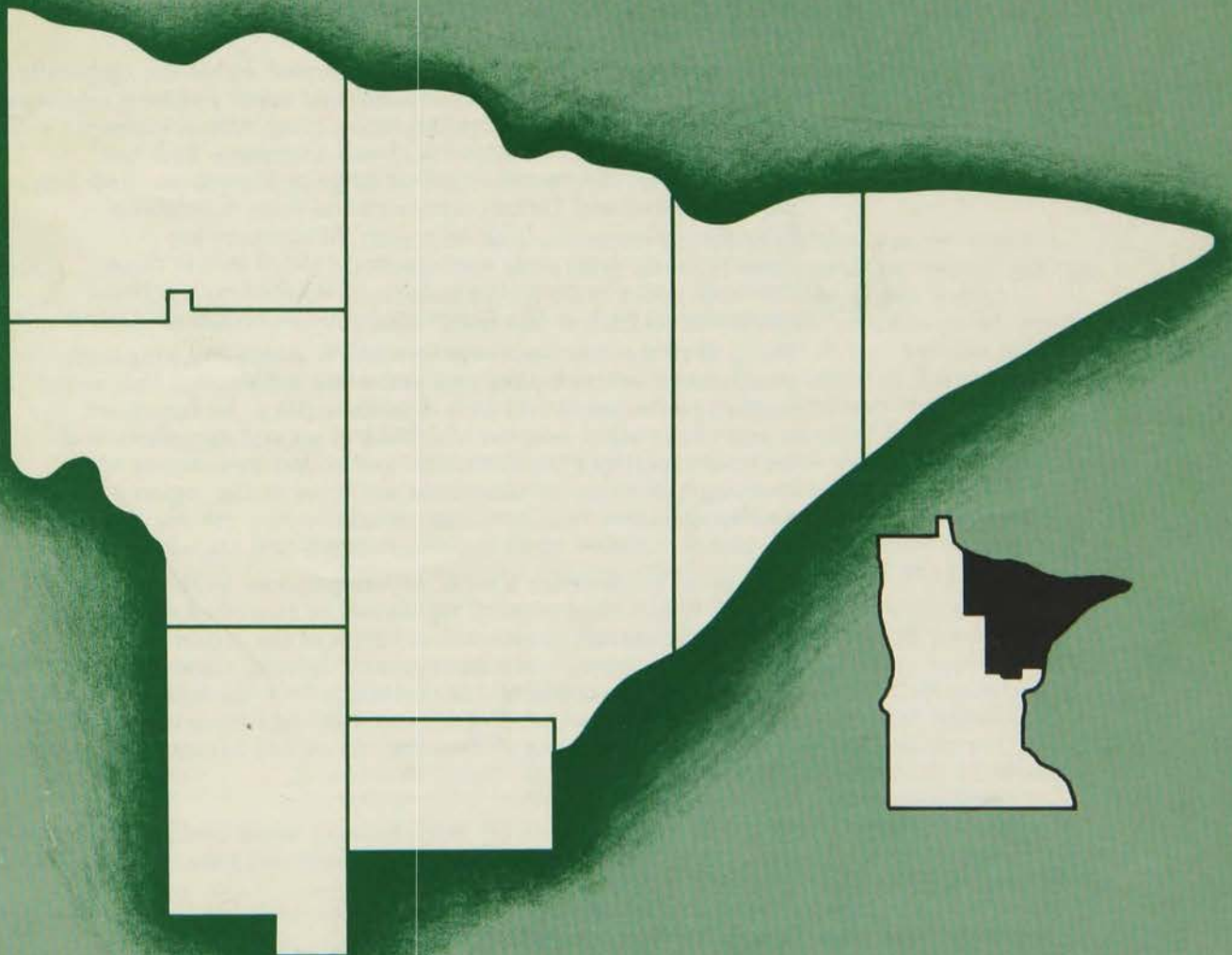


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NORTHEAST MINNESOTA: A Region in Transition

Summary Report of the
Northeast Minnesota Task Force



Agricultural Extension Service
University of Minnesota

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Foreword

The decade of the 1980s will continue to be a period of transition for northeast Minnesota as the region struggles to overcome severe economic conditions. High unemployment and low economic activity, due in part to a national recession, have led public and private policymakers to examine the economy of this part of the state with renewed interest.

In November of 1982, a task force was created within the University of Minnesota to focus on the economic and social problems existing in the seven-county northeast region (comprising Aitkin, Carlton, Cook, Itasca, Koochiching, Lake, and St. Louis Counties). Task force members, who represented a broad range of disciplines, came from the Twin Cities and Duluth campuses and from Agricultural Extension Service offices in the region. In addition, key representatives from state agencies participated in task force meetings, and communications were established with regional organizations such as the Range Economic Development Council.

The goal of the task force was to address short- and long-term perspectives, with emphasis on providing information that would be useful to regional and state decisionmakers. An important aspect of the effort was the synthesis of several disciplines and bases of experience in an attempt to discover new means of applying University of Minnesota resources to the region's problems. Rather than launching extensive new efforts, however, the task force drew upon existing research and knowledge.

This report summarizes a set of papers prepared by the members of the task force. These papers, which will be published separately, examine the current economic conditions of the region, explore potential development alternatives, and describe some of the activities of the University of Minnesota that might help the region. We wish to acknowledge the outstanding efforts of the task force members, who gave freely of their time and energy, above and beyond their normal workloads.

—G. Edward Schuh and Jerrold Peterson
Co-Chairpersons, Northeast Minnesota Task Force

Introduction

The seven-county northeast region has been plagued by reduced economic activity, high unemployment, and an increase in the demand for government human service programs. Between 1980 and 1982, unemployment rose to 20 percent of the region's labor force and was significantly higher in individual counties. During the same time, the gross regional product fell seven percent. As business, government, and labor officials struggle with the realities of the region's economic problems, there is growing evidence that the recent recession alone is not responsible for them. Even more frightening is the possibility that the future may hold much of the same.

Economists have identified structural problems in the region's economy that short-term growth and national prosperity will not solve. One far-reaching problem is that the region is highly dependent on one industry. Taconite production accounts for the largest share of economic activity in the region, and the future of this industry is tied to the long-term recovery of the nation's steel industry. Unfortunately, substantially increased steel imports, reductions in capital investment, and stagnant levels of steel exports are indicators of the future of this industry. Taconite production also suffers as steel companies increase the share of cheaper imported iron ore feedstock used for domestic steel production. If these national trends continue, short-term prospects for an improved regional economy are not promising.

Long-term prospects for improved economic activity are more positive, but only if the public and private sectors take the initiative and take it soon. The region has a rich supply of both physical and human resources. Mineral deposits (in addition to iron ore/taconite); large timber resources; the land resource for horticultural peat, agriculture, and peatland development; and the natural beauty for tourism all offer potential sources of economic activity. The necessary trained labor force and educational institutions are available to augment any development. Basic support systems, including a good transportation system, already are there. In addition, recent demographic trends indicate that the labor force may shrink as the population increases in age and as individuals migrate out of the region to seek more promising employment opportunities. These resources and trends add up to a guarded optimism regarding the future of this region.

Past and Present Conditions in Northeast Minnesota

The global recession of the past few years has resulted in reduced economic activity in Minnesota. Although the Twin Cities metropolitan area, with its manufacturing, high-tech, and service sectors, has experienced some economic problems, the effect in other regions of Minnesota has been much greater. The agricultural areas of the state have had to contend with the after-effects of a Russian grain embargo, low commodity prices, and high interest rates, all of which have resulted in depressed farm income and unemployment in farm support services like fertilizer and implement dealerships. Northeast Minnesota has experienced severe recessionary impacts in its taconite, timber, transportation, and tourism industries. The recession in the state economy has led to high unemployment, reduced state government revenues, and a significant increase in the demand for government human service programs.

The northeast region contributes a large share to gross state product (GSP). In 1980, Minnesota had a total GSP crudely estimated at \$43 billion; northeast Minnesota accounted for \$3.4 billion. Of this eight percent of GSP, the taconite industry contributed \$1.3 billion, the timber industry \$430 million, the transportation sector \$400 million, and the tourism industry \$100 million. All other sectors of the regional economy accounted for \$1.19 billion of the gross regional product (GRP). As a result of the recession during 1981-82, GRP in northeast Minnesota declined seven percent or \$240 million.

To measure the effect of this reduction in GRP, one only has to look at employment trends. During that period, employment fell by 11,000 jobs, resulting in some of the highest county unemployment rates in the country. The accompanying table presents estimates of the unemployment rate between January 1981 and January 1983. Although the rate for Minnesota has remained below the national rate, the rate for northeast Minnesota has remained above it. Even more alarming is the

pattern for individual counties. Those counties and areas that depend on the taconite industry for a major share of their employment have suffered far greater rates of unemployment. Lake County and the portions of St. Louis County that do not include the Duluth area all have had higher rates than the region in general. These areas also are susceptible to cycles of employment trends as taconite plants close and reopen in response to the demand for taconite. (This table does not account for all of the employment problems in the region since it does not measure the underemployed and those who are now working only part time.)

The long-term prospects for economic recovery are not good. Despite some promising possibilities, the global recession clearly has had a lasting effect on the region. Since the demand for taconite is expected to continue to fall below production capacity for the region, as many as 10,000 jobs that are directly or indirectly tied to the industry are thought to be permanently lost. This loss consists of 4,000 mining industry jobs and an additional 6,000 jobs related to the construction and support sectors.

Unemployment rates for the nation, state, and northeast Minnesota, January 1981 to January 1983

Area	January 1981	July 1981	January 1982	July 1982	January 1983
Nation	8.3	7.3	9.4	9.8	11.4
Minnesota	6.7	4.9	7.4	7.4	10.4
Northeast Minnesota (seven-county region) .	10.9	7.0	12.8	18.5	22.1
St. Louis County (excluding Duluth) ...	11.4	5.6	13.8	25.2	27.5
Lake County	8.4	5.8	10.6	34.7	27.6
Duluth	7.9	7.3	9.5	11.0	15.4

Source: *Northeastern Minnesota Labor Market Review*, Minnesota Department of Economic Security.

Taconite Production: Tied to a Declining Steel Industry

The taconite industry is the most important sector of the economy in northeast Minnesota. In 1980, the mining industry directly accounted for 12 percent of regional employment and 21 percent of total wages paid. Indirectly, this industry contributed a much greater amount to the economy. And in some areas of the region, this industry is even more important. For example, the mining industry in St. Louis County (excluding Duluth), accounted for 30 percent of employment and 46 percent of wages paid in 1980.

The region's taconite industry is tied directly to the domestic steel industry, since northeast Minnesota supplies 64 percent of the domestically mined iron ore used in steel production. Unfortunately, the U.S. steel industry is in trouble. World steel demand more than doubled between 1960 and 1980, but domestic production only increased by 20 percent. During the same period, Japanese steel production increased sevenfold and European Common Market production rose by 70 percent.

Over the last 20 years the U.S. steel industry has faced increasingly stiff foreign competition. In 1980, U.S. demand for steel was 101 million tons; 83 percent of this steel was supplied domestically and 17 percent was imported. With current trends, demand soon will increase to 151 million tons by 2000, with the domestic share falling to 70 percent and imports increasing to 30 percent. Just as harmful to the taconite industry in northeast Minnesota is the trend within the U.S. steel industry toward using more cost effective imported iron ore. Imported ore is forecasted to rise from 14 million tons in 1980 to 35 million tons by 2000, while domestic production declines from 49 million to 44 million tons of contained iron. As a result, taconite shipments from northeast Minnesota will fall from 50 million tons in 1980 to 46 million tons by 2000.

One cause of the decline in the U.S. steel industry has been its inability to adopt more efficient and cost effective technologies. The U.S. steel industry lags behind other countries in three areas of

technical improvements that would result in fewer labor requirements, less energy, and increased efficiency:

- Both the Japanese and the Europeans have made the conversion from open hearth furnaces to basic oxygen furnaces more quickly and to a greater extent than the United States has.
- The United States has been slower in adopting continuous casting technology. In 1978, continuous casting was utilized by Japan and West Germany for 45 and 37 percent of total production; in the United States it was utilized for 12 percent of total production.
- The United States has lagged behind other countries in adopting direct reduction technology. Studies over the past two years have demonstrated that this technology currently is infeasible for northeast Minnesota, but other production technologies have yet to be examined.

In 1982, the U.S. steel industry lost in excess of \$3.5 billion. The steel companies and, indirectly, the Minnesota taconite industry face a tough challenge, as outlined in the accompanying chart. What is likely to happen is that domestic steel production will decline to around 75 percent of its peak value and taconite pellet production probably will not exceed 50 to 60 percent of total capacity over the next few years.

Factors related to steel industry problems

<i>Domestic factors</i>	<i>International factors</i>
Costs for:	Strength of dollar
Labor	Exchange variability
Energy	Excess export capacity
Capital expansion	Government subsidies
Environmental control	Policies of developing countries
Domestic ore	Iron ore developments
Age of plants	Low demand forecasts
Excess capacity	
Import pressures	
Low scrap prices and minimill competition	
Low demand forecasts	

The Impact of Changing Regional Demographics

Demographic trends will have a large impact on the ability of the northeast region to adjust to the realities of the future. As its population ages and migration out of the region continues, the unemployment outlook will change. Recent economic troubles have forced the younger, more productive elements of the population to move out of the region because of high unemployment, a low rate of retirement, and better job opportunities in other parts of the country.

Examining the current characteristics of the population is important to understanding the possible demographic trends. Total population in the region grew just less than four percent between 1970 and 1980, but this growth generally was located in Hibbing, Hermantown, Cloquet, and the International Falls area. The population also aged, since younger individuals and families were moving out and an increasing number of older individuals were moving into the region for recreation and retirement activities. In general, then, the population of the region is older than the state as a whole, and there are fewer households with persons in the productive ages between 25 and 45. Northeast Minnesota also is characterized by a low labor force participation rate, which is attributed to the low female participation rate in all age classes. Low female participation is partially due to cultural traits, but it also can be traced to the fact that the economy, which is based heavily on mining and forestry, is a materials producing economy.

To make predictions about future demographic trends, population characteristics must be linked to economic projections. Two projections have been made, each assuming a different economic output. The first projection, a baseline approach, assumes no outmigration from the region and a population growth from 343,000 in 1980 to 367,000 in 1990. This option is derived from the simple assumption that population and industry growth rates for

northeast Minnesota will correspond to rates for the nation as a whole. The largest increases would occur in the 25 to 44 year group, whereas the 45 to 65 age group would stabilize after a small decline. In contrast, the differential population projection shows a declining total population in all age groups except the oldest. This option involves a complex set of assumptions related to the competitive positions of regional export-producing industries, particularly manufacturing. This projection assumes a large amount of outmigration of individuals and families in the 25 to 44 year age group. As a result of outmigration by the childbearing age group, the under 16 age group also is expected to drop sharply in the 1980s. Under this option, total population is expected to decline to 280,000 by 1990.

Of the two projections, the differential option appears to be the more likely to occur given the economic outlook of the region. If the assumptions in this option hold up, the implications for the labor force in the northeast region still may prove to be a problem for the economy. Under the baseline projection the labor force (16 years and older) would increase from 147,000 in 1980 to 162,000 in 1990, whereas the differential option projects a decrease in the total labor force resulting in a 1990 figure of 117,000. Unemployment under the baseline option would increase from 15,000 in 1980 to 18,000 in 1985 and return to 15,000 in 1990. Under the differential option, unemployment would increase to 19,000 in 1985 and then drop to 13,000 in 1990. With either option, unemployment remains a large problem for the region. Under the differential option, the unemployment rate would remain above its 1980 level during the 1980s. The largest loss of jobs under the differential option would occur in mining, manufacturing, selected private services, and local government, but the total number of jobs in every type of occupation would decline.

Retraining Efforts Not a Likely Solution

If we assume that the taconite industry will never return to its peak employment level, retraining should play a major role in developing new industries for the region. Unfortunately, retraining is expensive and the rate of return from retraining investment may be lower in northeast Minnesota than in other parts of the country. The value of retraining can only be realized if there are employment opportunities to train for; if there are none, retraining is a costly and possibly worthless investment.

Retraining should be considered an investment and the rate of return on retraining should be compared to the rates of return on alternative uses of funds. Human capital theory demonstrates that the older a worker is, the lower is the rate of return from an investment such as retraining. Unfortunately, the demographic characteristics of the region show an aging population and a demand for retraining from those who, in theory, would benefit the least. This disincentive to retraining in the region is partially offset by the seniority provisions in layoffs. Layoffs, in general, occur in order of seniority so that those who can benefit most from retraining are released first.

The success of retraining programs depends in large part on the willingness of workers to participate. Most retraining programs experience low participation rates, generally between 6 and 16 percent. Even the most successful programs have trouble achieving participation rates over 40 percent. One highly successful program in Wayne County, Michigan, boasted a participation rate of 38 percent and a 50 percent reemployment rate for those who did participate. If that program were matched in northeast Minnesota, only 2,090 workers of the estimated 11,000 permanently unemployed would find reemployment.

A factor that would limit participation in northeast Minnesota programs is the revolving layoff, under which companies cut back by laying off employees for short periods of time or by going to shorter work weeks. Incentives for retraining decline when an employee perceives that he or she soon will be working again. And the problem is further

exacerbated if the jobs they are being trained for would most likely pay less.

One of the major stumbling blocks to retraining in the United States is the ill-defined responsibility for layoffs and retraining. Private companies shy away because of the cost factor, labor unions and workers believe it is the responsibility of the company, and government often is left to fund and implement the programs. The most successful approach to retraining is for labor, management, and government to react to the fundamentally changed circumstances of the region together. The three should cooperate in designing a retraining program for displaced workers if they think it would be economically feasible.

A detailed skill analysis is important for an accurate diagnosis of the nature of the displaced worker problem. If the basic skill requirements of the new jobs are fundamentally different from the skills possessed by displaced workers, then policy should be directed at general formal training in schools and colleges. If, however, workers lack desired specific job skills and also lack some general job skills, they can acquire them most efficiently in on-the-job settings. Workers who participate in retraining for jobs that will likely be lower paying may require subsidies, possibly in the form of partial income maintenance payments funded by government.

If successful retraining programs are to take place, a complete examination of the region and possible retraining programs will be necessary. Required skills need to be identified, and the potential success of retraining programs must be assessed. Outside factors such as the revolving layoff procedure or the unemployment insurance system have the effect of hindering adjustment to new economic realities by encouraging workers to wait until they are called back to work. Once all factors have been considered, the decision to commit funds to retraining programs can be made. A retraining program may, however, be more costly than permanent income maintenance, particularly if no economic recovery occurs to create new jobs. In this situation, retraining may not be an efficient private or social investment.

Support Systems Probably Are Adequate

Local government in northeast Minnesota provides a variety of services, some local, like roads, sewers, and public safety, and some statewide or nationwide, like human services and education. Funding for local government comes through local sources—from property taxes and fees for services—and through substantial amounts of state and federal aid. This pattern of shared revenue responsibility matches the rest of Minnesota, but there are distinct differences. Some of these differences should raise concern among local officials.

One difference is that communities in the Iron Range areas of the region receive a large share of local government revenue from the taconite production tax, a replacement for property taxes that is based on current taconite production or on the average of production over the most recent three years, whichever is higher. Since production of taconite has declined significantly over the past few years, this source has failed to generate expected revenues.

Another possible area of concern to the region is the amount of federal aid it receives. Although the amount varies from one unit of local government to another, specific cities rely on federal aid for a significant share of their budgets. For example, in 1980, the city of Duluth received 40 percent of its intergovernmental revenue in the form of federal aid, more than three times the average for all other cities in the region. With the recent changes in federal budget priorities in Washington, cities that have relied on large amounts of federal aid could feel increased pressure as federal aid declines.

Existing support systems generally are sufficient in the region. The challenge will be to generate the necessary funds to continue general maintenance and to construct new systems for specific development projects. As economic conditions constrain local revenue and as state and federal aid becomes less reliable, local governments will face tough choices between providing basic services and maintaining support systems.

The transportation system in northeast Minnesota should be the envy of most regions. Where high transportation costs exist, they are due to the distance to markets or to physical and climatic conditions. The transportation system is mature and some disinvestment should be expected as industry and population shifts occur. Specific development projects, such as new timber production, may require public or private investment in transportation facilities to provide access or to remove local constraints. Investment in transportation that is unrelated to specific economic need will be of limited use in attracting industry to the region, however.

Problems do exist because of highway weight limits and seasonal weight restrictions, but primary and secondary roads in the region are extensive and mature. The railroad system provides the region with major advantages, but some investments in new branches for mineral development or in facilities such as intermodal yards may be helpful for industrial development. The water transport system currently has excess capacity given the economic conditions. If improved economic activity eliminates the excess, some channel, harbor, and terminal improvements may be desirable.

Development Options for Northeast Minnesota

One objective of policymakers for the region will be an attempt to diversify the economy to provide more jobs and to avoid the cyclical nature of the regional economy. The region is rich in natural resources that can be the base for much potential development. A geological base that is favorable for the discovery of mineral deposits provides an opportunity for the mineral sector to expand its development to other mineral sources. The region contains some of Minnesota's largest deposits of peat, which can provide a resource for energy and for horticultural peat. An increased and diversified timber industry is possible by expanding the use of the state's vast forest resource. Many of these same lands also can provide the growing medium for energy crops, commercial horticultural operations, and agricultural development. Finally, the scenic value of the region's lakes and forests is a drawing point for a tourism industry that has yet to reach its potential.

Expanding the Mineral Sector Beyond Taconite

The mineral sector in northeast Minnesota has for decades been the predominant economic activity of the region. First iron ore was mined. As iron ore deposits became too scarce and mining them became too expensive, taconite development picked up the slack. Now that factors such as foreign competition and increasing costs are beginning to affect the taconite industry adversely, other mineral production may provide further development in the mineral sector. Northeast Minnesota's iron ore and taconite production has been a consistent and important factor in the health of the state economy; it has made Minnesota one of the leading states in nonfuel mineral production. By the end of 1982, the mining activities in the region had contributed more than \$2.5 billion in tax revenues for the state. There is no visible technology or mineral development opportunity that could have a significant impact on the current crisis within the

next two years. Longterm alternatives for expanding the mineral sector in the region include improving the quality of iron ore raw materials, enhancing the value of iron based products through further production, and providing a broader base for mineral diversification, all of which require additional research.

A large international oversupply of raw iron ore material, represented in Minnesota by taconite pellets, is likely to persist for several years, creating a high competitive market for the product. For Minnesota's taconite industry to remain competitive, the quality of raw iron ore material must be improved and operating costs must be lowered. Higher quality feed material can increase U.S. domestic production relative to imports by improving blast furnace productivity. Another means of withstanding economic pressure from imports is to lower operating costs by finding more efficient ways of producing taconite pellets. Both of these options have a probability of success since the problem areas and technology are well known both to industry and to academia. They will, however, require substantial cooperative research between industry, the state, and the U.S. Bureau of Mines.

The second alternative involves research to identify potential economic routes for producing iron based products with higher added value. Studies over the past two years have indicated that although conventional direct reduction processes are not economically viable in Minnesota, direct smelting, the production of raw steel products, or the production of higher value products such as alloy steels could have significant economic impact and provide new, although limited, employment opportunities. The nearby peatland resource may provide a local source of energy for these new processes. This long-term alternative requires both basic research and demonstration plants to determine whether these efforts would be economically feasible. There is no basic motivation for industry to explore added value operations in Minnesota, so any efforts would require state initiative and funding.

The final alternative involves developing a broader base for the state's mineral industry. Minnesota is known to have significant mineral deposit potential, but the extensive cover of glacial drift has hidden the base rock from classical mineral exploration activities. To determine the true nature of these potential deposits, the Minnesota Geological Survey currently is mapping the state for possible mineral deposits. This effort must be accelerated and a comprehensive program for interpreting and publishing the results must be developed to encourage commercial exploration. At the same time, forward looking fundamental research should be developed to tackle the technical aspects of mineral processing and metal extraction for the nonferrous metals that are known to exist in the rock structures of Minnesota. The potential impact on the region's economy is promising, but much depends on the findings of current research efforts.

During this period when private industry is curtailing its research efforts, the state must take a larger responsibility for developing and funding a long-term research plan. This plan not only should develop the research needs outlined above, but it should include training engineers for development activities and insuring adequate funding in both the public and private sectors. Although long-term research results cannot be predicted, the experience with taconite process research provides an example of a promising outcome.

Developing Minnesota Peatlands

With the adverse economic conditions in northeast Minnesota likely to continue for some time, some see peatland development, specifically for energy, as a means of increasing employment opportunities. Unfortunately, despite growing pressure, the effect that development might have on the environment is not fully understood. Although experience in Europe proves that development is technically possible, the unique characteristics of Minnesota peatlands, both environmental and economic, will challenge potential developers.

Minnesota has almost six million acres of peatland, but actual commercial reserves are much less once constraints such as depth, quality, environmental limitations, and conflicting land uses are taken into account. Minnesota peatlands are part of a larger wetland resource that may be suitable for development. Like peatlands, available wet mineral soils generally are located in most of the counties of the northeast region.

There are three general uses being considered for the region's peatlands:

- Nonrenewable uses in which peat is extracted for energy fuel, for industrial chemical production, or for horticultural peat.
- Renewable uses in which peatland is a growing medium for energy crops (willows or cattails), agricultural products, and timber resources.
- Preservation of peatlands as unique natural systems, as a resource base for future generations, or for scientific, recreational, historical, or aesthetic value.

Current development of Minnesota peatlands is limited to drainage for agriculture (generally in the southern regions of the state), timber production, and horticultural development (with about 2,000 acres in production). There also are a few small scale energy production sites, but this development, along with energy crops and industrial chemical production, is still largely in the research stage.

Future development of Minnesota peatlands should be viewed with guarded optimism. Although agriculture and timber production will remain the predominant uses of peatlands, both horticultural and energy development can be expected to grow in importance. Horticultural peat extraction is likely to expand since Minnesota remains a net importer of horticultural peat and out-of-state markets also are being examined. Only a limited number of jobs would be created from this expansion, however, and they would be seasonal and would not pay as well as the mining jobs they might replace. Energy development holds some promise, but this type of development will be limited for at least the next few years. At this time, economic constraints apparently favor small scale development, which limits the number of jobs created. This situation exists for both renewable and nonrenewable energy development. Future development will depend partially on funding from public sources. Financing opportunities have been enhanced recently by new programs at the state and regional levels.

Reviewing the current trends in peatland development in Minnesota, the following conclusions can be drawn:

- The development of Minnesota peatlands for horticulture and energy development is technically feasible at this time.
- The scale of a specific development proposal has direct influence on the economic and environmental feasibility of a proposal.
- Peatland development for the next few years may be limited to horticultural development and pilot plant energy development.

- The creation and expansion of markets is the most important component in the future development of state peatlands for both horticultural and energy development.
- Peatland development will offer only a limited number of job opportunities in northern Minnesota.
- Peatland development in the near future may be dependent on government financing or incentives.
- Some environmental problems, specifically those that deal with water quality, remain unanswered and must be dealt with in future development.
- The state must continue its efforts in determining peatland development policy in the near future.

Encouraging New Development in the Timber Industry

Northeast Minnesota supports a significant primary forest products industry that is expected to continue growing. Although the primary industry is strong, several opportunities for diversification and industrial expansion exist: 1) a potential for development of a larger wood-based secondary industry, 2) an appreciable surplus annual growth of several species that could provide the raw material base for new economic activity, and 3) the possibility of a greatly expanded wood industry through aggressive management of regional forests.

The forest industry is a major source of employment and economic activity in northeast Minnesota. In 1975 it was estimated that the industry directly accounted for 6 percent of regional employment and 11.6 percent of total employment when related indirect employment was included. The industry also has a significant effect on regional economic activity, with relatively high economic multipliers. Of the 33 sectors of the regional economy, the pulp and paper products sector ranked third and the lumber and furniture sector ranked fifth. Approximately 90 percent of the region's total sales of forest products were made outside the region and 69 percent were made outside the state, demonstrating the industry's strength as a basic industry. Pulpwood, the largest component of the region's timber harvest, accounted for 87 percent of the total 1.73 million cords harvested in 1975. Fuelwood for residential and industrial heat accounts for an increasing share of the total harvest; 45 percent of the region's households used fuelwood during the 1978-79 heating season.

The secondary wood processing industry provides a promising development option for the region. Since recent changes in shipping rates have erased much of the advantage long enjoyed by West Coast wood products producers, the local industry has become more competitive in local and eastern markets. Specific secondary products that have potential include:

- Dimension blanks (or panels of edge-glued strips of wood) made from underutilized hardwoods such as paper birch. Blanks would be sold either to secondary processors in place of random width/random length hardwood lumber or would be sold as "handy panels" for use by home woodworkers through retail distribution centers.
- Specialty products such as wood turnings, wooden boxes, novelties, and the like made from paper birch or other underutilized hardwoods.
- High value finished products such as furniture. In addition to paper birch, quantities of saw quality maple, ash, yellow birch, and aspen in the region could support this kind of product line.
- Structural composite I-beams made from oriented strand board or waferboard and locally produced softwood lumber. This type of product is used in place of softwood dimension lumber of large sizes (2x6, 2x8, 2x10, 2x12) that are increasingly difficult to obtain. A similar product now manufactured in a large mill located in the western United States is being distributed nationwide and is reported to be finding ready acceptance in the marketplace.
- Treated waferboard or oriented strand board with high resistance to decay and insect attack. Although present markets for these products do not require a high degree of resistance to biological organisms, development of this characteristic could open up markets in the southern United States, in tropical regions of the world, or for specialty applications where service conditions are severe.

All the products listed above would require labor intensive processes, although large numbers of new jobs could not be anticipated in the short run. Of the five product areas listed, production technology has been proven for the first three; the fourth and fifth options will require some technical product development (two to four years).

Another means of improving the potential for developing the forest industry is to increase harvest levels. Much of Minnesota's timber is mature and its harvest and replacement by younger, more vigorous forests would result in significant increases in wood fiber production. Harvest levels also can be increased by utilizing public and privately held

forestlands that have been previously neglected or set aside. In addition, long-term growth rates in the region could be increased by applying proven forest management practices such as timber stand improvement, planting, and prime site identification and management.

To convert the opportunities outlined above into reality, the following actions should be considered:

- Participation of municipalities in the proposed Iron Range Star Cities Program.
- Development of containerized shipping facilities in Duluth to reduce transportation costs.
- Upgrading of the secondary road network to increase accessibility to timber stands.
- Completion of site specific timber inventories of county and municipal forests and identification of highest quality lands.
- Development of comprehensive long-range management plans for regionally administered forests.
- Development of policies to improve utilization of wood from sites that are harvested.
- Use of stumpage discounts and other methods to stimulate harvest of low value or isolated forest stands.
- Use of aggressive enforcement to prevent timber theft or random harvest of timber for use as fuel.
- Determination of ways to provide sustained and adequate financing for county land management programs.
- Use of zoning laws to prevent loss of prime forestlands to agriculture and other development.
- Development of harvest guidelines and establishment of inducements to insure reforestation of harvested sites.
- Development of landowner associations or cooperatives to encourage management and harvest of privately held lands.
- Local bonding to underwrite establishment of new manufacturing facilities.
- Cooperation with the University of Minnesota, the Department of Natural Resources, industry representatives, and consultants in evaluating the potential for new products from local raw materials.

Expanding the Horticultural Industry

Two separate industries exist for commercial vegetable and small fruit production in northeast Minnesota and other areas of the state. The

processed industry, in which the vegetable or fruit is frozen or canned, presently has excess capacity and as a whole is not seeking new processing sites aggressively. Some limited potential in the future may exist for very specialized, high demand products. Because of trends in the *fresh market industry* for vegetables and fruits, consumer demand is increasing. Consequently, the potential for development of a fresh market industry is far more encouraging than is development of a processing industry in northeast Minnesota.

Despite the natural constraints in northeast Minnesota, several conditions constitute advantages for developing a fresh market industry. These include a climate particularly favorable to certain crops; adequate acreages of sandy, sandy loam, and peat soils, all of which are excellent vegetable and fruit growing mediums; and an abundant water supply for irrigation. The region also is much closer to the highly populated eastern and midwestern markets than California is. And it has a good transportation network to move the products to these markets.

Several extremely important factors must be considered in developing a fresh market or processing industry:

- The area must have highly motivated, knowledgeable entrepreneurs who are willing to take leadership in the production, packing, or marketing and distribution of products. Each of these areas constitutes a significant business area.
- Motivated growers with the resources (land, capital, labor, and equipment) to be successful must be present. This business requires a long-term commitment to be successful.
- The industry must have access to an adequate labor force. Fresh vegetables and small fruits are labor-intensive commodities in almost all aspects. Although there appears to be a significant supply of labor given the unemployment rate, the work generally is seasonal and would pay less than many of the jobs the industry would replace. The largest demand for labor would be in harvesting and packing, which require both skilled and unskilled workers.
- Facilities for cleaning, grading, packing, and cooling must be available in order to prepare products for the wholesale fresh market. One average packing facility probably accommodates 2,000-3,000 acres, depending on the mix of crops being packed. The cleaning, grading, and packing operation constitutes a business in itself. An individual operating such a facility might be providing service to a large number of growers who do not have the necessary capital for this kind of operation. The number and size of growers that can be

efficiently serviced by a packing facility is being studied.

- The industry must have access to the markets. This entails having knowledge of market volume and packing requirements and being able to supply what those markets want.
- Market development must be a continuous activity to evaluate changes in the market and to be on top of new markets that develop.
- A research system must be in place to solve problems that will arise unexpectedly and continuously.
- As a companion to research, a system must be in place that provides grower education and training and that assimilates new technology applicable to the industry.

Vegetables that should be adaptable to the region and to the factors outlined above include the cole crops (broccoli, cauliflower, cabbage, etc.), asparagus, and other crops for which early varieties are available. Small fruit crops include blueberries, strawberries, raspberries, and cranberries.

The most serious limiting factors in starting a viable fresh vegetable or small fruit industry are a knowledge of available markets and how to gain access to them and the facilities for packing products for a particular market. Efforts to encourage industry development should be targeted at those areas and should encourage interested entrepreneurs to take the risks.

Capitalizing on Limited Agricultural Opportunities

Minnesota is a strong agricultural state, but agriculture in northeast Minnesota accounts for only a small share of regional employment and income. Some portions of the region do support a significant agricultural sector, but the physical constraints of the majority of the region limit its size. These constraints include climate, land cover, and drainage requirements. The potential for further development of this industry is limited due to current low commodity prices, high interest rates, and the high debt requirements for starting farming.

The best alternatives for providing sufficient income to support a full-time farming venture in the region are a high producing dairy herd or a feeder pig operation. Unfortunately, the dairy industry is facing a nationwide surplus and milk prices will most likely come under downward pressure over the next few years. Feeder pig production becomes less competitive as the operation moves farther

away from the feedgrain areas of the state. This constraint also is the case for poultry enterprises (chicken and turkey), since the transportation costs for feed increase the farther north the operation is. Cash grain production, which is highly established in other parts of the state, is limited here by the soil types and climate. The land is better suited for forage production.

Part-time farming offers a better alternative for developing the agricultural industry in the region. The majority of farm operators in northeast Minnesota work off the farm for at least 100 days per year. This situation is likely to continue since the opportunities for full-time farming are limited. To make part-time farming profitable, two things must be considered. The enterprises selected must provide high returns per hour, and ownership of expensive machinery must be avoided since small operations cannot carry large overhead costs. Given these considerations, beef cow operations and hog farrow-to-finish operations appear to be the best alternatives. Net returns for these operations are low relative to capital investment required, however, so even part-time operators must be encouraged to contact local agricultural extension offices for information on production, management, and marketing practices.

Tapping the Region's Invaluable Tourism Resources

Northeast Minnesota is rich in the natural attributes that are an important part of the tourism industry. Some of the major attractions of the region include: the natural resource base that provides for activities like fishing, hiking, hunting, and scenic viewing; officially designated state and national parks, forests, wilderness areas (including the Boundary Waters Canoe Area), and monuments; interpretive facilities; industries like mining and shipping (through the Duluth harbor); festivals and other special events; and the presence of friends and relatives of visitors. Although the region's tourism industry has taken advantage of these attractions, potential for further development exists.

The tourists who visit northeast Minnesota come from:

Minnesota (mostly the Twin Cities)	50 percent
Other Upper Midwest states	40 percent
Other areas, including foreign countries	10 percent

These visitors are offered services from about 900 resorts, motels, and hotels (1970); public and private campgrounds; restaurants; service stations;

bait and tackle shops; grocery stores; and other tourist services. The industry does not contribute to the regional economy to the same degree that the taconite industry does, but tourist services do supply the region with income and a significant number of jobs.

Investment is a crucial factor to the success of the industry. Investments in services, facilities, and other attractions certainly are needed to maintain and upgrade the quality of tourist attractions, particularly in the long run. But the greatest and quickest return is likely to result from well conceived investments made in marketing, particularly since only about two-thirds of the existing total commercial accommodation capacity is being utilized during the peak period from mid-May through September. The ultimate objective of tourism marketing is to influence visitors to come and spend money in the region. Investments can be made in facilities, services, and other attractors, but marketing is essential to realizing area income from them.

Experience with recent publicly financed (in part) cooperative tourism marketing programs involving several northeast Minnesota firms and associations suggests some guidelines that can increase the likelihood of success. Among the important ones are:

- Investment by the private sector must accompany public sector investment.
- Marketing programs should be based on thorough marketing plans grounded in the best available market information.

- Programs should be targeted to specific markets and maintain a consistent theme.
- Response to inquiries from prospective vacationers should be fast and should provide enough specific information for the inquirer to make reservations.
- Roles and responsibilities for the planning and operational aspects of the program should be clearly understood by all participants.
- A means of evaluating the program should be built in at the start.
- Professional expertise in the private and public sectors should be utilized as much as possible.

The potential success of these programs can be demonstrated by the "Vermilion 82" marketing program. As a result of an initial program cost of \$47,826 (\$33,000 public and \$14,826 private), tourists spent an estimated \$366,700 in the Lake Vermilion area. This represents a direct tourist spending return of \$7.67 for every dollar invested. Further returns from the programs can be realized by indirect spending in the area.

Industry officials also see the need for further investment in tourism facilities. Commonly cited areas of need include trail systems, additional historical and cultural interpretive facilities, information system improvements (signs and information centers), and special events targeted at building occupancy during the off-seasons. Other areas that have been identified for investment are lodging facilities, waste management, and energy conservation.

University Outreach Has Made a Difference

As part of its deliberations, the task force looked at two different types of outreach efforts. Both are integral activities of the University of Minnesota, and the programs described are regular continuing programs.

The Minnesota Agricultural Extension Service acted quickly once the economic stress stemming from the slowdown of the taconite industry became apparent. The efforts of county extension offices in the area, reinforced by the efforts of campus-based specialists, have centered on assisting families that have been affected by unemployment. Examples of these activities include:

- A specially developed packet of information has been made available to families who have experienced loss of jobs. This packet includes a summary of the most recent results of research on unemployment and the impacts of stress on children. It includes suggestions that parents can use in helping their children understand the situation and in helping them cope with their feelings.
- Eight food consultants, working along with 15 volunteers, teach small groups and individuals how to get the most nutrition from their food dollars. Individuals in 20 different communities are being contacted. Participants receive information and assistance on nutrition, shopping and food preparation, meal planning, food preservation, and food budgeting. An average of more than 2,000 persons per month are being assisted through this effort.
- Extension recruited 18 volunteers who were then trained to work as budget consultants to assist families in developing plans for coping with reduced incomes. Each volunteer received 16 hours of training and received brochures and educational materials to use in teaching individuals who live within a 10-mile radius of the volunteer's home.
- Five half-hour television programs are being developed for showing within the area. The first program, "It's a Great Place to Live . . . If You Can Make A Living," was broadcast on July 21, 1983. Fifteen thousand viewers in 6,000 households were estimated to have seen it. The intended audiences are unemployed and underemployed persons in northeast Minnesota. The content of the programs

focuses on gaining control over life, keeping a roof over one's head, coping with credit and insurance, deciding how important money really is, and building family self-reliance.

- Families who have turned to farming are being assisted by programs aimed at helping them identify goals and determine whether they can be realized. Workshops for such families include goal setting, time management, economic analysis of income potential and necessary investments, and a plan of attack for achieving goals.
- Continuing efforts are being made to enhance income potential through expanding commercial fishing in Lake Superior, improving the management capacity of operators of small sawmills, and expanding home-based textile industries. These extension efforts are aimed at strengthening the economy of the area through diversification.

Another example of how the University of Minnesota extends itself to meet the needs of the state is found in a program called UNITE, University-Industry Television for Education. This Institute of Technology program addresses the problem of keeping technical employees of Minnesota businesses at the cutting edge of technological progress. An exclusive live microwave television broadcast with two-way audio enables employees of Minnesota business firms to participate in regular day courses without leaving their place of business. This approach eliminates valuable time losses and other costs associated with traveling to the University or participating in conventional conferences and workshops. The program also is available to small firms and plants.

This program has been in place for more than 10 years. Some 1,500 on-the-job students currently are enrolled in more than 70 courses. Both credit and no-credit courses are available through UNITE.

Unfortunately, UNITE is not available to northeast Minnesota because that region is beyond the broadcast range of the University of Minnesota's transmission tower. Additional investment in transmission relay towers would be needed to make the technique fully available. Unquestionably, techniques that utilize new communications technology need to be explored as a possible means of keeping the University of Minnesota closely involved in assisting the people of northeast Minnesota.



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