

The rainforest in Cameroon during the pre-colonial era. (Top).

Logging in Gabon today. (Bottom).



Forestry and development: possibilities of Central and West Africa

By Tord Ekström

Africa's share of the world's forest product industry is extremely small. This is true also for Central and West Africa, which in this respect are inferior to both North and South Africa.

At the same time parts of the continent are very rich in forests, especially Central Africa that is one of the three big reserves of tropical rain forest of the earth, and partly coastal West Africa where, as a rule, the possibilities of regenerating forest also are good.

These regions are thus an illustrative example of underdevelopment in the forestry sector. In this article an overall expansion of integrated forestry and forest-based industries in this part of Africa is judged to be both possible and desirable.

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Introduction

During the colonial period, economic development in West Africa¹ was subordinated to the needs of the "mother" countries, and the colonies partly served as a source of raw materials, and partly as a market for the consumer goods industries of the metropolitan countries. The pattern of trade which was established during the colonial period is still mainly predominant. It is true, that the total dominance of the former metropolitan powers over foreign trade is decreasing in favour of growing relations with other industrial countries, but up till now the attempts to extend the regional trade have mainly failed.

A characteristic of the countries of West Africa as well as of most other African regions is their endowment with rich natural resources, which, by and large, are exploited and exported unprocessed or slightly processed i.e. minerals and agricultural products. In the same way the commercial exploitation of the natural forests in West Africa¹ is still confined mostly to production of tropical roundwood for exportation, alongside with utilization for subsistence. This composition of the exports implies that the exporting sector produces a low value added, and has small positive effects on the rest of the economy. The onesided raw material exports also result in serious balance of payments problems.

The forestry sector is thus an illustrative example of present underdevelopment of West Africa. With regard to the still existing big forest resource of the sub-region and its great potential for reforestation, and to the fact that not only mechanical wood industries but also some modern pulp or paper mills already have started and still more are under construction in Tropical Africa it is astonishing that the development possibilities within this sector are so little debated outside a narrow circle of specialists.²

Mechanical wood processing now is to be found in all West African countries,

mostly small local saw mills. In the last decade there has been an emigration of European hardwood plywood industries to Central Africa, primarily Gabon, Cameroon and the Congo. There are relatively well developed mechanical wood industries in the Ivory Coast and Ghana.³

Chemical woodprocessing — plants under construction

Chemical wood processing is more recent in Central and West Africa, though of great interest in principle. The modern pulp and paper industry has, in contrast to the situation in other African sub-regions, been based on mixed tropical hardwoods as initial raw material with a change-over to planted fast-growing hardwoods after a few years. The first mill started in 1980 was *Cellulose du Cameroun SA (Cellucam)* with a planned production capacity of 120 Kt/year of bleached sulphate pulp for exportation, mainly to Western Europe.⁴ However, FAO has put the capacity figure for 1982 at only 70 Kt with a successive rise to 95 Kt in 1986. Some paper production is planned to start in 1983.⁵

A second West African pulp mill is to be built in Gabon by *Société Gabonaise de Cellulose (Sogacel)*. Originally it was planned for a capacity of ca 250 Kt/year⁶, but for 1982 FAO gives the figure 125 Kt/year of bleached hardwood sulphate pulp that is to rise to 175 Kt in 1984 of which 50 Kt will be used for paper production whereas the rest is market pulp.⁷ However, the FAO capacity survey here seems to be in advance, since there still is no mill in Gabon in the spring 1983.

Whereas the above mentioned two mills mainly will produce market pulp for exportation, there are three integrated mills now under construction in Nigeria which are to make paper for the large domestic market: fine paper in the *Iwopin* mill, newsprint in the *Oku Iboku* mill, and linerboard and fluting for corrugated board in the *Jebba* mill. All three mills will use raw material mixtures, either

mixed tropical hardwoods or planted hardwood (Gmelina) blended with imported or domestic pines or imported softwood pulp.⁸ The total capacity as indicated by FAO was 90 Kt of pulp and 113 Kt of paper in 1982 which is to increase to 162 Kt of pulp and 189 Kt of paper respectively in 1986.⁹

Further, in Angola there is some capacity worth mentioning, that is 44 Kt of pulp per year – of which 32 Kt market pulp – and 19 Kt of paper per year. In neither case an increase is planned up to 1986.¹⁰

Thus the total installed pulp capacity in the reported four countries in the sub-region was about 200 Kt in 1982 which is to grow to nearly 500 Kt in 1986 according to FAO.

Projects

By that time there may also be some addition to the capacity through investment in the Ivory Coast, Ghana and Congo where there are since long studied projects. For the former country FAO mentions the *San Pedro project* of 150 Kt per year of bleached sulphate market pulp with possible startup 1985 and with mixed tropical hardwoods as initial raw material (Eucalyptus plantations later)¹¹. For Ghana the *Daboasi project* is mentioned, to produce 50 Kt per year of printing and writing paper and newsprint after 1985, again based on mixed tropical hardwoods to be substituted later by plantation wood.¹² In Congo there is a pulp mill project – not indicated by FAO – based on eucalyptus plantations right from the start.

In most cases these mills are financed by international joint ventures with the government of the host country as majority owner, and a private consortium consisting of suppliers of equipment and technical and marketing services, banks, consulting firms, etc. The large cost of the mill, however, may make up only 60 per cent of the total project cost. Cost for investment in infrastructure and forestry may correspond to 20–35 per cent. The

respective government is usually responsible for the latter cost, but the financing is to a great extent made possible through loans and credits from the World Bank group and other sources. In these lending negotiations the promotion of a well known transnational company is often looked upon as a guaranty for the viability of the project. For example, the Swedish Cellulose Co (SCA) and Stora Kopparberg have played a great role in the realisation of the Cameroon and Gabon projects respectively¹³, and Billerud seems to be doing the same in Congo.

THE ROLE OF FORESTRY IN THE DEVELOPMENT PROCESS

In the following pros and cons of expansion within the forestry sector are discussed with regard to agriculture and other industries. Thereafter interest is turned to the choice between small and large scale forest-based industries and the connections between them. In the last two sections the subject is the disadvantages of developing modern and especially large scale forest industries, namely dependence on foreign capital and technology, and how to deal with these problems. To conclude, the importance of regional co-operation in the forest-based, and especially the pulp and paper industries is pointed out.

Forestry versus agriculture

In West Africa subsistence crops are still to a large extent grown by means of shifting cultivation, which gives a higher output in proportion to the work effort compared to stationary methods, but requires vast areas of forest land. It is an adequate method when the density of population is low, but with growing population pressure the periods of rotation are becoming too short – six to seven years in certain areas – and the new forest is not allowed to grow up again after the burnings.

Commercial exploitation of the tropical rain forest mainly consists of selective cutting of big trees of valuable species.

Vast areas are cut down every year, and the forest roads built in this connection are opening the forests to the farmers. This combination of extensive agriculture and extensive forestry rapidly reduces the areas of closed forest in the sensitive marginal zones. This is true for the Ivory Coast and Cameroon, for example, whereas in Gabon with its small population, the forest is less in danger. Shifting cultivation is by far the worst threat to the tropical forest and to forest-based industries. If forests are to be used as sources of fuel and raw material, a transition to stationary methods of cultivation is required, together with sustained forestry as a basis for continuous processing of the wood.

However, even with stationary agriculture and sustained forestry there is a conflict over the optimal use of forest land close to the coast. Agro-industrial complexes based on large scale farming and mechanization, are growing up in developing countries. This cultivation yields very well for the work effort, but the yield is low for each ha. Examples from West Africa are cultivation of sugar cane and rice, and of maize for cattle-breeding. These plantations may compete with forest plantations for the optimal land use.

However, to a certain extent agriculture as well as the population should move from the coast to the inner part of the countries. There are also certain possibilities to combine forestry and agriculture. If by forestry we mean sustained forestry and by agriculture an intensive cultivation for household use or for sale, experience from, i a, South East Asia suggests that competition between agriculture and forestry may be mitigated through the taungya or farm forestry system. Studies in central Java illustrate this point. The practice there is to seek the assistance of farmers in establishing teak plantations. The farmers plant the forest trees and between the rows of these trees various food crops are sown. In order to increase the food crop yields fertilizers were applied to the soil at the time of planting. The incidental result is that rates of

growth of the tree crop have been increased by four times in the first year.¹⁴

Again, the continuing destruction of the West African rain forest mostly depends on the use of archaic forms of both agriculture and forestry. With suitable reforms it should be possible to produce raw material for a growing forest industry with less competition over the use of the soil for production of food and trees for energy.

Further, it should be stressed that with the short regeneration periods for pulpwood in West Africa (6–10 years for planted hardwoods and the double for pines) the area of rain forest occupied by industries should not be of great relative importance. With a rapid population increase, the great danger for the rain forests of West Africa and the world will remain agriculture by shifting cultivation.

Forest-based industries versus others

When a sub-region is so richly endowed with forest as central and coastal West Africa – actually or potentially – one expects the debate to be dominated by arguments for and against using the wood raw material for industrial purposes. Certainly, the development of forest-based industries, and especially the pulp and paper industry, was given an important role in some five-year plans elaborated within the sub-region, in the 1970s.

However, a look into two recent works of significance creates some disappointment. *The Lagos plan of action for the economic development of Africa 1980–2000*, adopted by the African heads of state and governments, mentions forestry and forest industries as important parts of the economy in several connections, but attributes no special role to the forest sector, and gives no detailed indications for its development.¹⁵ And the World Bank, in its *Accelerated development in Sub-Saharan Africa, An agenda for action* (1981), though accepting the long-term objectives of African development as expressed in the Lagos plan of action, pays

still less tribute to the forest-based industries, and this in spite of the fact that the World Bank Group to a certain extent is supporting such industries in its lending activities.

One explanation for this somewhat lukewarm interest in the development of African forest-based industries might be the view that even if there is a huge forest reserve in the region, it may not provide first class raw materials for the most important forest industries.

This has certainly been the common view, not only in the temperate countries and their transnational forest companies, but also in the FAO and even in the FIAG (Forest Industries Advisory Group of the UN Economic Commission for Africa, FAO, and UNIDO). In its well known *Timber trends and prospects in Africa*, FAO pointed out Eastern Africa's highlands with their good conditions for softwood plantations as the most suitable sub-region for pulp and paper making, whereas Western Africa with many big trees in heterogeneous forests should be specially suitable for developing mechanical forest industries.¹⁶

Eastern Africa, which is poor in natural closed forests, hardly had any other choice but to grow plantation wood in advance to develop forest-based industries. For Western Africa, however, the view has changed somewhat since the 1960s. The West African rain forest usually is so very heterogeneous that the distance between relatively large trees of the same species may be long, whereas mechanical wood processing still needs a relatively homogeneous raw material, and selective logging will then be more expensive than clearcutting.¹⁷ On the other hand, the pulp and paper industry, as pointed out above, has now learned to use this very heterogeneous raw material, which therefore is no longer an obstacle to its development.

After the technical progress of the last decades, permitting to produce good pulp and paper also from heterogeneous hardwoods, the West African rain forest can

be compared to newly discovered rich natural assets which may be utilized along with others, e.g. fertile soil and mineral deposits. This view seems to be generally accepted within the sub-region concerned.

The utilization of the forest resource in a country naturally proceeds in several stages as in, e.g. the textile industry. Compare the processing of domestic cotton to yarn, and further to fabrics, simple cotton clothes, and finally more complicated ready-made clothing with the processing of wood raw material – from standing timber to sawn timber or veneer and plywood, and further to houses and carpentry, or from standing timber to roundwood, chips, pulp, paper and different finished products. All lines are needed, in the long run, but the question may be where to start and how to proceed.

Sometimes investment in underdeveloped forest countries is rejected by the developed pulp and paper companies due to the opinion that these countries are inferior as regards production of pulp. This may be true for the time being, but it is no decisive argument. Even if such a country is inferior as to the general level of costs it should nevertheless – according to classical economic theory – produce and export goods for which this inferiority is relatively insignificant, and instead import other goods from more developed countries, and both parties may gain from such an exchange. Within the forest-based industries, however, even an underdeveloped country may have certain essential cost advantages.

Domestic processing means that the less developed country producer may draw advantage of his proximity to the raw material. This is especially important where the raw material is heavier and/or bulkier than the processed product. That is very true for roundwood and woodchips which are more expensive to transport than intermediate goods like pulp and veneer. This is the most important reason behind the huge relocation of the US paper industry southwards and of the Soviet paper industry eastwards.

In a not too distant future the supply of abundant and cheap wood raw material also may cause a gradual relocation of the European pulp and paper industry to West and Central Africa.¹⁸ As said above a similar movement already has occurred in the European processing of West African veneer logs. And already today hardwood pulps – partly from Brazil – account for more than half of the market pulp consumed in Europe.^{18.1}

Compared to the developed economies the underdeveloped countries are short of capital but have more unskilled labour. An essential argument for investment in forest-based industries in West Africa concerns the effect on employment. Compared to other manufacturing and particularly mechanical engineering, the forest-based industries have the advantage of creating employment in rural districts which results in a reduction of the usual concentration of manufacturing and migration to the cities. Compared to mineral extraction, forestry and forest-based industries will provide a more lasting employment to the extent that the raw material is reproducible.

A mine provides employment just until the deposit is economically depleted. In the same way traditional selective logging for exportation provides employment for the people in a region as long as there are attractive trees left in the forest. As the yield of each ha is low, it is necessary to exploit large forest areas every year. When the forest is depleted of large trees of the required species, the exploiting companies move on to other concessions in other regions (cf the economic stagnation in the Amazonas region around 1900).

On the other hand, when forest-based industries are establishing themselves on a larger scale, beyond the detached small saw mills and veneer mills, they will be dependent on a continuous delivery of raw material, and consequently they will be obliged to regenerate the forest. Only then local employment can be secured in the long run.

In almost all manufacturing industry, as well as in forestry and agriculture, goods can be produced in different ways depending on the input of different production factors. Mechanized agriculture is capital intensive as well as mechanized forestry, but in both cases production may be organised differently. An integrated forest product industry comprises stages which are more or less capital intensive: modern pulp and paper mills are very capital intensive, but forestry and mechanical wood processing is or may at least be labour intensive. (We will return to this in the next section).

As regards the scarcity of capital in the underdeveloped countries a distinction must be made between domestic and international capital. The amount of capital which the African investors have at their free disposal is limited, whereas international financing capital is moving across the borders and may be available for certain activities in underdeveloped countries – e.g. mining and pulping. When capital may be borrowed, a rich mineral deposit thus can be exploited even if mining is very capital intensive. The income from mineral exports then can finance imports necessary for developing labour intensive industries and other domestic employment. This is also valid for forestry and production of pulp.

Compared to other large manufacturing industries, the forest sector should not be more difficult to develop as it probably does not demand more skills which is the most serious bottleneck for a developing economy.

The choice between different forest-based industries: small scale mechanical processing versus large scale pulp mills

The alternatives to be discussed here are on the one hand an integrated industry of pulp, paper, mechanical wood products, charcoal, etc in which production of pulp on a large scale for exportation is included and, on the other hand, manufacturing of

various forest products on a small scale just to cover domestic demand. Decisive for this choice is the access to internal and external capital as well as to trained personnel.

According to a common view in the capitalist countries, mechanical wood industries first should be developed in poor countries and only later on, when the necessary capital and know-how has been accumulated, the pulp and paper industry. This is how the forest-based industry of the "old" forest industry countries developed during the later part of the 19th century and in the 20th. Such a development might result in an industry structure where many small forest-based industries are spread over the country. At the outset sawmills and in a later phase integrated production units for pulp and paper appear together with panel industries with the principal aim and direction to cover domestic demand.

The underdeveloped countries which set out to enlarge their forest industry today are, however, in a quite different situation than that of the industrialized countries a hundred years ago.

In Sweden for example, the development of the forest industry boomed with production of sawn wood at the beginning of the industrialization in the middle of the 19th century. Methods of manufacturing pulp and paper from the wood raw material were developed only towards the end of the 19th century. Nonintegrated pulp mills at that time began to be built for the export market, but also small paper mills producing for domestic demand.

If the forest countries of West Africa will continue to export roundwood or possibly wood chips more work will indeed be created, but the value added effect will be low. If instead they prefer to expand the processing of their own wood raw material they already have the same opportunities of choice as Sweden had only at the turn of the century, in the sense that the technology of both chemical and mechanical wood processing now

is available. Thus, there is no logical reason with reference to tradition, why West African countries should abstain from export oriented pulp mills today. There is no real evidence for the claim that it would be better to start building sawmills and postpone pulp and paper mills until capital and knowledge have accumulated within a forest rich country.¹⁹

In the Lagos plan no indication is to be found about this choice between different forest-based industries. In the preamble it is stressed that Africa's almost total reliance on the export of raw materials must change, and further it is said, for example, that industry should undertake processing of domestic raw materials but the text does not go beyond such general statements. As to the FAO, after having earlier expressed doubts about the suitability of the West African wood raw material, it has later on pushed the question of the optimal capital allocation. According to FAO the development of small scale forest-based industry as a rule presupposes that it will be enlarged at the rate of accumulation of capital and know-how within the country. Whether the growth is started with sawmills or paper mills or comprises integrated industries on a small scale, the individual units of production must be planned with regard to the limited access of capital and skill.

"It may be better first to make paper, boxes or sacks and once having set up the marketing structure and gained industrial experience in the use of small amounts of capital and the use of limited technology then to integrate backward to the primary process."²⁰

Import of advanced technology may further bias the technical development of a less developed country, according to FAO:

"Because of the special conditions in Europe and North America in the 50s and 60s, basically the high price of manpower, mills tried to cut costs installing larger capacity units and cutting personnel. This

made sense for Europe but it would be nonsense to apply this approach to the developing countries. They don't have the capital to install large scale, high capacity equipment, and they don't have the skills to run them. We firmly believe that small pulp and paper mills should be built in developing countries and not the massive mills that are normal for the developed countries and here I'm generalizing. These small mills should be designed primarily to fill domestic demand. Some countries should consider export-oriented mills and the picture changes for them. Brazil for example, with its hardwood resources is not a typical developing country."²¹

As indicated above also the World Bank seems to support the small scale industry alternative (see below p 18).

Even with access to development aid, foreign loans and equipment suppliers' credits, expansion of the forest industry has to be financed mainly by domestic capital which is a scarce factor in all developing countries, irrespective of the choice of investment object. The choice between different alternatives of development evidently will depend on the possible disposal of the various products. According to the alternative which is based on domestic accumulation of capital and know-how, the production is mainly directed to the local market. According to the Forest Industry Advisory Group with ECA/FAO (FIAG), the forest industries represent excellent opportunities for import substitution, once the local domestic markets have reached the adequate proportion. The local and internal markets for forest products within Africa are growing rapidly to reach the point where the establishment of industrial units within this sector becomes feasible and viable in several countries.

The conditions for basing production on the demand within the country itself are good as regards some wood and panel

products and converted paper products but less favourable for pulp and bulk paper. The production of pulp and paper in particular shows important economies of scale which can be realized only at levels of consumption that are higher than in most individual African countries. For these countries, a development based on the local requirement of paper will create the same difficulties as for any other import substitution. Almost all African countries with a rich forest potential have small domestic markets.

Thus, there is an obvious risk in developing the forest industry in Central and West Africa on the basis of domestic demand. The consequence may be that the individual countries construct small integrated pulp and paper mills for 25-50 Kt/year with the intention mainly to substitute imports but also to export the surplus to the neighbouring countries until the domestic demand has grown up to the level of production.²² This will result in the paper being expensive and therefore difficult to dispose of.

The recommendation of small scale pulp and paper production in West Africa means an import substitution strategy that may be appropriate when no foreign capital is available, and as long as no common regional industrial planning is undertaken. But otherwise such a strategy seems dubious for the forest-based industry.

After the progress of the pulping technique in the 1970s international capital has begun to be available for large scale production and exportation. The financial bodies seem to have admitted that also large scale forest industry may be advantageous in this African sub-region. The completion of Cellucam in 1980 may prove to be a turning point.

Further it must be stressed that in West Africa today it is the necessity to make huge infrastructural investments that makes pulp and paper industries appear as extraordinarily capital intensive. It is easily forgotten that such investment later on to a large extent may be used by other industries as well, and that the cost

therefore should not be borne by the forest-based industry alone.

The best alternative: a fully integrated forest industry complex

Various forest-based industries may be developed simultaneously into an integrated complex by using international capital and existing know-how according to the second alternative mentioned above. Such a combined forest industry may start out by using mixed tropical hardwood for the production of pulp that is suitable for making certain types of paper (e.g. printing and writing) and for blending with other and more expensive types of pulp. In the complex all kinds of wood may be used for different purposes: besides pulp, there should be production of sawn wood, pitprops, poles, veneer, and plywood, other panels and charcoal or other energy wood which would mean a great reduction of the present raw material waste. Some production of paper can also be comprised in the combine.

In a forest industry complex the main part of the raw material is used in the pulp mill, but valuable hardwood, and species suitable for construction should be taken to a saw mill and a veneer mill instead of being cut to chips. Hard (siliceous) species, which will cause problems at the pulping, can instead be sold as poles and pitprops, and possibly exported.

Combined industries are a precondition for an *efficient utilization of the wood raw material*, and a complete use of it implies production of pulp. A small mill only producing for internal consumption will market an expensive pulp, whereas a large mill producing pulp competitive on the world market will be expensive to construct and therefore requires access to international capital.

As West Africa – as pointed out above – is rich in labour but poor in capital it may be deduced that a labour intensive technique should be used in general and primarily that the output of forest products should be restricted to the relative-

ly labour intensive parts of the processing such as logging, silviculture and mechanical wood industry. If the region is restricted by a limited supply of domestic capital it seems clear that a given amount of capital invested in many small units of production spread all over the country provides more opportunities of labour than the same amount of capital would do if invested in one large capital intensive industry. This is the main reason for the World Bank to support small firms.²³

The reasoning above presupposes, however, that the factors of production are immobile between West Africa and the industrialized countries. This is more true for labour than for capital, both physical and human. The access to domestic capital is restricted, but international capital and know-how are available. In the forest sector, it has principally been directed to selective logging of tropical hardwood and of later years to pulp production (Brazil) – but only to a small extent to sawmills, panel industries or papermills. It may therefore be justified to utilize international capital and know-how for constructing a capital intensive pulp industry in a developing country, and use the limited domestic resources as much as possible for developing labour intensive industries, including infrastructural build-up. Production of pulp also will provide many job opportunities in logging, in planting and silviculture, and in transportation.

Furthermore, export of pulp gives access to foreign exchange which can be used in the same way as a loan from the World Bank for developing small scale labour intensive industries. Pulp export earnings may be used for building a forest industry combine using labour intensive methods in other production units, and it is possible to create still more jobs by combining agriculture and forestry through the agro-forestry system (see above p 14).

As indicated above the proportion of production factors used may vary to some extent in a branch of industry, a problem that has been discussed by the

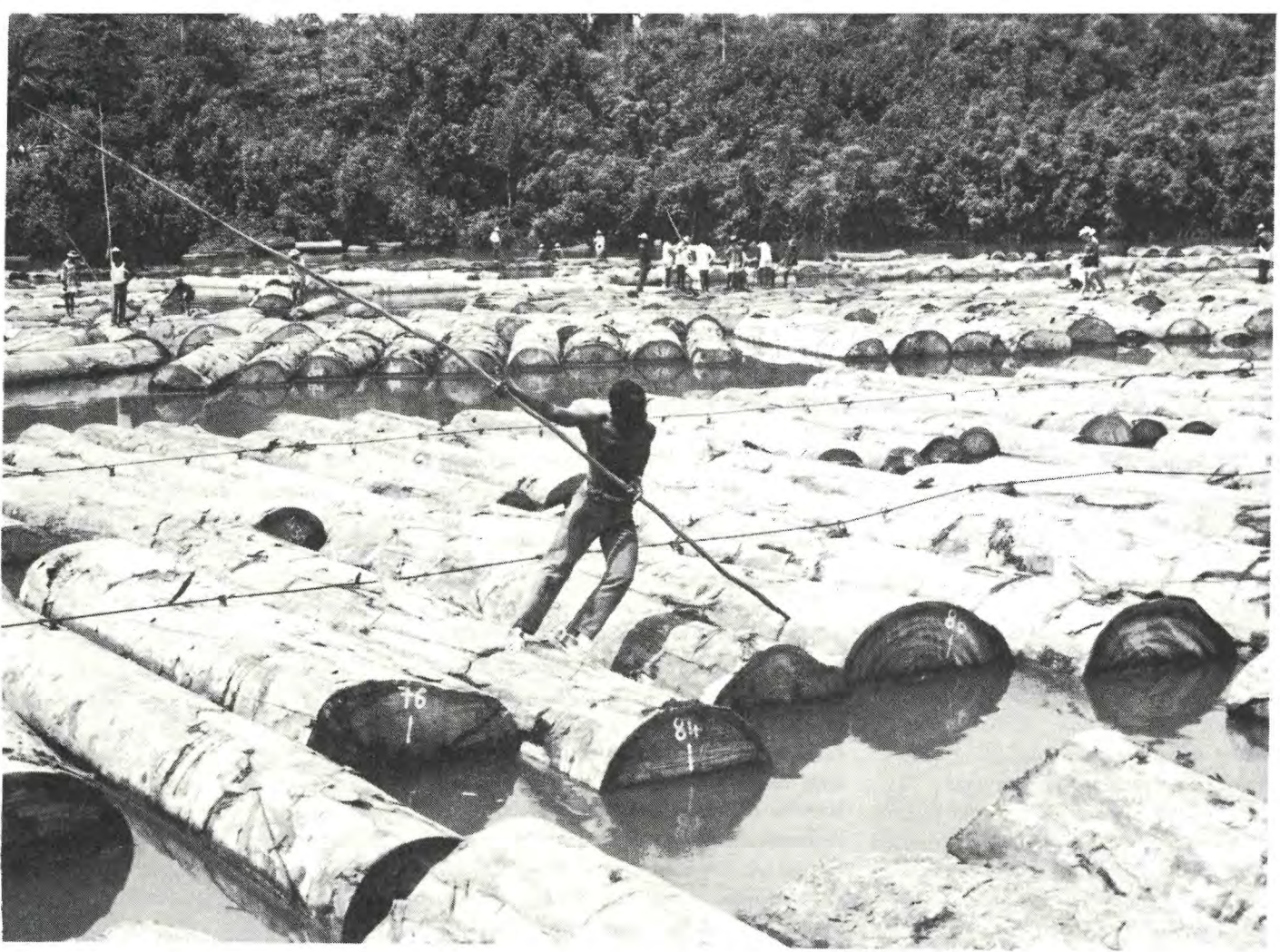
African ministers of industry.²⁴ For the forest sector this may be applied to mechanical wood processing rather than to the chemical processing industry, and to paper more than to pulp production. In the paper industry and in mechanical wood working second hand machines can be used which may be bought at prices giving a relatively low capital cost. This is much more difficult in pulp production where, by and large, the equipment must be specially constructed. Consequently, a large forest industry combine can use different factor proportions in different sectors and mills. The reasoning of the ministers of industry about the necessity to select a labour intensive technology when possible is truly justified in this case.

We may therefore conclude that if it is possible to borrow internationally for the construction of a pulp mill and to earn foreign exchange by exporting pulp, this could serve as a sound basis for developing a combined forest industry.

The access to international capital will depend on a commitment in the pulp production by one or several paper companies of developed countries either as customers of pulp or as sellers of equipment and services. As is shown by recent evidence there is such an international interest in participating in a development of large mills in Central and West Africa.

An African multinational integrated industry comprising production of pulp on a large scale should be able to use the raw material in the best possible way and utilize the economy of scale in the production of pulp.²⁵ Thus the co-operating countries should have access to cheaper paper as compared to the situation where each small country produces pulp and paper on a small scale. The mills producing for a regional market can also make different qualities of paper and paper board.

In the beginning, however, it might be more difficult to export paper than pulp to countries outside the region due to the fact that paper is closer to final consumption. This has been the case with Brazil, for example. There are different kinds of



paper for different purposes, the claim for quality is higher, and the competition is keener. All this together makes increased marketing efforts necessary. Contrary to pulp, paper is usually protected by rather high customs barriers. The countries of West Africa are, however, associated with the European Economic Community or have special trade agreements with it according to the Lomé convention. Nevertheless this does not entirely guarantee the export (cf the conflict between Sweden and the EEC concerning the application of the agreement on free trade since 1973).

Thus, the world paper market is more exacting for newcomers than the pulp market. However, once export-oriented pulp industries have been established in West Africa, the exportation of paper rather soon will follow. As the paper industry grows it will consume a rising share of the region's pulp production, as has been the case in Scandinavia, for example. Until then, however, a pulp mill is likely to supply the lion's share of the combined output of a West African forest product complex.

Combined forest industries in Africa constructed with the aid of international capital and know-how, and in which the

production of pulp on a large scale for export is included should have good prospects of coming into reality. It is the development alternative which has the lowest cost of production for each produced unit. Of all the alternatives discussed it has the best chances for finding a market, and it has the best prospects as regards financing. The other side of the coin, however, is the risk involved in getting dependent on foreign capital and know-how. We now turn to a discussion of this problem.

The disadvantage: dependence on foreign capital and technology

Dependence on foreign capital and technology is not only an economic factor but partly also a national one. Are the cons of an increased dependence through a pulp mill greater than the pros of an earlier start of the export of pulp and of an integrated forest-based industry?

This depends to a great extent on which development effect the burden of debt will have in the long run. Should the pulp mill remain as an isolated enclave in an economy unchanged in other respects, the development effect will be minimal. Being indebted may thus be justified, but

only if it does not hamper a comprehensive development.

A special qualification should be made for the case when a government would transfer profits from the pulp export, e.g. to Switzerland, instead of investing them for the development of the country. However this eventuality does not influence our choice of development alternatives. A corrupt administration can spoil the benefit to the community in *any one* of the alternatives discussed above, which will make development impossible.

The import of capital and technology may be connected with terms that directly hamper development. An example may be, e.g., marketing conditions which limit the disposal of processed products of a country or else restrict the market. Another example may be terms of forest concessions which might result in depleting natural resources without leaving a large share of the profit to the host country. Selective logging of tropical hardwoods is one example, and so is the cutting of pulpwood if the required regeneration is neglected. Such an agreement may cause serious problems later on.

An example of such problems are the concessions to Japanese companies to cut mixed tropical hardwood in Southeast

Asia. The roundwood or the chips are exported to Japan for processing. The case illustrates the considerable risk for abuse when the concessions are limited in time, as the forest may be devastated without any consideration of regeneration. Furthermore the concessionaires may use machines liable to damage the soil productivity without any financial damage for the company responsible for the destruction. These risks should be considerably reduced when the concessionaire is an industry dependent on continuous deliveries of cheap local wood (compare p 14).

It is also important how the income from the pulp production is distributed between the host country and the foreign participants, and this is not only determined by their respective shares in the equity capital. The distribution is influenced by the price of technology and equipment, by the costs for management and marketing, and by the terms of concessions by which the logging rights are being granted.

Furthermore it is possible that the use of foreign technology leads to overpricing of the import of equipment and services and underpricing of the exported forest products.

Our conclusion, however, is not that suitable African countries should refrain from importing technology but that they should try to *strengthen their basis of negotiation* against the sellers of know-how, services and equipment by *developing regional co-operation*.

Host country control – possibilities and restrictions

An extremely important question is what opportunities an African country has to influence a pulp project in order to have the best possible effect on its development. Some possible ways are:

- Tree planting should start as early as possible, sometimes combined with cultivation of subsistence crops.
- Sawmills, veneer production, board manufacturing and charcoaling should be

developed in connection with the pulp mill.

- A labour intensive technique ought to be chosen, where this is possible (e.g. in logging). There is always a risk that the transfer of technology leads to suboptimal resource allocation and pressure making for a wrong choice of technique.

If African governments have the political will to fight for such an economically favourable development of their projects, there should be good possibilities for success. As a rule, the African part has, at least formally, the controlling power and thereby the opportunity to influence the realisation of the project.

The possibilities of a socially "good" performance of the project are also favoured by the fact that optimal utilization of the raw material together with labour intensive techniques of production should minimize the cost of the firm as well.

The possibility of the government of directing the performance of the project is, however, limited by the lack of know-how in the mill as well as in logging, planting and in combined agro-forestry.

The African ministers of industry have emphasized that the possibility of selecting a technique suitable for a set of production factors, is confined by the fact that the technique available is the one developed in the industrialized countries with regard to their earlier shortage of labour.

"As things stand, recently established African industries use developed country technology with little concession to the circumstances of the economies in which they operate. — — — The uncritical use of foreign technology makes its heaviest demand on those resources with which Africa at present is relatively poorly supplied — capital, entrepreneurial and managerial talent, and skilled labour."²⁶

The ministers of industry also stated that:

"it exists a resistance to the idea

that labour intensive technologies should be widely introduced. The fear is often expressed that relatively labour intensive technologies would provide employment at the expense of growth, and so in the longer run be detrimental to employment itself."²⁷

From the point of view of the firm it may also appear profitable, in the short run, to concentrate on the production of pulp and to use an advanced logging equipment. The reason for this view is that a forest industry combine puts heavy demands on the organizational capacity and presupposes a know-how of the various lines of production within the management of the enterprise.

However, in our opinion forest industries still have better prospects of being integrated in the economy than many other forms of raw material extraction and industrial production.

The industry today

The present structure of the industry is described by the ministers of industry as:

"a foreign enclave in the national economy, more susceptible to external rather than domestic impulses. The existing industrial enterprises are generally oriented to processing activities at either end of the manufacturing process, namely either primary processing (agriculture and mineral resources) or the final stages of manufacturing based on imported semi-finished products. In either case, very little value added is generated and the spread effect benefits are small."²⁸

The present export of veneer logs is in fact a highly foreign enclave in the national economy in spite of an occasional rise in employment (compare earlier logging of Hevea in the Amazonas). Processing the veneer logs in West Africa can be a first step in making forestry more integrated in the economy. Today the main is-

sue is to use rain forests in a more all-round way than is presently done, along with regeneration and a labour intensive silviculture. Only then forestry and forest-based industries will be integrated: one stage will obtain its raw material from the preceding one, process it and pass it on to the succeeding stage. The capital intensive pulp industry is to a large extent the missing link in this chain.

Domestic processing industries in a country, as e.g. pulp and paper, will later create industries providing the former with service and equipment – that is parts of an engineering industry, and a sector for producing services. Furthermore the distribution and transportation sectors will be stimulated. This is a parallel to the recommendations from the ministers' conferences about industries connected with agriculture.

Vocational training, africanization and accident protection

Integration of a forest-based industry in a West African economy presupposes in the last resort that expatriates gradually be replaced by African managers, technicians, foremen and trained workers. This is a key issue.

Without training of Africans the African benefits of a project will be sharply curtailed. An example is the staggering blow the mining industry in Zaire received, when 500–600 white mining experts and engineers left Kolwezi in connection with the war of 1978. Training also is a necessary precondition for an appropriate accident protection.

The African ministers of industry have recommended on job training schemes to be promoted so that qualified African personnel could increasingly assume the responsibility of planning, programming and implementing industrial projects and managing existing and planned industrial establishments.

In Cameroon, Gabon and the Ivory Coast, the governments have counted with the necessity to use a relatively great number of expatriates with experience from

similar projects at the start of the mill. There is very little local manpower with sufficient qualifications today, and the proper training may best be obtained by participating in the mill operations. This is an extremely important long run work that must not be neglected.

A pre-feasibility study of the planned mill at San Pedro in the Ivory Coast²⁹ presented two alternatives with respect to Ivoirization:

The first one entailed a rapid Ivoirization of the mill personnel and was regarded as reasonable by the Ivorian authorities. At the start of the production there would be both managers and qualified technicians as well as foremen and special workers among the expatriates. Within ten years the number of expatriates was planned to diminish from 18 to 1 per cent of the total number employed at the mill. According to the investigators this presupposed that the enterprise responsible for the project and the Ivorian authorities made a joint systematic effort to ensure that proper training and education would be provided.

The second alternative was more conservative. In that case expatriates would be retained in key positions during the first five to ten years and the number of expatriates would diminish over a ten year period from 36 to 10 per cent of the total number employed at the mill. Half of the expatriates engaged at the start would belong to the category special labour, and three years later they were assumed to be substituted by local personnel. This alternative was recommended in the study.

This study illustrated the differences between the demand from the Ivorian authorities for a rapid and complete Africanization and the training efforts considered to be reasonable by the technical advisers from the point of view of the firm. What extent the training finally will have – once the pulp mill will have started – is a negotiating issue between the government representative in the joint venture and the European parties in their position

as sellers of training services and granters of the viability of the project.

In the agreement on purchase of services between Cellucam of Cameroon and SCA of Sweden training and assistance in the recruiting of personnel was included.³⁰ Technical and administrative key persons were to be trained in Sweden. Supervisors and qualified process operators with an education equivalent to higher secondary school or technical school, were to begin by attending a pretraining course in Cameroon, and then work in French mills during half a year in order to get some practical experience. They were then to return to Cameroon to take part in the installation, the start up of operations and training of other employees.

Sogacel in Gabon signed an agreement with Stora Kopparberg of Sweden concerning the purchase of services which includes training in logging and industrial production and recruitment of the European staff.³¹ The total number of employees was estimated to 1 940. Sogacel estimated that the European experts would amount to 228 persons at the start of production and that their number would be reduced to 185 during the following two years. Subsequently the expatriate personnel should decrease more rapidly as a result of training efforts.

For future training and africanization it is important that modern production, especially in the pulp and paper industry has or will be started in tropical Africa (Kenya, Cameroon, Nigeria etc) and is running in other underdeveloped countries (Brazil etc). Thereby a wider market for the purchases of skills and services within this sector will be created for the underdeveloped countries. Then West Africa will no longer be totally dependent upon the experts and interests of the industrial countries when demand on the world market will increase again.^{31.1}

SUMMARY AND A BROADER PERSPECTIVE

In the long run there are good prospects

Logs ready for export from a port on the Ivory Coast.

for forestry and forest-based industries in Central and coastal West Africa. This presupposes, however, that industrial complexes are built which, through an efficient and manysided use of the raw material, can get a low wood cost compensating for their initially relatively high manufacturing cost. With growing industrial experience, their total cost may be low. This would make them competitive on the world market.

In the short run it is an important advantage for new hardwood pulp producers, e g in West Africa, that many European paper makers due to reduced demand and low profitability in the beginning of the 1980s want to cut their cost by adding new and cheaper pulp to their traditional fibre mix. In the autumn 1982 short fibre eucalypt pulp could be up to 25 per cent cheaper than long fibre coniferous pulp³². This makes it easier for new pulp producers to acquire a market share that they will strive to enlarge in the longer run.

However, the possibilities to base industrial development in West Africa on exports to Western Europe have been curtailed due to the lower rate of economic growth since 1974, and it seems very likely that this trend will remain during the 1980s. The crucial point is whether or not the governments of these developed countries are willing to accept the demands of the underdeveloped countries for a New International Economic Order, which might mean a permanent cut in their production of some industrial goods, e g textiles, steel, and many forest products. This will of course affect the level of employment and will often be concentrated to regions where the level of unemployment is already high. From the measures of protectionism which now are directed against imports from the developing countries, it appears that the industrial countries are not willing to accept a structural change, at least not during the slow economic growth prevailing since the middle of the 1970s.

If low economic growth will continue in the industrialized capitalist countries,



regional and subregional co-operation will become even more important for the developing world. This is especially true for expansion of the pulp and paper industry, with great economics of scale advantages, in countries with small and poor populations like most in Central and West Africa. Aware of these difficulties the ECA has long been working to propagate regional co-operation.

The African states should stimulate industrial co-operation by defining complementary industrial policies to permit better adjustment of industrialization programmes in various countries. The governments should make agreements on specialization, and set up African multinational firms. They should further increase the supply of skills and know-how by pooling technical and scientific resources.

Already in 1973 the ministers of industry stated that Africa's aggregated demand for industrial products would justify the creation of industries for viable intermediate and capital goods if only the national markets could be integrated. Projections of demand to the year 2000 also indicate vast opportunities for investment and employment generation, based solely on the African market.³³ Even if the ministers did not mention pulp specifically, it would have been a good example.

An important step in this direction was the creation in 1975 of the *Economic Community of West African States (ECOWAS)*. The aim is a widespread economic co-operation which includes, i a, an elimi-

nation of tariffs and industrial co-operation among the sixteen member countries. The founders of the community have been conscious of the fact that the benefit of this co-operation might be unfairly allocated among the members, and this has resulted in the institution of a fund with the task, i a, to compensate for losses caused by the establishment of community enterprises or by the process of trade liberalization.³⁴

Lately, the importance of regional co-operation to Africa has also been stressed in the Lagos plan of action, and endorsed by the World Bank³⁵. According to the Lagos plan³⁶ member states are convinced of the fundamental role of intra-African industrial co-operation in all its various forms, and will therefore undertake preparations of sub-regional and regional plans for the creation of major industrial complexes whose cost and production capacity would exceed national financial and absorptive capacities, and, further, give high priority to the establishment of multinational industries in Africa especially in basic areas with high investment costs, and expand bilateral industrial co-operation among member states through joint ventures.

It seems clear that the creation of an African economic community along these lines would be of tremendous importance for the development of forestry and forest-based industries in Central and coastal West Africa, and would have subsequent great effects on the world markets for forest products.

Notes:

- ¹ In the western part of Africa two sub-regions are usually recognized, namely West Africa – consisting of 15 countries – and Central Africa with 9 countries: see for example *Economic co-operation and integration among developing countries*, volume II, part two (Africa) UNCTAD, 1976. Sometimes, however, both these sub-regions are referred to as *Western Africa*, as e.g. in *Timber trends and prospects in Africa*, UN-FAO, 1967.
- In this article we are mainly interested in the *coastal* countries of the latter area (including Zaire and even the Central African Republic – though not coastal – and Angola), both with regard to their large forest reserves and good possibilities for regeneration of forests, and their possibilities of taking part in the world trade with forest products. Thus, the Sahelian countries are excluded, since they are less interesting as suppliers of raw material to forest-based industries.
- For convenience, the whole area in the following is sometimes referred to as West Africa. However, our interest is focused on Cameroon, Gabon and the Ivory Coast, and, to some extent, Nigeria with regard to existing and planned mills; cf note 8 and 9.
- ² See below, p 15.
- ³ *World Wood*, 1982 Review, pp 55 et seq.
- ⁴ Horntvedt E, *Tropical hardwood pulp from Cameroon in New pulps for the paper industry*, Proceedings of the symposium on new pulps for the paper industry. Brussels, Belgium, May 1979, pp 93–98.
- See also Hagner, S, 1980, *Raw material provision to the Cellucam pulp and paper mill, Cameroon*, in Fries, J, (ed) *Workshop on Plantation forestry in tropical countries – physical and biological potentials and risks*, Swedish University of Agricultural sciences.
- ⁵ FAO 1982a, *Pulp and paper capacities*, Survey 1981–1986, p 86.
- ⁶ *Sogacel, 1977*, Société gabonaise de cellulose, General report, economic study, Kango pulpmill, February 1977.
- See also, for example, FAO 1982b, *Projected pulp and paper mills in the world 1981–1991*, p 11 et seq.
- ⁷ FAO 1982a, op cit, p 89. According to oral communication from Stora Kopparberg financing and construction have been delayed by new calculations to increase profitability.
- ⁸ FAO 1982b, op cit, p 20.
- ⁹ FAO 1982a, op cit, p 95.
- ¹⁰ FAO 1982a, op cit, p 85.
- ¹¹ FAO 1982b, op cit, p 13.
Cf also *Pre-feasibility study of the pulp mill in the San Pedro region, The Ivory Coast*, made by Forindeco, Oslo 1976.
- ¹² FAO 1982b, op cit, p 12.
- ¹³ Horntvedt 1979, op cit, and Sogacel 1977, op cit.
- ¹⁴ King, K F (1975), *It's time to make paper in the tropics*, Unasylva 1975:III.
- ¹⁵ *The Lagos plan of action* was adopted at a meeting of the Organization of African Unity in 1980, and has been published by the International Institute for Labour Studies, Geneva 1981.
- ¹⁶ FAO 1967, op cit, chapter 2.
- ¹⁷ *World Wood*, op cit, p 55.
- ¹⁸ Cf Ekström, T, *Tropical Africa's pulp potentials*, in *Pulp and Paper International*, June 1976. In a broader context, the future of the Swedish pulp and paper industry was treated with some pessimism by the author and others in an extensive trade union research report: TUA 1969, *Massa och papper i en föränderlig ekonomi 1970–1990* (especially ch 2) which at that time was sharply criticized by industrialists and forest owners.
- ^{18.1} *Market pulp: Looking forward and back*, in *Pulp and paper international*, April 1983, p 76.
- ¹⁹ This discussion recently acquired relevance when the Bai Bang paper mill built in Vietnam with Swedish aid was completed and as the completion of the Tanzanian *Southern paper mill* at Mufindi advances. Production there will probably begin in 1984, ten years after the startup of the first modern East African mill, the *Panafric* paper mill in Kenya. Both these mills are integrated and will produce about 60 kt of paper/year. However, both the Vietnamese and the Tanzanian mills may suffer from at least temporary lack of close and thus cheap raw material, which should be no obstacle in West Africa.
- ²⁰ *Pulp and Paper International*, January 1978, Interview with dr Kenneth King, FAO.
- ²¹ *Ibidem*.
- ²² For example 3 kg per year and capita × 6 million inhabitants equals 18 kt/year.
- ²³ The World Bank, *Annual reports*, and the two sector policy papers entitled *"Employment and development of small enterprises"*, and *"Forestry"*.
- ²⁴ Second conference of African ministers of industry.
- ²⁵ The Lagos plan of action, op cit, ch VII.
- ²⁶ ECA 1973, op cit.
- ²⁷ ²⁸ *Ibidem*.
- ²⁹ Forindeco 1976, op cit.
- ³⁰ Oral communication from representatives of SCA and Sunds in June 1977 and January 1978. At that time there was still no forest concession contract between Cellucam and the government of Cameroon. The information on training only concerns the industrial production. See also Horntvedt 1979, op cit.
- ³¹ Sogacel 1977, op cit, pp 15–16.
- ^{31.1} Compare also *Brazil and Cuba court Africa in South*, November 1980.
- ³² Association of Swedish pulp and paper manufacturers (SCPF), *Information*, No 1, February 1983, p 2, and *Affärsvärlden*, Stockholm, 1982-12-08, and *Pulp and paper international*, April 1983, op cit.
- ³³ ECA 1973, op cit.
- ³⁴ See for example UNCTAD 1976, op cit, and International Herald Tribune, *West Africa – 1978, A special report*.
- ³⁵ *Lagos plan of action*, op cit, p 128. The final act of Lagos aims at the establishment of an African common market as a first step towards the creation of an African economic community by the year 2000. For the importance of regionalism, see also The World Bank, op cit, pp 118–119.
- ³⁶ *Lagos plan of action*, op cit, p 24. ■