costly alloy that lasts for 300 operating hours. In summer the tar becomes sticky and clings to everything. A two ton truck accumulates a thousand kilos on the undercarriage in a week. Equipment often drops out of sight, and much time was wasted in recovering it until the companies altered their schedules to do all their strip mining when the ground was hard, stockpiling sands for later use. The draglines used for removing the tar sand mixture are mammoth. The smallest weighs 6,200 tons and its cab stands as high as a 21-storey building. The bucket weighs 90 tons empty and scoops up enough tar sand to fill a double garage. The whole machine is as wide as an eight-lane highway. The dragline places the sand on stockpiles, from where the substance is transferred to a conveyer belt which takes it to the extraction plant.

In the extraction plant, the sands go into a tumbler with stream, hot water and a caustic solution. Bitumen then rises to the top of the tank and the sand settles. The bitumen is removed, naphtha is added and this mixture is put through two centrifuges to spin out the remaining solids and water. The result is pure, hot bitumen, which then goes through a fluid-coking process similar to that of a conventional refinery.

Every tar sands plant, existing or proposed, can only be described as energy-intensive. Keeping the draglines, excavators, trucks and conveyers in diesel fuel puts current production costs at over $15 a barrel, not counting taxes, royalties, profits and depreciation. It is estimated that it takes two tons of tar sands to produce one barrel of crude oil. These figures are at the heart of the recent agreement between the Alberta and federal governments to link prices for crude oil from the tar sands to international oil prices. This agreement will encourage research and development, and the huge capital costs involved in further tar sands development.

LA PROTECTION DES FORETS CANADIENNES

Le dixième de la superficie mondiale des forêts productives est situé au Canada. Ses produits représentent 14 pour cent de la valeur totale des expéditions de l'industrie manufacturière canadienne et 20 pour cent de l'ensemble des exportations canadiennes. L'industrie forestière fournit en outre du travail à 11 pour cent de la population active du pays. Au cours des deux prochaines décennies, la forêt continuera à fournir bois d'oeuvre, pâtes et papiers mais elle sera aussi source d'énergie et de produits chimiques.

Cette énorme étendue de terres forestières productives ne signifie cependant pas qu'il existe au Canada un confortable excédent de bois sur pied. Au contraire, afin d'assurer des ressources forestières suffisantes pour l'avenir, la recherche forestière est axée aujourd'hui sur 1) l'aménagement, la régénération et la culture, 2) la protection contre les maladies, les parasites et le feu, 3) la recherche appliquée et 4) la conversion en énergie par voie directe et la transformation de la biomasse en énergie.

La menace la plus sérieuse aux ressources forestières du Canada est celle du feu. Chaque année environ 8,000 feux détruisent plus de deux millions d'ha de forêt.