

SECOND  
WORLD CONFERENCE  
ON DETERGENTS

Looking Toward the 90's

## Proceedings

# Second World Conference on Detergents

Looking Toward the 90's

Edited by  
A. R. Baldwin

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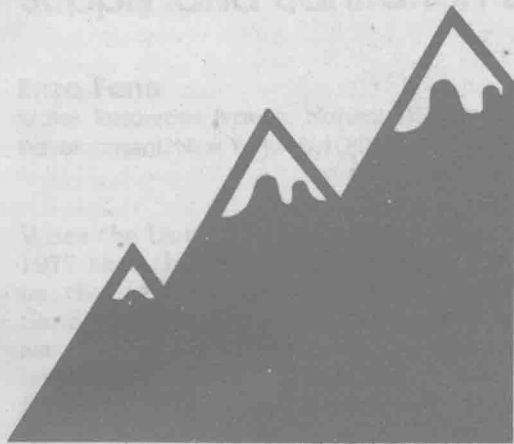
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Montreux, Switzerland October 5-10, 1986

# Second World Conference on Detergents

Looking Toward the 90's

## INTRODUCTION

**Richard Baldwin**  
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The Second World Conference on Detergents was held in Montreux, Switzerland, Oct. 5-10, 1986, to review the technical, economic, legislative and commercial trends in the detergent industry worldwide.

Choosing the site was easy. The first such international conference was held in 1977 in Montreux. Organizers and registrants alike were so favorably impressed then that there was no hesitation at returning to the lakeside location.

In the nine years since that first conference there have been numerous developments in the detergent industry. And during that nine years a new generation of technical managers, researchers, executives and other key personnel has emerged. The organizers, however, did not want to look back at what has happened—the theme for the meeting was "Looking Toward the 90's". Speakers focused on what's ahead in raw material supply and economics, in equipment and textile trends, in formulation technology for laundry

and non-laundry products, in builders, in special function ingredients, in processing, in packaging and also at what researchers have learned about consumers and potential changing lifestyles.

There were 781 technical registrants in Montreux for the 1986 Conference, plus more than 100 representatives of companies participating in the accompanying exposition. Approximately 150 spouses accompanied technical registrants, to make the total participation over 1,000.

Ted Matson and Adolf de Jong worked more than two years with more than a score of program committee volunteers to identify topics, session chairmen and speakers. Kurt Gehri of the Union der Seifen- und Waschmittelfabrikanten der Schweiz again did a fine job coordinating local logistics and arranging an outstanding series of social events providing participants with ample opportunity for informal dialogue.

As one keynote speaker stressed, providing efficient cleaning products at reasonable cost is necessary to maintain and to improve sanitation worldwide. . . and sanitation is a key factor in the health of the world's peoples. This Proceedings provides an opportunity for those who did not attend the conference to obtain information provided by the speakers.

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# Population, Water and Health: The International Drinking Water Supply and Sanitation Decade

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When the United Nations Water Conference decided in 1977 that the decade 1981-1990 should be designated as the International Drinking Water Supply and Sanitation Decade, it was bringing to its culmination a series of concerns which had been expressed since the late 1960's. In fact, it was in 1961 that the charter of Punta del Este recommended targets to be reached by the governments of Latin America for the ensuing decade in the area of water supply and sanitation. This theme was picked up again in 1976, when the United Nations Conference on Human Settlements suggested that quantitative targets should be established by countries to ensure that all their people would have access to safe water supply and hygienic disposal of human wastes by the year 1990.

The reason the United Nations Water Conference paid the attention it did to this particular problem is the fact that, apart from the groundswell which already had built up, it had before it a document prepared by the World Health Organization which indicated the stark reality of the situation with respect to developing countries in the year 1975. The information provided indicated that of the 77% of the urban population which had access to piped water supply, 57% had house connections with the remainder using public stand-posts; and that as regards sanitation, of the 75% of the urban population which had reasonable sanitation facilities, 25% were connected to public sewers and the remaining 50% possessed household systems. The situation on the other hand was totally different in the rural areas where, at that time, 78% of the population was without an adequate water supply and no less than 85% of the population was without satisfactory sanitation services.

Obviously, there were considerable variations among regions and from country to country; but the fact remains that the problem in the rural areas was a serious and important one. One may well ask why investment in the developing countries was so deficient in the rural areas compared to the urban. There are various reasons which can be given for this. Among them may be cited the facts that:

- Investment in water supply facilities in the urban areas can be effected at a lower cost per capita than is the case in the countryside, which requires more extended facilities.
- In a climate of limited operation and maintenance services it is easier to manage facilities which are located within a relatively circumscribed area rather than scattered over a broad territory.
- At the political level, it is easier to satisfy the needs of large concentrations of people such as those found in an urban setting, than those of dispersed households or hamlets.

There are undoubtedly many other reasons which come into play, but these are illustrative of the kinds of

problems that have to be faced in many developing countries.

The Decade is now at its mid-point, and it must be said that a determined effort has been made, especially in the early years, by governments and by the international financial organizations and the organizations of the United Nations system, to intensify the investment in and development of water supply systems, particularly in the rural areas.

Where are we today? Despite the progress made to date, it appears that there is still a formidable task ahead of us. It is estimated that in 1985 there were still more than one billion people who needed safe drinking water and that nearly 2 billion people did not have adequate sanitation. In order to give an order of magnitude of the problem, it can be pointed out that the number of unserved people still represents over twice the number of people who have been provided with adequate water supplies world-wide during the first five years of the decade, but, more alarming yet, more than 20 times the number of people who have received adequate sanitation facilities. It is clear that a much greater effort will be needed in the years ahead if these numbers are to be substantially reduced.

## POPULATION SERVED

Progress in the development of water supply and sanitation service in the developing countries has not been uniform among the different regions and between countries within each region.

The figures which are currently available (1) relate to the three-year period between 1980 and 1983; additional information for more recent years is being collected. Nevertheless, it is of some comfort to note that the number of people in rural areas who have available water supply has increased dramatically over the period to more than 250 million individuals. In view of the fact that population in the rural areas tends to increase more slowly than in the urban areas (as a result of out-migration from the countryside), this increase appears to be all the more dramatic in that the service coverage in percentage terms has increased from 27% in 1980 to 41% in 1983. This improvement may be compared to that taking place over the previous decade when a similar rate of growth occurred not over three years, but over a 10-year span. The results achieved in the urban areas appear to be more modest in that some 90 million additional people received new water supply in the three-year period covered. This growth rate is disappointing in view of the rapid population increase in the urban areas, which has resulted in a change of only 1% growth in absolute terms; but it is symptomatic of the fact that urban systems, although ultimately cheaper on a per capita basis, require more complex planning and network layouts.

When urban sanitation is taken into account, the situation appears to be more meaningful in that over 150 million urban dwellers have received sanitation facilities over this period, representing an increase in coverage from 49% in 1980 to 59% in 1983. The declining trend which had been observed in this respect in the earlier decade has clearly been reversed. In contrast, the rural population with access to sanitation facilities seems to have declined over this period both in absolute numbers and on a percentage basis. In fact, since there are a considerable number of countries that have rural sanitation programs under way, the most likely explanation appears to be that there may have been some modification in the statistical data base which was gathered initially in 1980 and subsequently in 1983.

In reviewing the differences between the various regions of the world, the most notable progress in the provision of water supply and sanitation facilities appears to have been made in the Latin American and Caribbean regions. In this area, to which the Charter of Punta del Este has applied since the early 1960's, the coverage in 1980 was 78% in the urban areas; it had increased strongly by 1983 to 85%. In Africa (which is the region faced with the world's most rapid rate of population increase) absolute coverage was not able to keep up with the rapid population expansion, and the total percentage of population served declined from 66% to 57% over the three-year period. In Asia and the Pacific the progress has been encouraging, with service increasing from 65 to 67%, equivalent to some 52 million additional people served in the region. Finally, in Western Asia, which already had the highest percentage rate of coverage in the world, there was a slight improvement from 94 to 95% coverage. The implications of these figures are that the situation in the urban areas is improving and may be considered relatively satisfactory.

With respect to rural water supply, here too there has been an improvement in each of the regions concerned, with the largest increase in Asia and the Pacific. The percentage coverage in this instance went from 26 to 44%. In absolute numbers this entailed an additional 200 million people receiving service. Other regions have had corresponding increases.

Urban sanitation facilities also have increased sharply in Latin America and the Caribbean, where coverage has grown from 56% in 1980 to 80% in 1983 for a total of 72 million additional people. A different situation has been found to exist with respect to rural sanitation, where only Western Asia reported increased coverage, going from 18% in 1980 to 25% in 1983. Both Africa and Asia appear to have had a decrease in percentage terms, with coverage in Latin America and the Caribbean remaining more or less unchanged.

In total it is estimated that by the end of 1985 some 530 million additional individuals would have received a safe drinking water supply in the first half of the decade and that some 86 million would have received adequate sanitation services. The numbers would indicate that improvements in the urban water supply sector would have outstripped those in the rural areas by a ratio of some 2 to 1, and that significant improvements in sanitation would have occurred, primarily in the urban areas.

## CONSTRAINTS AFFECTING PROGRESS IN THE IMPLEMENTATION OF THE DECADE

Following a major investigation conducted by the United Nations in 1984 (1), it was confirmed that there were four main categories of constraints which continued to slow up the rate of implementation of the Decade, and that these constraints applied both in 1980 and in 1983. The most important factors which appeared to apply both to urban and rural areas were, first and foremost, the limitations on financial resources (reference will be made to this again subsequently); inadequacies in the level of operation and maintenance of systems; a lack of trained personnel both in the professional and sub-professional spheres, which has a direct bearing on the operation and maintenance problem; and lastly, the inadequacy in pricing or cost recovery policies of governments. This last aspect, related closely to the concept that water is a social good which in many instances should be made available free, or almost free, to the population, is a major factor in this whole problem of both the adequacy of investment, on the one hand, and of the availability of proper operation and maintenance facilities on the other.

There are other factors which appear to be somewhat less significant at present in terms of their impact on the implementation of the Decade than they were a few years ago. These are essentially the extent to which planning and design criteria for water supply and sanitation systems are available; the adequacy of legal structures, that is to say, the whole question of the ownership of water, particularly underground; and the degree to which the use of inappropriate technologies in the establishment of water supply systems, particularly in the rural areas, is a retarding element or gives rise to cost inefficiencies. With respect to the appropriateness of technologies, the large variety of pumping systems in the rural areas and, at times, the oversizing of drilling systems, can lead both to waste of resources and to difficulty in maintenance functions, particularly with respect to availability of spare parts and capable mechanics.

As regards investment, the same United Nations survey in 1984 showed that on average the proportion of national budgets allocated to drinking water supply and sanitation in developing countries has varied between 1 and 6% since 1980. It is a positive fact that a number of countries in Africa have attributed greater importance to water resources development than to other sectors, and that in a number of instances the percentage of national budget assigned to the sector has exceeded 10%. It is also true that in other regions, particularly in Asia, governments have allocated sharply higher funding for rural sector water supply (and in some instances also for urban programs) than had been true in earlier periods. Countries which fall into these categories in Africa include Ethiopia, Lesotho, Malawi and Zambia, while in Asia the Government of India stands out as one which has increased sharply the funds to the rural programs in its sixth Five Year Plan (1980-1985). The same can be said for Cyprus, Nepal, Sri Lanka, the Sudan and Trinidad and Tobago.

It has been found in general that the lower the per capita income of the countries concerned, the higher the

level of external funding which is injected for the rural water supply and sanitation sector. It may be noted, however, that a heavy reliance on external funding is out of the question in most instances, certainly as far as long-term development prospects are concerned. In fact, estimates made at the beginning of the Decade indicated that against a requirement of some \$30 billion per year needed to achieve the objectives of the Decade, the level of investment being undertaken at the beginning of the Decade was on the order of \$7 billion per year out of which a maximum of \$2 billion could be attributed to external aid. It is not realistic to assume that future continuing levels of external aid will exceed 15 to 20% of the annual investment for the sector in the developing countries. The major effort will have to be made by the governments and communities concerned.

While it is true that a number of governments have attributed growing importance to Decade objectives and have increased the levels of their investment, overall the actual investment going into the water supply and sanitation sector—particularly in the rural areas—is not commensurate with the urgency and the need. It is true that governments are under pressure for limited funds from many quarters, but it is also a fact that the level of investment is barely keeping up with population growth rates and that renewed efforts and priorities will have to be reflected in national development plans, in an improvement of the cost-effectiveness of investments and of operation and maintenance functions, and, in particular, in improved cost recovery through appropriate pricing mechanisms.

One of the aspects to which increasing attention is being given, particularly by international financial organizations, is how to make the private sector more responsive to investing in the water supply and sanitation sector. It is argued that if the energy sector can function efficiently in many countries through private initiative, it is not clear why a change of attitudes could not place the water supply sector in a similar category. In terms of improved cost-effectiveness, the main issue appears to be how one can minimize the costs of service while maintaining acceptable engineering criteria and health standards. For example, the use of improved handpumps in the rural areas has been found to be an important aspect in keeping costs within acceptable levels in countries such as Ghana, India, Kenya and Tanzania. One of the features of these new handpumps is not only that they cost less to operate and maintain, but also that their increased reliability makes it possible to have the local communities take on responsibilities themselves for the routine operation and maintenance functions which are required. In similar fashion, various countries in East Africa and India are introducing improved low-cost latrines. The possibility of introducing local manufacture of basic components of the systems is another way of contributing to lower production costs.

The collapse of a pumping system is the surest way to induce populations to return to their original polluted sources of water. Thus, technical cooperation activities of the United Nations organizations include the training of one or two villagers in basic maintenance functions in each location where wells and pumps are provided. This also relates to having villages accept collective responsibility for the water supply systems

which are made available. The establishment of training programs at the national or regional level is an essential additional component to this whole maintenance picture.

The recovery of costs through appropriate pricing mechanisms for existing water supply systems is often given less importance at the national level than finding ever new resources for the installation of additional water supply and sanitation systems. When the revenues which are obtained from water supply systems are inadequate, the first outcome is growing neglect for the operation and maintenance of existing facilities with an ensuing deterioration and reduced level of service. Obviously, the introduction of suitable pricing mechanisms is largely an educational and social problem to which inadequate attention has been paid so far in many developing countries. It appears that this is one of the features which will have to receive growing attention in the second half of the Decade if more effective management of the systems is to be assured in future years.

### THE DECADE AND HEALTH

Among the factors which have been considered both complementary and essential to the activities of the Decade are a number of important social issues. These include the integration of water supply and sanitation services within a primary health care framework; the use of public opinion as a tool leading to greater support and participation at the community level; the attributing of greater importance to the role of women, who in many countries are the principal water carriers; and the more effective use of international and non-governmental organizations as catalysts in the process of providing water supply and sanitation systems.

Obviously, the whole question of primary health care and education is of direct relevance to improved quality of life through better health. Thus, any primary health care program must have water supply and sanitation as an integral and basic component of the activity of governments in this area.

In fact, primary health care programs are considered to be directly related to the possible control or reduction of certain water related diseases such as diarrhea, schistosomiasis and guinea worm. The ways by which primary health care functions are associated with water supply and sanitation activities vary from country to country, but in some instances the primary health care worker has become the spearhead for improved water supply and sanitation at the village level. This is particularly the case in a number of countries in Asia. On the other hand, the reverse could also apply, where new water supply and sanitation programs could be the instrument through which improved primary health care activities are introduced within a particular community.

Many water-related diseases are of biological origin. Some diseases may be both water-related and excreta-related, where transmission is through a fecal-oral route and does not necessarily have to be only water-borne but also could be through food, utensils, soil, etc. Insects may also be directly responsible for water-related diseases, particularly those that breathe

or pass a portion of their life cycle in water. Of course, if a disease is carried in the blood, then clean water and sanitation do not necessarily reduce the level of its occurrence.

One of the most difficult aspects of making an assessment of a new water supply scheme is an evaluation of the social cost of disease, since quantification is very difficult. If one wishes to view the issue in terms of improved human productivity levels, one also would have to take into account the relative levels of unemployment or underemployment in a particular area which may throw off the assessment. Nor can one obviously quantify pain or discomfort, even though in certain instances these factors may be extremely relevant to the whole evaluation process. One aspect to which one could attribute an economic dimension is the possible reduction in the cost of medical facilities which are required from improved disease or health levels in a particular area or region.

Since, as indicated, the links between improved water supply and reduction in disease cannot easily be measured in economic terms and since they do not have a clear physiognomy in health statistics, decisions by governments concerning the introduction of sanitation systems are likely to hinge on such social aspects as a desire for improved health, an overall improvement in the quality of life, and a desire to promote economic development through healthier and more productive individuals. There are, of course, other elements which can play a role in the decision-making process in this respect, such as income redistribution, a desire to discourage emigration to the urban areas by providing better health and sanitation facilities in the rural areas, a wish to reduce social unrest in certain situations, and so on. In short, economic objectives in the case of health are frequently not the primary concern of the policymaker.

### MANAGING WATER QUALITY

When discussing health issues, by extension the whole problem of the management of water quality comes to the fore. Obviously, water quality problems will involve all sectors of the economy and entail the management of pollution, primarily in the agricultural, industrial and community water supply sectors. These problems relate directly to the protection and conservation of the national stock of water in each country, an issue which is coming to the forefront of governmental attention following a rapid increase in population levels of the major urban centers, the rapid growth of industries, particularly around the urban perimeters, and the increasing use of chemical products in the agricultural sector.

In order to deal with water quality problems, not only will governments have to understand in-depth the technological issues involved in the pollution problem, but they will have to introduce effective policies and institutions to cope adequately in these areas.

There is no doubt that the environmental effects of domestic wastes will become more significant as the communities grow in size, transforming themselves from villages to small towns and from cities to large urban agglomerations. One of the characteristics of many cities in developing countries is to have relatively

limited sanitation networks within the urban perimeters and a large number of unserved fringe areas which have grown through totally unplanned development following migration from the rural areas. The use of ditches, open pits and dung heaps to eliminate excrements clearly has serious health effects and can result in highly polluted urban runoff affecting the quality of nearby surface and ground water sources.

As the demand for industrial use grows, utilization of good quality water for cooling and processing will be accompanied by a corresponding elimination of polluted water which can have very serious impacts on receiving water bodies. The very fact of having great diversity in the technologies of production and the operational characteristics within each industry makes it difficult to summarize the waste characteristics of the industrial sector very precisely. Nevertheless, in 1984 the World Bank did try to develop guidelines for effluent limitations after having studied streams in over 30 classes of industries. The worst offenders among the industries in terms of the greatest levels of water pollution are generally those which process primary products, such as mineral extraction and processing facilities, tanneries, coffee factories, sugar and oilseed mills. If their level of concentration becomes sufficiently great, industries tied to the agricultural sector also can become major sources of pollution.

As regards agriculture, a worsening of water quality can occur in different ways. The most common results from the drainage and runoff from fertilized land where the heavy concentration of organic matter, sediments and microorganisms and the relatively high concentration of nitrogen and phosphorus nutrients can be driven into streams, rivers and lakes, resulting in oxygen depletion, eutrophication and undesirable growth of plants and weeds. In temperate climates, the situation can become even worse following the spring thaws which result in very high loadings of short duration.

Two other aspects of the agricultural waste disposal problem relate to the waste water generated from animal feed lots which are high in organic content, microorganisms and nutrients; and from forestry operations where logging activities can result in increased runoff carrying sediments and nutrients to water courses.

Finally, in the rural areas the elimination of domestic wastes in areas where sanitation facilities are not available is also a serious water quality hazard. Many individuals are not aware of the cause-effect relationships between excreta disposal and health, and it is quite common for both humans and animals to dispose of their excreta in or close to rivers and ground water sources which are also used for water supply. Alternatively, even if excreta are driven into fields and ditches, they easily can be washed by rainfall into nearby water supply systems.

Without going into greater detail, it is quite clear that in terms of the management of water quality, particularly in developing countries in future years, it is essential that management be placed on a very firm legal foundation with the supporting institutional mechanisms for enforcement. Most developing countries have some form of basic legislation for the control of certain aspects of water pollution but, in general, the

laws which exist are not totally suitable in view of the prevailing political, economic and cultural realities, and thus are not as effective as would be desirable. Accompanying this problem is the fact that many countries do not have the institutional bases or the resources to enforce the required control laws. Among the measures which can be introduced to enforce pollution control mechanisms are:

- Direct charges on effluents as incentives to polluters to reduce waste loads;
- Subsidies to encourage pollution control through tax rebates or payments to offset the introduction of pollution control mechanisms;
- Government standards on effluents from production processes as a way of limiting discharge levels of certain substances;
- The provision of government licenses to industries which will use only clean processes;
- The requirement that an environmental impact statement be made available by potential investors wishing to set up new projects (2).

In the same way that water pollution problems have come to the forefront in many industrialized countries over the last few decades, so too the same types of issues are affecting, and will increasingly affect, developing countries in the future, particularly in those situations where very rapid and unregulated urbanization is taking place. Since an increased demand for goods and services and for food staples and energy inevitably will be followed by increased levels of industrial, agricultural and community waste, an inadequate control over the disposal of these wastes may lead to irreparable damage of water bodies. These may then become unusable for essential functions in agriculture, fishing, water supply and industry. Thus, the whole issue of environmental protection is one which must be addressed comprehensively and soon by developing countries. As a first step, governments may assess what they have in the way of legislation and institutions and what measures still have to be introduced in the way of water quality management. The preparation of a water quality management plan becomes meaningless unless accompanied by an adequate legal basis for pollution control, and the establishment of institutions responsible for such activity. In this context, nations can identify the various uses to which specific water bodies can be put, adopt the required standards and make an inventory of the waste discharges which can be damaging to these particular uses. Underlying this whole problem is the importance which should be attributed to educating the public and the need to enlist the cooperation of the polluters so that governments and responsible citizens may work together on the introduction of successful, comprehensive programs.

#### THE ROLE OF THE INTERNATIONAL COMMUNITY

One may well ask what the international community, and in particular, the family of United Nations organizations, has done to try to promote and assist in the implementation of the International Drinking Water Supply and Sanitation Decade. The first step was establishment of an Interagency Steering Committee for Cooperative Action for the Decade to promote

closer cooperation among the various United Nations agencies involved, both at the global and the country level. Ten organizations currently are working together on this. The Committee acts as a focal point within the system for the exchange of information on members' activities on the Decade and also for the harmonization of policies and the taking of joint action in areas considered to be of special importance to progress. Among its activities are the establishment of specific task forces, the issuance of a basic strategy document in 1983 on human resources development for the Decade (largely related to training requirements), the production of a strategy paper on the enhancement of women's participation in water supply and sanitation activities, and a paper for policy-makers and planners on how to involve women more actively in water supply and sanitation programs at the community level. To facilitate project formulation, a handbook on project preparation also has been issued. More important, perhaps, are the activities which have been undertaken at the country level where the Resident Representatives of the United Nations Development Program act as a Decade focal point for the technical cooperation activities being implemented by the United Nations organizations within each country. Technical support teams made up of representatives of the different organizations work closely with government representatives and with the representative of the UNDP to prepare new projects for local or international financing. The Decade also has led to a closer cooperation between multilateral and bilateral agencies, particularly those among the bilaterals which actively promote and support water supply and sanitation programs. Round table meetings to review financing requirements are being sponsored, particularly in the least developed countries, with the support both of the UNDP and of the World Bank, as mechanisms available to governments to mobilize support for the Decade from the international community.

As regards the present flow of resources from multilateral and bilateral organizations, it appears that projects in urban areas, and water supply projects in particular, continue to receive the largest amount of external assistance. Thus, it is the sanitation sector as a whole which continues to lag behind, and the rural areas which are still playing the role of the poor relative with respect to their urban counterparts. A similar situation exists with respect to the financing of projects by international development banks, even though there has been an encouraging increase in the proportion of World Bank funds allocated to rural projects between the beginning of the Decade and 1984. The levels, in fact, passed from approximately 8% to 13.6% of Bank lending in comparison to the earlier five-year period.

#### THE FUTURE

At the onset of the Decade there were several statistics that gave a sense of special urgency to the need for action, especially in the developing countries. It was repeatedly recalled, for example, that over five million children under the age of 5 died each year, largely as a result of water-borne or water-based diseases; that 78% of the rural population was without an adequate water supply and 85% without satisfactory sanitation

service; that only some 20-25% of the \$30 billion estimated to be required each year for the sector was actually made available by governments and by the international community; and that the \$30 billion per annum was still only a portion of the \$70 billion per annum needed overall for the water sector worldwide to the year 2000; this figure includes the investment envisaged for the irrigation and hydropower sectors in addition to community water supply and sanitation.

As already indicated, progress has been uneven between the geographical regions of the world. Halfway through the Decade, water supply services in Africa in the rural areas alone had been extended to some 36 million individuals, while an additional 29 million had received some form of sanitation facility. Again in Africa, and in addition, some 20 million urban residents had received a new source of water supply—this figure should be viewed in the context of an incredible 7% per annum population growth rate in the urban setting—a figure to be measured against the 40 million new individuals served in Southeast Asian cities, and the over 90% coverage already achieved in Eastern Mediterranean and American urban areas.

One of the principal impacts that the Decade has had has been to induce governments and municipalities to move away from large scale engineering and the construction of large pumping stations, large scale piped water systems, sewage treatment plants geared to large quantities of water connected to extensive networks of buried sewer lines, and from different types of sophisticated hand pumps; in short, from approaches typical of industrialized societies.

The emphasis placed on self-financing, community involvement, training in operation and maintenance of the systems, and the linkages with primary health care has given new dimension not only to governmental priorities but also to the scope and thrust of assistance being rendered by the United Nations community, especially the United Nations Development Program, UNICEF, the World Health Organization (WHO), the U.N. Department of Technical Cooperation for Development, and the World Bank.

It is estimated that some 7 million handpumps will be required in the developing countries alone to meet Decade objectives. The UNDP and the World Bank have been supporting and implementing over several years the comprehensive testing, development and design of handpumps suited to village level operation and maintenance. Many manufacturers already have made changes to improve pump performance and reliability in the light of results obtained under actual field conditions in various countries.

One of the primary objectives has been to create lighter, easily maintained and cheaper units. The use of plastic structures, especially below ground, has helped. One expectation is that developing countries, with the

assistance of manufacturers, will want to establish national, regional or subregional production units geared to the manufacture of standardized modules.

On the sanitation front, another UNDP/World Bank program involves development of low-cost latrines. The "VIP," or ventilated improved pit latrine, is already widely used in countries such as Botswana, Ghana, Lesotho, Nigeria, Tanzania and Zimbabwe, both in the rural and urban areas.

Apart from work being done to facilitate a move toward cheaper technologies, there appears to be a greater consciousness of the need to cope with slum areas and small communities, with simple low-cost facilities that rural area residents will be able to accept as their own and which they will be encouraged to operate and maintain. A greater concern with health education will hopefully help to reduce mortality and morbidity rates. Community involvement and education should lead to greater inputs of free labor in lieu of external capital.

In short, the great amount of capital required and the work which still remains to be done to make the objective of the Decade become an ultimate reality, enough good-quality water for all mankind, can be achieved only by integrating national and external sources of finance with the organized labor of local communities, provided under self-help schemes, both for investment and operation and maintenance functions. In this effort, the international community can act as an indispensable catalyst by providing guidance in planning and priority setting; multilateral funding on a grant basis for essential start-ups and key facilities; by coordinating bilateral assistance schemes at national levels so that collectively they can be most efficiently absorbed; by acting as broker between donors, recipients and the private sector; and by helping to coordinate and organize the self-help schemes.

The ultimate objective of the Decade will not realistically be met by 1990, as had been hoped, but even if the completion date slides forward toward the second millennium, it is important that we now see more clearly how best we can channel our resources and direct our collective efforts to the common goal of eliminating thirst and water-related diseases from our planet, once and for all.

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# World Economic Outlook

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In view of the sometimes difficult economic situation in which we live, I think it is a very nice idea to present this subject before a world conference on detergents rather than before a conference on world economics. Imagine what a nice product you would have if you could produce detergents against international over-indebtedness, or a cleaner against unemployment on the labor markets. Such products, I can assure you, would be in very high demand.

It seems that in the annual overview of UNCTAD, such a formula or product has been found. The General Secretary of this UN organization has pointed out recently that there is a quick solution to the debt crisis, namely an expansionary economic policy in the industrialized nations to provide for growth and to avoid a worldwide depression. This is only one example.

Unfortunately, in the field of economic politics a great number of such promises guarantee a 100% solution to all the economic problems in the world. I fear, however, that these promises will not materialize because they present only one side of the coin. They all neglect the fact that in most economic problem situations there is a trade-off between desirable and undesirable consequences when such "ideal" products or policy mixes are applied.

But before discussing this problem let me first give you an idea of where we currently are. The first half of this decade brought us in the industrialized free world a remarkable decline in inflation rates. But the progress in the fight against the eroding value of money was not without a price. All these countries have experienced a recession in the initial period of monetary restraint. On top of this it seems that, particularly in Europe, rising unemployment has been more than just a cyclical problem. The recession was used to eliminate jobs which were not able to compete with capital. We have observed a period of investment in rationalization due to the fact that labor cost exceeded capital costs. The substitution of labor with capital took place in steps because the cost of reducing the work force during a recession is much smaller than during a period of economic growth. Basically, it is not because of the so-called monetaristic economic policy that Europe is suffering from persistent high unemployment. It is, rather, due to the fact that business used the political environment in the recession to accelerate the process of labor substitution caused by the secular trend toward higher relative employment costs. I do not intend to go into the details of restrictions and frictions on the European labor markets which led to the problem of excessive employment costs. However, we have to recognize that the politicians have failed so far to restructure the labor markets in such a way that wages respond to market forces.

As long as this problem in Europe remains unsolved it represents a potential danger for governments who started the disinflation process and want to be reelected. In other words, the unemployment question is a serious danger to further success on the inflation front, particularly in the United Kingdom where the

situation is most severe.

Let me leave this subject for awhile and focus on those countries which have chosen another way to develop their economy, namely the indebted developing countries. Particularly, Latin America and Africa did not follow the example of the Western industrialized nations to bring inflation under control. On the contrary, their policy was even to accelerate the growth of money in order to get short-lived positive effects on real output and to be able to finance the growing gap between government income and expenditures. At the same time, these countries followed a relatively inflexible exchange rate policy, above all against the U.S. dollar, to avoid exploding import prices. The subsequent balance of payments problems or decline in the official reserves are described in all basic textbooks on international economics. However, the story you cannot find there is the political aspect of such a problem. The much applauded recycling of the petrodollars by the international money center banks was based on the belief that governments can never go bankrupt. Indeed, this is true. However, what they can do is to declare default or a moratorium on their debt, a debt which is not enforceable. Such a situation made the international banking system extremely vulnerable. Particularly U.S. banks, with their rigid balance sheet principles imposed by legislation, with pressure for quarterly earnings maximization, and with their poor diversification, because of the Glass-Steagall Act and the Interstate Banking Law, became the longer the more dependent on Latin America's debt servicing policy.

The unenforceability of international debt combined with the vulnerability of the U.S. banking system raised the question of the stability of our financial system and the possibility of a collapse similar to the one in the thirties. Despite the fact that the true economic value of this debt may be very low, these fears have not yet been and most likely never will be realized.

After the Mexico shock in 1982 it turned out that the combined efforts of the IMF, the BIS, the World Bank and the cooperation of the major central banks were quite effective in preventing such a collapse. In this context the eventual behavior of the central banks, particularly the Federal Reserve Bank in the U.S., would be of vital importance. In the thirties, the Fed failed as a lender of last resort. Thousands of banks had to close their doors, unable to fulfill their obligations to their customers. The increased demand of the savers for cash due to the general economic uncertainty has led to an enormous outflow of reserves from the banking system. In such an exceptional situation it is most important that the central bank provide the required liquidity to restore confidence in the banking system. At that time the Fed did not realize this unusual situation, and it came to a massive decline of demand deposits and wealth leading to the economic disaster of the thirties which involved the whole world and which also was, to a great extent, a precondition to World War II.

Today, the situation is different. The Fed and the central banks of all major industrialized countries behave differently. The reaction of the Fed to the major difficulties in the financial system in the recent past proves that this institution together with the FDIC and the Comptroller of the Currency are determined to avoid such a crisis. The chances that it may happen despite such a security system are very small.

However, it is still very important to cut the link between the debt problem and the bank problem in the U.S. because the monetary authorities will avoid a collapse of the system but not necessarily also one of individual banks. Under such an arrangement, the risk for the shareholders of banks and the bank management is not eliminated. As a matter of fact, the low P/E ratios of bank stocks in the U.S. provide evidence that this risk is still considered to be high.

But let me turn now to another adjustment problem. Since the end of last year the oil price has collapsed because Saudi Arabia was no longer willing to act as a swing producer because conditions coupled with this role became steadily more difficult in the eighties. The impact of large new oil producers, such as the United Kingdom, Mexico and Norway, has curbed the market power of OPEC. Moreover, in certain OPEC nations ambitious development projects have led to shortages that have undermined cartel discipline. For internal financial reasons and to discipline OPEC the Saudis increased production. Although I am of the opinion that a return to the former OPEC discipline is unlikely, some success is still visible. It seems that, with the help of a growing OECD area, oil prices will fluctuate around the \$15 level. The medium-run implications of such an oil price are positive. It is low enough to provide some growth and, for a limited time, low inflation rates. And it is high enough to keep the oil industry alive. I am not saying that such a life is pleasant for all because it will kick producers with unrealistic price assumptions out of the market. Also, the growth and inflation effects of the low oil price are limited to one to two years, because inflation and growth are dynamic processes which can be influenced only temporarily by a permanent change in the price of oil.

Let me summarize all this in one sentence: We currently are living in a world with low inflation, low oil and low commodity prices with serious frictions in the international and (in some important countries also national) debt and labor markets.

Against this background there are certain risks, particularly in view of coming elections in the U.S., United Kingdom and West Germany. The risks are that present governments will give away the benefits of future low inflation in exchange for short-term solutions to the debt problem and short-lived successes on the unemployment and economic growth front. And I think that the risk/reward ratio of this deal will not be favorable for some countries. But let me elaborate this on a country by country basis.

#### UNITED STATES

Among all countries considered here, the monetary policy stimulus in the U.S. is most pronounced and most advanced. The massive overshooting of the U.S.

dollar up to February 1985 and the troubles of some banks has led the Fed to change its restrictive course drastically.

In addition to this, the economic performance in the U.S. in 1985 and in the first half of 1986 was considered unsatisfactory. This view supported money expansion further. On top of this, the Fed argued that there was a considerable decline in the velocity of money in the past year which had to be offset by a corresponding increase in money in order to avoid a recession.

However, most of these arguments do not hold water.

First, economic performance with a growth rate of 2.7% in real terms for 1985 corresponded to the growth potential of the economy. This long-term growth potential, determined by the increase of the capital stock, the labor force and technological changes, is between 2.5 and 3%. Temporary deviations from this potential are possible, however, only at the cost of changes in the level of inflation. So my interpretation of '85 is quite different from this view. In the first half of '86 the economy grew at an annual rate of 2.2%, not far away from the potential growth. The figure was low only because of inventory decreases in the second quarter; real final sales grew at 6%. So in fact, economic performance was quite reasonable.

Second, it is true that the income velocity of money growth trend slowed from 3% in the '70s to 0% in the '80s mainly because of the disinflation process and in '82 and '83 because of innovations in the deposit fields such as "now" accounts and super-nows. However, the impact of the innovation should now be washed out after three years. What we observed recently was a decline in velocity because of the rapid growth rate of money. Because velocity is calculated as the ratio of nominal GNP to money, it should rise in such a case. After one to two years, however, nominal GNP will be affected by the rapid money growth leading to an increase of velocity. This process will accelerate even more when people start to add higher inflationary expectations in their demand, resulting in even higher velocity and inflation. The conclusion one can make from this analysis is that in the first round of money expansion velocity decreases before it starts to rise again. It would really be paradoxical if the Fed decided to be even more expansionary in view of such misleading information.

Third, it is very dangerous to provide excessive liquidity to an economic system to avoid bank collapse in a prophylactic sense. The consequences for inflation are much less favorable than in the case where the Fed would step in with liquidity in the actual case of a banking failure.

I have talked much up to now about inflation, and you might be tempted to protest and ask, "Where do you see inflation in the U.S. at current rates of 2 to 3%?"

I am fully aware of the fact that the observable inflation in the States currently is very low. It is low, however, for special non-monetary reasons, namely low oil and commodity prices. It was low in 1985 and earlier because of the appreciation of the dollar in real terms (inflation differential adjusted). If you deduct these special factors from the currently low consumer price

inflation, you get already a figure in the range of 4 to 6%. I am not saying that strong reflation is just around the corner. But I expect that we will see an inflation rate of 5% on average in the U.S. next year and even more in '88 if the Fed does not change the course now.

A better alternative to inflation in order to handle banking problems lies in the deregulation of the U.S. banking system to allow take-overs in other states and to allow diversification into other fields such as investment banking and to allow more flexible balance sheet rules. This would make the financial system in the U.S. less vulnerable to the LDC debt risk.

Another problem area in the States is the trade deficit and budget deficits. Here I am more optimistic than many other economists. The trade deficit was the result of a long period of currency overvaluation. Structural elements like the budget deficit and lower productivity relative to Japan might also have had an influence. Since the Fed has changed course, however, the dollar lost more than 20% of its real trade-weighted value. The first impact of a depreciation on the trade balance is negative, because trade flows don't immediately react to the depreciation. However, the U.S. has to give more dollars away for given import flows and gets less dollars for given export flows, because the dollar is worth less on foreign exchange markets. This perverse reaction of the trade balance is known to economists as the J-curve.

If you have a continuous decline of the dollar over a period of one and a half years, you can also observe continuous J-curves. So the dollar's effect on the real trade flows has been concealed by this phenomenon. But this cannot continue forever, of course. It seems to me that the peak of the trade deficits has been reached, that the real effects of the dollar's value are starting to dominate and that the J-curves are disappearing. I don't believe we will achieve equilibrium in foreign trade very soon because of the existence of structural elements. However, I am quite confident that the turnaround in trade will surprise many analysts next year.

A more serious deficit is that of the federal budget. Even here there are signs of improvement. Despite the fact that the famous Gramm-Rudman Bill seems to contain an untenable objective, I still expect a trend toward lower deficits and thus lower growth in government debt. I think in a few years we shall see debt growth in the neighborhood of the potential output growth in the U.S. This trend would imply an optimal deficit situation, at least from an economic point of view.

## JAPAN

The economy suffers now from the considerable decline in GNP growth from 4.5% in '85 to roughly 2.5% this year. The source of this growth deceleration goes back to the yen appreciation, particularly vis-a-vis the dollar. Much faster than in the U.S., imports are growing rapidly and exports are slowing down. Inflation will be almost nil this year, and unemployment is showing a rising trend but still low at roughly 3%. The big question now is whether Mr. Nakasone will follow the recommendation of the U.S. to stimulate the

economy in order to fulfill the renewed idea of the locomotive theory. It seems to me that Japan is the country in the weakest position to resist U.S. recommendations. Its strong and important export position in the U.S. makes Japan vulnerable to protectionism and other pressures. As a consequence, I believe it is reasonable to assume there will be some monetary accommodation in Japan. Indeed, the most recent figures on money supply seem to indicate such a course. On the other hand, I believe this stimulation will remain within limits and will not lead to fast and sizeable reflation. We have to assume a modest recovery next year against the background of an overvalued yen, while monetary and energy price stimuli can help only a little bit.

## WEST GERMANY

Germany, on the other hand, is less dependent on the U.S. wish for monetary stimulus. Economic growth most likely will be very good, at a level of 3%. Inflation this year is almost nil because of oil and the DM appreciation, as in Japan. In other words, the economic picture is bright. There was some overshooting of the monetary target, but Mr. Pohl made it very clear recently that the Bundesbank attaches top priority to a noninflationary course and that it will not accept the U.S. invitation. Furthermore, it is more likely in my opinion that the present conservative government will be reelected and that a further consolidation of the budget policy will take place.

Under such conditions, the risk for reflation is very small in West Germany. Nevertheless, a repetition of zero inflation next year seems unlikely because the oil price and the dollar will not go down indefinitely.

Another term of the conservative government will give the country another possibility. After the successful consolidation of the government budget it would be desirable to achieve similar results in the labor market and to bring down structural unemployment. This, however, will require some painful removals of laws and union power to make the labor market more flexible. I don't venture a prediction here.

## UNITED KINGDOM

In contrast to Germany, the political situation in the United Kingdom is more fragile. The popularity rating of Mrs. Thatcher is low, the party divided and the economic picture provides good marks for the government only for inflation. The economy is losing steam, unemployment is almost 12% and the pound is considered to be a "banana" currency by not very respectful foreign exchange dealers.

The big risk is that Mrs. Thatcher will compromise with those who want more monetary and fiscal stimulation coupled with the possibility that she will lose the elections anyway. This worst case scenario would confirm the bond market which values the inflation and uncertainty premium very highly in the interest rates. The chances are that she will not compromise and win. In the latter case, I believe financial markets in the U.K. will rally similarly to the way those in the U.S. did when the disinflation period

started. In the first case, I would join the camp of the not respectful dealers. Today, both alternatives have the same degree of likelihood, and it remains to be seen whether Mrs. Thatcher is able to unify the Conservatives and to regain popularity.

## SWITZERLAND

In the first half of this year Switzerland had some problems with an overly restrictive monetary policy. The Swiss National Bank has set a growth target for the monetary base of 2%. But in addition to that, our central bank underestimated the banks' reserve needs at the end of the month and overestimated it during the month. In other words, the growth of 2% was poorly allocated during the course of the months, leading to extreme money shortages at the end of the month.

Overnight rates shot up to over 100%, with effects on longer maturities. Euroswiss francs rose to unacceptably high levels with a strong potential impact on exchange rates and growth. Without giving up its 2% target, the Swiss National Bank changed its allocation with the consequence that interest rates are dropping. By doing this, it removed an important barrier to further development of the financial markets. We are benefitting from a three-year bull market on the stock exchange with a 150% performance over the whole period.

Given the realities of a somewhat lower economic growth potential in the future, but with a still very favorable inflation outlook, we believe in a continued bull market.

However, remember—the safest way to double one's money is to fold it over once and put it in the pocket.

# The Dynamics of an Evolving Industry

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Rapid changes are occurring in the detergent industry, indeed in almost every aspect of our society. I have therefore chosen as my topic "The Dynamics of an Evolving Industry," and I plan to discuss briefly the dynamics of the world market, competition in the industry, cooperation with related industries, environmental conflicts, and the industry's future.

It is only by effectively managing the interfaces with these external groups that our industry will secure its longer term prosperity.

## DYNAMICS OF THE WORLD MARKET

The world detergents market in total is very large and still growing. Sales in 1985 were \$30 billion. Tonnage growth rate was 4%/yr from 1980 to 1985.

The industry is important because it meets the basic human needs of cleanliness and hygiene, which apply the world over. Yet these needs occur in a wide variety of ways. There is a range of very different items to be cleaned, for example clothes, floors, dishes, people. There is a wide diversity of local habits, typified perhaps by the difference between washing clothes in an automatic washing machine or in a local river. And, there is the important distinction between the domestic detergents markets and the industrial markets. These all add to the complexity of our business, and external change has a different impact on each segment.

Consumer incomes are an important factor in our markets. As average incomes grow, so does average detergents consumption (Fig. 1). Rising income is also reflected in a demand for more sophisticated, higher quality, often more specialized products.

Figure 2 shows how rising prosperity in Europe over 30 years has seen the introduction of new product categories like fabric softeners and the decline of others, such as hard soap. Hand dishwashing liquids are a category that has grown fast, but is itself now under threat from products for machines.

Figure 2 referred to Europe, but differences are even more striking if we look at countries at different stages of development (Fig. 3). The poorest countries still rely to a great extent on hard soap, while the richest use a wide range of products, as well as consuming a greater overall volume.

In addition to these income-related changes, other factors are of course influencing our markets. For instance, there is still considerable technical innovation in a relatively mature market such as fabric-washing. There we see the development of low-temperature powders, enzymes, softening-in-the-wash products, heavy-duty liquids and concentrated products. Also, we must not assume that in all cases the developing countries will simply move toward the consumption patterns of the richer nations. Instead we are seeing cases such as the NSD bar, where new products designed specifically for certain third-world markets are being introduced.

So, there have been, and will continue to be major changes in the composition of our markets. Under-

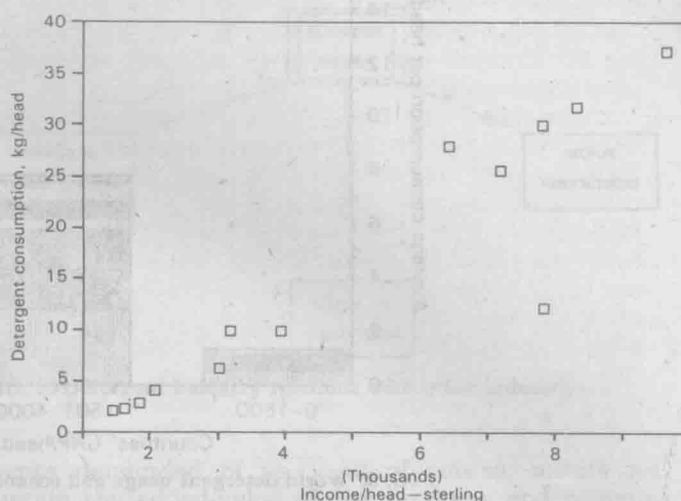


FIG. 1. Detergent consumption vs income/head, for selected countries.

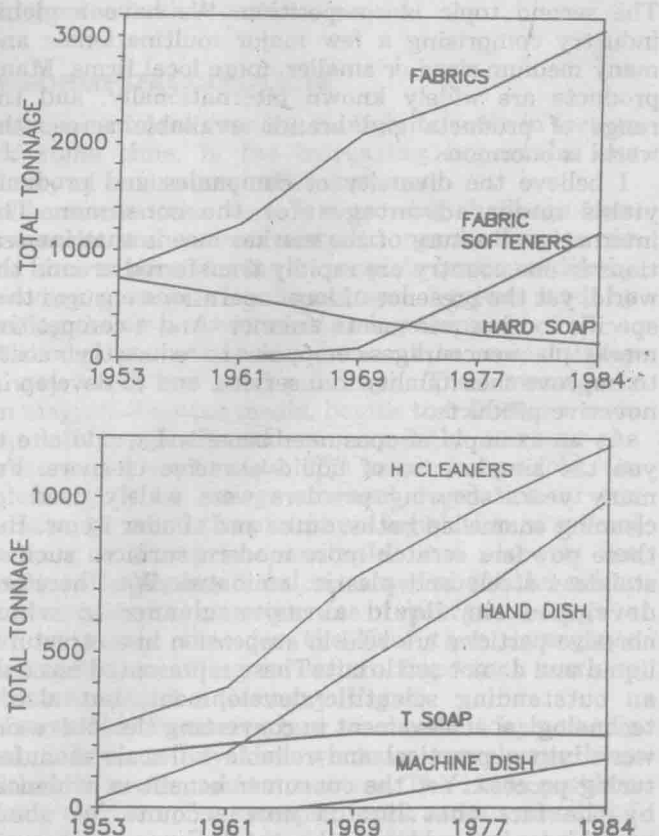


FIG. 2. Development of the European detergents market, 1953-84. Top, detergents for washing fabrics. Bottom, other detergent products.

standing the needs of the consumer in different countries in relation to his income, culture and life-style is important for competitive success in the world market. That always has been fundamental in our business, and it will continue to be so in the future.