an extensive program of grants and contributions to universities and forestry organizations which totalled over $19.3 million in 1985-86.

Forestry Canada has negotiated forest resource development agreements worth more than $1 billion with the provinces to encourage forestry renewal on private and public lands; to ensure long-term timber supplies; and to foster regional economic development. Depending on specific provincial needs, these agreements may provide for reforestation, intensive forest management, silviculture, access roads, inventory and planning, industrial development, private or group ventures, research, technology transfer, training, administration and public information. Forestry Canada also provides forestry advice for the management of federal lands and directly manages forest lands on several Department of National Defence properties and pursues policies and programs which stimulate employment in the forest sector.

Provincial. All forest land within the provinces, with the exception of private land, national parks, federal forest experiment stations, military areas and Indian reserves (except in Newfoundland), is administered by the respective provincial governments.

The provincial forest services have traditionally concentrated on the management, protection and utilization of the forest resources.

Tenure system and timber allocation. The tenure arrangements, in force in the provinces, are generally intended to satisfy goals of providing a means of allocating public timber in order to maximize returns from the resource to the residents and the provinces, to ensure maximum utilization of the timber resource and to facilitate effective forest management. The bulk of cutting rights to provincial Crown timber remains held in the form of long-term arrangements, which have been or are evolving in almost all provinces in the direction of increasing the responsibility of industry for managing the forest lands for which they hold licences, generally in return for some form of compensation. In provinces where there is a large degree of private ownership of forest land, forest policy is to provide incentives for greater utilization of timber from those lands. Some provinces are also requiring forest companies holding long-term licences, involving large forest areas of volumes of timber, to make timber surplus to their needs available to smaller firms. Otherwise, smaller timber cutting rights are allocated by quota privileges or through competitive bidding. In 1988, British Columbia doubled the volume sold on a competition basis from 5.2 million m^3 to 10.5 million m^3 in the Small Business Forest Enterprise Program. Timber resources are fully allocated in most provinces. Fees for holding cutting rights and timber harvested are generally set administratively or through negotiation. Stumpage rates vary by location, species, and product category, and are normally adjusted regularly to reflect prevailing market conditions.

Forest protection. The reduction of losses of timber and other forest values due to forest fires, insect infestations and disease epidemics continues to be a major undertaking of the provincial forestry agencies. Losses vary regionally but all jurisdictions are striving to enhance their capability to detect, control or suppress insects, diseases and fires. In addition, the significant increase in reforestation investments have to be protected from competition by weeds and brush.

Provincial governments have stepped up public awareness campaigns in an effort to lessen the number of human-caused forest fires. As lightning remains the primary cause of forest fires, automated lightning detection networks have been or are being installed by several provincial forestry agencies. Used in connection with other elements of fire detection networks (including aerial and ground patrols, lookout towers and improved heat detection equipment), detection capability is being expanded in several provinces. A national training group has been formed to standardize training to make inter-agency firefighting assistance among jurisdictions more effective. Most provinces participate in the Canadian interagency forest fire centre at Winnipeg which coordinates the sharing of personnel and equipment between provinces and territories when they need support to handle an extreme fire situation.

Several provinces have highly developed programs for fire detection and fire fighting. In Newfoundland two new CL 215s were added to the water bomber fleet, in 1988, giving the province a total compliment of four CL 215s and four Canso water bombers. A helitak unit consisting of a medium-size helicopter and support staff is located in central Newfoundland.

Nova Scotia, has 35 observation towers and an aerial patrol service with five helicopters and two fixed-wing aircraft.

Quebec has developed a new system for fighting forest fires. This system relies on computers, satellites and patrol aircraft, as well as data from weather stations, radar and lightning detectors. The Maniwaki Technology Transfer Centre, established in 1986, ensures the uniform and orderly application of these technologies throughout the province. A fleet of 21 water bombers supports the ground crew of firefighters.