

We have decided on various measures for the restoration of green areas and the conservation of the natural environment and are already implementing these measures. For instance, we have marked out green areas, forests, wilderness areas and park zones and have worked out plans for land utilization. In order to create still larger urban parks the Government of Alberta is implementing a measure called "overzoning," according to which green belts are designated around urban areas. Next, strict restrictions are being placed on industrial exploration and development practices. Particularly, land ravaged by the extraction of coal or oil-sands is required to be restored to a level which is at least of the same productivity as that before the development before such land can be further used.

Furthermore, the Government has ordered the utilization of large tracts of land on the eastern slopes of the Rockies to be frozen, and the Government, in concert with local inhabitants, is studying ways and means of utilizing this land in a positive way. The problem that has arisen in connection with land utilization is that the garbage and noise which result are threatening wild life as well as recreation areas and residential quarters. Garbage, in particular, contaminates rivers, with the result that they become no longer adequate for the breeding of fish. This is, indeed, another urgent matter.

In order to solve these and many other problems, the Legislative Assembly of Alberta passed the "Land Surface Conservation and Reclamation Act" in 1973, with the aim of preventing the destruction of land by all kinds of industrial activities. In this way, we are developing a many-sided strategy for consistent land utilization in order to minimize the destruction of natural environment.

Concerning city planning, it is necessary to control the growth of cities in order to prevent a deterioration of the quality of life of urban inhabitants. For this purpose, the "areas of restricted development" are being enlarged in order that such areas be utilized for parks or other recreative purposes, and restrictions are being placed on the construction in larger cities of big enterprises which may cause pollution. Location of such enterprises is strictly prohibited within the

radius of 24 miles from the center of any principal city within our Province.

At the same time, the Government is making positive efforts to purchase land in order to secure the construction of industrial estates, public utilities, traffic routes, parks and green belts.

Lastly, a few words should be said about development and environment in general. In the Province of Alberta, industrial enterprises are required to observe anti-pollution regulations stipulated in a number of laws. It is the purpose of Alberta's Department of the Environment to exercise controls over its natural resources and to secure a balance between the conservation of the environment and the standard of living. Thus, the Government is consistently taking this basic attitude toward the development of oil-sand, the construction of pipelines, the exploitation of coal deposits and electric power, and also toward the construction of petrochemical and oil refining, meat-processing and other industries.

We consider it essential that, while permitting the development of natural resources, a workable plan be adopted in advance towards protecting human beings and wild life.

The planned development of oil-sand is the most important task before us. In connection with this, the Government of Alberta is now engaged in the establishment of Alberta Energy Company, Alberta Resources Growth Company, Alberta Oil Sands Technology and Research Authority, and drawing up plans. In concrete terms, our policy is aimed at the recycling of all resources, with special emphasis placed on the prevention of air and water pollution.

Regarding the information and research activities on environmental problems, it must be mentioned that our Government is considering the establishment of an information network on environmental problems under which reports, brochures and news releases giving the results of regular monitoring by the Government of water and air pollution would be made available to the ordinary public, and also of a system by which public hearings would be arranged on

environmental problems according to the petitions of citizens to the Government.

The above is an outline of the measures taken by the Government of Alberta for the conservation of human environment.

## REPORT

By Hon. A. A. Nunweiler,  
Minister Without Portfolio  
(Northern Affairs),  
Government of the Province  
of British Columbia,  
Canada

Judged from the standpoint of environment with regard to the development of natural resources, British Columbia may be said to belong to the Arctic Circle. A number of problems are expected to crop up in the coming decade, and these problems will have to be settled in keeping with the requirements of the population which is certain to grow rapidly as a result of socio-economic development. Further, we are required to overcome various obstacles such as social, economic, environmental and housing problems, which are not confined to Canada but are common to all countries in the Arctic Circle.

The fundamental problems for us to tackle are how to stabilize our economy through the development of natural resources, while, at the same time, protecting the environment of the north, and how to prevent the outflow of the working population from north to south.

In planning new towns and cities, it is necessary to resolve the tendencies of over-dependence on single industries, isolation from markets, and confinement to small communities, and also to consider the concrete effects of northern climatic conditions on inhabitants.

In working out plans for the development of natural resources, attention should be given to : (1) the ecological aspect, (2) recreation areas, and (3) the idea of providing sufficient resources not only to local inhabitants but also to the whole province.

British Columbia is located on the west coast of Canada,

lying between the 49th and the 60th parallel. When we refer to the north of our province, we take it for granted that this refers to north of the 53rd parallel. The industries of the north include lumbering and the extraction of molybdenum, oil, natural gas and coal, and also hydroelectric power generation along the rivers.

Grain growing and cattle breeding are the main industries of the northeast. Further, these areas, which are considered to abound in raw materials, are regarded as the last frontier. The number of people living here is less than 10 per cent of the total population of the province. These areas serve as resort areas for people living in the urban communities of Canada. Not only Canadian people but also people from the United States and other countries of the world visit these areas as holiday-makers.

Economically speaking, our province is characterized by features peculiar to northern frontier areas. Like the economies of other northern states, our economy depends to a large extent on the trans-Continental railway and on overseas markets. In view of our geographical location, it is essential for us to utilize our natural resources effectively, particularly in view of the fact that in many parts of our province transportation costs are tremendously high. There are areas in our province from where it takes two hours by plane and two days by car to reach a commercial center like Vancouver. Furthermore, in the northern districts, there are only two manufacturing industries, and people living there are greatly affected by any fluctuation in economic activity. Since these areas depend so heavily on a very small number of industries, serious economic problems are caused when demand for their products declines, and social problems arise when demand rises suddenly and sharply. Efforts are being made to provide sufficient services to prevent the outflow of young workers and brain workers having a higher education, an outflow of labor force which is caused by the weak economic foundations of these areas.

A number of obstacles must be overcome in connection with the development of the northern districts.

First is the rationalization of forestry of forestry here.

This entails the effective utilization of all the timber resources, the adjustment of railway transportation rates (aimed at lowering the train transportation cost of timber), the construction of a network of new railway lines, and the development of the port of Prince Rupert into an industrial center in the north. Attainment of these tasks is certain to accelerate the development not only of the Province of British Columbia but also of the other western and northern provinces of Canada.

If we take a look at the export and import activities of Canada, we will note that these activities are concentrated on Vancouver in the west, in contrast to the fact that there are the five major ports in the east, including Halifax, St. John, Quebec and Montreal.

Therefore, in order to meet the conditions for the development of foreign trade in the west and also to cope with the requirements of regional development, it will become necessary to provide the proper port and harbor facilities over the coming 50 years to promote a vigorous and stable economic development in the northwestern districts of Canada. Sufficient production activities and development, coupled with endeavors for a pleasant life, will presumably be a major key to the improvement of the living conditions of people in the north.

Successful achievement of these tasks will not merely bring about an increase in production and population in the north but will result in better community services and serve to make these areas invulnerable to the adverse effects of economic fluctuations.

I would like to tell you something about the program which our government has been promoting since two years ago from this standpoint.

The program covers a wide scope, which includes economic and social activities, problems of natural environment, etc. Some of the activities which formerly were left to the discretion of private enterprises have come to be placed under the jurisdiction of the government. In Canada, provincial governments handle affairs related to land, health

preservation, education, social services, and various other social activities.

These activities are carried out with funds derived from various kinds of taxes, royalties, etc. for the benefit of the ordinary public. Meanwhile, private enterprises play their role by marketing products extracted from the natural resources owned by the government.

Further, the government is engaged in various kinds of conservation work concerning the forests. Sufficient environmental attention is given to tree-felling. It is generally conceded that the northeast does not offer opportunities for serious investment. This is due to the lack of consistent endeavors for industrial development and also to the high cost of transportation.

Because of these unfavorable conditions, the collapse of an industry threatens to deal a crushing blow to a town or city, which tends to be of very small scale in these areas. This is a serious social problem.

In consideration of the problems outlined above, the Provincial Government of British Columbia is pushing ahead measures in four major stages. The first is for the government to own the Columbia Cellulose Co. and to reorganize the freight rate system of the Canadian National Railways. These steps would result in a more effective transport of timber and timber products. The Provincial Government and the Dominion Government of Canada are planning to extend the lines of the Canadian National Railway and the British Columbia Railway in order to develop the northwest which abounds in mineral resources. Our government is also considering a plan to hold a bidding for untapped forest resources as a means to promote the socio-economic development of the northwest. As for the purchase of the Columbia Cellulose Co., it should be brought up that the government obtained a controlling portion of the stock of the company after April, 1973, when it bought up 79 per cent of its total stock. The company, which had long been floundering on a deficit basis, was able to register a profit of \$200 million in a very short span of time. It is now possible for the Government to fully utilize revenue sources like this for the purpose of preserving

the environment and controlling pollution and also for the purpose of improving working conditions and heightening productivity.

I would like to tell you more in detail about how the program for the development of the northern districts is being implemented.

The Provincial Government and the Dominion Government have extended the Canadian National Railway line to Prince Rupert of the British Columbia Railways, to facilitate the transportation and loading of such natural resources as pulp. This has resulted in the development of Prince Rupert as a new trading port on the west coast of Canada. This program is also significant in that it is intended to promote the rationalization of industry. According to this program, the forest industry is being enabled to utilize timber resources more effectively, and large tracts of land are being secured for the conservation of environment and for recreation. The forest areas in the north are so large that they can supply 12, 730, 090 cubic meters of timber annually, and a regional development plan is being put into practice for further developing of these areas. In this way, a general plan is required to be translated into a concrete program which meets the requirements of each locality.

(Then, the reporter made explanations on regional development projects in Burns Lake and Smithers.)

In this way, the Government of British Columbia listens carefully to the opinion of the local people and is making sincere efforts to bring their suggestions into line with general national plans. Experience in the south shows that problems of environment and society are apt to be caused in densely populated areas, and while learning from this experience, we are drawing up measures for the general development of our province. This means that we are required to pay sufficient attention to the development of the north. There have been many cases in the past in which our Government had to pay a high price for the resettlement of population in the course of development.

Outlined in the above are the more important of the problems related to the development of the north. In con-



clusion, I will set out only the targets which sum up the above: These are (1) stabilization of the economy of the northern districts, (2) further expansion of the economy of the north in scope and depth, (3) development of small local cities and towns, (4) construction of sufficient port and harbor facilities in the northwest, (5) a sufficient participation of local people, particularly Indians, in the fruit of regional development in the north, and (6) sufficient consideration given to the environment in the implementation of these measures.

In other words, development should mean a better living environment for people in the north. The targets set are so complex, as mentioned earlier, that we are required to act with the utmost caution.

Attending this conference as a delegate, I am resolved anew to continue to work for coordination in the future, and to contribute to the welfare of mankind.

## REPORT

By Hon. T. E. Aura,  
Mayor of Helsinki,  
The Republic of Finland

The history of Finland is closely related to agriculture and weather conditions. The population of the country tends to concentrate on the fertile agricultural areas along the southern coastal districts, which have been rapidly urbanized since the end of World War II.

Weather conditions still have a close bearing on the distribution of population, as do the commercial relations with foreign countries and man's natural preference for coastal areas. The northeast of our country presents a striking contrast to the south mainly because of its low temperatures. The population of Helsinki and its environs to the south is 750,000, and it is only in the south that urban areas are to be found.

Climatic conditions in the north have a tremendous effect on buildings, and the construction methods employed in other parts of the European Continent are not suitable for Finland. Heating of housing accounts for 28 per cent of Finland's total energy consumption, and it is dependent on foreign countries for the supply of as much as 71 per cent of its total energy consumption. Needless to say, the price of energy is the main concern of our country, and the high cost of heating houses poses as a serious economic question. It is possible to lower the cost of heating houses by using thicker outer walls and thicker insulation materials under the roof. The standard thickness of insulation materials for housing is set at 10 - 15 centimeters.

The Finnish National Board of Building has issued instructions concerning the saving of energy in housing constructed by the state. The standard set for such housing is more comprehensive than that which is set for private housing. Thus, the proportion of the area of windows to the

total floor space is specified, and electric heating in rooms is completely prohibited. Further, the foundation of a building without a basement is required to be 160 centimeters deep in the south and 200 centimeters in the north. It is necessary to insulate the foundation sufficiently to protect it against the cold, and to lay electric heating cables under it to protect it against frost. The laying of such cables in itself does not require high costs, but the cost of using such cables is exorbitantly high because of the runup in heating costs in the aftermath of the energy crisis.

Housing is also required to be designed in consideration of changes in weather. Further, it is only recently that we stopped using insulation materials and planting insulation forests for other concrete buildings.

Similarly, the weight of snow has a close bearing on the construction of roofs. The roof is required to withstand a load of 150 kilograms per square meter in the south of Finland. Further, the repeated melting and freezing of snow in spring poses an important technical question to roof construction. In this respect, constructors agree that flat roofs are better than inclined ones.

Formerly, no construction work took place in winter-time. It is very difficult to work outdoors in winter. However, various measures to solve this problem have been developed. Thus, thanks to the development of a heating method for concrete by means of electric resistors and the adoption of prefabricated buildings, construction work now takes place even in the winter.

Construction work throughout the year is also very important from the standpoint of employment. If we could not engage in construction work throughout the year, Finland would not be able to boast the leading housing construction industry of the world.

It is vital for Finland to protect its people against the cold, and more so than for the other countries of Europe. Today, we have no fear of cold weather indoors or outdoors. Particularly, in the wake of the skyrocketing price of oil, the living modes of the people of Finland were exhaustively

reflected upon. In view of the fact that heating accounts for 44 per cent of the total energy consumption of the country, it is of urgent importance for us to improve the efficiency of insulation. Houses built on Government loans are required to have triple windows and a thermostat for the main radiator.

At present, the room temperature of housing has been lowered from 22°C to 20°C, and people are cooperating positively with the Government in this respect.

Further, surplus heat generated in power stations is utilized for regional heating. Individual heating would require 60 per cent more fuel than the present fuel consumption. At present, power stations in Helsinki are connected to regional heating systems, and it is estimated that by 1985, 90 per cent of the total volume of rooms in the city will be heated by regional heating systems. This will be a favorable contribution to the conservation of environment, as it will reduce air pollution and minimize soil contamination by oil.

Road construction is costly in Finland, because of the use of insulation materials to keep the road surface unfrozen with thick asphalt layers and other insulation materials. In wintertime, road conditions are unpredictable and ever-changing because of, for example, sudden snowstorms, and it is very important to keep roads safe. Generally speaking, motorists use spiked tires, but in the south, damage to asphalt due to the use of spiked tires has been cited as a serious problem, therefore buses running in cities are prohibited from using spiked tires.

Now, let me make some explanations on the snow-removing system in Helsinki. It is impossible to completely remove snow if the snowfall exceeds 20 centimeters in one day. We experience such heavy snowfalls twice or so a year. At present, half of the snow-removing costs must be paid by the citizens.

Formerly, salt was used to melt snow. But the use of salt for this purpose has been prohibited because of the damage it causes to nature and also because it dirties shoes and floors. Sand is now used instead.

Natural water of good quality can no longer be found in the south of Finland, although clean water can still be found in the center and in the north. Work is now under way on the construction of the world's longest tunnel over a distance of 120 kilometers from Helsinki to Lake Paijanne, which boasts water of high quality and which represents a very important supply source. Helsinki extended a long-term loan to the pulp manufacturing plant near the lake to help it construct a waste water treatment system. This has proved extremely successful. Thus, the quality of the water of the lake was improved year after year in the 1960s when the quality of the water in other lakes continued to deteriorate. At present, the water of the lake is nearly as good as it was before there was the pulp plant.

In Helsinki, 95 per cent of the houses are connected to public sewage network. Inside the old city, both rain water and household waste water flow through the same sewers, but in the new housing areas, the sewers for rain water is separate from that of the household waste water. Waste water is treated at the 10 biological water treatment plants of the city.

Even in winter when the temperature falls to a very low level, waste water can be treated sufficiently in open skies. The water thus treated is used for melting snow.

So far, I have stated in detail the various conditions which have an effect on human life. It will be easily imagined that climatic conditions in Finland have had a great effect on the people who live there. Generally speaking, the people of Finland are shy and are not easily excited. At first you may think that they are rather cold, but once you become friends with them, you will find they are warm-hearted people.