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The Role of Forestry in World Economic Development

Egon Glesinger

IN 1960 the world's forests will yield some 1,700 million cubic meters of roundwood. This volume, by weight around 1,350 million tons, may be compared with a world production of all grains of 800 million tons or a world steel output of 290 million tons.

The output of primary forest products will be worth about 35 billion dollars — the same order of magnitude as the national incomes of countries like France, Germany or the United Kingdom, and roughly one fourth of the estimated value of world food production. Primary forest industries will employ something like five million people, secondary industries as many again. Five to six million people will be engaged on felling and extraction and about 1.5 million in growing and tending forests. Thus forestry and forest industries will be affording employment to 17 or 18 million people, quite apart from the incomes which many millions of farmers will be getting from their woodlots, or communities be gaining from their communal woodlands.

There is no doubt that forestry represents a significant element in world economy. The next question is obviously whether it is going to become *more* or *less* important in the future. What should we be planning for, looking 20 or 40 years ahead? Will forests still have an essential role to play in the world's further economic development?

The dangers of human progress

Throughout recorded history the earth's forest area has been shrinking. It has shrunk more quickly in the last 100 years than ever before. Some people held, even a few decades ago, that this was a necessary accompaniment of economic and social progress. To early man the forest afforded food, fuel and shelter. With the advent of settled agriculture and population expansion, tremendous areas were cleared. The early stages of industrialization brought new demands on the forest — for constructional wood and fuel on an ever more lavish scale — and the forest boundaries receded as man progressed and multiplied.

The world's forests are still being destroyed, wilfully or ignorantly. But at the same time the realization is spreading that the diminution of forest areas may have far-reaching consequences because forests provide not just wood but a host of other benefits or "human utilities".

The benefits from forests are essentially twofold, on the one hand wood, and on the other various physical and social effects frequently termed "forest influences". In many instances the latter transcend in importance the significance of forests as producers of wood. Indeed, over much of the earth's surface forests and associated vegetation are the protecting covers which secure the maximum absorption of rainfall, regulate streamflow, help prevent flooding and silting. Thus they improve the efficiency with which water resources are used for almost all of man's activities — irrigation, domestic water supplies, industry, hydroelectric works, to mention but a few. The quantity of water needed every day by modern cities and industry is enormous, yet it is seldom realized what a large part forests play in the complicated process of ensuring steady supplies.

Then, again, forests give protection against erosion, and shelter to agriculture in adjoining areas. They can act as barriers against landfalls and avalanches, they can furnish fodder and grazing for livestock and a habitat for wildlife, they provide places for public recreation, and surroundings

While the emphasis here is on wood production, the need to conserve forests for their environmental and human services is squarely recognized. So is the difficulty of measuring the value of these services, noted as a reason for the low priority assigned to forestry by governments, economists and planners – a common grievance today.

Egon Glesinger, a German national, was Director of the FAO Forestry and Forest Products Division (forerunner of today's Forestry Department, established in 1969) from 1959 to 1963. This address was delivered at the fifth World Forestry Congress (Seattle, United States, 1960), which had the theme "The multiple use of forests".

for rest and the restoration of health — as well as contributing to the beauty of the landscape.

The trouble is that while almost everyone accepts in theory the indispensable role of the forest in all these connections, yet governments, economists and planners conveniently forget about it and assign to forest investment far lower priority than it deserves, because foresters have not yet succeeded in measuring the value of these "influences" in monetary terms. The studies made in connection with FAO's Mediterranean Development Project produced many striking illustrations of the catastrophic consequences which threaten a large number of countries as a result of inadequate provision of funds and priorities for the restoration and maintenance of a proper forest cover for protective purposes.

Let me reassure you that, by recognizing the many purposes of the forest and acknowledging the multiple use concept, we do not mean that there should be equal division of forest lands among all possible uses or all uses on every hectare. What we do mean is that, in defending our forest resources against competing claims for land, we must weigh any one exclusive use against a possible combination of uses, with the idea of getting the optimum combination in a given management unit. The forest will not necessarily yield maximum production for any one of the uses selected, but the total benefits will probably be greater than could be obtained by exclusive use for one purpose.

We all know very well that there is scarcely a country in the world where one does not find substantial areas which should be covered by forests — areas which are at present either used for cultivation or grazing or have become denuded and unproductive. Moreover, with the growth of world population and the inevitable rise in living standards particularly of the underdeveloped countries, the areas needed to be reserved for tree cover or where productive forests have to be restored are bound to grow. It is one of the important responsibilities of foresters, economists and statesmen to see to it that the maintenance or establishment of forests in critical areas becomes accepted as an indispensable aspect of all national programs for economic and social development. This process must go hand in hand with increased food production and be complementary to it.

Wood consumption trends

Let us now turn to the second aspect of our question about the future role of forestry and examine world trends in the consumption and production of wood. One of the first facts which comes to mind is that technical progress has resulted in a steady displacement of wood in uses for which at one time it was the only conceivable material. *Per caput* consumption of fuelwood in Europe has fallen from 0.42 cubic meters in 1913 to 0.24 cubic meters in 1955, and this process continues because it is an expression of progress. Before the last war the average dwelling unit in Europe needed nearly 15 cubic meters of wood. In 1950, 10.5 cubic meters. In 1955, only 7.5 cubic meters. In the United States, between 1940 and 1953, the wood requirements for a dwelling unit fell from 33 cubic meters to under 25 cubic meters.

Does all this mean that the "age of wood" is slowly passing?

The answer is emphatically NO. This is not only my personal conviction as the author of a book which tried to demonstrate that wood and forests will be called upon to play an increasing role. It is supported by considerable evidence.

First, despite substitution, *per caput* consumption of industrial wood has risen over the last decade in nearly every region of the world. Secondly, there is a positive correlation between consumption of industrial wood and national income. It is not a high correlation, because wood availability (either in the shape of domestic supplies or capacity to import) is also a big factor. Moreover, FAO investigations have shown that, while the response of consumption to increases in income is very high at low income levels, it becomes progressively less marked as income rises. But, despite this flattening of the curve, the correlation between rises in income and the consumption of industrial wood remains a basic fact of the greatest importance.

We must of course be careful not to say that as the presently low income countries move up the income scale to the level of the more advanced countries, they will necessarily need to consume as much industrial wood per head as do, say, Japan, Canada and the United States today. But it is a fair generalization that no low income country will reach higher levels while maintaining low wood consumption levels.

I personally would guess that the world will need at least twice as much industrial wood as it consumes today by the end of the century and probably earlier, some time between 1980 and 1990. We can also conclude from FAO's present knowledge that needs will rise relatively fast in the less advanced areas of the world; and that for low income countries, that is for more than half of humanity, a substantial increase in wood consumption will be an essential accompaniment of and indeed a condition of economic growth.

The slow rise in output and its reasons

In the light of what I have said on wood consumption trends, can we be satisfied with the progress that has been made in forestry over the last decade?

Unfortunately, I do not think we can. Forest output has been lagging behind the progress of national incomes. Between 1950 and 1957, the gross national product of industrialized and underdeveloped countries has risen by close on 30 percent but the output of the world's forests by not much more than 15 percent. For industrial wood alone, the picture is slightly better, a rise of nearly 30 percent, but part of the increase has been provided by shifts from fuelwood to pulpwood and by better utilization of previously waste

materials. But there is an obvious limit to such shifts and in many countries this limit has been reached. Moreover, there is the same trouble as in agriculture, that the biggest increases have on the whole been in the already developed countries and in the U.S.S.R., and least in the underdeveloped countries where production might almost be said to have been stagnant. This defect mars even more what would otherwise be the brightest spot on the production side, namely the growth of pulp and paper industries. In the past 20 years, world capacity has risen from 25 to 60 million tons of paper. This increase has proceeded substantially faster than the simultaneous growth in world industrial output and has made pulp and paper an industry which by value (15,000 million dollars), size and capital is fully in line with the traditional large-scale industries of former days such as iron and steel, textiles, and oil. Yet, despite some recent progress in Latin America and the Far East, 90 percent of all the world's pulp is still produced in Europe and North America. And the growth of paper consumption for education purposes and packing in the poorer countries is being delayed by inadequate local supplies and the inability of these underdeveloped countries to allocate substantial amounts of foreign currencies for paper imports.

There are many reasons that explain this development, which is all the more disappointing since one would normally expect that the existence of enormous unexploited forest reserves would render an expansion in output particularly easy. Most of these reasons are well known and I would, therefore, like to deal only with some aspects which have emerged as particularly significant from our systematic observation of similar developments in some 80 to 100 countries all over the world.

1. It cannot be overstressed that governments, legislators and administrators still fail to appreciate fully the importance of forest development and conservation with the result that investments are insufficient, forest services understaffed and politically weak, and private capital not attracted even where forest development would be profitable.

2. Planners and economists often tend to give low priority to forest development as our experience in FAO has unhappily proved, because they believe that trees must always take 100 years to grow and are low-yielding, long-term investments. They overlook the fact that quick-growing plantations can reduce the growth cycle to 10 to 20 years especially for the supply of pulpwood and fuelwood, and they fail to appreciate that forest development usually starts with natural forests which, unlike agricultural crops, do not have to be grown, but only need to be made accessible, put under management, and cut.

3. Population pressures often combined with political expediency are another major reason why little priority is accorded to the conservation and maintenance of existing forests or to the establishment of new ones. The inability to put a value in economic terms on the protective benefits that come from the forests, contributes very significantly to this situation. The underfed half of the world population can hardly be expected to correlate food production and forestry if even their leaders and many technical specialists do not understand or are unable to demonstrate that connection. It was one of the main purposes of FAO's Mediterranean Development Project — which started out as a forestry program — to demonstrate how wrong it is to base national economic policies and development programs exclusively on short-term considerations and the need to secure quick returns.

4. A further difficulty we encounter in some parts of the world is that governments tend to go from one extreme to the other — from no control whatever to complete prohibition of any kind of forest cutting and industrial development in the belief that such action is the best way to prevent forest destruction. I need not stress that such measures are almost as misguided as doing nothing. I regard it as one of our important educational tasks to spread understanding for the need to combine conservation and cutting restrictions in some areas, with commercial cutting and forest development in others.

5. Then there is the fact that most of the forests of the underdeveloped countries, where output should have risen, are tropical forests, often believed to be difficult of access. FAO's experience in its technical assistance program, for instance in the Amazon region, has shown these forests generally to be poor in presently commercially valuable species but not nearly so difficult of access as is generally imagined. But development must often await lamentably slow colonization and agricultural settlement; and there is little to attract investors during this process. A different picture of what can happen is provided by the eastern forests of Russia, also difficult of access and remote but, of course, of softwood. Their rapid present development is perhaps comparable to what happened in North America a century ago. Neither of these cases, however, provides a solution, and even less a much needed large-scale demonstration of converting tropical forests into real centers of forest operations and industries.

6. The biggest difficulty of all, however, stems in my opinion from the fact that in large parts of the world foresters have become accustomed to organize forest output almost exclusively in accordance with their views about the capacity of the resource and with little or no thought to present or prospective national needs. I have often been surprised to find that although planning is an indispensable element of all forest management and

should therefore be highly developed among foresters, there are only a few countries where forest production is organized and planned in accordance with modern economic concepts. The establishment of steel mills or any other industry has always been determined by demand for the products. Foresters, however, have not yet adopted this approach and there still exist in fact many foresters who regard themselves as "conservators only". There is no doubt that one of the basic responsibilities of foresters is the maintenance or building-up of the fertility and productivity of the soil. But this should not lead to such a slavish attachment to the conception of sustained yield (especially in the tropics, where yield is often extremely low) as to preclude the adoption of management plans designed to yield in quality and in quantity what industry and the consumers need.

We are thus led to the conclusion that for a number of well-known reasons forest output, especially in the underdeveloped regions, is not progressing at the rate which appears desirable and even needed. Unless this situation is changed and the tempo of forest expansion greatly stepped-up, many countries of the world are bound to experience three equally serious difficulties in their development process. These are, first, that inadequate supplies of paper, building timber and other forest products will act as a real bottleneck in achieving better living standards and rising national incomes; secondly, that even the artificially reduced amounts of paper, timber, and so on, which still have to be imported will act as an increasingly serious drain on currency reserves which should be directed instead to the purchase of capital goods; and thirdly, that this growing and somewhat artificial shortage of forest products will lead to increasing overexploitation and destruction of accessible forests.

Signs of hope

Fortunately, the picture is not only one of unresolved difficulties. Indeed some of the basic obstacles which have impeded forestry progress are beginning to be removed.

(a) The most important development is perhaps the trend towards establishing plantations of quick-growing species. This is a development in the forestry field, if continued on a sufficient scale, comparable to the transition in agriculture to selected strains and hybrids in crop cultivation. There is the possibility of obtaining three, five or ten times the yield per hectare as is obtained from natural forests. This leads some people to advocate the sweeping removal of mixed tropical hardwood forests and their replacement by new plantations, a subject which provides a perennial topic for argument amongst foresters.

(b) Of parallel importance, especially for developed countries where labor costs are high and there is full employment, is the progress of modern logging techniques. We can compare the mechanization of forest operations, and other improvements in working techniques, with the revolution which the introduction of tractors, harvesters, and other machinery a generation ago brought to agriculture. In underdeveloped countries, these techniques can fundamentally change the notion of forest accessibility and help reduce the almost prohibitive costs which primitive logging methods entail today.

(c) Technical progress is producing every day new practical demonstrations of the dictum that wood is a most versatile raw material. Timber industries are using much ingenuity and enterprise in taking advantage of what wood has to offer. But more can be done, not only in devising new uses for wood and perfecting manufacturing techniques, but in the "art of selling" where I often think we lag behind other industries. Wood chemistry is as yet in its infancy, and a breakthrough is overdue and is perhaps in sight in the use of lignin, which forms some 30 percent of the dry weight of wood. Pulp and paper capacity is spreading and the rate of progress is accelerating in the less developed parts of the world.

(d) Despite the difficulties experienced at high levels of government and economic planning to which I referred earlier, some statesmen and administrations are beginning to realize that forestry can provide a ready basis for industrial and economic development. Progress is slow, because of lack of experience in planning, lack of technical services — though the picture in regard to forest services, while still fairly dismal, is greatly improved from ten years ago — and lack of capital. But there are glimmerings that forest development, integrated with agricultural and industrial progress, will come to be used deliberately as an essential part of measures to promote a self-sustaining economic growth, and often as a particularly useful form of public works capable of absorbing unemployed and underemployed rural manpower.

(e) The impact of these more encouraging developments has reached the point where it can be clearly discerned. Maybe the most important example is provided by Europe, where FAO's first regional Timber Trends Study, published in 1953, revealed the danger of a serious pulpwood deficit and urged the adoption of immediate measures to step up forest output. Despite doubts voiced at the time, foresters have been able to meet the challenge and not only are production figures, by 1960, up to the level of our most optimistic projections, but there are also indications in many countries that further stepping-up of output can be expected. Europe, moreover, is one of the regions where, together with the United States and apparently also in Mainland China, the area of forests is on the increase.

(f) Finally, although we in FAO are not too satisfied with the practical achievements to date, we are still rather proud to have seen established seven Regional Forestry Commissions, which among them cover the entire membership of FAO, and which provide machinery for planning concerted action to achieve the changes which in our opinion are necessary.

Tasks for the future

I have tried in the course of this address to touch on some of the problems we are facing. What I would like to convey to this distinguished Congress, is that there is an urgent need to step-up very substantially and on a continuing basis, the rate at which the world's forest output is growing, and also to increase the area on which forests are restored or maintained in order to exercise their protective influence. These objectives can and must be reached, and it is my belief that this Congress could render an important service by drawing attention to the four central tasks towards which foresters should, during the next years, devote attention. These are:

1. Systematic studies to develop methods for evaluating forest influences in quantitative terms. These, I believe, will provide support for forestry claims for investment funds in competition with claims from other sectors.

2. Research and experiment with quick-growing species for all climates, with special attention to the introduction of plantations in tropical areas as a means of harnessing at last the vast reserves constituted by tropical forest lands.

3. A gradual spreading of pulp and other forest industries, in order to create in the major underdeveloped regions centers of forest operations and industries corresponding to their forest wealth and in line with their growing needs for forest products.

4. The systematic adoption of quantitative national plans for forest production and development related to prospective requirements for forest products. This approach should become the standard basis for forest policies in every country.

Let me conclude by calling on you, ladies and gentlemen, to help the nations of the world derive ever-growing benefits from the world's forests. Wood has an enormous function to fulfil in a rapidly expanding world economy, and the world will be the poorer if its forests are not made to meet the requirements for paper, packaging, building materials, and the many other things which wood can provide.

And in the process of producing wood or providing shelter, the beauty of the world can be enhanced, and the lot of those who live in and on the forest and process its products, can be made happier and healthier.