THE FOREST WEALTH OF THE SOVIET FAR EAST AND ITS EXPLOITATION

BY

A. TSYMEK

KAAN NASIONAL RI
IV : -
6 no.3

U. S. S. R. COUNCIL
INSTITUTE OF PACIFIC RELATIONS

33 Hal

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

CONTENTS

	Page
The Forest Wealth	1
Coniferous Species	3
Deciduous Species	5
The Distribution of Forests	10
The Exploitation of Forests	14
Prospects for the Development of the Lumber Industry	30

LIST OF TABLES

1.	Categories of Forest Areas in Far Eastern Territory	1
2.	Chief Varieties of Industrially Useful Timbers	3
3.	Timber Resources:	
	a. Plantations Where Deciduous Trees Predominate	9
	b. Plantations with Predominance of Coniferous Trees	9
4.	Consumption of Wood per Head of Population	19
5.	Production of Timber and Timber Manufactures	20
6.	Mechanization of Wood-Working Industry	24
7.	Investment in Oborsky Lespromkhoz	26
8.	Amount of Wood Sawed per Worker Employed	28

PERPUSTAKAAN NASIONAL

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

IV 16

THE FOREST WEALTH OF THE SOVIET FAR EAST AND ITS EXPLOITATION

BY

A. TSYMEK

Head of the Forest Section of the Soviet Far East Planning Commission

Prepared for the Sixth Conference of the Institute of Pacific Relations, held at Yosemite Park, California, August 15 to 29, 1936

U. S. S. R. Council Papers, Number 3

U. S. S. R. COUNCIL
INSTITUTE OF PACIFIC RELATIONS
20 RAZIN STREET, MOSCOW

1936

PERPUSTAKAAN NASIONAL RI.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

Copies of this paper may be obtained at 40 cents each from the Publication Office of the Institute of Pacific Relations, 129 East 52nd Street, New York, or through the National Councils of the Institute.

PERPUSTAKAAN NASIONAL R.I.
Tanggal : 28-6-2010
Nomor Induk : 70/DN-Musium/10
BIB - ID : 0010-27379760
ITEM - ID : 100803130?
Asal : Museum Pusat

Copyright, 1936, by the U. S. S. R. Council, Institute of Pacific Relations

Printed in the United States of America

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

THE FOREST WEALTH OF THE SOVIET FAR EAST AND ITS EXPLOITATION

THE FORESTS of the Far Eastern Territory are one of its most important natural resources and play a valuable part in the growth and development of the productive forces of the Soviet Far East. Moreover, the geographical position of the Far Eastern territory, which borders on the thinly wooded and unwooded countries of the Pacific Ocean, makes the forests of the territory a possible base for the export of valuable timbers.

For very many years the Tsarist administration in the territory did practically nothing in the way of investigating its natural features and wealth; it was only when the Far East became Soviet that the investigation of its raw material and power resources, and their inclusion in the economic turnover, began to develop rapidly. In the ten years that Soviet power has existed in the Far East, 35,000,000 hectares of forest area have been investigated, as against 5,604,000 hectares investigated in the last sixty years of the Tsarist regime.

However, at the present time, the forests of the territory, like its other resources, have as yet been insufficiently explored. Of the enormous forest areas of the Far Eastern Territory, amounting to 61,000,000 hectares, only 57 per cent have been investigated, while the remainder is still completely untouched. On January 1, 1935, the following categories of forest areas were listed in the territory:

TABLE 1. CATEGORIES OF FOREST AREAS IN FAR EASTERN TERRITORY
(in thousand hectares)

Category	Total Area	Actual Forest	Wooded Country
State forests	91,230.1	58,239.5	75,059.8
Forests of local importance	4,707.7	3,806.8	4,132.3
People's Commissariat of State Farms	219.0	166.4	203.6
Preserves	49.0	31.4	39.7
Total	96,205.8	62,244.1	79,435.4

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The wooded proportion of the whole territory is, in respect of actual forest, 20.8 per cent; in that of wooded area, 26.9 per cent.

The low proportion of woodland in the Far Eastern Territory as a whole is explained by the fact that a large part of it is situated in the north between the latitudes of 59° and 60°, and is within the limits of the forest-tundra and the polar-tundra regions which are almost completely treeless. This part of the territory occupies an area of nearly 2,000 million hectares (or two-thirds of the whole territory). The only extensive growths here are thickets of Rampant Pine (*Pinus pumila*) which occupy up to 35 million hectares and have no industrial value whatever.

Thus the forests of the territory are wholly concentrated in its southern part (south of 59 and 60 degrees latitude). The climate of the southern parts of the Far Eastern Territory, which is characterised by a long and fairly hot season of growth, is favourable for the development of forest vegetation, but there are factors which affect the development of forests unfavourably. The chief of these is the perpetual frost which extends widely northward from 52 degrees latitude and westward from Khingan. The frost allows the rain deposits from the summer monsoons to accumulate in the upper layers of the soil, cools them, and diminishes evaporation. Therefore, in the part of the territory where extensive frozen areas prevail, the formation of surface swamps is usual, not only in flat regions, but also on the mountain sides.

Another effect of frost is that it gives rise to the surface growth of roots of trees. Other unfavourable influences on forest vegetation are: the severity of the snowless winters, which permits the frost to penetrate deeply into the soil; the prevalence of dry and cold northwest winds; the prevalence of winter rains, arriving in the second half of the growing period, and along with these the droughts in spring, autumn and the beginning of winter; the gravelly soils of the uplands, which are easily washed away and carried down; and the excessive moistness of the heavy over-argillaceous soils of the lowlands.

The comparatively low proportion of forest area in the territory is, however, not only attributable to natural conditions, but also to the activities of man. It has been established that as

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

much as 20 million hectares of forest area in the territory has been destroyed by fires and tree-felling during the period of the activity of Russian capital.

The distribution of forests of economic importance, according to the predominance of species, is shown in Table 2.

TABLE 2. CHIEF VARIETIES OF INDUSTRIALLY USEFUL TIMBERS
(in thousand hectares)

Cedar	Spruce and Fir	Larch	Pine	Total Coniferous	Deciduous	Grand Total
4,190	12,807	26,277	2,084	45,357	11,101	56,459
7 p.c.	23 p.c.	46 p.c.	4 p.c.	80 p.c.	20 p.c.	100 p.c.

The forests of the Far Eastern Territory are unusually varied in species: they comprise about sixteen kinds of coniferous trees, and up to 150 kinds of deciduous trees. The chief tree species of the forests which at the present time have industrial importance are described in the following pages.

CONIFEROUS SPECIES

1. The Korean Pine (Pinus koraensis)

The Korean Pine grows on the southern coast of the Sea of Japan, in the basin of the Ussuri, and the basin of the lower course of the Amur (to Komsomolsk). It is the most predominant tree of the area. It reaches the age of 400 years, a height of forty metres, and a thickness of over one metre. The wood is distinguished for its high qualities of technical usefulness, since it is very adaptable for sawing, for plywood manufacture, for tar extraction and also for cabinet-making. It is well known and popular in the markets of Japan, China, England, and other countries. It does not grow in other parts of the U.S.S.R. The total amount of Korean Pine in the forests of the Far Eastern Territory is about 600 million cubic metres.

2. Common Pine (Pinus silvestris)

Distributed in the basin of the upper Amur and its tributary the Zeya, this tree of the predominant group reaches an age of from 200 to 250 years. It grows 22 to 28 metres high and from 40 to 60 cms. thick. This pine wood possesses high technical qualities and in the upper Amur region replaces Korean Pine,

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The resources of common pine in the forests of the territory reach a total of 300 million cubic metres.

3. Spruce

Of this there are four varieties, of which the most widely distributed are the Ayan Spruce (*Picea ayanensis*) and the Siberian Spruce (*Peobovata Lab.*). Spruce is widely distributed throughout the territory, occupying with fir nearly 13 million hectares of forest area with total resources of over two and a half milliard cubic metres. It grows 150 to 200 years and reaches a height of thirty-six to thirty-eight metres with a diameter of sixty-five to seventy cms. One of the most productive species in good soils, it forms fine plantations of building timber and saw-mill timber, with a supply of 400-600 million cubic metres. It is adaptable for building, and an excellent raw material for paper-cellulose manufacture.

4. Fir

Of the four different kinds found in the territory, the most widely distributed is the Silver Fir (*Abies nephrolepis*). It is as widely distributed over the territory as is spruce and does not grow apart, but along with spruce, pine, and even deciduous species. This also is an excellent raw material for paper cellulose.

5. Larch

Of five different kinds, the most widely distributed is the Daurian Larch (*Larix dahwica* Turez). Larch occupies over 26 million hectares of forest area, containing 2.7 milliard cubic metres of wood. It is distributed throughout the territory, with the exception of the basin of the Ussuri and the lower Primorsk, where it is only rarely found. It grows in pure as well as mixed plantations, particularly in the burnt-over spruce-fir taiga. The wood of the larch possesses high technical qualities: it is heavy, strong, resilient, resinous, and withstands rot. It is suitable for building, for subaqueous construction, for sleepers, telegraph poles, pit-props, etc., and is an excellent raw material for paper-cellulose and hydrolysis manufacture; gums are obtained from its wood, and tan extract from its bark. It yields Venetian turpentine. The freshly hewn wood sinks in water, a factor which makes its transportation (floatage) extremely difficult.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

1. Velvet Corktree (Phellodendron amurense Rupr)

Distributed in southern Primorsk and the basin of the Ussuri, this tree is found as a rare admixture. It grows 300 years and reaches a height of twenty-six metres and a thickness of seventy cms. The wood is distinguished for its high technical qualities and is valued highly in cabinet-making and in furniture and plywood industries. The corktree provides good insulating material for safety fittings, and the like. Its second bark gives cork suitable for stoppers. The total resources of Velvet Corktree wood do not exceed two million cubic metres.

2. Birch (Betula)

This wood occurs in ten different kinds and occupies a large area in the forests of the territory. A few kinds are of the greatest interest. Silver Birch (*Betula platyphylla* Suk.) is a tree whose slenderness limits its use to pit-prop manufacture and as a material for transport conveyances, agricultural machinery, boker-work, etc. The Yellow Birch (*B. costata* Trautv.) is found frequently in mixed forests in the south of the territory, chiefly in the basin of the Ussuri. It is sometimes found in mixed forest, here comprising 0.3 of its total growth. It grows 30 metres high and 70 cm. in diameter, gives a beautiful veneer, is suitable for agricultural machinery, aeroplane building, cabinet and furniture making, and is used for beams and joists. Reserves of this wood reach 47 million cubic metres. The Schmidt Birch (*B. schmidtia* Reg.) grows exclusively in the southern part of the Primorsk District in mixed plantations and with deciduous trees. It reaches a height of 15 to 20 metres and a diameter of 50 centimetres. The wood is dark in colour and possesses great durability, strength and weight, and sinks in water even when air-dried. The durability of the "iron birch" is three and a half times greater than that of cast iron. It is suitable for canoes, bearings, side-blocks and other small parts used in mechanical engineering. It can be used as a satisfactory substitute for boxwoods and other species of hardwood trees. Its reserves are very limited.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

3. Dimorphant or White Hazel (Kalapanax zionifolia Mig.)

This hazel grows in the southern part of Primorsk in coniferous and mixed forests, and its valuable wood is suitable for cabinet-making and plywood.

4. Mongolian Oak (Quercus mongolica)

Oak is found throughout the territory of Primorsk and the southern part of the Amur district. With favourable soil conditions, it attains great dimensions: a height of 25 to 30 metres, and a diameter up to 100 cm. It is distributed over an area of 1,300 thousand hectares, with a total wood supply of over 80 million cubic metres. The wood of the healthy oak is distinguished for its great technical qualities and is suitable for plywood, cabinet-making, furniture-making, and for small parts used in mechanical engineering. However, a large part of the oak forests of the territory consist of unproductive plantations of fourth and fifth grade quality.

5. Willow (Salix)

Thirty different kinds of willow are distributed over the whole territory, occupying in all nearly one quarter of a million hectares of forest area. Sakhalin Willow is noted for its great dimensions, reaching a height of 30 metres. The Maximovich Willow also, which grows along the Okhotsk coast, on Sakhalin and Kamchatka, and is found also in the south of Primorsk, reaches a height of 25 metres. It is used for boat-building, wicker-work, etc.

6. Elm (Ulmus)

Growing chiefly in Primorsk, there are four different kinds. The total supply of elm in the forests of the territory is nearly 36 million cubic metres. The wood of the elm is noted for its high technical qualities and is used for the manufacture of vehicles, for cabinet-making and building, furniture-making, also in the manufacture of wooden hoops, plywood, and other commodities.

The Mountain Elm (*Ulmus montana* Wither.) reaches great dimensions: a height of 25 metres and a diameter of 60 cms. There are also stands of the Japanese Elm (*U. japonica* Sarg.) which grows to 25 metres in height and one metre in diameter.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

7. Maple (Acer)

Seven different kinds grow in the south of the territory, separately and as admixtures. The total supply of maple in the forests of the Far Eastern Territory reaches 7 million cubic metres. It has good wood, suitable for cabinet-making, furniture veneer, vehicle and other manufactures. The following reach great dimensions: the small-leafed maple (*Acer mono* Max.) 15 m. high and 50 cm. in diameter; the Manchurian Maple (*A. manchurica* Max.) 20 metres high and 50 cm. in diameter; the lime maple (*A. tegmentosuma* Max.) 15 m. high.

8. Lime (Tilia)

Two kinds are found—the Amur lime (*Tilia amurensis* Kon.) and the Manchurian Lime (*T. manchurica* Rupret Max.). The Amur lime is most widely distributed in the south of the territory. The total supply of lime in its forests is approximately 122 million cubic metres. Lime wood is suitable for casks, boxes, cabinet-making, shoe-lasts, wooden vessels, toys, matches, and many other commodities. There is no lime felling in the inhabited parts of the territory, as the tree is preserved as a honey-bearer.

9. Manchurian Walnut (Juglans manchurica Max.)

This grows throughout the Far Eastern Territory. The supply forests in the whole southern part of the territory. Its total supply does not exceed two million cubic metres. It reaches a height of from 25 to 30 metres, with a diameter of from 70 to 75 cms. The wood has high technical values, giving high-quality plywoods, high-class furniture, and is of a very beautiful colour and grain. The main supplies of walnut are concentrated in the basin of the Ussuri River.

10. Aspen (Populus tremula)

This grows throughout the Far Eastern Territory. The supply in the forests of the territory reaches 44 million cubic metres. It is a most valuable raw material for the manufacture of matches.

11. Poplar (Populus)

The total supply of poplar wood, which occurs in five different kinds through the whole territory, is 120 million cubic

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

metres. The most important are the Korean poplar and the fragrant poplar. This tree is noted for its rapid growth, reaching a height of 30 metres in from 80 to 100 years, with a thickness of 100 cms. Poplar wood is good for match manufacture.

12. Ash (Fraxinus)

There are two kinds, the Manchurian Ash (*Fraximus manchurica*) and the Mountain Ash (*F. rhyncophylla* Hance.). The total supply of ash in the whole territory is 46.7 million cubic metres. The Manchurian Ash grows within the boundaries of the Ussuri District, the Mountain Ash only in southern Primorsk. The former reaches a height of 35 metres and a thickness of 90 cms; the latter grows 12 to 15 metres high and to a thickness of 30 or 35 cms. The chief ash supplies are concentrated in the basin of the Ussuri. The wood is noted for very high technical qualities, giving high-quality plywood and material for furniture, aviation, and other purposes.

Besides the species enumerated the forests of the Far Eastern Territory also include, among the coniferous species: the Yew (*Jaxius cuspidata*); among the deciduous species: Acacia (*Cladrastia aniurensis*), Hornbeam (*Carpihus cordate*), the Ussuri Pine (*Pinus ussuriensis* Max.), the Alder (*Alnus*), the Wild Cherry, the Apple Tree (*Malus*); and an enormous number of different bushes, of which the rampant pine is the most prevalent.

The total timber resources in the forests of the Far Eastern Territory are approximately 7,400 million cubic metres. How this quantity is distributed among the different species is shown in Table 3.

The distribution of deciduous species growing in forests of industrial importance in the southern part of the territory (excluding Kamchatka and Sakhalin), according to the predominating species and wood resources, is given in Table 3a, that of the coniferous species in Table 3b.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

TABLE 3. TIMBER RESOURCES OF FAR EASTERN TERRITORY
(in million cubic metres)

A. *Plantations where deciduous trees predominate*

Oak	Ash	Elm	Maple	Birch	Pine	Lime	Other	Total
54.3	22.9	19.6	3.2	283.2	26.6	26.6	168.3	604.7

B. *Plantations with predominance of coniferous trees*

C. *Total*

Pine	Spruce and Fir	Larch	Cedar	Total Coniferous	Deciduous	Total of Con. and Dec.
94.2	2,370.4	2,211.9	892.6	5,575.1	604.7	6,179.8

Of this quantity not less than 3 milliard cubic metres is industrial timber. The growth in the forests of the Far Eastern Territory is reckoned roughly at 60 million cubic metres. The enormous extent of these reserves becomes particularly impressive when it is borne in mind that no more than one seven-hundredth of the whole reserves and not more than one-fifth of the growth is cut down in the territory annually. A comparison of the timber resources of the territory with those of the whole Soviet Union and with those of its other regions shows that the forests of the Far Eastern Territory constitute 11 per cent of the total resources of the Soviet Union, and in forest area take third place, after the Yakutsk S.S.R. and the West Siberian Territory. In timber resources the forests of the territory take first place, exceeding those of the West Siberian Territory, the Northern Territories, and the Yakutsk S.S.R.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

THE DISTRIBUTION OF FORESTS

THE WOODED area of the Far Eastern Territory is irrigated by a close network of large rivers which provide an outlet for the timber both to the existing railway line and to places of consumption within the territory, and also the transport routes connecting the territory with the countries of the Pacific coast. Stretching westward from the Sikhota Alin range to the western borders of the territory, the whole enormous extent of its southern part forms the basin of one of the largest rivers of the Asiatic continent, the Amur. In the Sikhota Alin mountains there are a number of mountain rivers flowing into the Sea of Japan and the Gulf of Tartary. From the spurs of the Stanovoi range a number of rivers flow into the Sea of Okhotsk.

In relation to the main waterways, the distribution of forests in the Far Eastern Territory is as as follows. In the basin of the upper course of the river Amur up to where it is joined by the Zeya, 18,300,000 hectares of forest are concentrated, with a predominance of deciduous trees and pines, which occupy 82 per cent of the total forest area. Spruce occupies here only 4 per cent of the forest area and deciduous trees (such as birch) 14 per cent. The total reserves of standing timber here are roughly about 1,600 million cubic metres of which industrial timber represents nearly 600 million cubic metres.

The forests of this whole vast territory are distinguished by their low productivity, giving from 50 to 100 cubic metres per hectare and only in the best growing localities from 150 to 200 cubic metres. Notwithstanding the fact that this whole region is irrigated by a close system of rivers suitable for floating, the conditions for exploiting the forests are more difficult here than in other regions of the territory, as the chief wood of this region, the larch, is difficult to float. Also the intermittency and low productivity of the forests, and the inconsiderable quantity of large concentrated reserves of timber in them, makes the application of the most advanced modern methods of lumbering difficult in this region.

BAT. GENOOTSCHAP VAN K. EN W.
ERPUSTAKAAN NASIONAL R.I.
PERPUSTAKAAN NASIONAL REPUBLIK INDONESIA

A base of considerably greater importance for the timber industry is the stretch of forest growing in the basin of the middle course of the Amur (from Blagoveshchensk to Khabarovsk). To this belong the forests growing in the basins of the tributaries of the Amur: the Bureya, Kur, Urmi, Arkhara and Bira. The forests of this region are more varied in kind than those of the upper Amur. The forest area covers 4,817,000 hectares, of which Cedar occupies 466,000 hectares, Spruce 1,176,000 hectares, Larch 2,220,000 hectares, and deciduous trees 904,000 hectares. The total timber resources in this region are 550 million cubic metres of which 180 million are industrial timber.

The forests of this region are more productive than those of the upper Amur region. The average reserve of industrial timber per hectare here, in the basin of the Arkhara, is 67 cubic metres, in that of the Kur 47 cubic metres, of the Urmi 4 cubic metres, of the Bureya 26 cubic metres.

Colossal, as yet untouched, timber resources are preserved along the lower course of the Amur (from Khabarovsk to Nikolaevsk); the forest area of the first sub-region is 3,402,000 hectares, of which Cedar constitutes 11 per cent, Spruce and Fir 59 per cent, Larch 19 per cent, and deciduous trees 11 per cent. The total timber resources here amount to 340 million cubic metres, of which 150 million are industrial timber. The average reserve of industrial timber per hectare equals 45 cubic metres.

The forest area of the second sub-region consists of 6,280 thousand hectares, of which 0.8 per cent is Cedar, 22 per cent Spruce and Fir, 70 per cent Larch, and 7.2 per cent deciduous trees. The timber reserves here are huge, exceeding 1,200 million cubic metres; the productivity of the forests is higher than in the first sub-region, and there are over 50 cubic metres of industrial timber per hectare.

The most valuable of all the forests of the territory are those growing in the basin of the Ussuri. In richness and in diversity of species these timber reserves have no equal in the Asiatic part of the U.S.S.R. or, indeed, in any other part of the Union. To this timber base belong the forests growing in the basins of the tributaries of the Ussuri: the Ulakh, Dubikh, Bikin, Iman, Khor, etc. The total forest area of this region is 8,663,000

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

hectares of which Cedar represents 34 per cent, Spruce and Fir 40 per cent, larch 5 per cent, and deciduous trees 21 per cent. The total timber resources of the region amount to 1,470 million cubic metres, of which nearly 600 million cubic metres is industrial timber. The forests of the region are distinguished by their high productivity, reaching in the best locations 600 cubic metres of total resources per hectare. The average timber supply per hectare in the upper parts of the Ussuri is only 205 cubic metres of total resources and 70 cubic metres of industrial timber; for the middle and lower course it is 160 metres total and 60 cubic metres industrial. In the Ussuri forests are contained large timber resources of the deciduous species: Ash, Walnut, Corktree, Elm, etc.

Forests having a direct outlet to the sea are distributed along the huge territory of the coasts of the Okhotsk Sea and the Sea of Japan. The chief kinds of trees in these forests are Fir and Daurian Larch.

The forests growing along the coast of the Okhotsk Sea and in the basins of the Uda and the Tym rivers and the rivers flowing into the Nikolaya Bay and Sakhalin Bay are, from the point of view of forest exploitation and timber transport, an isolated raw material base. The total forest area of this base is 6,846,000 hectares of which 40 per cent is taken up by spruce, 2 per cent by fir, 41 per cent by larch, and 17 per cent by deciduous trees. The forests of this region have as yet been only slightly investigated and are not exploited.

The forests growing on the coast of the Sea of Japan and having an outlet, through the close network of rivers which transsect them, to that sea, and hence to Vladivostok, Kamchatka and the Pacific Ocean markets, include 5,770,000 hectares of forest area. The northern part of this coast is covered with spruce, fir and deciduous forests; the lower with cedar and broad-leafed forests. The total timber resources in this whole region are 400 million cubic metres, of which not more than 130 million are marketable timber.

The forests of the northern part of the region are distinguished by their high productivity—the average content per hectare of spruce forests here comes to 225 cubic metres, that of deciduous trees to 165 cubic metres.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The forests of the southern part of the coast in the more accessible and convenient localities have been greatly depleted by felling and now have limited reserves of industrial timber.

The forests of the Soviet part of Sakhalin are composed chiefly of spruce and fir, and of deciduous trees.

The total forest area of Sakhalin is 2,103,000 hectares, which contains a total timber supply of 330 million cubic metres, of which 120 million cubic metres is industrial timber (115 million coniferous, and 5 million deciduous).

The whole north of the Far Eastern Territory, with the peninsula of Kamchatka, has a wooded unproductive area of 3,500,000 hectares of Spruce, Fir and deciduous growths, representing 3 per cent of its total area.

A considerable number of forests grow in the basin of the river Kamchatka, but they have greater cultural than industrial importance.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

THE EXPLOITATION OF FORESTS

THE LOW LEVEL of development of the productive forces of the Far East before the Revolution is clearly reflected in the exploitation of its great timber wealth described above. Fifty-five years after the formal establishment of Russian Tsarist power in the Far East (1913), the timber industry was still in an embryonic state of development, not at all corresponding to the possibilities it possessed as a very rich and varied raw-material base, with a large potential capacity to supply the internal and foreign markets.

The total bulk of the output of the timber industry established in 1913 was:—2,900,000 cubic metres of timber collected; timber for sawing, 650,000 cubic metres, producing 390,000 cubic metres of sawed wood, which approximately corresponded to the capacity of the internal timber market of the territory (excluding agriculture). The large foreign timber market which sprang up at this time, requiring a large quantity of varied timber goods (Japan, China, Australia, etc.) was almost completely ignored. The timber industry of the Far East was barely able to cope with the demand of the internal market for wood. Up to 1913, timber was imported in fairly considerable quantities to the Russian Maritime Province from abroad.

Thus in 1906, through the customs of the southern part of the territory, timber was imported from abroad to the value of 315,000 rubles (gold); in 1907, 385,000 rubles; in 1908, 5,124,000 rubles; and in 1909, 2,480,000 rubles.[1] Not only this, but the fishing industry of Kamchatka was supplied with wood by-products, such as tar, entirely from Japan. There were practically no large timber enterprises in the territory. In the whole Far Eastern Territory there were at this time 52 sawmills with 95 frame-saws. All these mills were grouped around the towns (Vladivostok, Khabarovsk, Blagoveshchensk) and along the

(1) Tolstoludzsky, *Historical Outline of the Development of Timber Economy in the Far Eastern Territory.* Vladivostok, 1928; manuscript.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

Ussuri railway (between Vladivostok and Khabarovsk). They were to a large extent small-power enterprises; each mill had on an average 1.8 frame-saws. There were in all only four sawmills with four or more frames. The others were mostly temporary, primitive, one and two frame enterprises.

Logging, which amounted to 2,900,000 cubic metres of wood, was distributed over the whole expanse of territory from the shore of the Japan Sea to the Upper Amur. Lumbering was carried on by small parties near river banks and near the railway line, in the most convenient places adjacent to the places of consumption (towns, sawmills, railway, etc.). The biggest timber merchants worked in the Maritime Province (concession of the Australian Eastern Timber Co. in Soviet Harbour, the Soviet Timber Co., Rubinstein and Co., the concession of the Vladivostok merchants Suvorov, Skidelsky, Borodin, etc.), but the bulk of their lumbering operations did not exceed 60 to 100 thousand cubic metres of wood.

Lumbering and floating were on a still lower technical level. The wood-working industry, with the exception of a single plywood factory and one primitive match factory, was represented exclusively by sawmills having only sawing shops. The inner market required chiefly building material and firewood. The sawmills, with the aim of increasing the actual output of sawed wood, accepted only large pine and cedar[2] logs.

All this led to a very one-sided and reckless exploitation of timber. Of the enormous variety of valuable tree species in the exploited areas, only the best trunks of cedar (in the Amur Province, pines) were cut, from which were taken only one, in rare cases two, logs. All the rest was left lying in the forest, cluttering it up, and accumulating material for fires and the breeding of a colossal number of insect and fungus pests. The most valuable woods—ash, oak, walnut, and other kinds—were disposed of as firewood. Larch, spruce, fir, and a number of other prevalent kinds, were not completely utilized. Only selected trees were cut.

Timber collecting went on exclusively in winter. The peasant's horse and saw were the only means of production used

(2) The term "cedar" is here used to denote Korean Pine.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

in the forest. Peasant and "yellow" (Chinese and Korean) labour was so cheap that the timber merchant did not need to invest capital, either in the mechanisation of timber collecting or in any of the means of production. The industry possessed neither technical personnel nor permanent workers. Not a single case is known of mechanisation or rationalisation of logging in the Far Eastern Territory before the Revolution. The lack of correct husbandry led to the destruction of the timber areas. During Tsarist control of the Far Eastern Territory, as a result of forest fires and destruction by reckless cutting, at least 20 million hectares of forest were turned into desert, swamp, and bare stony mountain sides. Only a very small part of these areas (not more than 2.5 to 3 million hectares) were put to any productive use.

During the period reviewed above, the Zeya-Bureya plain in the Amur Province, which had been covered with forest, was converted into a huge expanse of unwooded territory, and the forests receded far from the railway towards the basin of the river Ussuri; the territory around Vladivostok was almost completely deprived of wood, hardly a tree was left in the region of Poset, Shkotovo, and elsewhere.

The economy of the territory is now suffering considerably from the loss of these forests. The lack of trees in the Zeya-Bureya plain intensifies the agriculturally unfavourable nature of the climatic conditions: the dry spring, insufficient snow-covering in winter, and the deep freezing of the soil, etc. The destruction by fire and the felling of the forests along the banks and upper reaches of the river added to the destructiveness of the frequently recurring floods, and to the washing away of the fertile soil of the hill sides and river valleys; even to the choking up of the streets and pavements of Vladivostok and other towns, at flood times, with masses of clay, shingle, and sand. The destruction wrought by Russian timber merchants in the forests of the Far Eastern Territory during their brief period of exploitation is now severely felt in the whole economy of the territory. The rectification of these depredations is entailing an enormous amount of labour.

Thus the exploitation of forest wealth in pre-revolutionary times was characterised by the following features: a negligible

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

output of forest products; the exploitation of only a fraction of the forest regions most accessible and convenient for marketing; the one-sided and reckless exploitation of these forests; the huge, unproductive destruction of forest wealth by fire and axe; the primitive method of timber collecting and preparation; the complete absence of any industry for wood-manufacture; the complete absence of permanent labour cadres in the forest, on the rafts, etc.

At the time of the Civil War and intervention, the forest industry of the territory collapsed. At the beginning of the establishment of the Soviet power (end of 1922), the activity was less than that of 1913. The majority of the sawmills were unworkable. Lumbering on the mainland had practically ceased. The Japanese, with the "consent" of the White Guard government, carried on reckless felling along the coasts, providing free timber for their wood and wood-chemical industries.

Without cadres of permanent workers, and with the complete absence of machinery in the forest, with the raw material completely uninvestigated, with the timber enterprises unworkable—this was the condition in which the Soviet Government received the timber industry at the end of 1922. The unsatisfactory and irrational exploitation of the huge forest wealth before the Revolution was part and parcel of the whole system of the pre-revolutio[illegible] economy of the territory. Industrially, the territory develope[illegible] very slowly, and thus conditions necessary for a rapid growth of the timber industry were lacking. Private ownership of the forests and means of production (which belonged to the crown, Cossacks and settlers) led to irrational and reckless exploitation and destruction of the forests.

The driving force in the development of the forest industry was the eagerness of the timber capitalist for the largest possible profits and of the landowner for big rents. Neither one nor the other was interested in the rational exploitation of the forests, their preservation, or their improvement. The contradiction between private ownership of the forest and private ownership of the means of production led to antagonism between the forest landlord and the entrepreneur over the distribution of the surplus value created by the forest worker who in the process of his labour provided both profit and rent. This antagonism

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

retarded the development of forest industry: for a considerable time the timber industry of the territory, on account of high rents, could not compete with Manchurian timber large quantities of which were imported into the Far Eastern Territory. The timber industry developed haphazardly according to market fluctuation without any calculation of the available raw material or other important factors.

The ease with which cheap labour power could be attracted to the forests, in the shape of peasant and mainly "yellow" labour of Chinese and Koreans, enabled the entrepreneur, by cruelly exploiting this labour, to receive enormous profits without any capital investments in the construction of special roads, purchase of machinery or other items. As a result the timber industry was organised in a most primitive manner, with no technical basis in the forest.

Under the Soviet Government, the timber industry was afforded entirely new conditions in which to develop. The huge work carried out by the Soviet Government in the territory in the development of industry, agriculture, and transportation, and in strengthening its defensive power, evoked an extraordinary growth in the demand for timber.

The whole planned economy of the Soviet Union, and hence of the Far Eastern Territory, does not and cannot experience crises. It ensures a constant and ever growing market for its forest products. It is sufficient to quote figures of average consumption of wood per head in the Far Eastern Territory in comparison with 1913, to realise the enormous possibilities created in this respect by the socialist system in contrast with those under the capitalist system. Table 4 shows these figures for the different years.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

TABLE 4. CONSUMPTION OF WOOD PER HEAD OF POPULATION IN FAR EASTERN TERRITORY

Indices	1913	1928	1932	1935
Consumption of manufactured wood per head of population (in cubic metres)	1.44	1.56	2.10	3.5
Consumption of firewood per head of population (in cubic metres)	2.26	2.54	2.51	3.0
Total (in cubic metres)	3.7	4.10	4.61	6.5
Percentage	100	110	125	175
Consumption of manufactured wood per head of urban population (in cubic metres)	1.46	2.92	3.6	7.0
Percentage	100	200	247	480

Forest administration and timber industry in the U.S.S.R. are unified and have no other task than to satisfy, in the fullest and best way, all the demands of the national economy for wood and its by-products, by a rational utilisation of the forests, at the same time developing these in order to increase their productivity. In a socialist society forests are regarded not only as a source of raw material but also as a geographical factor of enormous economic importance for their incalculable usefulness; they retain moisture, conserve the soil, moderate the climate, and are a consideration in the public health. Therefore, forests in the U.S.S.R. are classified under these heads: industrial, cultural, conservational, forests of local importance, and forest areas available to be utilised for other forms of cultivation. Each of these categories of forest has its own special husbandry, obviating the possibility of predatory destruction. The forest industry, like all the national economies, is developed, not haphazardly, but according to a plan which provides not only for quantitative and qualitative indices of production but also for a system of measures for the socialist reconstruction of the given branch (a plan for capital investment, a plan for cadres, a plan for scientific research work, etc.). Here there is no competition between the different industrial enterprises. On the contrary, the working masses individually and in whole factories, territories and republics are competing among themselves for the best fulfillment and overfulfillment of the plans,

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

and for the maximum increase in the productivity of labour, the greatest reduction in the cost of production, and so on.

As a result of these conditions and also of the great work carried out in the technical reconstruction of forest industry, the Soviet timber industry has achieved great successes in the exploitation of the timber wealth of the territory. Compared with 1913, the timber industry of the Soviet Far East in 1936 has greatly increased the scale of its work, making a large advance in the work of utilising one of the richest natural resources of the territory—its forests. A comparison of the principal quantitative indices of the work of the timber industry before the Revolution and in 1935 is given in Table 5.

TABLE 5. PRODUCTION OF TIMBER AND TIMBER MANUFACTURES IN FAR EASTERN TERRITORY

Indices	1913	1923	1935	1935 in per cent of 1913	1935 in per cent of 1923
Timber cut (in thousand cubic metres)	2,900	3,050	10,200	351	334
Number of sawmill frames	95	52	165	173	317
Production of sawed material (in thousand cubic metres)	390	320	1,500	385	470
Production of barrels by mechanised means (in thousand units)	none	none	1,110	—	—
Production of boxes by mechanised means (in cubic metres)	none	none	26,000	—	—

When Soviet power was established in the Far East, the territory had only two primitively worked enterprises for the manufacture of articles from wood, whereas now it has eleven mechanised ones. Now the territory has seven box-making factories, two barrel-making shops, fifteen factories for goods of general consumption, ten factories for manufacturing small articles—all organised in 1931-1935 in connection with the sawmills. The total number of workers engaged in the timber industry was calculated in 1913 to be 15,000, whereas in 1935 it is fixed approximately at 65,000, an increase of 4.3 times.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

This increase in the scope of production is accompanied by the inclusion in the economic turnover of hitherto unexploited forests and a more thorough utilisation of forests.

Before the Revolution the average yield of prepared wood per hectare of forest area only came to 0.05 cubic metres; in 1935 only to 0.16 cubic metres; but according to the 1936 plan, it will be brought up to 0.18 cubic metres. This is a 20 per cent increase, and 3.5 times the 1913 level. Apart from this great increase in the amount of wood produced in all the regions of the territory under the Soviets, forests have begun to be exploited which before the Revolution were not exploited at all: the forests of the Komsomolsk region, of Sakhalin, and of Kamchatka.

Moreover, before the Revolution only the forests situated closest to inhabited localities and main transportation lines were exploited, which to a large extent explains the terrible deforestation despite the insignificance of utilisation of the total forest area. In all the above indicated districts, the Soviet lumber industry has penetrated far into the interior of the forests, increasing the area of exploitation several fold. An idea of the increase in the exploited area of timber is provided by the increased use of rivers for floating logs: in 1913 logs were floated on 3,200 kms. of river, in 1929 on 6,920 kms., in 1932 on 11,186 kms., in 1935 on 16,000 kms., not including the Amur. The timber area brought into exploitation in the logging regions increased from 4 million hectares in 1913 to 25 million hectares in 1936. In addition, the forest areas opened to exploitation via overland transportation increased considerably; in 1936, it comprised approximately 4 million hectares of timber area.

In 1936, approximately 30 million hectares of timber are still entirely untouched (the Upper Zeya, Selendzha, Bureya, the coast of the Okhotsk Sea, a number of areas on the middle and lower Amur, the coast of the Japan Sea). This area constitutes a tremendous reserve for further extensive development of the lumber industry. This reserve is impressive if we bear in mind that the forest areas whose reserves have been depleted by cutting and which have temporarily lost their industrial importance amount to only 6 million hectares, located in the southern part of the coast of the Japan Sea, including the

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

districts near the cities of Vladivostok, Voroshilov, and the districts near Khabarovsk and Blagoveshchensk. Aside from increases in the utilisation of timber, timber is now more rationally utilised than in pre-revolutionary times. As has been described, commercial timber cut before the Revolution in the forests consisted entirely of large cedar and pine logs; and very valuable hardwood timber was used merely for firewood. At the present time cedar and pine do not constitute more than 40 per cent of the commercial timber, the remaining 60 per cent consisting of spruce, fir, larch, and various deciduous species.

The exploitation of other varieties of timber became possible because of the tremendous growth of the economic demand in the territory for a diversity of timber, and because of the fact that in recent years, in addition to sawmills, a powerful wood-working industry has been established in the territory for the manufacture of finished articles. This industry was almost non-existent before the Revolution.

As can be seen from the above tables, considerable progress has also been made in the distribution of sawmills: they were established in the Komsomolsk district, Sakhalin and Kamchatka for the first time. Obviously, however, there still is inequality in the distribution of wood-working plants; and a disproportion in the distribution of lumbering and wood working, resulting from the slow development of the lumber industry as compared with the economy as a whole, has led to the construction of temporary sawmills in those localities where the greatest amount of sawn materials is used. The development of the wood-working industry has increased the rational utilisation of sawn lumber, increasing its ratio to the finished product from 55 (maximum 60) per cent before the Revolution to from 70 to 73 per cent now.

The improvements registered in the utilisation of the timber in the Soviet Far East is by no means the only achievement of the lumber industry in the territory. The main successes, those which are providing a firm foundation for the rapid development of the lumber industry in the territory, consist in the changes in methods of exploitation of timber which have been introduced on the basis of an advanced technology.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The corps of permanent workers, technicians and employees in the timber industry of the Far Eastern Territory at the end of 1935 numbered over 25,000 people, and the inventory of the timber industry included 6,500 horses.

As a result of the technical reconstruction which has been carried through, new progressive methods of work in the forests are constantly replacing the antediluvian methods which Soviet economy inherited from the pre-revolutionary timber industry. Striking testimony of this is provided by the changes in the proportion of timber hauled over improved roads in the lumbering districts of the People's Commissariat of Timber in the Far Eastern Territory.

The Soviet timber industry has conducted extensive work in the study of the forests. In the 65 years during which Tsarist rule existed in the territory, forest investigation was conducted on 5,604 hectares of forest land. Besides the investigation of the forests (the ascertainment of their commercial reserve, their distribution over the area of the territory, the study of their botanical species), extensive work has been carried out under the Soviet Government in studying the biological properties of the various species (rate of growth, reforestation, types of wood, etc.) as well as their physio-chemical properties. As a result of this, the number of varieties of timber used has considerably increased.

As a result of the 50 million rubles invested up to the present under the First and Second Five-Year Plans, the wood-working industry has been supplied with technical equipment. In this period the technical equipment of those enterprises which remained from before the Revolution was almost completely renovated, and almost as many new frames have been installed as existed in pre-revolutionary days. Considerable work has been carried out also in mechanising the most arduous processes of sawing. Extensive housing for workers and employees of lumber factories has been built for the first time. The mechanised production of many finished wood products has been introduced. This process of renovating the wood-working industry is illustrated in Table 6.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

TABLE 6. MECHANISATION OF WOOD-WORKING INDUSTRY
(per cent of total)

Type of Tools in Sawmills	Time of installation		
	Prior to 1923	1923-27	1928-35
Wood-sawing frames	7	10	83
Band saws	4	12	84
Circular saws for length cutting	6	12	82
Disc cross-cut saws	9	2	89
Drimken saws	13	6	81

As the table shows, the present stock of equipment in the wood-working industry in the Far Eastern Territory was almost entirely installed between 1928 and 1935, and the proportion of the equipment remaining from capitalist industry does not constitute more than 6 or 7 per cent of the total equipment.

As a result of reconstruction and new construction, the capacity of the sawmills has increased to 4 million cubic metres of sawed material as compared with 1,400,000 cubic metres in 1913. The average productivity of one frame saw in the mills of the People's Commissariat of Timber was increased to 33,000 cubic metres of logs in 1935, as contrasted with an average productivity in pre-revolutionary factories of 6,800 cubic metres (an increase of almost five times).

The productive capacity of a board factory was raised to 12,000 cubic metres of board in 1935, as against 4,000 in 1913. The productivity of a match factory rose to 360,000 boxes, as compared with 60,000 in 1913. The production of containers has been mechanised, so that the capacity of 1,300,000 barrels and 30,000 cubic metres of boxes has been reached in 1935.

Radical changes were introduced by Socialist construction in the organisational form of timber enterprises. The "lesnichestvo" which existed in the initial stages of Soviet construction was replaced by "forest industrial enterprises", which included the lumber industry, (logging, sorting, hauling) and scientific functions (forestry, fire patrol, pest fighting, reforestation on cut areas and areas denuded by forest fire). This new consistently Socialist type of enterprise in the lumber industry has resulted in the elimination of the contradictions between the lumber economy and the lumber industry which Soviet economy

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

inherited from capitalist society. While the pre-revolutionary "lesnichestvo" was a purely fiscal institution which, despite its frequently tremendous size (from 5 to 6 million hectares of total area), was served by a staff of twenty or twenty-five employees, the present day "forest industrial enterprises" (lespromkhoz) are huge industrial enterprises responsible for an output with a value of several million rubles, equipped with powerful machinery, and employing many workers.

For a more detailed picture of this new type of enterprise we include a brief description of one of the largest "lespromkhozes" in the Far Eastern Territory—the Oborski. This lespromkhos is located in the basin of the river Obor (a tributary of the Amur), not far from Khabarovsk. The total area consists of 300 thousand hectares, including 250 thousand hectares of forest land. In 1933, 230 thousand cubic metres of timber were shipped from here; in 1934, 302 thousand cubic metres, in 1935, 350 thousand cubic metres. In 1936, a plan providing for a production of 530 thousand cubic metres has been drawn up. The total production of the Oborski unit in value, on the basis of prices in 1926-27, amounted to R. 4,021,000 in 1934, R. 4,500,000 in 1935, and R. 6,000,000 in 1936.

The enterprise possesses the following technical equipment: a broad-gauge timber-hauling railway of 59 kms. with a park of locomotives and rolling stock, twenty-four tractors with a total of 1,400 h.p., ten sleeper lathes, two internal combustion engines, five portable engines, etc.

While before the Revolution there were houses only for the administration, and the workers lived in large mud huts, at the present time the lespromkhoz has large housing units. There are 650 substantial houses for the permanent staff of workers, engineers and employees, with 36,284 square metres of housing space. There are 135 barracks for seasonal workers with 15,258 square metres of housing space. There are 23 stores, 21 restaurants, 5 bakeries, 11 schools, 13 "red corners" (reading rooms), 5 nurseries, 6 hospitals and medical stations. The volume of capital investment in recent years for this lespromkhoz is shown in Table 7.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

TABLE 7. INVESTMENT IN OBORSKI LESPROMKHOZ
(thousands of rubles)

1931	1932	1933	1934
6,382	1,271	534	2,855

The unit has a permanent staff of 2,200 workers and employees. The total number of inhabitants of its territory is 13,000. Its subsidiary economy includes 60 hectares of grain crops, 400 hectares of vegetable gardens, 500 cows, 50 horses, a large herd of swine, and other items.

The introduction of technology in lumbering made it possible here to change over from selective cutting to wholesale cutting, and to clean up the cut-over area, thereby preventing forest fires and making possible the normal development of reforestation on the area set aside for lumbering (part of the area is utilised for settlements, agricultural land, etc.). The adoption of wholesale cutting made possible rational utilisation of the timber. While before the Revolution and in the initial period of Soviet rule only the first grades of cedar and pine logs were used, at the present time the most varied grades are used. Thus, for instance, the classification of timber in the Oborski Lespromkhoz in 1934 was as follows:

	Cubic Metres
Sawing timber of coniferous varieties	33,000
Sawing timber of deciduous varieties	10,000
Building timber	48,700
Telegraph poles	1,500
Sleepers	60,200
Mine supports	15,400
Board material	2,200
Railway car construction	1,700
Shipbuilding timber	5,000
Firewood	122,000

Thus, the logging of sawing timber of coniferous varieties which in pre-revolutionary times constituted nine-tenths of industrial timber at the Oborski Lespromkhoz, does not now comprise more than one-fifth.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The territory has eight large lespromkhozes of the same type as the Oborski. From the above description of the Oborski Lespromkhoz it is evident that the Soviet timber industry has little in common with the lumber and timber industry before the Revolution as regards the methods of organising the work in the forest. The lespromkhoz is just as much an industrial enterprise as a coal mine or any other enterprise which exploits natural resources on the basis of the latest technology and the latest achievements of science.

The Soviet lumber industry has done pioneering in many areas of the taiga, paving the way for the development of other forms of industry, agriculture, and transportation.

Great changes have also taken place in the type of organisation in the wood-working industry. The type of organisation adopted in the wood-working enterprises is determined by the tasks confronting them: to provide the maximum production of finished articles made of wood, and to secure the most rational utilisation of materials with the minimum expenditure of labour. These tasks can only be solved by large wood-working combinats, and this, therefore, is the line along which the new wood-working enterprises are being built, as has been indicated above. To the same end, various shops for the production of finished articles of wood have been organised in all the large sawmills of the territory.

This reorganisation of working methods in the forest and in the mill has resulted in a large increase of labour productivity. In the lumber industry this is revealed by the change of the average quantity of timber shipped per worker (Table 8):

TABLE 8. AMOUNT OF LUMBER SHIPPED PER WORKER EMPLOYED
(per first quarter of the year)

Year	Cubic Metres	Per Cent
1933	62.8	100
1934	86.3	137
1935	102.5	163
1936 (Plan)	112.5	179

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The increase in labour productivity in sawing may be seen from the following data:

TABLE 9. AMOUNT OF WOOD SAWED PER WORKER EMPLOYED
(per working day)

Output	1928-29	1932	1933	1934
Cubic metres	0,991	1,135	1,064	1,672
Percentage of 1928-29	100	114	107	169

This growth in the productivity of labour has been effected not only by the introduction of machinery in the timber industry, but as a result of raised qualifications of the working forces, of better organisation of work, and not least of the change in the attitude of the workers to their work, which has been transformed from the heavy degrading burden which it was under capitalism to a question of honour, glory, and heroism.

The productivity of labour has been raised to heights unprecedented in human history by the Stakhanov movement, the highest degree of shock-brigade work, combined with the mastery of the powerful new techniques, which at the present time have penetrated all branches of economy. The Stakhanovites of the timber industry of the Far Eastern Territory provide remarkable indices for labour productivity; they have reached from 70 to 80 cubic metres of timber per man per day in logging, and from 150 to 200 cubic metres of material handled by one shift at the frame saw.

However, the successes registered in the utilisation of timber far from satisfy the Soviet lumber industry or the demands of the national economy as a whole. The lumber industry has as yet only taken the first step towards attaining the required condition in the utilisation of the tremendous forest wealth of the Far East. There are still many old methods which have not been outlived and which delay the tempo of development in the territory's lumber industry. The lumber industry has not yet reached the level of organisational and technical efficiency which the foremost branches of the national economy, and notably heavy industry, have reached. The lumber industry lags behind the general tempo of development of the national economy in the territory itself, and does not adequately meet the demands of its economy

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

for timber. Compared with the growth in the demand for finished articles of wood, little has yet been done to develop the corresponding branches of production. Machines have by no means yet become the main means of production in logging, and therefore manual labour is still of great importance.[3] Very little has been done as yet in logging to overcome the seasonal character of the industry, and this leads to tremendous pressure in the fulfillment of the winter plan.[4] The lumber industry in many respects is still made up of small enterprises scattered over the vast area of the territory, where the technical reorganisation of logging and sawing has not yet been seriously undertaken.

Logging and floating have not yet been provided with permanent corps of qualified workers, and large numbers of collective farmers are used for the purpose, thereby often withdrawing them from their regular work. The lumber industry as a whole has as yet done little to master the techniques already introduced and still has tremendous unused reserves in this respect. As contrasted with heavy industry, the food industry and other branches, the lumber industry is still a branch with a deficit, which every year requires considerable sums in the form of state subsidy. There are still tremendous shortcomings in the utilisation of the timber and raw material in the mills: all varieties have by no means been brought into exploitation. Much waste remains on the cutting ground in the form of stumps and chips—the considerable waste from the sawmills is not utilised. The forestry work is poorly conducted. But these shortcomings, as may be seen from what has been stated above, do not arise from the system of Socialist economy; on the contrary, the Socialist system of economy creates the necessary conditions for eliminating the shortcomings which are remnants of the past in our economy. Only the Socialist system creates conditions conducive to the fullest rational utilisation of the natural resources in the interests of economy as a whole.

---

(3) At the present time the logging by individual loggers, whose proportion of the total is 55 per cent, has advanced very little in the way of mechanisation.

(4) Up to 95 per cent of the annual logging is done in the winter months.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

PROSPECTS FOR THE DEVELOPMENT OF THE LUMBER INDUSTRY

THE NATIONAL economy of the Soviet Union is developing on an ascending curve, there is therefore a constantly growing demand for the products of all its branches. A summary of the potential volume of lumber consumption at the end of the Third Five-Year Plan (1942) in the Far Eastern Territory indicates that it will reach 25 million cubic metres. Not counting the logging done by the agricultural population for its own requirements, it may be estimated that the volume of production of the logging industry in the territory by the end of the Third Five-Year Plan will mark an increase to no less than twice that of 1936. This rapid growth of the lumber industry is made possible not only by the increased demand for timber and the possibility of export, but also by changing conditions of development.

The exploitation of the forests of the Far Eastern Territory, despite its technical backwardness as compared with other branches of industry dealing with natural resources (coal-mining, gold-mining, fishing, etc.), has taken the road of modern technique. This circumstance, combined with the gigantic growth of the entire economy of the territory, provides brilliant prospects as regards both volume of production and technical development.

In the near future the sawmill, the most common type of enterprise, will be abandoned in favour of huge wood-working combinats, producing not semi-finished products, but finished articles of wood. At the same time, tremendous importance will be attached in the wood-working industry to forms of production which at the present time are as yet almost unrepresented in the Far Eastern Territory. These include the wood-chemical industry, paneling, furniture manufacture, the manufacture of building parts and machine parts, production of compressed timber, etc. The wood-chemical industry will develop with special intensity under the Second Five-Year Plan; a cellulose-paper combinat is planned at Komsomolsk with a capacity of 28 thousand tons of paper and 2 thousand tons of cardboard.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The cellulose-paper industry is provided with a tremendous raw-material supply in the form of spruce, fir, and deciduous timber. The pressed-wood industry will receive its raw material mainly in the form of waste from sawing.

The sawmill which is the dominant form of enterprise at the present time will be replaced, as has been mentioned, by the wood-working combinat. The combinat is the most profitable form of enterprise from the standpoint of national economy; it secures the most rational utilisation of raw materials, raises labour productivity, and produces not semi-finished material, but finished articles of wood. Wood-working combinats will acquire special importance with the exploitation of the forests of the Ussuri basin, which are distinguished by the great variety of their species. Among the various branches of mechanised wood-working, the production of building parts (window frames, doors, floors, parquet, etc.) will develop the most in the near future. The production of high-grade furniture, of panels, of machine-building parts, etc., will greatly develop as well. All these branches of production are certain of abundant sources of raw material. The Far Eastern Territory has the richest reserves of deciduous species in the U.S.S.R., reserves which have scarcely been touched.

The production of high-grade paneling will develop primarily in the basin of the Ussuri river and in the districts near Khabarovsk. The first plant for the manufacture of furniture and parquet will also be built there.

The reconstruction of the wood-working industry will cause great changes in the methods of exploiting the forests. The one-sided development of the wood-working industry in the form of mere sawing led to the one-sided exploitation of timber. This one-sidedness can only be avoided by the necessary reorganisation of wood-working. The highly differentiated wood-working industry will create conditions for manifold utilisation of the timber reserves (raw material). This in turn will create the necessary conditions for widespread mechanisation of all the logging processes and the increase of labour productivity.

The combination of wood-working with logging will have great importance in the exploitation of the forests. It will bring the wood-working industry into close contact with its source of

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

raw material and secure the fullest utilisation of raw material on the cutting ground, the maximum reduction of losses in transportation, the increase of labour productivity, the reduction of operating cost. By way of example of the tremendous importance of this form of combination of wood-working and logging in the reorganisation of the lumber industry, we give a short description of the project for working the forests of the upper Ussuri, a project which will be carried out in the Third Five-Year Plan.

The forest area of the upper reaches of the Ussuri river consists of 620,000 hectares, 30 per cent of which are occupied by cedar, 54 per cent by spruce, 7 per cent by oak, and 9 per cent by other deciduous species. The total timber reserve is 104,579,-000 cubic metres of which spruce constitutes 28.3 per cent, cedar 21.8 per cent, birch 13 per cent, fir 12.1 per cent and lime 10.5 per cent, other deciduous species 4.3 per cent.

The total reserve of industrial timber (without counting short industrial grades) is 35,207,000 cubic metres of which sawing timber constitutes 12,300,000 cubic metres, building timber 5,300,000 cubic metres, sleepers 1,300,000 cubic metres, mine timber and balances 12,500,000 cubic metres, plywood 3,800,000 cubic metres.

At the present time the exploitation of all these forests involves a long and difficult float on the Ussuri river. The logging of 100,150 cubic metres in the upper Ussuri basin is conducted in 10 or 12 places. The floating continues 5 or 6 months, and every year large quantities of timber are lost. Only the part which can be floated is logged—the best industrial coniferous species. Hard-wood varieties comprise not more than 5 per cent of the total volume of logs and have a high loss from sinkage (up to one half!). Hence present conditions result in:

1. One-sided utilisation of the raw material in the valuable forests of the upper Ussuri basin;
2. Small utilisation of the reserves of industrial deciduous timber;
3. High production cost in floating the logs;
4. Extremely low labour productivity in logging;
5. The virtual impossibility of carrying through an effective mechanisation of logging under the circumstances.

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

The problem of the full utilisation of these rich forests will be solved by the radical reorganisation of logging and its combination with wood-working. The project provides for the construction of a broad-gauge hauling railway with a total length of 124 kms. into the forest, and the construction of a wood-working combinat in the forest. Instead of the 100 to 150 thousand cubic metres logged at the present time, the building of the railway will make it possible to log 1,200,000 cubic metres, 800,000 of which will be industrial timber and 400,000 fire wood.

Such organisation of the work of logging and wood-working makes it possible to mechanise the entire productive processes, both in the forest and in the factory. It facilitates extensive work of artificial reforestation in those cut-over areas which are set aside as permanent forest land. The fullest utilisation for agricultural purposes of those areas which are most suitable to agriculture can be most fully assured by such means, and the worker can be provided with such material and cultural conditions as he has in the city and in the factory.

The coming years will be remembered in the history of forestry in the Far Eastern Territory for the widespread work of reforestation undertaken in those sections where the forests were destroyed by the former owners. The coming years will witness tremendous improvements in the distribution of the territory's lumber industry. Large construction projects have been approved, and their realisation begun: the Baikal-Amur Railway line, the Khingan-Bureya coal and metallurgical combinat; new cities (Komsomolsk, Sovietskaya Gavan) all call for the rapid development of the lumber industry in districts where it is undeveloped at the present time, and which will open to exploitation the tremendous forests which so far are almost untouched.

Together with the development of timber exploitation in the old lumber centers (the Ussuri basin, the southern coast of the Japan Sea, the middle reaches of the Amur), the lumber industry will develop extensively along the upper reaches of the Amur, in the basin of the Bureya river, along the lower Amur, on the northern coast of the Japan Sea. Thus, the lumber industry will spread northward and westward from the South and East.

PERPUSTAKAAN NASIONAL RI.
PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

PERPUSTAKAAN NASIONAL



SUPRIYANTO
TGL : 7-10-2015
PARAF : .....

PERPUSTAKAAN NASIONAL
REPUBLIK INDONESIA

PERPU