

Forestry and the Forest Products Industry

The forest is one of Sweden's most important natural resources and has a central role in an ecologically sustainable society. Utilization of the forest must occur in a way that maintains its productive ability, biodiversity, renewal and vigor without damaging other ecosystems.

Paper production accounts for more than half of both value-added and export value in the Swedish forest products industry. It is the industry segment that has expanded the most strongly for several decades, as new pulp capacity has been integrated with paper production. Market pulp production capacity has remained largely unchanged. Sawmill capacity has risen.

Climate, history and biotic factors divide Sweden into different forest ecological systems. The growing season is the period during the year when air temperature is higher than +5°C. In southernmost Sweden, it starts almost two months earlier than in the far north. In the west, precipitation in some places is twice as much as in

the east. This is because low-pressure systems and associated rain or snow generally come in from the west. About half the precipitation falls during the growing season.

The four vegetation zones are alpine/subalpine, characterized by treeless areas or birch; boreal, dominated by coniferous (evergreen) trees such as Norway spruce

and pine; boreonemoral, with a mix of coniferous and temperate deciduous (broad-leaf) trees such as oak, beech, ash, linden and maple; and nemoral, dominated by temperate deciduous trees. Although most of Sweden lies within the boreal coniferous zone, a large part of southern Sweden belongs to the boreonemoral vegetation zone. The southwestern corner of the country lies in the nemoral zone.

Growing stock, tree species and forest health

Since the 1920s the growing stock in Sweden's forests has increased by more than 60%. The annual increment today is almost 100 million m³ standing volume. The fact that the forests are today growing faster than in the beginning of the 20th century can largely be explained by chang-



es in land use and improved silviculture.

About 85% of the total standing volume consist of conifers. Norway spruce is more common than pine throughout Sweden, except in the northernmost region. Among deciduous trees, birch is the most common, making up two thirds of the deciduous growing stock. The standing volume of oak and beech has more than doubled since 1945.

Almost three fourths of Sweden's forest area consists of till—clay, sand, gravel and boulders deposited by glacial ice—and more than 15% of sediment. The average productive ability (site class) is 5.3 m³ of standing volume per hectare (ha) and year. The site class decreases sharply from south to north. On average, the growth increment is 4–5 times higher in the south than in the north. The forest's rotation period i.e., the number of years from planting until felling, is 60–100 years in southern Sweden and 70–130 years in northern Sweden. Several types of deciduous trees, with the exception of oak and beech, have shorter rotation periods.

Hard winds cause damage to the forest every year. During the late autumn of 1999 a few strong storms caused extensive forest damage in southern Sweden. Altogether 5–6 million m³ of standing volume was felled by wind that year. More recently, pine trees in central Sweden have been attacked by the scleroderris canker fungus (*Gremmeniella abietina*). An estimated 300,000 hectares of trees have been severely damaged.

Forest history

Although Sweden is a sparsely populated country, its forests show traces of human use over many centuries. Environments that are more untouched are today found only in the northern interior. Being located in national parks or reserves protects many of these forests. Consequently their old-growth character has been preserved for the future.

In southern Sweden and other regions of the country with a long agricultural tradition, forests served as a source of wood for construction, fuel and production of numerous useful objects and tools in an overwhelmingly agrarian society.

For a long time, especially in southern and southwestern Sweden, farmers cut and burned forests to create fields for short-term cultivation, thereby depleting nutrients from the soil.

As early as the Middle Ages, the forests supplied raw materials used in important Swedish export products. For several centuries, wood tar, pitch and potash were major sources of income. By supplying charcoal, the forests were also a prerequisite for perhaps the most important single industrial sector in the late Middle Ages and early modern period: mining and metals. This was especially true in central Sweden.

Due to rapid population growth in the 19th century, Swedish forests came under increasing pressure. Wooded areas were cleared to accommodate the proliferation of smallholder leases. Forests were thinned so that grass could be cultivated to sustain bigger herds of livestock.

Structure of ownership

What is especially apparent when comparing Sweden to other timber-producing countries around the world is that the State owns only 3% of the productive forests. During 1993 most government-owned timberland was transferred to a forest product corporation—AssiDomän—in which the State now owns 35% of the shares, and the remaining 65% are quoted on the stock exchange. However, in October 2001 the State offered to buy out all other shareholders, in a transaction to be completed by early 2002.

Private individuals (families) are the largest single category of forest owners in Sweden. In the southern part of the country, they are the dominant category, accounting for 80% of forest. Until World War II, most private forest owners were farmers who lived on their property and were engaged in crop cultivation as well as forestry. Since then the area of forest employed by this type of combined agriculture and forestry enterprise has dropped from more than 9 million to less than 4 million ha. Today many individual forest owners do not live on their forest property, but often in communities close to it or in more faraway cities and towns. The bulk of forestry work on their properties is now performed by employees of the forest owners' associations or by other contractors.

Forest products companies are the second-largest category of forest owners in Sweden. Their holdings are concentrated in central Sweden and some portions of northern Sweden.

Up to the end of the year 2000 nearly 12 million ha of forest have been certified in Sweden as sustainably managed. The national Forest Stewardship Council (FSC) certification system covers 10 million ha and the national Pan European Forest Certification (PEFC) covers 1.8 million ha.

Development of forestry technology

Until the 1950s all forestry work was manual and physically heavy. Today, felling is highly mechanized and takes place throughout the year. Development of environmentally friendly methods has been the goal throughout. Productivity in all forestry work is about nine times higher today than fifty years ago. Swedish forestry is characterized by increased utilization of information technology (IT) for support

to decision-makers, planning, monitoring, follow up and automation.

National forest policy

In Sweden, legislation on forest ownership and management dates back a long way. Because of their major economic role, forests have been a topic of regulations ever since the provincial laws of the 13th century.

The new national forest policy came into force on January 1, 1994. It incorporates the commitments made by Sweden at the United Nations Conference on Environment and Development (UNCED)—also called the Earth Summit—at Rio de Janeiro in 1992. Underlying this policy is the conviction that there will continue to be a demand for renewable products in the future and that Swedish forests can remain an important raw material base for processes that are based on principles of ecological cycles. Goals for both forest production and forest environment have been established. These two types of goals carry equal weight. The preservation of biological diversity is a key element of the new forest policy.

Sweden's forest policy states that, as hitherto, forest management will be characterized by multiple uses. Forests should be able to sustain hunting and the gathering of wild mushrooms and berries as well as active silviculture. The traditional Swedish "right of common access" implies that regardless of who owns the land, everyone is entitled to hike through the natural landscape and to pick mushrooms and berries that grow there. This is an important element of the multiple-use concept, but it also assumes that people behave in a respectful way. To the Swedes, common access is an important tradition and a privilege that is rarely abused. In northern portions of the country, the Sami (Lapp) minority pursue reindeer husbandry in forests on the basis of ancient rights. The Sami are legally entitled to use lands that belong to others in order to feed and protect their reindeer herds.

Swedish forest policy assigns "sectorial" responsibility for the environment. One consequence is that forest owners and forestry workers are responsible for obtaining the requisite knowledge to fulfill environmental measures. A few years ago, a major ecological and environmental training campaign was carried out. Known as Richer Forest (*Rikare Skog*), the campaign involved 100,000 participants and has already led to environmentally sounder forest management in Sweden. From 1999 to 2002 a Greener Forests (*Grönare skog*) campaign is underway. Its theme is how forestry can effectively combine high economic production with advanced environmental benefit. The goal here is also to involve 100,000 participants.

Since 1903 there has been legislation which requires planting and cultivation of new forests after logging.

Today's forest legislation contains provisions aimed at protecting key woodland habitats for flora and fauna, selected valuable deciduous trees (mainly oak and beech), forests located near high mountains and wetland forests. There are also special regulations governing some 4 million ha of low-productive woodlands that are not included in the productive forest. These regulations allow only careful low-intensity utilization, ensuring that the character of these woodlands will remain unchanged. Key woodland habitats function as the nodes of an ecological network, while forest wetlands and low-productive woodlands often comprise ecological corridors in the landscape.

Before new silvicultural methods or new forestry materials are put into use, a description of their environmental consequences must be presented to the Swedish forestry administration.

Sweden has a forest gene bank, which is responsible for preserving the original genetic material of the country's tree species.

Forest products—a major Swedish industry

Sweden is a "superpower" in the forest products industry. With one tenth of total global exports of forest products, Sweden is the world's fourth largest exporter of paper, the third largest exporter of pulp and the second largest exporter of sawn coniferous wood products.

The Swedish forest products industry plays a large role in the national economy than is the case in any other European Union (EU) country except Finland.

Forestry and forest products have been identified as a strong economic "cluster" in Sweden. These economic sectors collaborate with their suppliers in the engineering and chemical industries, the transportation sector, the IT industry, the construction sector etc. as well as with their own customers in the graphic, packaging and woodworking industries, among others. Such collaboration generates employment and enhances knowledge and expertise throughout the cluster.

Paper the largest segment of the industry

Paper production accounts for more than half of both value-added and export value in the Swedish forest products industry. It is the segment that has expanded the most strongly for several decades, as new pulp capacity has been integrated with paper production. Market pulp production capacity has remained largely unchanged. Sawmill capacity has risen.

Market and competitors

The Swedish forest products industry is strongly export-oriented. About 85% of paper and market pulp output is exported; the corresponding figure for sawn timber products is 75%. Western Europe is the dominant market. As European economic integration progresses, it is becoming the industry's "domestic market."

The pulp and paper industry in Sweden is Europe's second largest, after Finland, in terms of overall production capacity. It covers more than one tenth of the paper needs of the EU countries. It plays a crucial role in Europe's wood fiber supply, since its production is based overwhelmingly on fresh fiber production that is delivered to consumers on the Continent and in Great Britain, forming the necessary base for their paper industry, which is more heavily based on recycled fiber. Swedish pulp exports are also crucial to paper production in such countries as Germany, Great Britain and France.

Half of EU paper consumption consists of graphic paper—for newspapers, magazines, office use etc. With its largest newsprint production, Sweden supplies one fourth of EU newsprint. More than 40% of EU paper consumption consists of various kinds of packaging material. The Swedish forest products industry is well-positioned to cover this need and is the second largest supplier—after Germany—of this input product for the EU packaging industry.

The main competitors of Swedish paper suppliers in the European market are other Nordic and local manufacturers. In certain quality segments, there is also competition from non-European suppliers. Examples are Canada in newsprint, the United States in kraft liner and Brazil and Indonesia in fine paper. Paper imports from Eastern European countries to the Western European market are growing. However, Western Europe is a net exporter of paper, while pulp consumption must be covered by non-European imports,



mainly from the U.S., Canada and Brazil.

Swedish sawmills are rapidly increasing their degree of forward integration and customer orientation. Their exports are shifting toward a large share of semi-manufactures such as furniture components and glued laminated timber (glulam).

Production in Sweden

Of the total paper production capacity in Sweden, half consists of paper for graphic purposes and somewhat less than half of paper for packaging purposes. The remaining production consists of hygiene paper and various kinds of specialty paper. Of the graphic paper, half is newsprint. Printing and writing paper have expanded, increasing their share of production, along with corrugated material and paperboard for packaging. Sack paper and other kraft paper have declined as a share of total production and even fallen in volume; having accounted for nearly 30% of production in the mid-1960s, these qualities now represent less than 10%.

Of the total pulp production capacity in Sweden, two thirds are integrated with paper production. The degree of integration is highest for mechanical pulp and unbleached chemical pulp, which are mainly used for the production of newsprint and magazine paper as well as paperboard, kraft liner and kraft paper. Forty percent of the total production of bleached sulfate pulp is integrated with production of fine paper and paperboard, while most bleached sulfate pulp is sold in the world market.

Technical advances have led to major changes in the structure of Swedish pulp production. The role of sulfite pulp has sharply declined, while production of sulfate pulp has expanded and now accounts for nearly half of all pulp production. Production of mechanical pulp has largely been replaced by thermomechanical pulp (TMP).

Collection and use of recycled paper

Recycled fiber has become an increasingly important raw material in Swedish paper production and is used by 15 of the country's 48 paper mills. Most of the industry's recycled paper needs are covered by newspaper, magazines and corrugated board collected from households, retailers etc. Also used as raw material are packaging collected from household, paper from offices and production waste from printing plants and other paper conversion enterprises. Collection is supplemented by sizable imports. The average recycled paper content in total paper production is 17%.

Of newspapers and magazines in Sweden, 80% are recycled for use in new paper production. The recycling level for corru-

gated board is 84%. Adding office paper and household packaging, 70% of those paper products consumed in Sweden are used for making new paper. This is a very high percentage in international terms.

Restructuring and capital spending

The pulp and paper industry in Sweden has undergone major restructuring. Small mills have closed, while existing units have expanded and some new mills have been established. As of 2001, total paper capacity is 11.2 million metric tons at 48 paper mills, plus 11.9 tons of pulp at 45 mills. During the past four decades, average production capacity per mill has multiplied eight times for paper and six times for pulp. One key factor has been the need to take advantage of economies of scale. Another has been tighter environmental standards, which have required sizable capital spending that could not be borne by small units with low profitability. Another driving force has been changes in market demand.

At the company level, there has been strong concentration of ownership. Companies have shut down or merged with others. In the 1980s and early 1990s, large corporate groups were created, with diversified production in several of the main forest product categories, which include newsprint and other wood-based printing paper, fine paper, packaging material, hygiene paper, pulp and sawn timber. During most of the 1990s, the four largest groups established at that time accounted for more than 80% of total sales in Swedish forest product groups or companies.

Consolidation in Sweden laid the groundwork for extensive acquisitions of companies in other EU countries. These acquisitions have included paper production companies and to a lesser extent pulp producers, but also forward integration in the processing chain to include companies in the packaging and hygiene product areas. Swedish forest product companies have thus participated actively in the restructuring and consolidation process, especially in the European paper industry. In recent years, world-leading Nordic forest products companies have been formed by Swedish and Finnish companies. The consolidation process is continuing, for example by allowing companies to specialize in well-defined product areas for the purpose of gaining larger market coverage. Inter-continental consolidation has also begun, and the largest Nordic companies are becoming global. They are opening new sales and representative offices in Southeast Asia and North America. Alliances and collaboration in research and product development also exist, along with joint venture companies.

Although there are about 200 industrial sawmills in Sweden, the 20 largest ac-

count for two thirds of total production. Rapid restructuring and sizable capital spending are underway in the sawmill industry. Sawmills are very important from an employment standpoint, since they are located throughout the country and often form the core of business communities and employment in rural areas and the so-called forest municipalities.

The pulp and paper industry is capital-intensive. Capital spending in the pulp and paper industry represents a larger share of value added than in the manufacturing sector as a whole. Capital spending in the forest products industry—viewed over a number of years—averages 20% of total industrial capital spending in Sweden.

Part of a natural ecocycle

Paper and wood products are part of a natural ecocycle. When these products have been used, they can be recycled and their fibers can thus be reused a number of times. Finally these products can be incinerated and their energy content also utilized. The carbon dioxide that is generated by combustion is absorbed by growing trees through photosynthesis.

Fossil fuel use is the largest source of carbon dioxide emissions in the world. Biofuel is an alternative to fossil fuels. With a consumption of 90 million m³ of biofuel per year, Sweden has a larger share of biofuel in its energy mix than most other countries in Europe. The forest products industry is both the largest producer and the largest consumer of biofuel in Sweden. Forty percent of felled trees are transformed into energy for use in production or for external delivery. In addition, felling residues from treetops and branches can be utilized. There is potential to increase the biofuel extracted from the forest.

The Swedish forest products industry has made major progress in reducing carbon dioxide emissions: Its oil consumption today is one fourth of what it was 20 years ago, while the industry's production volume has increased by nearly 70% during this period. Due to low oil consumption along with carbon dioxide-free electricity and a high technological level at mills, the Swedish forest products industry has uniquely low emissions compared to other countries.

The industry's ecocycle employs recycled fiber both as a material for making new paper and as a fuel to generate energy. The use of recycled fiber for the production of new paper often has both economic and environmental advantages. But paper is also an energy-rich biofuel that can replace fossil fuels. In some cases it is better to use recycled paper as fuel, for example paper and packaging that are too dirty, or recycled paper collected in rural areas from which haulage to faraway mills would be too expensive.

After being reused many times, the fiber can be burned and yield valuable energy. Because paper is a biofuel, this can be done without disrupting the carbon dioxide balance of the earth. In Sweden, the technology for combining waste combustion with energy extraction is well developed. Only limited quantities of used paper products end up in landfills.

Altogether, material recycling and energy recovery use no less than 90% of the used paper products for which there is a legally defined producer responsibility.

Wood and paper products are also carbon dioxide "sinks." A wooden house binds carbon dioxide for perhaps 100 years, most paper products for a substantially shorter period. Using wood to replace other energy-intensive materials in structures leads to further lowering of global carbon dioxide emissions.



The environment

Internationally speaking, the Swedish forest products industry plays a prominent role in efforts to reduce environmentally hazardous emissions into the air and water. Emissions from mills have declined significantly and are now starting to fall to levels whose environmental effects are hardly measurable. The mills employ a strategy of at-source cleanup work, in other words improving their processes in an attempt to minimize the initial occurrence of pollution. External wastewater purification systems have also been installed. Examples of important changes in processes from an environmental standpoint are alterations in the digesting and bleaching procedures used in making chemical pulp. Such methods enabled the Swedish pulp industry to end all use of chlorine gas in 1993. They are an important step in efforts to increase the use of closed systems at pulp mills.

The industry's environmental activities have also broadened. Today they encompass the entire production chain from raw material to recycling of used products. One key element is to reduce the environmental burden from such sources as haulage and chemical use. Among the modern

tools used by companies are environmental management systems, which have been introduced at almost all the mills in Sweden's forest products industry. Environmental issues have become a natural part of company activities.

Research

Today the European pulp and paper industry leads the world in technology, with Finland and Sweden setting the pace of development work in Europe. Nordic supplier companies and converters also play a part in the European forest products industry cluster. Forest product research and higher education are preconditions for success. Aside from their own product development work, companies thus work together with central government agencies in research at universities, institutes of technology and industrial research institutes.

Research connected to the forest products industry occurs not only at companies but also at virtually all Swedish universities and institutes of technology. The hub of this research is next door to the Royal Institute of Technology (*KTH*) in Stockholm, at the Swedish Pulp and Paper Research Institute (*STFI*), as well as at the Association for Swedish Wood Products Research (*Träforsk*) and the Institute for Packaging and Distribution (*Packforsk*). *STFI* and *Packforsk* plan a merger in early 2002.

Karlstad University and Mid Sweden University also have strong pulp and paper departments, and the Luleå Institute of Technology and Växjö University have strong wood product departments. Forestry research is mainly concentrated at the Forestry Research Institute (*SkogForsk*) in Uppsala and at the Swedish University of Agricultural Sciences (*Sveriges Lantbruksuniversitet, SLU*), with programs in Uppsala and Umeå. Exchanges of researchers with other countries and international collaborative projects are also important components of industrial research in the forest products field.

Education and training

Programs of forestry education are offered by upper secondary schools and by the Swedish University of Agricultural Sciences.

The above schools provide not only basic courses but also in-service training. Moreover, the Regional Forestry Boards (*Skogsvårdsstyrelser*) and Forest Owners' Associations provide family forest owners with large-scale advisory services and extension courses.

Organizations

Numerous government agencies, industry organizations and others are active within

the forestry sector. Sweden's ministries are small, but subsumed under them are many relatively autonomous civil service agencies.

The chief responsibility for forest policy is vested in the Ministry for Industry, Employment and Communications, whereas the practical application of forest policy rests with the Swedish forestry administration. This consists of the National Board of Forestry (*Skogsstyrelsen*) located in Jönköping, and the ten Regional Forestry Boards.

Locally there are some 100 districts where forestry-trained personnel are in close touch with forest owners. The forestry administration is called upon to promote forestry; its operations include implementation of the Forestry Act, advisory services, distribution of government grants to forest owners performing contractual services, forest inventories, informational work, certain ecological matters, timber scaling regulations, forestry statistics and forecasts of trends in the forestry sector.

Many family forest owners are organized into six forest owners' associations. The associations cooperate in the Swedish Federation of Forest Owners (*LRF Skogsägarna*). Their 90,000 members own 6.1 million ha of forest (about 50% of all family held forest).

The associations were formed to improve the financial yield of forestry operations among their members. This is done by coordinating the timber trade and by helping the forest owners with logging and silvicultural practices. In order to ensure a steady market for timber and to control pricing, the associations have built up their own forest products companies.

The Swedish Forest Industries Federation (*Skogsindustrierna*) is the main organization of the forest products industry, with 80 pulp and paper companies and 260 sawmill companies as members.

The task of the Federation is to monitor and represent the interests of its members, while creating broader public understanding of the need for a competitive forest products industry in Sweden. Among its other tasks are to promote and monitor the interests of its member companies abroad. Sweden's forest products companies are manufacturers of a wide spectrum of pulp, paper and sawn timber goods.

The Swedish Forestry Association (*Sveriges Skogsvårdsförbund*) is an independent, non-profit organization that promotes forestry and related nature conservation. It organizes forestry conferences and excursions, and it provides information about the forestry sector.

The Swedish Environmental Protection Agency (*Naturvårdsverket*) is a governmental agency that coordinates and promotes environmental work.

Sweden's forest land, by owner categories, 1999

Private persons	51%
11.6 million (Mio.) ha. 250,000 holdings. 360,000 individuals of which 1/3 are women	
Forest companies	39%
8.9 million ha of which 5 companies own 7.6 Mio. ha.	
Swedish State	3%
1.1 Mio. ha.	
Other public bodies	7%
1.6 Mio. ha (commons, local govern- ments, Church of Sweden)	

Forest-related sector as % of GDP, 1998, value added

Pulp and paper	1.5
Forestry	1.3
Wood processing	0.9
Total	3.7

The largest producers of sawn timber in Sweden

CORPORATE GROUP/COMPANY	PRODUCTION CAPACITY, 1,000 m ³ SAWN VOLUME
SCA/Scaninge	1,400
AssiDomän	1,200
Stora Enso Timber AB*	900
Södra Timber	900
Finnforest/Moelven*	800
Mellanskog Industri AB	700
Vidakoncernen	550
Jabo	450
Geijergruppen	370
Norra Skogsägarna	350
Karl Hedin AB	350
Camfore-gruppen	280
Bergkvist-Insjön	275
Holmen	270
Derome-gruppen	250

*Part of an international group

The largest pulp and paper producers in Sweden

CORPORATE GROUP/COMPANY	PRODUCTION CAPACITY, 1,000 TONS
Stora Enso*	5,800
Holmen	3,200
SCA	3,000
Billerud	2,200
M-real*	1,500
Södra	1,400
Korsnäs	1,300
Kappa*	1,100
Rottneros Bruk	600
AssiDomän	600
Trebruk	500
Frantschach Pulp & Paper Sweden*	500
Munksjö	400
Domsjö	200
Klippan	200

*Part of an international group

Annual forestry measures, 1998–2000 average, 1000s of hectares.

	FAMILY FOREST OWNERS	OTHER OWNERS	TOTAL
Final felling	113	99	212
Thinning	168	92	260
Scarification	71	84	155
Planting	55	71	126
Precommercial thinning	119	78	197

Foreign trade

Exports, 2000		QUANTITY, 1,000s	VALUE, SEK MILLION
Paper and paperboard	metric ton	9,031	53,853
Wood pulp	metric ton	3,134	16,608
Sawn goods	m ³ solid volume	11,223	18,243
Wood-based panels + veneer	metric ton	246	1,840
Roundwood	m ³ solid volume	1,451	590
Chips, firewood, waste wood	metric ton	288	119
Waste paper	metric ton	179	269
Wood and paper products	metric ton	881	12,627
Exports, forest products			104,556
All exports			796,673
Imports, 2000		QUANTITY, 1,000s	VALUE, SEK MILLION
Paper and paperboard	metric ton	730	5,147
Wood pulp	metric ton	357	2,173
Sawn goods	m ³ solid volume	254	628
Wood-based panels + veneer	metric ton	461	2,276
Roundwood	m ³ solid volume	11,782	4,422
Chips, firewood, waste wood	metric ton	1,355	666
Waste paper	metric ton	703	622
Wood and paper products	metric ton	358	4,940
Imports, forest products			21,420
All imports			667,223

Web addresses for further information**National Board of Forestry**www.svo.se**Swedish Forest Industries Federation**www.forestindustries.se**Swedish Environmental Protection Agency**www.internat.environ.se**Forestry Research Institute**www.skogforsk.se**Swedish University of Agricultural Sciences**www.slu.se**Swedish Pulp and Paper Research Institute**www.stfi.se**Institute for Packaging and Distribution**www.packforsk.se

SEK 1 (Swedish Krona) = USD 0.12 or GBP 0.07 or EUR 0.12 (average 2000)

1 meter (m) = 3.28 feet

1 kilometer (km) = 1,000 meters = 0.62 mile

1 cubic meter (m³) = 35.31 cubic feet

1 hectare (ha) = 2.47 acres

1 metric ton = 1,000 kg = 2,204.6 pounds

To convert Celsius (centigrade) to Fahrenheit degrees, multiply by 1.8 and add 32.

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FOR FURTHER INFORMATION

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