NOTES

WORLD CONSULTATION ON THE USE OF WOOD IN HOUSING

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In July 1971 the writer, as one of a three-man New Zealand delegation, attended a World Consultation on the use of wood in housing, held at Vancouver, Canada. The Consultation was sponsored jointly by the Canadian Government and various United Nations agencies, and provided a forum for discussion of mutual problems and exchange of information on wood products, modern construction techniques, and on wood as a basic resource. The major objectives of the Consultation were to extend and improve the use of wood in housing, and to make international authorities aware of the importance of wood in house construction and its potential for raising living standards throughout the world. Particular attention was paid to meeting the housing needs of the developing countries through the use of their own forest resources and ways in which the developed countries could help in this respect.

A keynote speaker, an administrator of the United Nations Development Programme, told delegates that wood technologists rank amongst those who are helping to tackle the huge problems of population explosion and urban expansion that beset the developing countries. Up to now, such countries have been mainly intent on increasing their national product and on concentrating investment in sectors most likely to be revenue producing. They have not always given priority to the problem of housing. He said, however, that this attitude is changing rapidly with a growing awareness that poor housing conditions rob the economic system of one of the principal rewards of economic growth and breed discontent — which may in turn threaten political and economic stability. The timber and construction industries must therefore be oriented to adapt to this growing demand and contribute within the next two or three decades to overcoming the serious housing shortage.

The Consultation was attended by over 350 delegates from more than 60 countries. In a fortnight of plenary and technical sessions the delegates came to grips with many aspects of the use of timber and wood products in housing, including the supply of suitable raw material, technical problems associated with wood use, legislative and building code aspects, design and building techniques, promotion and research.

It was recognized that an improvement in the availability of housing, particularly for lower-income people of all coun-

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tries, whether highly industrialized or developing, could best be achieved by making use of all housing materials, both wood and non-wood. However, it was made apparent that many countries with adequate forest resources are not using these to best advantage, and much discussion therefore was concerned with how diverse wood species, particularly the so-called secondary or under-utilized species, could be more intensively and efficiently put to good use. There was a lesson for New Zealand here, as many of our native hardwood species must be regarded as being under-utilized.

Prejudice against wood, and financing, were pinpointed by the Consultation as probably the two biggest obstacles against the increased utilization of timber and wood products in housing in developing countries. It was emphasized that there was a major need for reasonably inexpensive, but technically up-to-date facilities for production, drying and preservative treatment of timber. The haphazardly sawn, ungraded, poorly dried, untreated wood which is still used all too frequently for housing in developing countries is responsible for most of the prejudice that exists against wood.

Many of the developing countries are in tropical regions where the hazards from decay and insects, termites in particular, are very high. The use of non-durable untreated or inappropriately treated wood in houses in these countries has resulted in very rapid deterioration and very short service life. The view was expressed that although such wood may be suitable for temporary shacks it is clearly not suitable for houses. Developed countries, including New Zealand, have a responsibility here in ensuring that timber and wood products sent to developing countries for use in housing is correctly sawn, graded, dried and preservative-treated. The developing countries should not be regarded as dumping grounds for low-quality material unsaleable on domestic markets.

New Zealand was in a position to be able to give more than it received at the Consultation. As mentioned previously, the problems of developing countries received major attention, including the provision of assistance, both technological and financial, to such countries by developed countries. With regard to technological aid, New Zealand is probably in a better position to provide a significant level of assistance than most other developed countries. Not only is New Zealand one of the world's largest users per capita of wood in housing, but our technology with regard to the use of wood is well advanced. For example, the use of preservative-treated timber in house construction is a field where New Zealand is an undisputed leader. Another field where New Zealand has expertise to offer is in the transport of entire completely prefabricated houses that have been manufactured off site. Also we have timber and house construction industries based very largely on the use of home-grown forest resources. All this means that we are well placed to teach developing countries how to convert standing forest resources into the various wood products needed in housing, and how to build houses using these products.
There are a number of ways in which New Zealand can provide technological aid, but probably the most satisfactory is to take in people from the developing countries and teach them such aspects as sawmilling, machining, kiln drying, grading and preservative treatment, so that they can apply the acquired knowledge when they return home. The Consultation considered this form of aid as being generally more satisfactory than a person or aid team visiting a developing country for a year or so, as frequently with this form of aid there is no follow-up action and the benefits of the visit are soon lost. It was agreed that what was required was an exchange of technologies rather than just an exchange of technicians, and that this would take a considerable amount of time and effort.

Another form of aid is to carry out research on the timbers from the developing countries, as it is lack of knowledge on the properties of many of these timbers that is preventing their fuller utilization. It is the developed countries that normally have the laboratory facilities and technological expertise required to carry out the necessary research. New Zealand is already doing some of this work, particularly on timbers from the Pacific Islands, and further requests for this type of work can be anticipated.

In the final plenary session of the Consultation, delegates approved a series of resolutions drafted earlier in technical sessions. Many of these dealt with the special requirements of developing countries, but a number were of relevance or of interest to New Zealand and will be referred to organizations within New Zealand for their information and possible action. Some of these were as follows:

(i) "It is recommended that timber processing and woodworking industries increase their efficiency and improve the quality and performance of wood-based materials in order to supply a growing housing market and compete favourably with other building materials."

The Consultation agreed that, from estimations made, the total world demand for wood in housing would increase, even though the consumption of wood per housing unit was likely to decrease. However, this increase in demand would depend on the increasing efficiency of the timber and woodworking industries and their ability to face competition from substitute materials, in particular concrete, steel, aluminium and brick. It was agreed that research, development and promotion would need to play important roles, in particular in the fields of wood panels and composite wood products which were replacing traditional solid timber construction in many applications.

(ii) "It is recommended to Governments that fundamental data about the properties of all available species from their forests be obtained. Forest products research laboratories are particularly urged to undertake more research on the properties of under-utilized species, particularly those from tropical countries. International
agencies such as FAO and IUFRO should cooperate closely with laboratories and promotional agencies in obtaining and collating the research results and disseminating them in a form which can be readily employed by potential users."

It was agreed that the world timber supply situation could change substantially through more intensive use of the raw material available, by harvesting a wider range of species and by more complete utilization of this material. Some progress has been made, but it was felt that the time was ripe for a major break-through.

(iii) "It is recommended to Governments and standardization organizations that to ensure the most effective utilization of forest products in housing, they plan the development of appropriate standards consonant with the needs of each country and reflecting the degree of development of its technology. The wider introduction of grading rules, and standards for the structural use of wood, are particularly recommended."

The Consultation recognized that grading and proper use of wood at a moisture content consistent with proposed utilization could lead to cost economies and wider acceptance of wood as a building material. There was agreement on the absolute necessity for wood products to be of predictable size and quality if architects and builders were to use them effectively and efficiently. Special attention was given to the need for standardization of dimensions and units of measurement, and of requirements for grading, seasoning and preservative treatment of timber. The training of graders was cited as especially important. Where applicable, the grouping of species for greater ease in utilization was to be commenced.

(iv) "It is recommended that IUFRO and individual forest products research groups work towards internationally standardized procedures for determining the natural durability of wood species, their permeability with respect to treating procedures, and the effectiveness and performance of preservative treatments. It is further recommended that codes of practice for the use of naturally durable timbers, or timber appropriately preservative-treated, be introduced, such codes to provide effective methods for the protection of wood and wood-based materials in construction when and where conditions require it."

It was considered that the natural durability of species must be evaluated in order to use wood effectively in construction, and that procedures for determining natural durability should be standardized world-wide to establish confidence in the results obtained. Proper design of buildings is important along with the use of preservatives in ensuring acceptable building performance. While the cost of preservative treatment may be offered as an excuse for avoiding it,
overall economic considerations generally favour preservation. The cost of treatment must be weighed against the possible cost of repair, reconstruction and borer eradication. Diffusion treatments were recommended where appropriate as being efficient, relatively cheap, easy to use, and applicable to most species.

(v) "It is recommended that Governments and other code writing bodies be encouraged to work towards the development of building codes based on performance."

It was considered essential that codes be sufficiently flexible in form and application so as not to hinder the introduction of new materials or systems of construction that can be shown to be satisfactory. It was agreed that performance type codes provide the ultimate solution to the flexibility problem. Adequate test procedures and technical expertise must be developed in order to institute a code based completely on performance. It is relevant to note that the New Zealand building code, NZSS 1900, is at present being re-written as a performance type code. Technical solutions will be included as means of compliance standards as ways of satisfying the basic performance requirements of the code.

(vi) "It is recommended that Universities be urged to modify their curricula to provide engineers and architects with adequate training in the use of wood design and construction."

University courses for architects and engineers the world over frequently fail to provide sufficient training in the use of wood as a building and engineering material, and this generally results in a preference for other materials on the part of practising architects and engineers. This is particularly true of the New Zealand situation.

(vii) "It is recommended that Governmental bodies and private agencies such as Insurance companies which are concerned with fire, arrange for the collection and reporting of comparative statistical information on property and life losses in building fires. It is further recommended that statistical information on property losses be applied to the determination of insurance rates for wood construction, and in this way provide the basis by which to reduce wide differences in such rates where they occur."

It was considered that the statistics should provide information on the cause and frequency of fire in buildings of various types of construction in different geographic areas. It was recognized that these statistics were needed to establish the relative hazards in different forms of construction, and hence to have insurance premiums based on firm statistics rather than on supposition or bias. A number of cases were quoted of extremely high premiums on buildings of wood construction.
In conclusion, the New Zealand delegates to the Consultation were agreed that New Zealand can, even if only on a modest scale, do more to assist the developing countries of the world with the many problems they have in housing their people. In particular this country can provide worthwhile assistance to developing countries by demonstrating how to utilize home-grown forest resources efficiently to produce timber and wood products suitable for use in house construction.

The Consultation produced an impressive array of recommendations, a number of which are of relevance to New Zealand, and which, if implemented, should result in improved utilization of wood in housing in this country. The delegates are ensuring that the recommendations are placed before the relevant organizations, and in some cases will themselves play active roles in endeavouring to achieve their implementation.