THE FORESTER AND LAND USE

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In 1962 an editorial in this Journal discussed leadership and the Institute, indicating that it was time for foresters to come into the light of day and help to lead new thought. It is timely now to examine the Institute's thinking in respect of the land we stand on, the soils we live by, and the country we will surely pass on to subsequent generations. It is timely also to review and, where necessary, to try to change New Zealanders' attitudes to land use in terms of the needs and future both of this country, and of the world as a whole.

What are the essential elements of the land issues in New Zealand? Land is finite: much of the country is committed to or developed for long-term uses, and perhaps only 4 million hectares are available for different or new uses. Some uses, such as traditional exotic forestry, require a relatively long period between planning and fruition, although the time span for new agricultural production (i.e., from development to marketing) may not be much less. There is a need for some of the presently uncommitted land to be left for reserves, or for some other option to be exercised in the future; there are problems of urban drift, social imbalance and environmental impacts. And there is the political problem of equating long-term land issues with short-term considerations, such as balancing trade deficits or equating cut with growth.

Those familiar with The Limits to Growth and Mankind at the Turning Point will be aware of projections made concerning the future population of the world and its increasing requirements for food, energy, and resources. In New Zealand the Interdepartmental Committee on Population Questions' 1975 publication, New Zealand Population Policy Guidelines, contains detailed information about many aspects of this country's population and should establish a good base on which to plan for our future — including the best use of our land. With 3.042 million people estimated at 31 March 1974, a decline in the rural population from 27% to 18% of the total population over the 20 years 1951 to 1971, and expected numbers in year 2000 (assuming no gain from immigration) ranging from 3.637 million (the low fertility option) to 4.175 million (the high fertility option) a number of interrelated events may be postulated.

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This projected population, modest though it may be by world standards, suggests that the old way of demands setting uses, and uses determining land availability are no longer appropriate. It is no longer possible to think of, or attempt to manage, land as an element independent of numbers of people or separate from their needs. Some pressures and consequences of the increased population can be anticipated. They will consume more food, both indigenous and imported. More land products (including probably sea foods) will be taken from the flow of exports which contribute much to our overseas income, and the per capita income from primary production earnings will reduce.

It has been a feature of all countries that rural people drift or migrate to towns and cities, there to seek opportunities and advancements or to improve defects present in their rural life.

There will thus be a growth in urban areas, coupled with some extension of their boundaries and further inroads into surrounding rural fringes. This latter will be necessitated by a requirement for sewage and land-fill disposals, power stations and transmission lines, water supplies, heavy industries, enlarged transport networks, quarrying and, by no means least, new recreational areas. The problems associated with this must in time restrict the rate of urban industrial growth in New Zealand.

It is estimated that some 290 000 ha of New Zealand has already been urbanised, with the area of urban land having increased by some 65% between 1960 and 1970: many cities occupy relatively good land. Town and Country Planning requirements are designed to safeguard soils of high actual or potential value for food production and other Acts attempt similar restraints — e.g., Counties Amendment Act 1961 with its 4.0 ha minimum yardstick. High-producing soils are estimated to comprise some 2.5 million ha of New Zealand, 1.4 million ha being actually capable of high food production and 1.1 million ha potentially capable, after treatments such as drainage. This represents a small component of our total land surface, of which some 50% is steep, some 30% is hilly, and only about 5 million ha has slopes of less than 12°.

If it is accepted that we must produce salable food to help maintain our standard of living and that we should in the long term produce as much food as we possibly can as our contribution to the hungry populations of the earth, then every hectare of food-producing land should be saved and used for this purpose. There will be a continuing shift towards growing more valuable products, fruits, berries and horticultural crops, as richer pockets of soil are established, or subdivided out of larger properties, in an attempt to
balance high capital and operating costs with income. Perhaps more grains, root and other food crops will find a ready and profitable market in the Pacific and other areas, foods urgently required now in many Third World countries. It seems unlikely that foresters can lay much claim to land having even moderate actual or potential food production, as we approach or enter the 21st century.

But the issue is neither as clear nor as simple as this. The forest industry with its important export contribution cannot be relegated to the very poor, the steep, remote and difficult lands. It cannot remain viable thereon. Recent enquiries into energy farming, for example, suggests this may be a profitable and desirable use of some of our land or of some products from the land. Such schemes require soils giving reasonable growth rates, good access and easy terrain for cheap harvesting — i.e., prime land for other uses. J. H. Troughton, DSIR, has calculated that about 26% of our 1975 total energy requirements ($80.5 \times 10^{15}$ J) could be produced from a sustained yield forest of 1 million ha ($15 \times 10^3$ kJ/ha at maturity).

No forester could contemplate using good forest land to grow high-density wood for conversion to gas or liquid products, or could he? Probably industry will find a compromise — more efficient total use of wood delivered to factory door, using low grade by-products or arisings for drying paper or wood kilns rather than burning oil or using subsidised electricity. The forester will be competing more and more with other potential users for his annual projected 45,000 ha planting ration (FDC Targets, 1975). But before planning and executing a massive afforestation policy — some 0.4 million ha per decade — perhaps foresters should decide what the main product is to be. This is especially necessary in relation to future markets, profitability, energy and transport requirements, industrial capital, effect on rural environments and social aspects of related industrial complexes.

W. R. J. Sutton has recently extolled the virtues of producing clear grades of coniferous wood for sale in future international markets. This is a product of wide acceptability and utility, requiring relatively low energy requirements in processing compared with pulp and paper. Is it conceivable that a high proportion of the potential exports of wood from whatever land can be spared for forestry could be as clean boards? And if so, on what sites and soils should they be grown? And, if economies of industrial scale are important in terms of the size required for efficient sawmills, how should the crop be dispersed?

There are some 14 million ha of the country supporting pastoral farming. Most farms are occupied, and presumably
most are reasonably well staffed and managed. We know that today and for some time past farmers have been reluctant to take on new staff, or labour except on a casual basis; and this has happened at a time when industry in urban areas has been unable to support all the labour offering. Forestry, in its early stages of establishment and tending, is a low capital user, but is high in labour requirements — a valuable attribute in the prevention of urban drift. Cannot a considerable proportion of the new forests, on which so much faith is pinned for the future, be located as woodlots, rows of trees and even small groups throughout the occupied grazing lands, as proposed by the Afforestation Working Party of the 1974-5 Forestry Development Conference? There appear to be many advantages: the main produce would be large pruned logs with some arisings and poorer grade logs for pulp or chip industries. The planned integration of social, economic and environmental factors through the medium of farm forests should bring stability to many rural areas, making them capable of absorbing a significant part of the one million or more extra people over the next 25 years. There would be a compensatory delay in the urban rush, with its costly reshaping of population groups, pressure on land, and resources. Hopefully, there would be a better and more easily sustainable economic balance in our primary production, with a more efficient use of less energy.

There is a need for the forester to think broadly and in the long term on all aspects of land use, to face up to the challenge of imaginative approaches, and to test ideas and their viability in terms of new, not old attitudes.

Could not the Institute try to examine, promote and define new concepts in land use? The expertise is there. Where is the new light of day and the leading of new thought called for in 1962?