases, such restrictions have deprived the farmers from getting adequate and timely supply of fertilizers. In many developing countries, a strong case can be made to increase fertilizer imports by removing quantity controls on imports. However, such controls should be removed by keeping a fair balance between domestic production and

imports. Such controls can be used to put gentle pressures on the domestic industry to improve its efficiency.

25. Many developing countries are moving towards complete liberalisation of the fertilizer sector. This means no regulation on quantity or price of imports or organisations involved in importing fertilizers. Although this is a desirable goal in the long run, the process or the speed with which it is achieved is not common to all countries. A few points should be kept in perspective. First, a move towards liberalisation should be gradual and well planned. Second, the nature, scope, and speed of the liberalisation process will be different between fertilizer importing and fertilizer exporting countries as well as between energy importing and energy exporting countries. Third, the size of domestic market and industry should be kept in perspective. Liberalisation may be more successful in small and medium markets than in very large markets because large markets, such as India and China, tend to become price-makers rather than price-takers in the international markets. Fourth, tariffs should be used to maintain a fair balance between domestic production and imports.

Investment policy

26. Fertilizer industry is highly capital and foreign exchange-intensive. In some countries, private sector has adequate capital and expertise to invest in production capacity, whereas in others, such as countries in sub-Saharan Africa, private sector does not have such capacity and risk-taking ability. In the former case, the government should create an enabling environment to encourage investment in the fertilizer sector by providing tax-incentives, developing financial markets, and guarantee the supply of foreign exchange and price stability. In others, the government may have to take a lead role in making the necessary investment. In such situation, issues of ownership and management warrant special discussion.

27. In many developing countries and formerly centrally planned economies, the distinction between ownership and management was blurred. The government ownership also resulted in government management leading to political interference, soft budget constraint, mounting subsidies, and inefficient operations.

28. On the other hand, in those countries where fertilizer plants were managed by technically competent management team with authority and accountability, even the government-owned plants operated very well. India's IFFCO plants, Indonesia's PUSRI plants, and Nigeria's NAFCON plants are examples of some of such well-run fertilizer plants. Thus, the SOEs should be managed by competent management teams.

29. In divesting the existing SOEs, a proper phasing scheme should be developed. First, existing viable plants should not be divested. Second, technical, financial, and management constraints should be alleviated on the existing non viable plants, so that they can become viable. Third, the plants which cannot be made viable with the necessary improvements should be liquidated. In addition, the growth of the public sector can be controlled by allowing additional new capacity to be constructed only in the private sector or through joint ventures. In such cases, the playing field should be levelled. That is, both public sector and private sector plants should be subjected to the same rules, regulations and incentives. In

dealing with different options in this area, one should remember that the ultimate goal is to provide fertilizer security for sustaining food security.

Technology and supply policy

30. The developing countries should promote international competitive bidding to ensure efficient and dependable technologies, because marginal savings in equipment procurement from incompatible sources can become a source of operating problems in the long run. They should not restrict their choice to a single technology in the long run, because there are constant improvements in production technologies. In this respect, macroeconomic policy should provide adequate foreign exchange support for the selection of the best proven technology.

31. In developing a supply strategy, due consideration should be given to the availability of domestic raw materials and technical know-how. Sound domestic technologies should be encouraged. However, a country should not build a plant based exclusively on imported raw materials, because there is little value added in fertilizer industry and the finished products could be bought at a cheaper rate. However, for strategic reasons, some plants can be built but the size of such capacity should be kept to a minimum. In developing domestic resources (raw materials) for fertilizer industry, the government should provide the necessary physical, institutional, and human infrastructures. The cost of infrastructures should not be charged to the project cost.

32. In many countries, inadequate supply of raw materials, especially natural gas, is a major constraint on optimum production performance. Every effort should be made to supply raw materials so that capital intensive fertilizer plants do not remain underutilized.

Environmental policy

33. Environmental problems in general and those related to the fertilizer industry in particular can be attributed to three factors, namely, the market failure, the policy failure, and the knowledge gap. The market failure argument suggests that environmental problems are caused by the non-existence of markets for environmental services. For example, a fertilizer factory dumps waste products, say phosphogypsum, in the river because it is a free good and no one owns it. If the factory is required to pay the cost of the treatment, then it will find ways to prevent the damage caused by the pollutants. In economics, this is known as "internalizing the externality".

34. The policy failure argument suggests that the pursuance of wrong policies can lead to environmental damage. For example, excessive crop price support programs can contribute to excessive use of agrochemicals such as pesticides causing harm to both humans and the environment.

35. The knowledge gap argument implies that the lack of proper knowledge about technologies, products and practices can lead to environmental damage. Eutrophication resulting from fertilizer run-offs is an example of knowledge failure. Based on these and other factors, the following policy measures are proposed.

36. First, the "internalizing the externality" argument would suggest that the cost of treating pollutants should be paid by fertilizer producers in case of production related pollution and by farmers for use-related pollutants. This argument poses several problems because fertilizer use plays an important role in food production. Thus, increased cost of environmental measures will lead to increased cost of fertilizer production which, in turn, will lead to increased cost of food production and higher food prices paid by the consumers. How much of the increased cost can be transmitted from producers to consumers depends on the price elasticity of demand and supply at each stage. Because ultimately consumers will bear the burden, a case can be made to provide "social support" for implementing environmental measures in the fertilizer industry.

37. Second, unless the policy of internalizing the externality is implemented by all countries, the early bird countries will be losers. Hence, a global consensus should be developed for implementing environmental measures. Also, realistic guidelines about environmental regulation should be developed. The ideal of "zero pollution" may be an unrealistic and unattainable goal.

38. Third, as fertilizers have an important role in both security and resource preservation, sustaining growth in fertilizer use and production will be socially necessary. This aspect of the industry will require a better social support for the industry.

39. Fourth, inappropriate policies leading to inadequate fertilizer use, and causing "nutrient mining" should be removed. Policies for environmental monitoring should be introduced, especially in those countries where fertilizer use levels are approaching agronomic optimum limits. Efforts should also be made to reduce fertilizer use where it is much higher than agronomic optimum.

40. Fifth, technologies to deal with fertilizer pollutants are available in the developed countries. To transfer these technologies to the developing countries, foreign exchange is needed at the production staff should be trained. Policy-makers should provide the necessary help in technology transfer.

41. Sixth, research, extension and education of farmers should receive higher priority in preventing environmental effects associated with fertilizer use. Further research is also needed in understanding production and environmental interactions of fertilizer use.

42. Seventh, in many developing countries, fertilizer nutrients are not used in proper balance; in relation to nitrogen use, phosphate and potash fertilizer are used in inadequate quantities. Such imbalance in nutrient use leads to lower efficiency and higher environmental damage. Balanced nutrient use should be encouraged, because it helps in both efficiency and environmental protection.

43. Eighth, fertilizer production is highly energy-intensive. To improve energy efficiency in fertilizer plants, investments in revamping and rationalization should be made.

Human resource development

44. Training and technical assistance are needed to improve efficiency in fertilizer production, use and marketing. To develop competitive markets and environmental soundness, adequate human resources should be developed.

Regional cooperation

45. Fertilizer markets are nearly saturated in the developed countries but these countries have production capacity, technologies and feedstock (raw materials) which can help in satisfying fertilizer requirements in the developing countries where fertilizer markets are growing and should continue to grow for meeting the food security and environmental protection challenges. Likewise, among developing countries also, some countries have adequate capacity and raw materials to supply fertilizers whereas others have technology, expertise and capital to convert raw materials in production capacity. Thus, cooperation between developed and developing countries and among developing countries should receive more attention in the future. To promote such cooperation, developing countries should provide an enabling policy environment by removing restrictions on ownership, foreign exchange repatriation, raw material supply and prices. Furthermore, contractual arrangements, especially joint ventures among countries should also receive greater priority. In developing joint ventures, issues related to price, foreign exchange availability, raw material supplies and market sharing arrangements should receive adequate attention so that there is little scope for misunderstandings in the future.

Industrial cooperation

46. Various participants indicated that they would like to receive help in certain areas of fertilizer sector management. Egypt will need help in developing a fertilizer information management system, and Iran and China in improving energy efficiency of fertilizer plants. South-South cooperation should be promoted to meet these requirements.

Annex I

AGENDA

Wednesday, 30 November 1994

- 08:30 - 09:30 Registration at Banquet Hall
- 10:00 - 10:30 Opening of the workshop by His Excellency, Shri Eduardo Faleiro, Minister of State for Chemicals & Fertilizers, Government of India
- 11:00 - 11:15 Presentation on UNIDO by Mr. F. Angulo
- 11:15 - 13:00 Presentation of country papers
- 14:00 - 15:30 Presentation of technical papers by companies and international agencies
- 16:00 - 16:30 Presentation of UNIDO's background working document by Mr. P. Narayan and Dr. B.L. Bumb
- 16:30 - 18:00 Discussion on policies to create an ecologically-friendly environment for the growth of the fertilizer industry with particular reference to:
- (a) Market development and pricing
 - (b) Utilization of indigenous resources
 - (c) Physical & human infrastructure development
 - (d) Development of technological base
 - (e) Methods of minimize adverse environmental effects of the fertilizer industry

Thursday, 1 December 1994

- 07:00 Departure from Hotel Kanishka for Panipat (NFL Plant)
- 09:30 Arrival at the NFL Plant Panipat

Thursday, 1 December 1994 (Cont.)

- 10:00 - 12:30 Welcome and briefing on the plant; visit to the plant and discussion
- 13:30 - 14:30 Departure from the NFL Plant and arrival at Karnal
- 14:30 - 16:00 Visit to an adopted village - Farmers service centre & seed grader and discussion
- 16:00 Departure from Karnal
- 18:30 Arrival at Hotel Kanishka

Friday, 2 December 1994 (Continuation of UNIDO's background working document)

- 09:00 - 10:30 (f) Investment policies for fertilizer projects in developing countries
- 11:00 - 13:00 (g) Agricultural and input pricing and subsidy policies
- 14:00 - 15:00 (h) Regional and subregional cooperation for development of the fertilizer industry
- 15:30 - 17:00 Discussion and adoption of the report of the workshop highlighting its conclusions and recommendations
- 17:00 Closure of the workshop

Annex II

LIST OF PARTICIPANTS

China

Ms. Ma Rong
Ministry of Chemical Industry
Building No. 16 Siqu Anhuili
Chaoyanggu, Beijing

Egypt

Ing. Mesbah Ashour
General Manager
Instment Unit
Egyptian Fertilizer Development
Center (EFDC)
P.O. Box 35
Talkha, Dakahlia

Fax: 20 50 525 695

India

Mr. P. Nayaran
Executive Director
The Fertiliser Association of India
10, Shaheed Jit Singh Marg
New Delhi 110 067

Dr. S.K. Saxena
Director - Marketing
The Fertiliser Association of India
10, Shaheed Jit Singh Marg
New Delhi 110 067

Dr. B. Swaminathan (Ms)
The Fertiliser Association of India
10, Shaheed Jit Singh Marg
New Delhi 110 067

Indonesia

Mr. Nur Hidayat
R&D Director of PT PUSRI
Jalan Mayor Zen
Palembang 30118

Fax: 62 711 712 100

Iran

Mr. E. Karimzadegan
Deputy Director of Planning
National Petrochemical Company (NPC)
Karimkhan Zand Avenue
P.O. Box 7484
Tehran

Fax: 98 21 882 2087

Republic of Korea

Dr. Ji-Hyeon Choi
Research Associate
Korea Rural Economics Institute
4-102 Joigi-Dong
Dong Moon-Ku
Seoul

Saudi Arabia

Mr. Essam A. Al-Gosabi
Marketing Coordinator
Saudi Arabian Fertilizer Company (SAFCO)
P.O. Box 533
31421 Damman

Sri Lanka

Mr. L.K. Hathurusinghe
Deputy Director
National Fertilizer Secretariat
167 1/1, Union Place
Colombo 2

Fax: 941 447 632

International Fertilizer Development Center

**Dr. Balu L. Bumb
Senior Scientist - Economics
Research and Development Division
Muscle Shoals, Alabama 35662
USA**

Fax: 205 381 7408