

Economic Impact of the Mineral Industry in Nova Scotia

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1.0 Introduction

Mineral Industry Overview

- The industry plays a major role in the Nova Scotia Economy
- The economic impact of the industry stems from various activities including:
 - Mineral exploration
 - Mine development
 - Mineral production
 - Secondary processing
 - Provision of goods and services to the industry
 - Mine site rehabilitation

Purpose of the Report

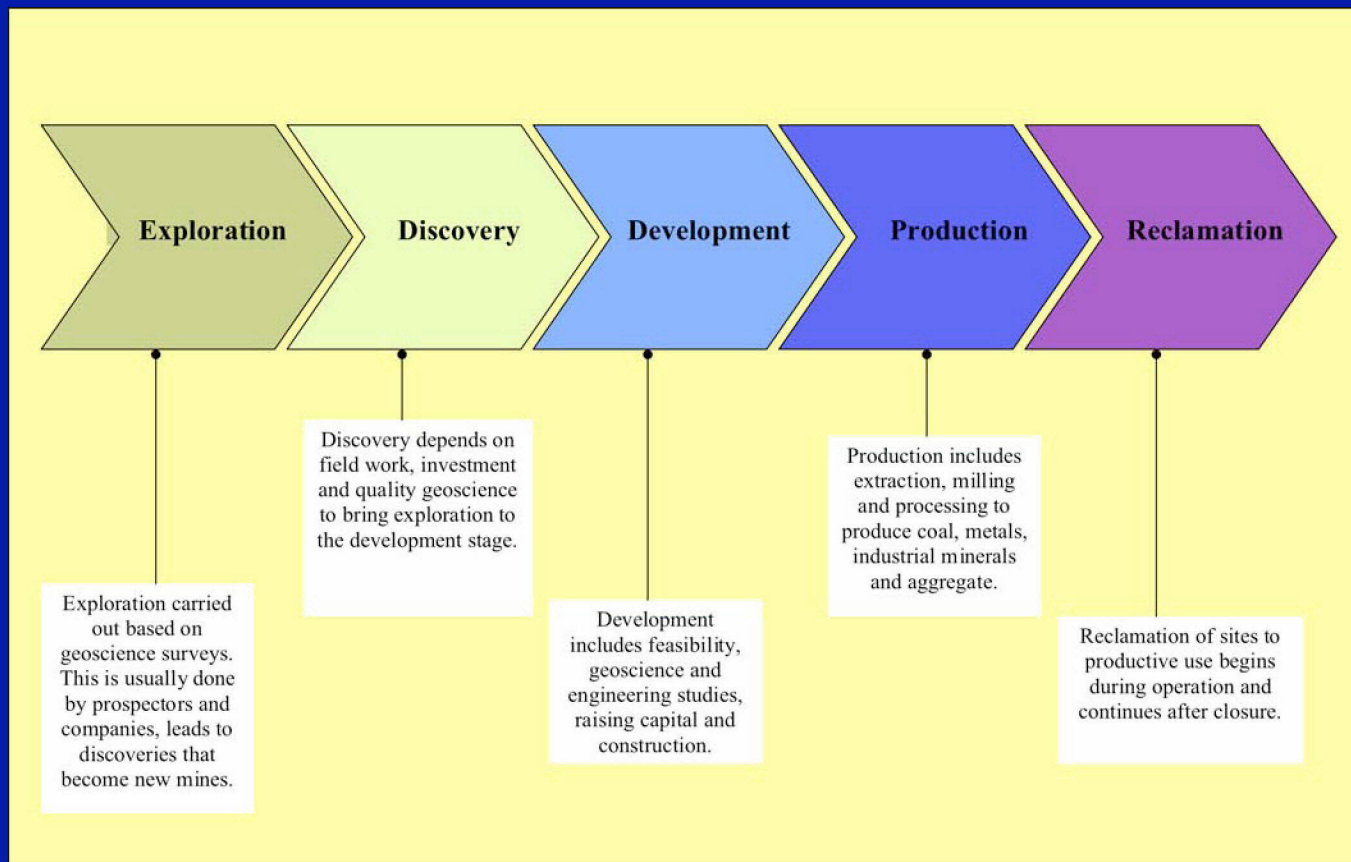
- To provide a comprehensive economic profile of the industry
- Compare it to other sectors
- Profile the role of government

How was the analysis undertaken?

- Interviews were conducted with industry participants to collect expenditure data and to collect various observations on the role of government in the industry.
- Various data sources taken primarily from the Department of Natural Resources were used to assemble long term industry trends.
- Statistics Canada and Natural Resources Canada data were used to analyze the mineral secondary processing industry.
- The Nova Scotia Department of Finance's Economic Impact Model was used to assess the spin-off impacts attributable to the industry.
- Unless otherwise noted information presented relate to 2003.

2.0 Economic Impact Results

The direct economic impact of the industry stems from various activities including:



What are economic impacts?

- Primary direct economic impacts are those attributable to the individual mine operators, exploration companies or secondary processors. They are the expenditures they make on various goods (fuel, electricity etc) and services (accounting, legal etc.) including wages and salaries.
- Both capital and operating expenses have been included.
- The spin-off or multiplier effect include both indirect and induced impacts, these result to businesses that supply goods and services to the mining industry. Also they result from consumers spending the income they earn from both the direct and indirect stages.
- Impacts are reported both in terms of employment (person-years) and gross domestic product.

Total Economic Impact Associated with the industry including primary and processing activity

- Employment (pys)
 - Direct - 2,551
 - Spin-off - 2,709
 - Total - 5,260
- GDP (\$'000,000)
 - Direct - \$232.2
 - Spin-off - \$168.1
 - Total - \$400.4



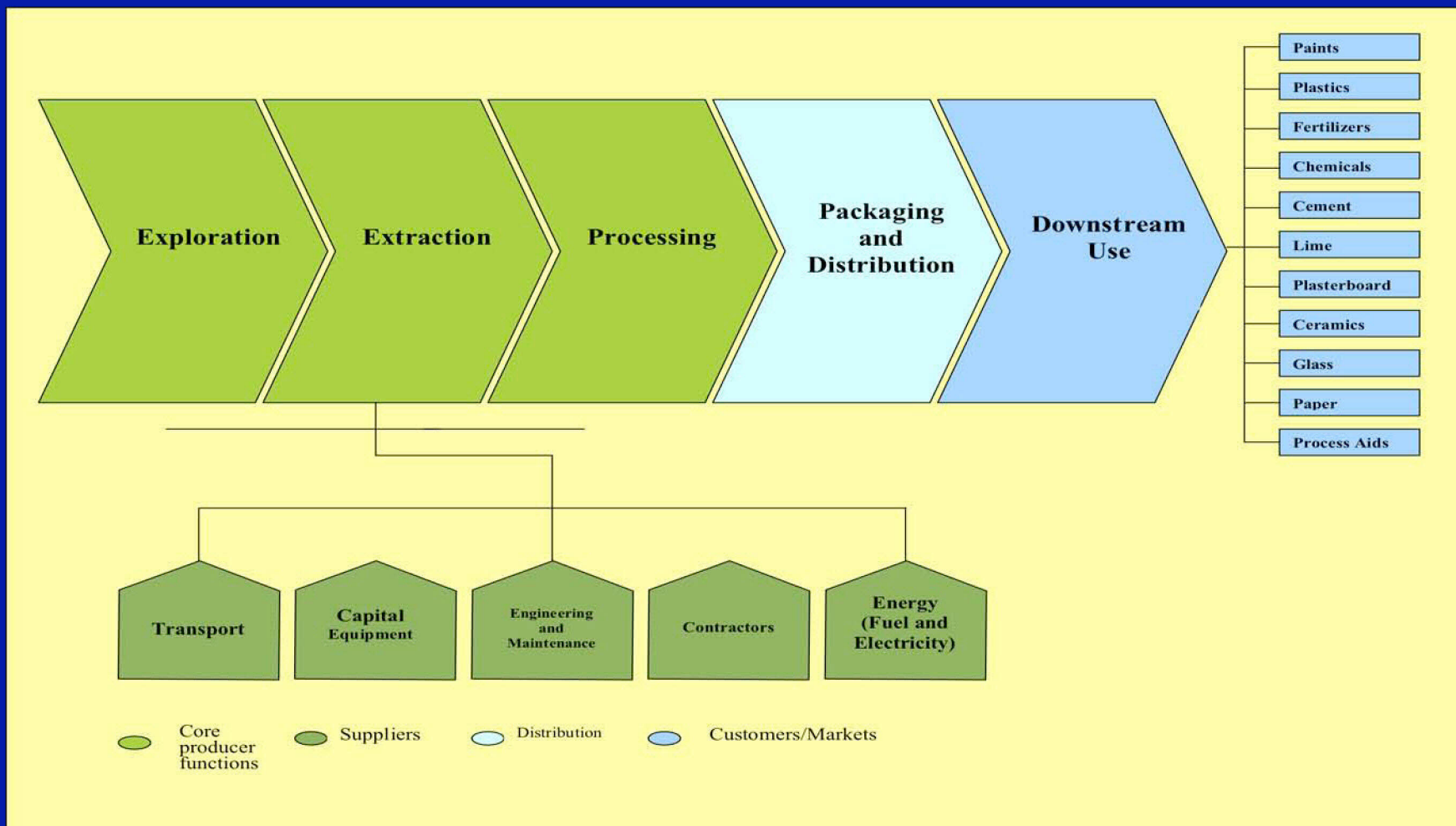
Impacts associated with mining activity



Primary Extraction

- Employment (py's)
 - Direct - 1,344
 - Spin-off - 1,470
 - Total - 2,814
- GDP (\$'000,000)
 - Direct - \$131.7
 - Spin-off - \$89.8
 - Total - \$221.5

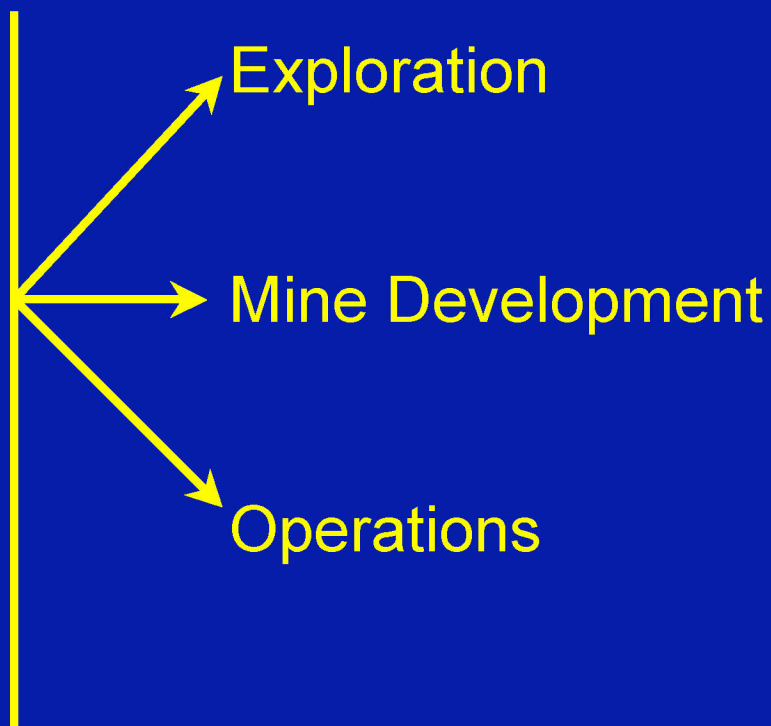
In this analysis we have included all aspects of the industry shown below aside from the downstream uses.



Services and goods supplied by the Nova Scotia economy to the Mineral Industry, these account for a significant share of the indirect economic impacts.

Services/goods to Industry Mineral Industry Activities

- Transportation
- Manufacturing
- Construction Services
- Business Services
- Wholesale and retail
- Government Services
- Financial Services
- Insurance Services
- Legal Services
- Communications
- Utilities
- Laboratory and testing services
- Accommodation/food services
- Technical Services
 - Engineering Design
 - Environmental Design
- Occupational Health and Safety
- Heavy Equipment Sales



Indirect economic impacts (continued)

- The above breakdown is not exhaustive but rather illustrative.
- All phases of mineral production make use of these varied goods and services.
- Many are provided in their entirety by Nova Scotian firms.
- Transportation services are provided by trucking firms, rail lines and cargo vessels.
- Many of the specialized services come from engineering and other technical service companies, these are provided by highly qualified professionals.

Impacts associated with the processing of minerals into products:



Processing

- Employment (pys)
 - Direct - 1,207
 - Spin-off - 1,239
 - Total - 2,446
- GDP (\$'000,000)
 - Direct - \$100.6
 - Spin-off - \$78.4
 - Total - \$179.0

Mining Operations play an important role in the rural economy.

- At current production levels about 1,350 persons are employed on a fulltime basis. The majority of these jobs are located in the rural area.
- We estimate that the industry has a total payroll of about \$80 million including wages and benefits.
- The primary industry also purchases a significant amount of other goods and services:
 - Fuel \$35 million
 - Electricity - \$8 million
 - Various goods/supplies - \$20 million
 - Various services - \$12 million
 - Municipal taxes - \$1.6 million

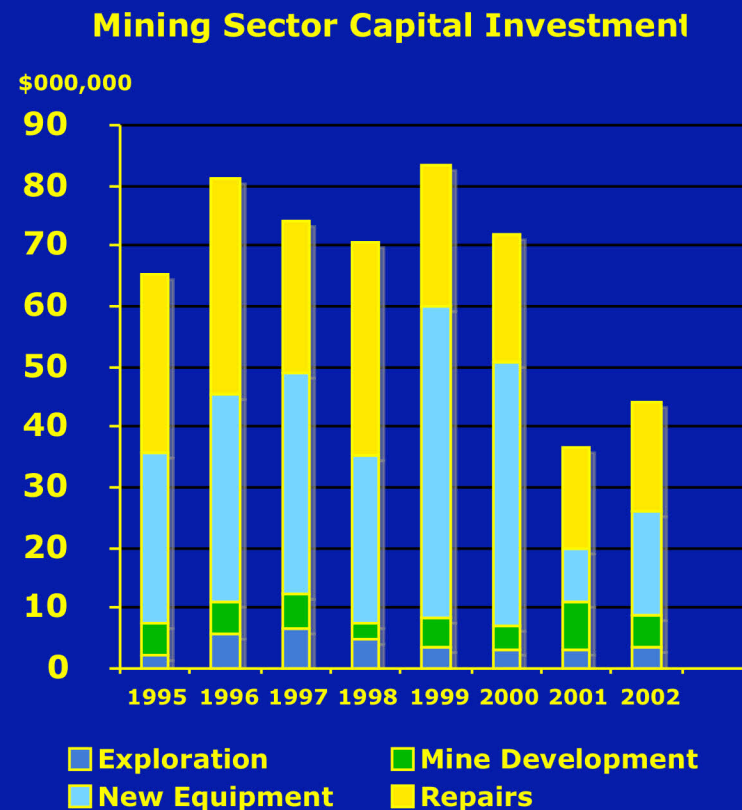
A wide variety of processed mineral products are manufactured in Nova Scotia.



- Clay products.
- Portland cement products.
- Ready mix concrete.
- Brick products.
- Marble products.
- Building stone and slate.
- Gypsum wallboard (proposed to start in 2006).
- Deicing and consumable salt products.

Each year the industry makes significant Capital Investment

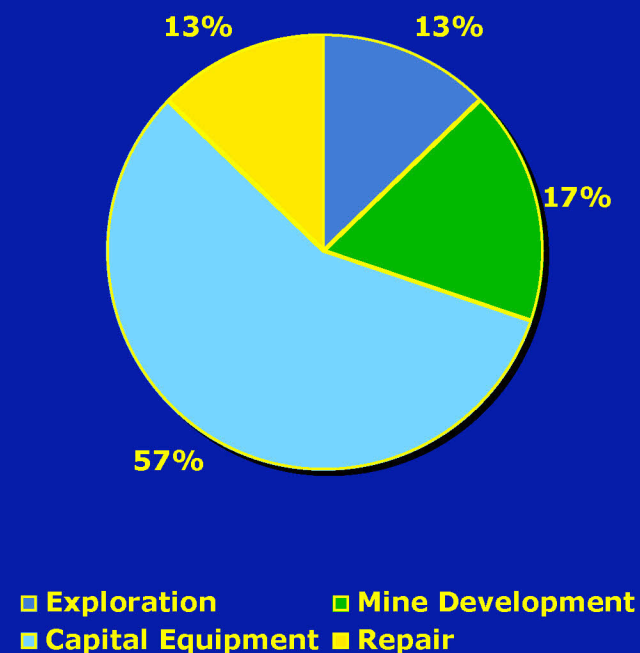
- Over the past 10 years capital expenditures have ranged between \$38 to \$83 million.
- New equipment and repairs at existing establishments account for typically 70-80 % of all capital expenditures.



Capital Investment by the Mining Sector 2002

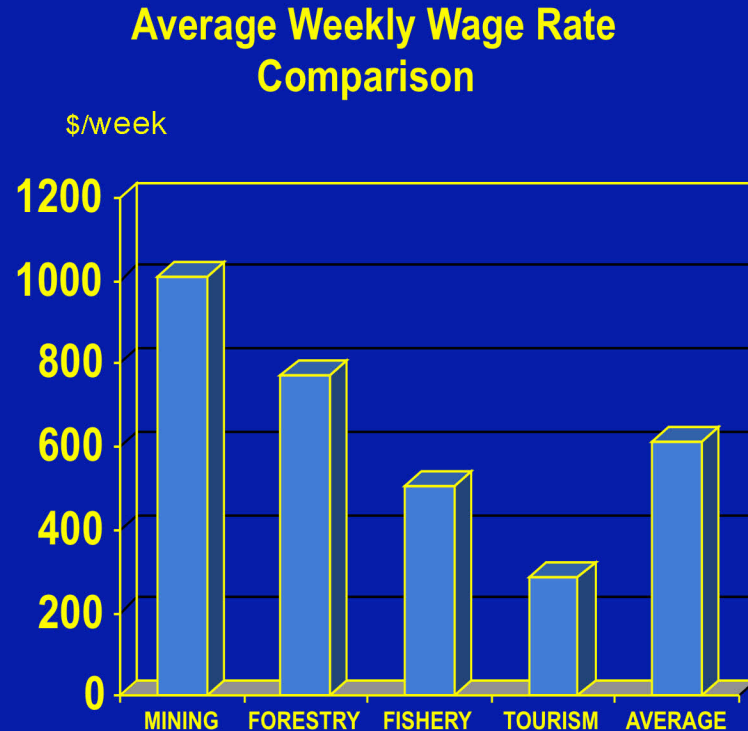
- In 2002 the mining sector invested in excess of \$44 million in capital related expenditures.
- The acquisition of new capital equipment for operating mines accounted for 57% of investment.

Capital Expenditures 2002



3.0 Comparison to Other Sectors

The mining industry in Nova Scotia ranks “Number One” in terms of average weekly wages paid among the various resource sectors.



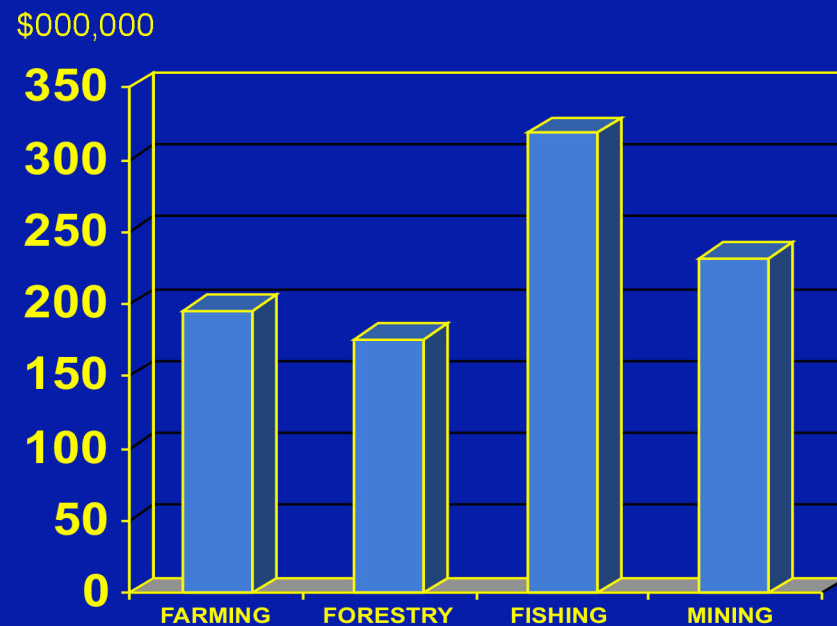
- Average wage in primary mining sector is over \$1,000 per week.
- This is more than 40% higher than the average of all economic sectors.

Productivity has Improved by 28% over past eight years.

- Industry productivity is a measure of efficiency. It can be defined as the ratio of the quantity of outputs over the quantity of inputs.
- According to national data the mining industry ranks among the top ten industries in the country in terms of productivity. Output has been increasing at the same time as employment has been decreasing.
- Productivity performance is used to determine if an industry can be considered dynamic.
- In examining the industrial minerals sector in Nova Scotia it is evident that its performance is consistent with national trends.
- In 1994 the average value of output in the industry was \$142,000 per employee. By 2002 this average value had increased to \$182,000 (adjusted for inflation).
- Over an eight year period this represents an increase in productivity of 28%.
- The mining industry in this province is dynamic.

The mining industry ranks “Number Two” among resource industries in terms of contribution to GDP.

Contribution to GDP



- The primary mining activity accounts for almost one quarter of a billion dollars in GDP.

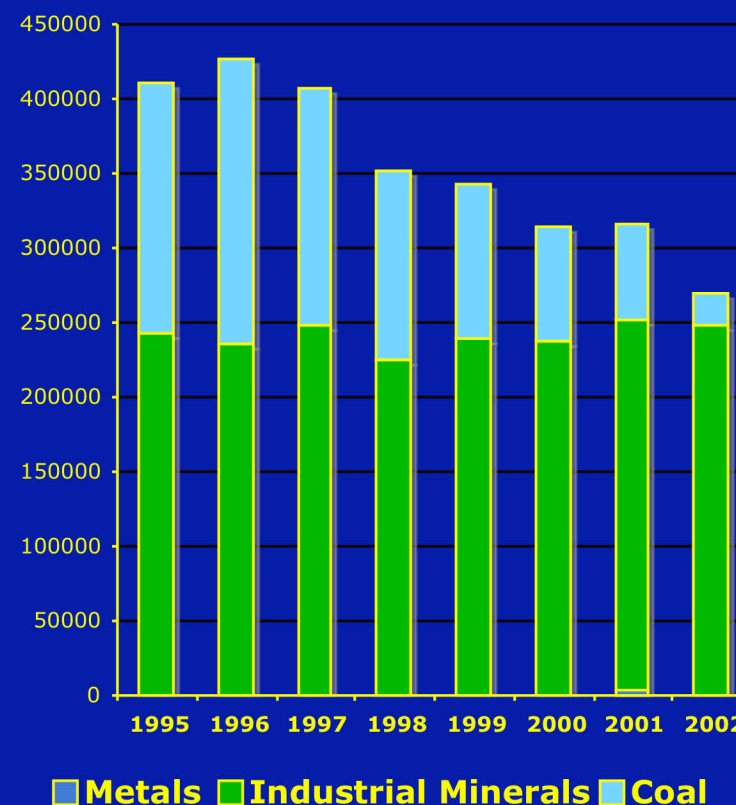
4.0 The Mining Sectors

Value of Primary Production by Commodity (2002 \$ 000)

Coal	\$20,000	8.5%
Metals	\$0	0.0%
Anhydrite	\$1,073	0.4%
Gypsum	\$80,037	33.9%
Limestone	\$3,894	1.6%
Peat	\$713	0.3%
Salt	\$43,021	18.2%
Crushed Stone	\$56,740	24.0%
Sand and Gravel	\$20,609	8.7%
Other (includes: clay, barite, silica sand, dimension stone and limestone for cement)	\$10,304	4.4%
Total Mineral Production	\$226,087	100%

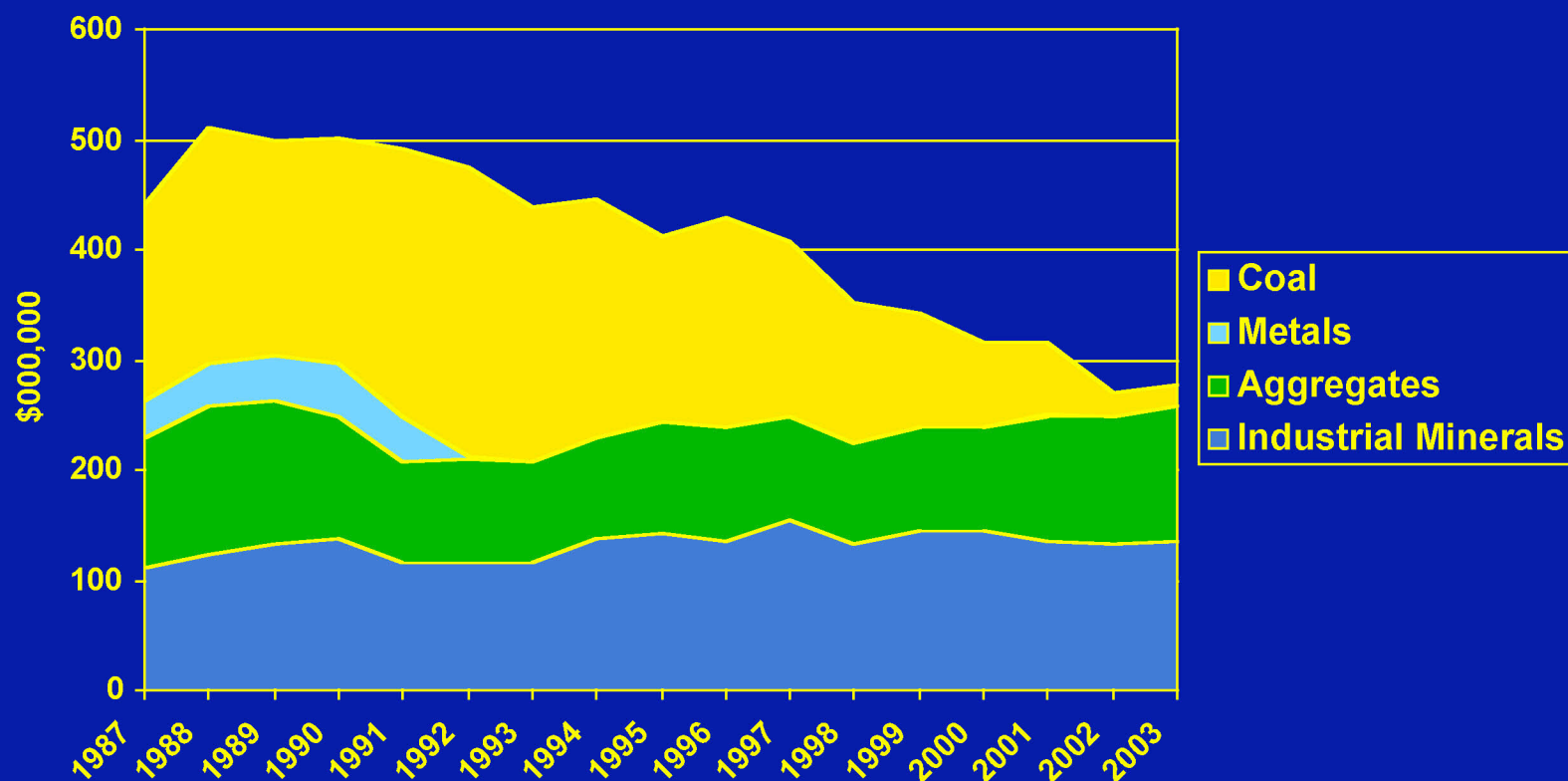
Mineral Production Historical Trend

- Value of production fell from \$410 million in 1995 to \$269⁽¹⁾ million in 2002.
- Drop in coal production accounted for decline.
- Metal production really a non-factor over this time period.
- Over the five year period 1998-2002 the value of industrial mineral production (including aggregates) has been steady with a bit of an increase.

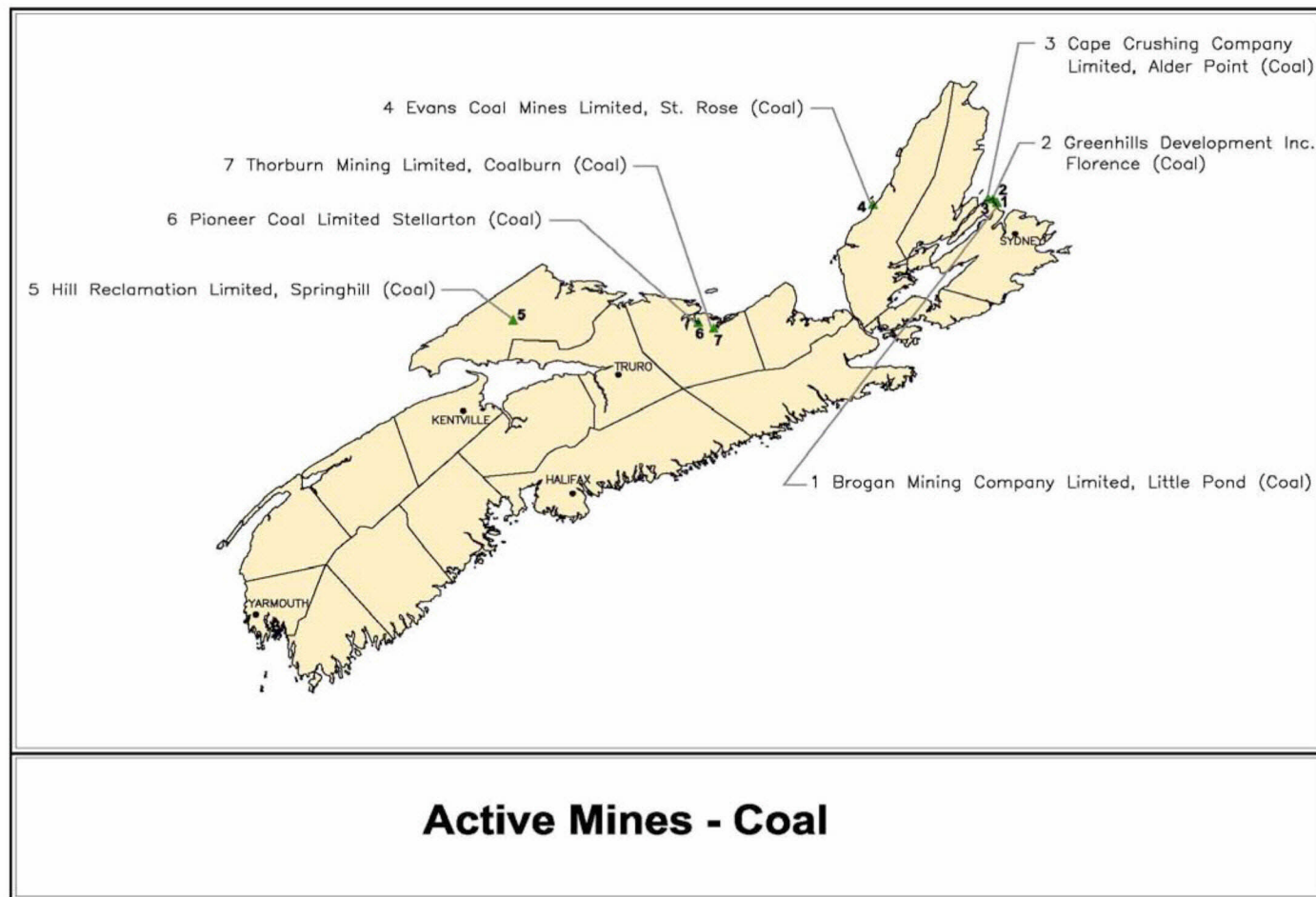


Note: 1. DNR includes some secondary production values in their annual estimate of overall value of mineral production

Value of Production 1987-2003 shows steady performance of Industrial Minerals and Aggregates



Coal resources are found in both Cape Breton and Northern Nova Scotia



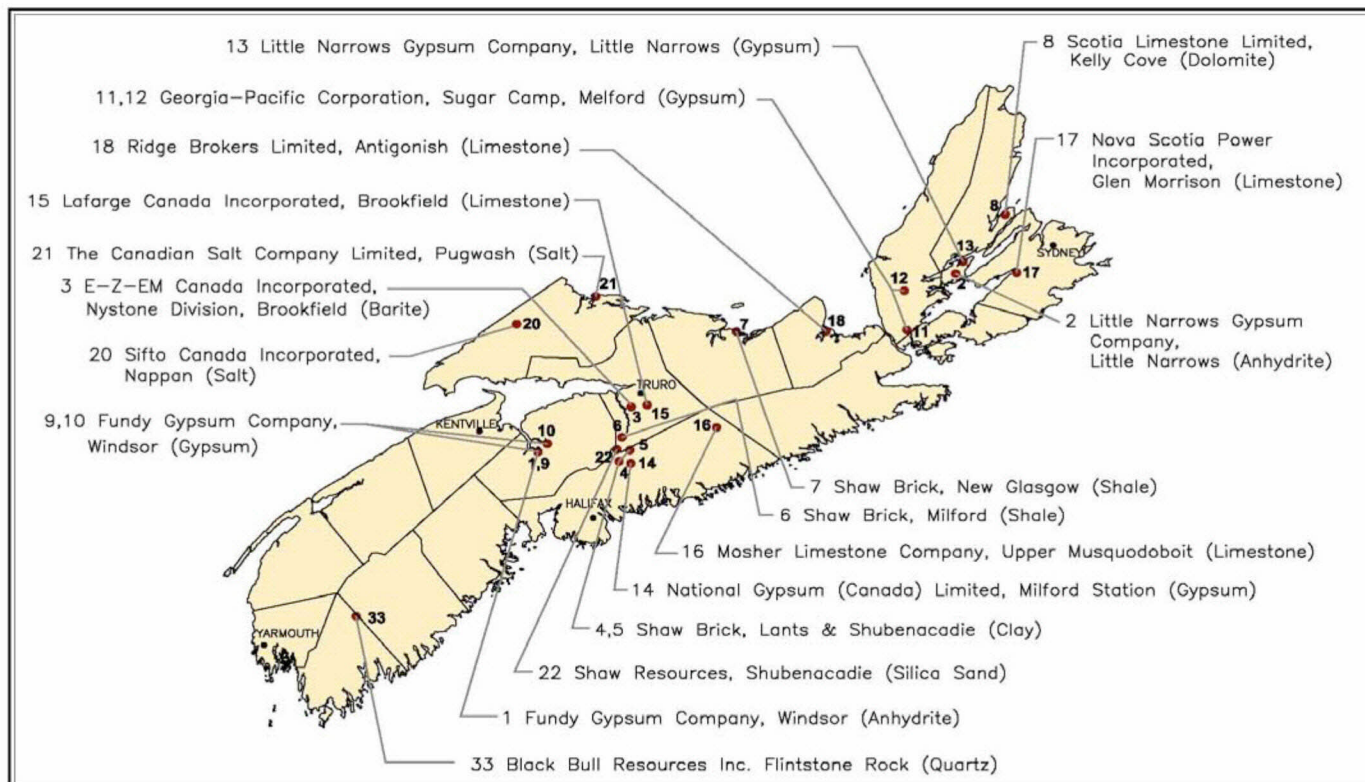
Nova Scotia Coal Production 1874-2002 - Coal Industry has played major role in economy over this period. Production has been cyclical.



Coal Comment

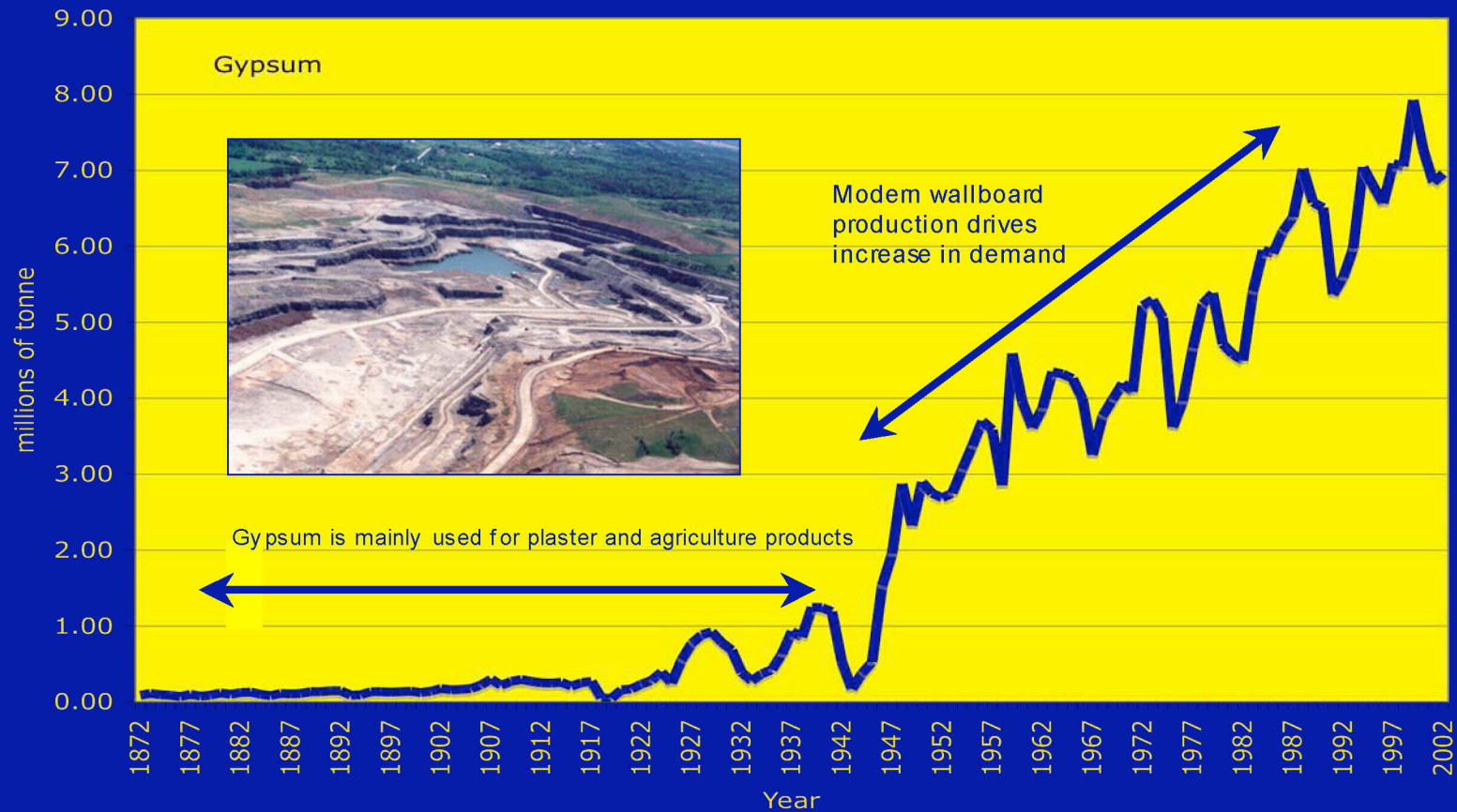
- Coal Prices have more than doubled in the past three years.
- Various surface coal proposals could see total annual production increases in range of 250,000 - 500,000 tonnes per year.
- 2004 - Call for Proposals on Donkin Coal Resource Block - annual production potential 5,000,000 tonnes per year.
- These developments could reverse the trend of a declining contribution by the coal sector.

Industrial Minerals Map



Active Mines and Quarries - Industrial Minerals

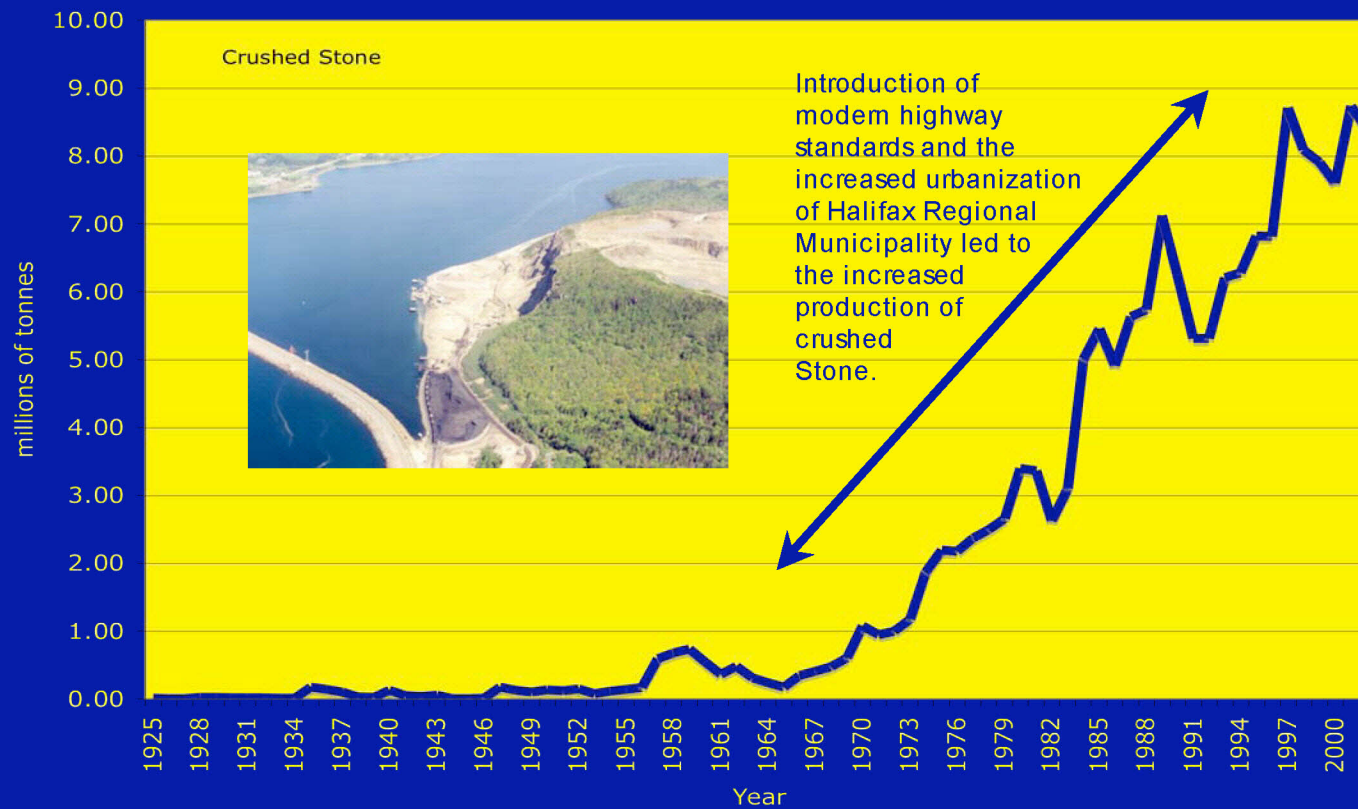
Gypsum Production 1872-2002: A mainstay of the industry with almost continuous growth.



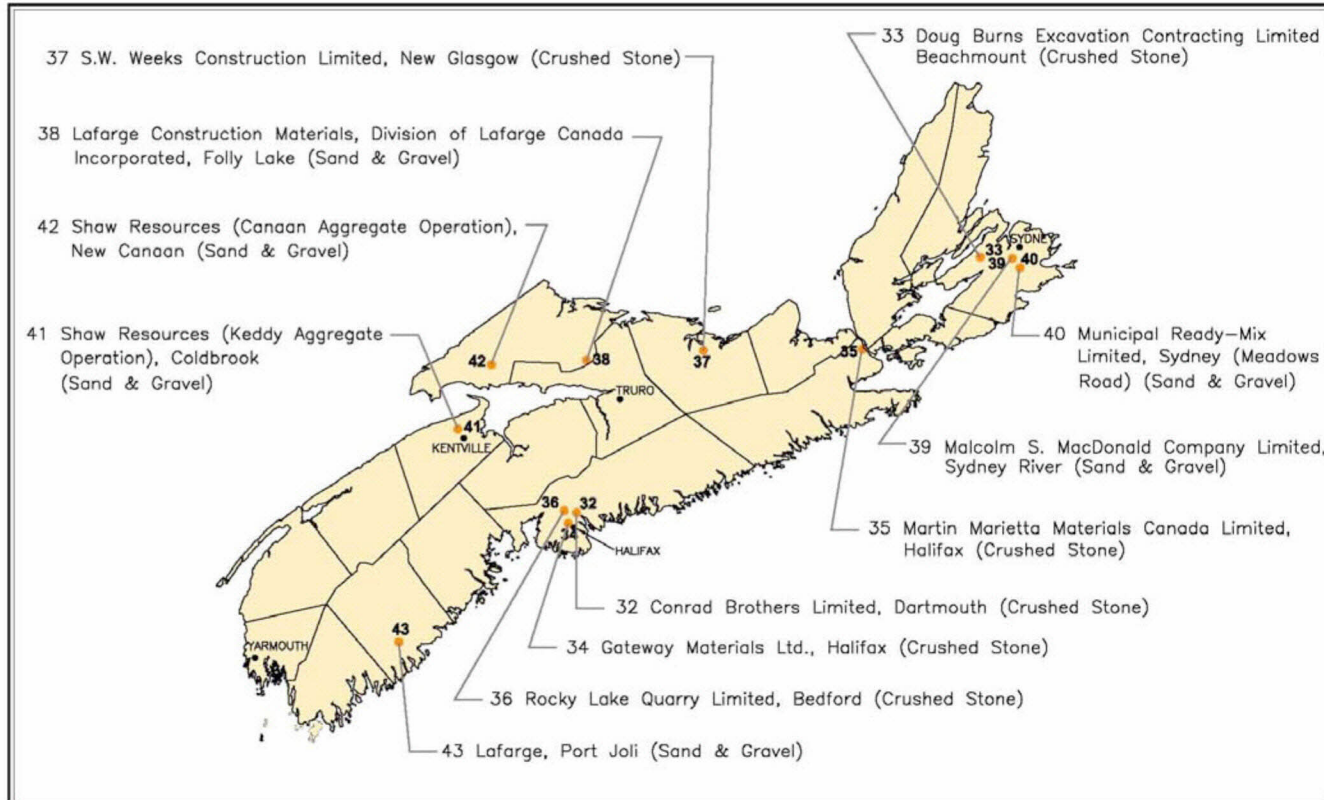
Salt Production 1920-2002 has followed a similar trend to Gypsum.



So has Crushed Stone

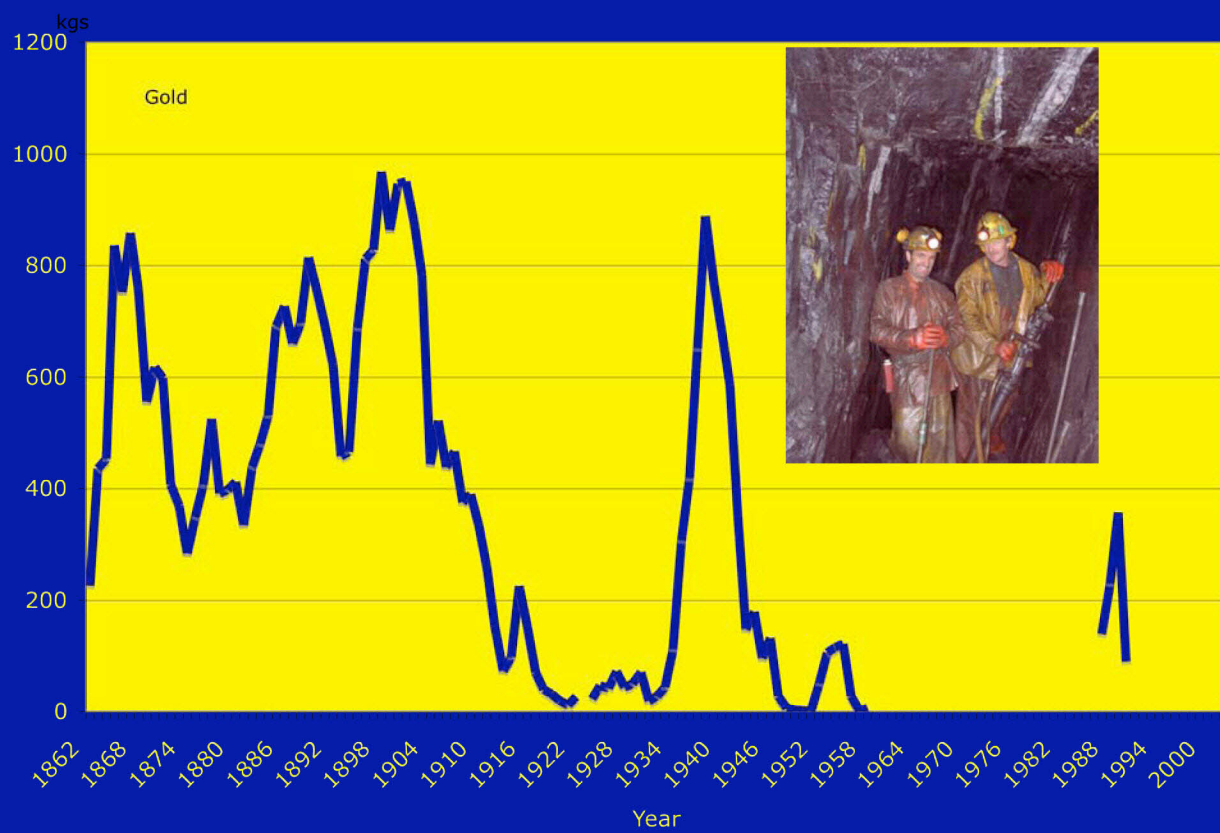


Quarry Map



Major Operations - Aggregate

Nova Scotia has a long tradition of Gold production.

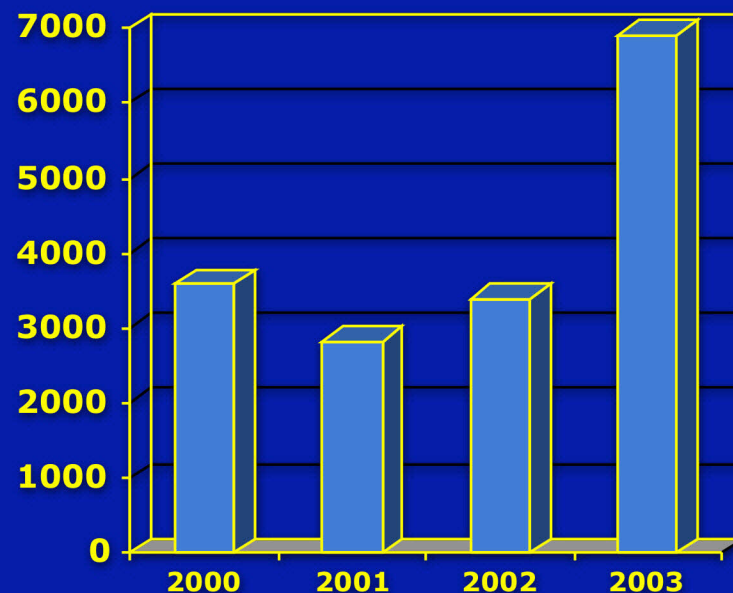


5.0 Exploration

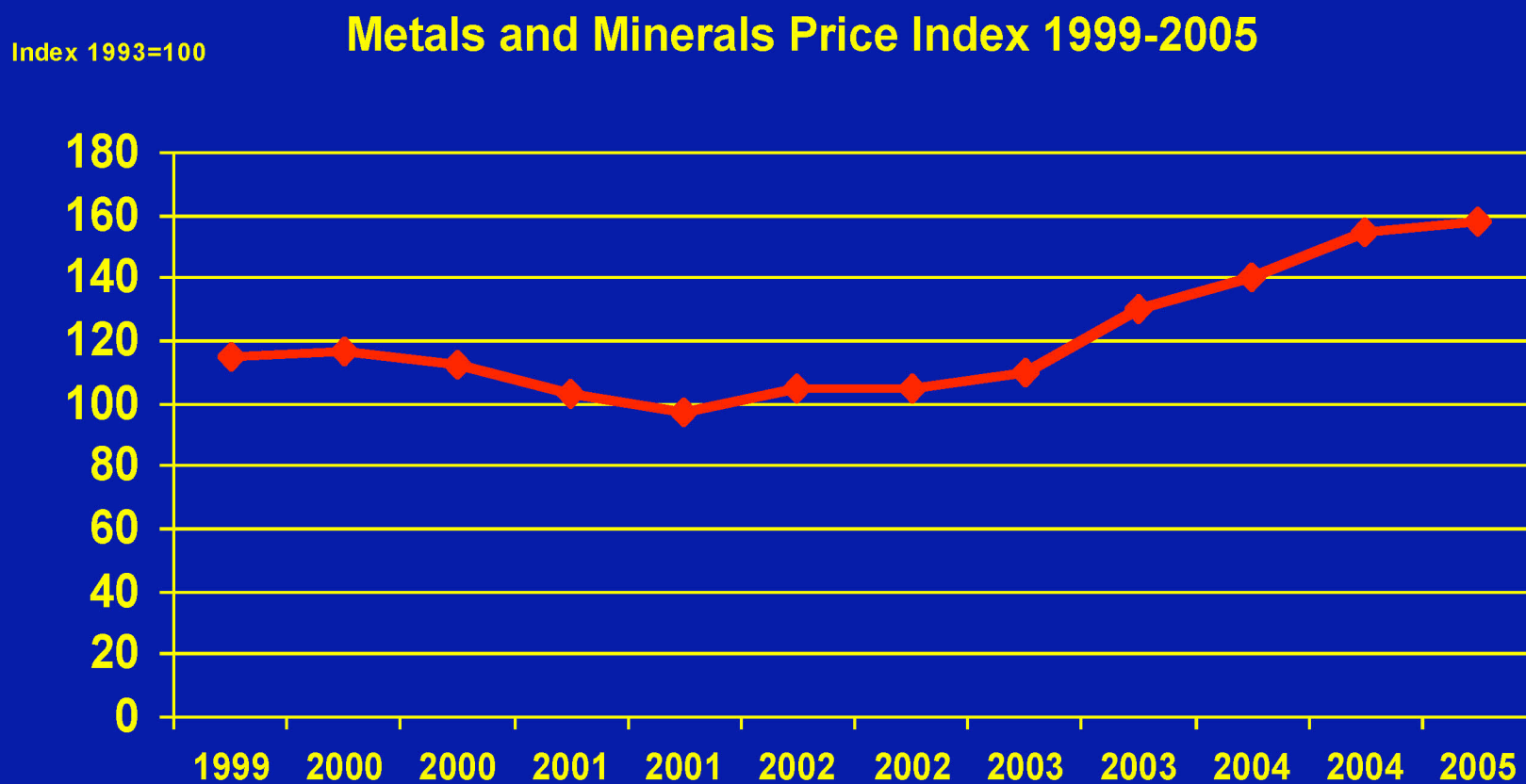
Gold has been a prime motivator behind recent increases in exploration activity in the province.

- Expenditures related to exploration are on the increase.
- This aspect of the industry makes an important contribution to a variety of technical service providers, these account for upwards of 37% of expenditures.

Mineral Exploration Expenditures (\$000)

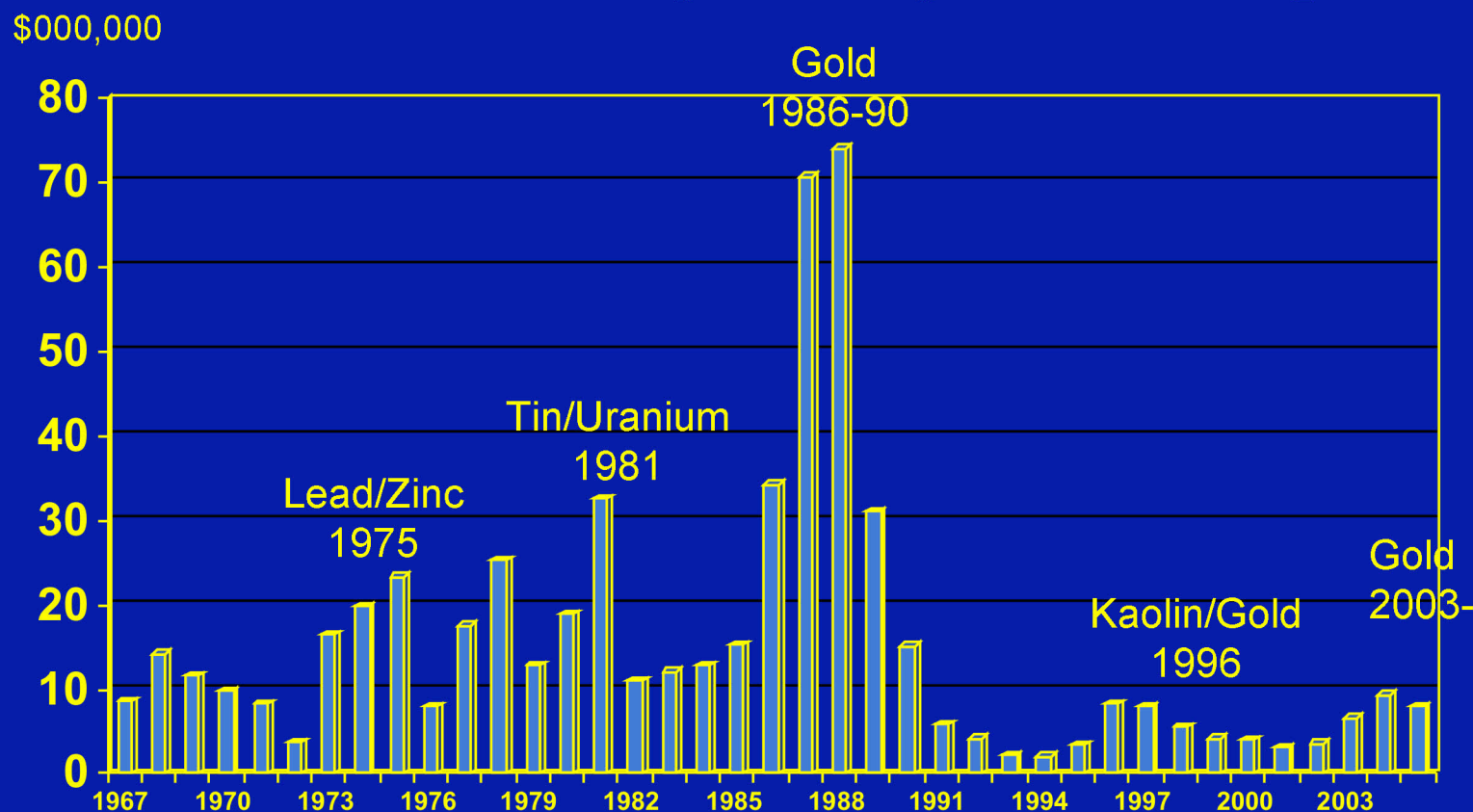


Rise in metal prices is credited with rise in exploration activity. Up 60% between 2001 and 2005.



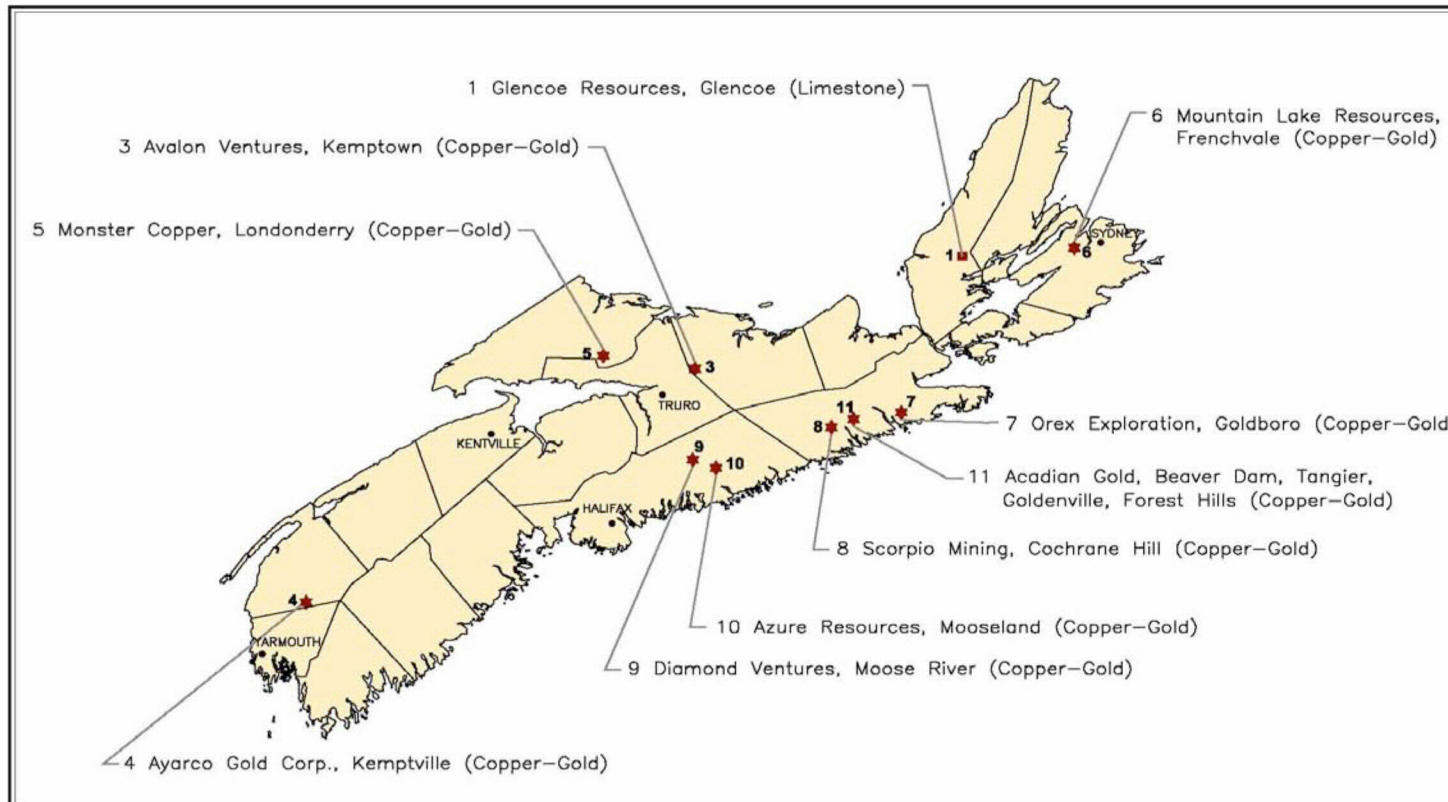
Source: BMO Financial Group Commodity Price

Exploration Expenditures 1967-2005 by Major Target



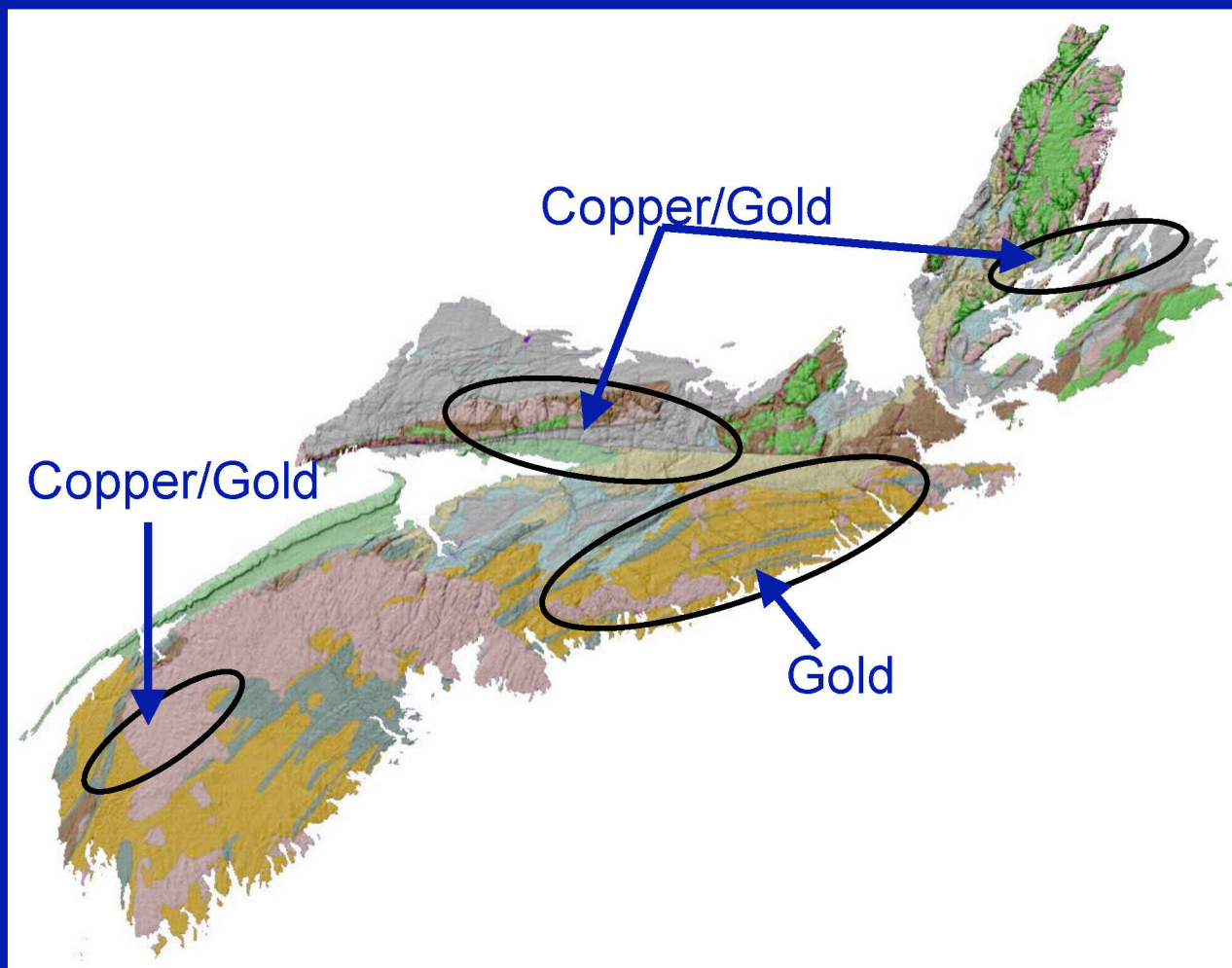
Note: Adjusted for 2005 dollars

Exploration Map - Current Focus

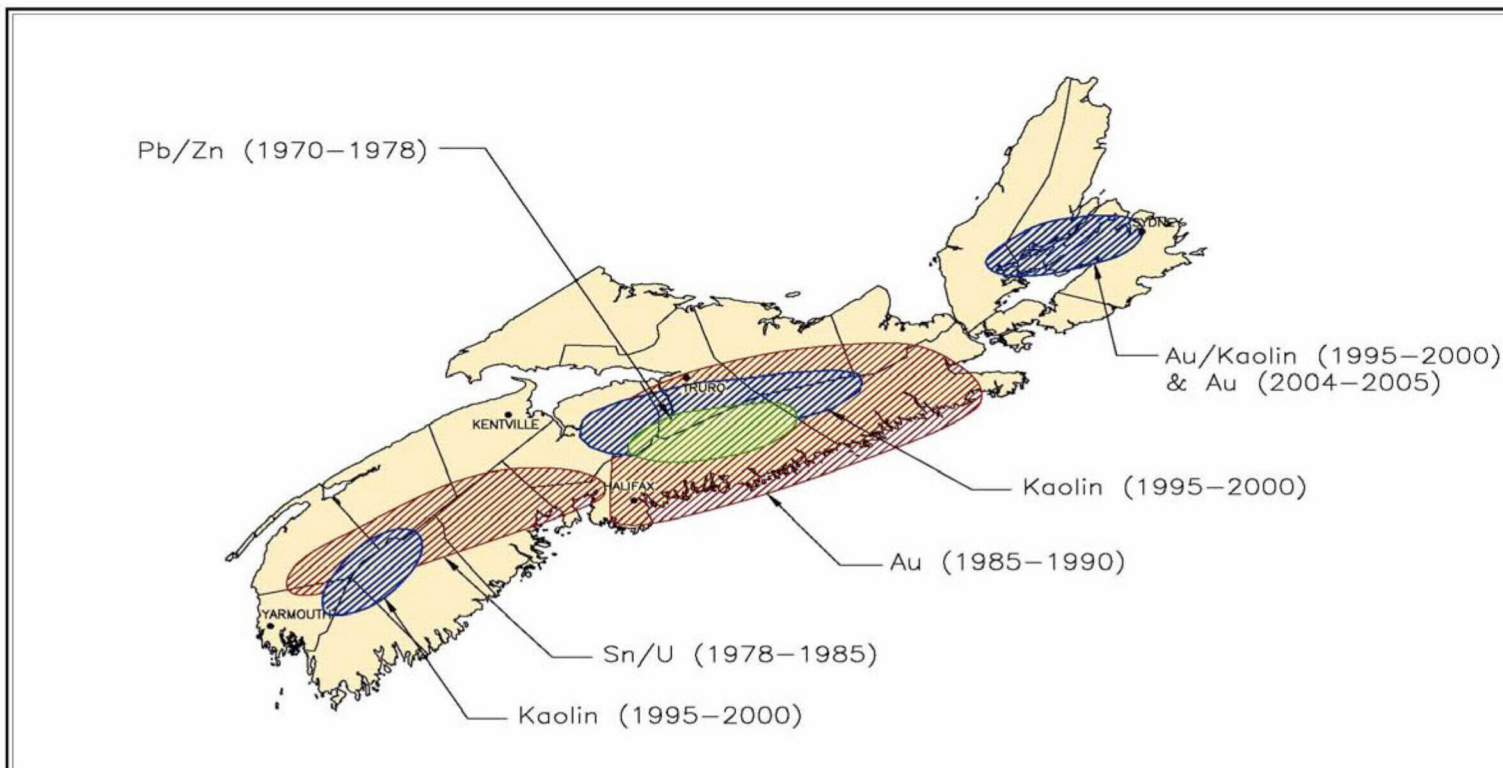


Major Exploration and Development Projects

Exploration Map - Areas and minerals of current interest.



Exploration Map - Areas of Focus 1970-2005



**Major Exploration Expenditures
by Commodity - 1970 to Present**

Government Support for Exploration

- A 15% non-refundable tax credit is available through the federal government. The Investment Tax Credit for Exploration (ITCE) introduced in 2000 and was extended to 2005.
- In the Atlantic Region both New Brunswick and Newfoundland provide support to junior exploration companies and Prospectors Assistance.
- Nova Scotia does not currently offer similar programs as New Brunswick and Newfoundland although it did offer a Prospectors Assistance Program up until recently.
- Quebec offers several tax incentives that significantly reduce the net cost of exploration. They also offer an enhanced Flow Through Share Program.
- Ontario also encourages mineral exploration by harmonizing their tax credits with the ITCE.
- Western Canadian provinces also offer a mix of exploration, tax incentive and prospector assistance programs. British Columbia has also streamlined regulations by an estimated 30%.

Government Support for Exploration

- Although government in Nova Scotia does not offer tax incentive nor prospectors assistance our discussions with industry revealed that the Department of Natural Resources' geo-science and mapping services are of significance in supporting exploration activity in the province.
- The availability of this data is credited as part of the explanation as to why there is twice the national average spent on exploration per unit of land mass in the province.

Industry view of Nova Scotia's attractiveness for exploration has its strong and weak points.

- Fraser Institute surveys mining and exploration firms on an annual basis. They then rank provinces by various categories.
- In terms of overall policy attractiveness Nova Scotia ranked 6th best out of all provinces and territories.
- It also ranked strongly in terms of infrastructure to support the industry (roads, power and ports).
- Native land claims were not a major concern compared to other provinces.
- Nova Scotia did rank quite low in terms of overall mineral potential which in part is explained by fact many respondents come from the metals side of the industry.
- Land access and Uncertainty related to provincial protected areas was also an area of concern.
- The province did not rank well on geological databases and ease of access to information, this was anomalous given our direct discussions with active industry participants who saw this type of service as high quality. Again the metal industry factor could in part explain the outcome.

6.0 Reclamation

Reclamation of mine sites is standard industry practice in Nova Scotia. This activity can create economic and commercial development opportunities.

Before Mining activity



Mining Activity



Reclaimed mine site

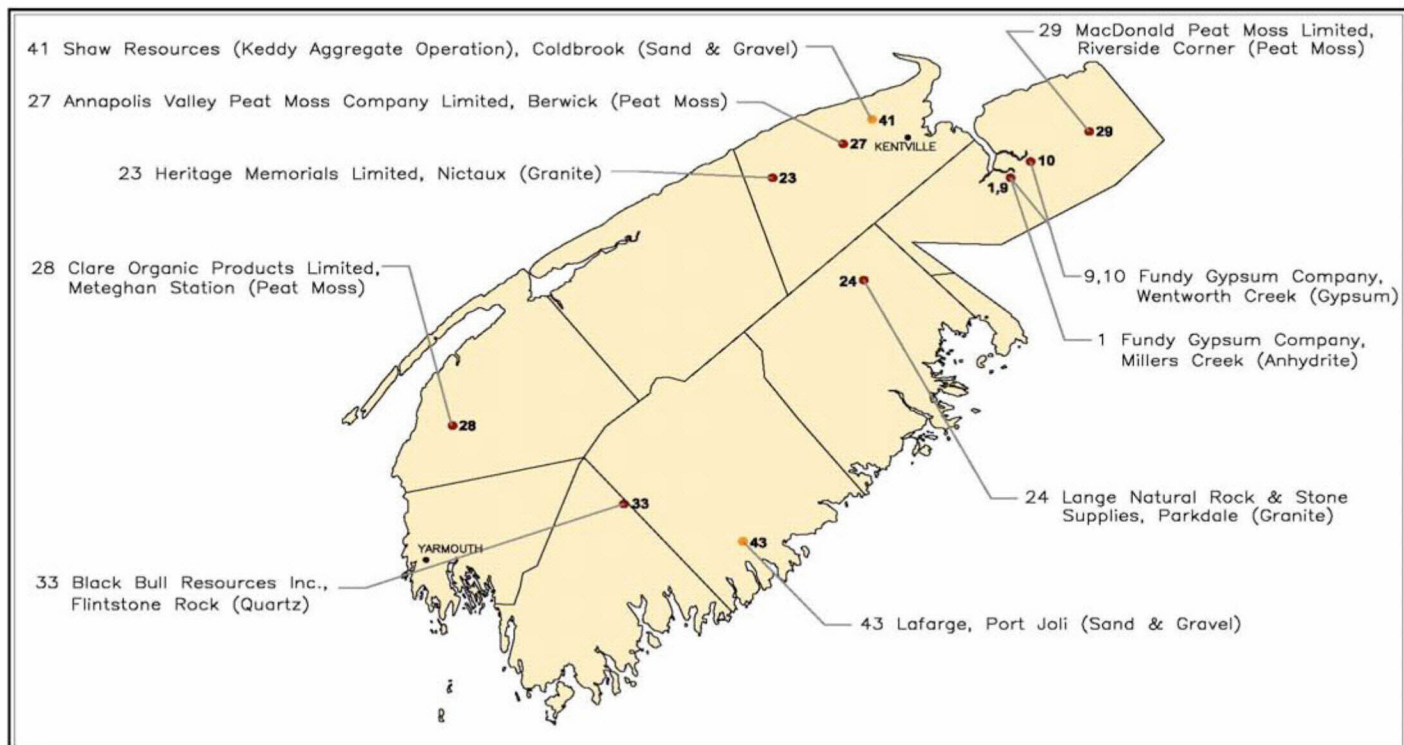
- Reclamation identified as an essential phase of mining.
- Westville open coal pit operation now provides a land base suitable for recreational or light commercial use.
- 10 acres of park land has been created.

7.0 Regional Analysis

Southwestern Nova Scotia

- Gypsum is the most important product produced in terms of value. Significant volumes are shipped via the new loading facilities at Hantsport. These facilities have the fastest ship loading capacity in North America. This product is mainly destined for the United States.
- Peatmoss is another important product with significant value added.
- Several sand, gravel and crushed stone operators provide important sources throughout the region.
- New white quartz mine is just starting production in Shelburne County.
- Proposal made to develop an aggregate quarry in Digby County for export market. Proposal is under review.

Southwestern Nova Scotia

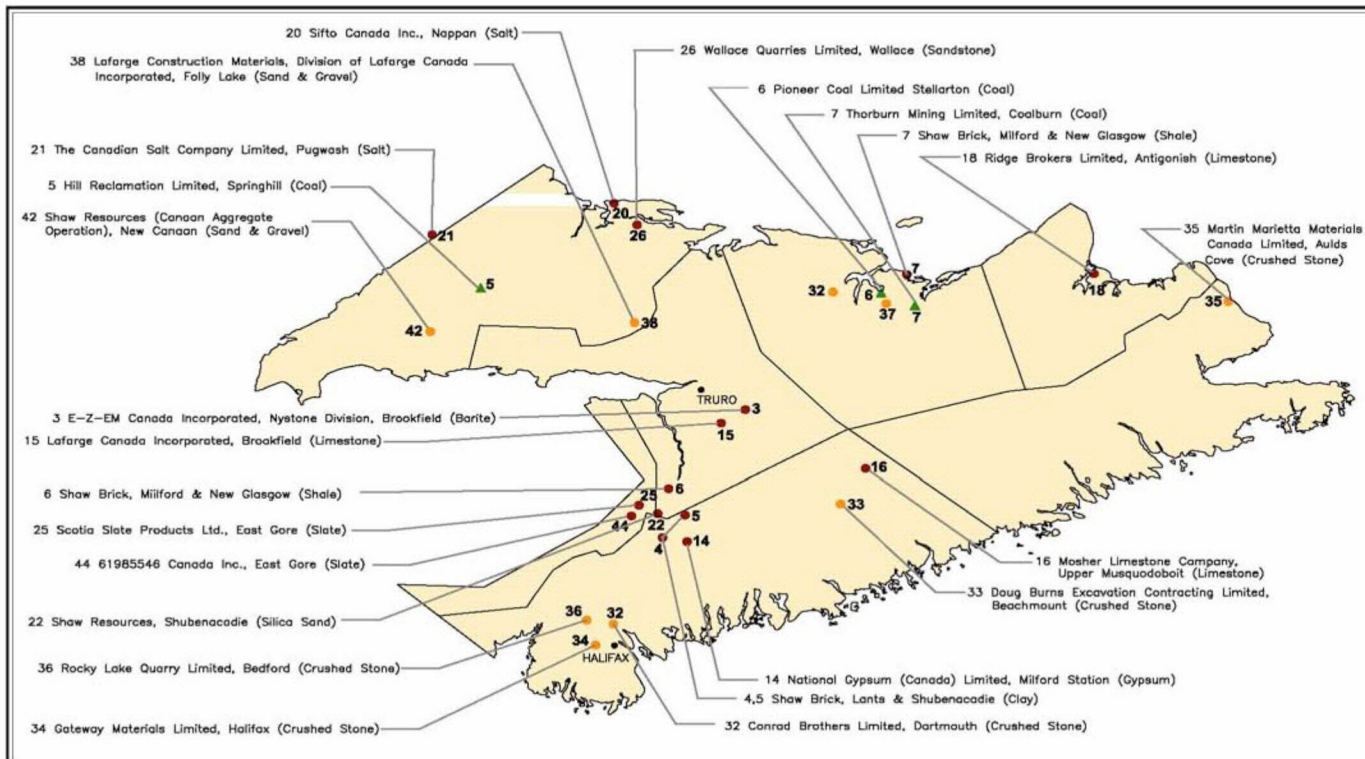


Active Mines and Quarries in Nova Scotia - Southern Region

Central Nova Scotia

- Most important economic commodities produced are salt and gypsum.
- Milford gypsum mine thought to be largest in the world.
- Aggregate production is significant due to large demand from urban core of Halifax Regional Municipality.
- Also important is the secondary processing of limestone into portland cement products near Brookfield.
- Barite is also produced in the region and is processed into an upgraded pharmaceutical quality product.
- Clay and shale are used to manufacture bricks and other structural products in Lantz Hants County.

Central Nova Scotia

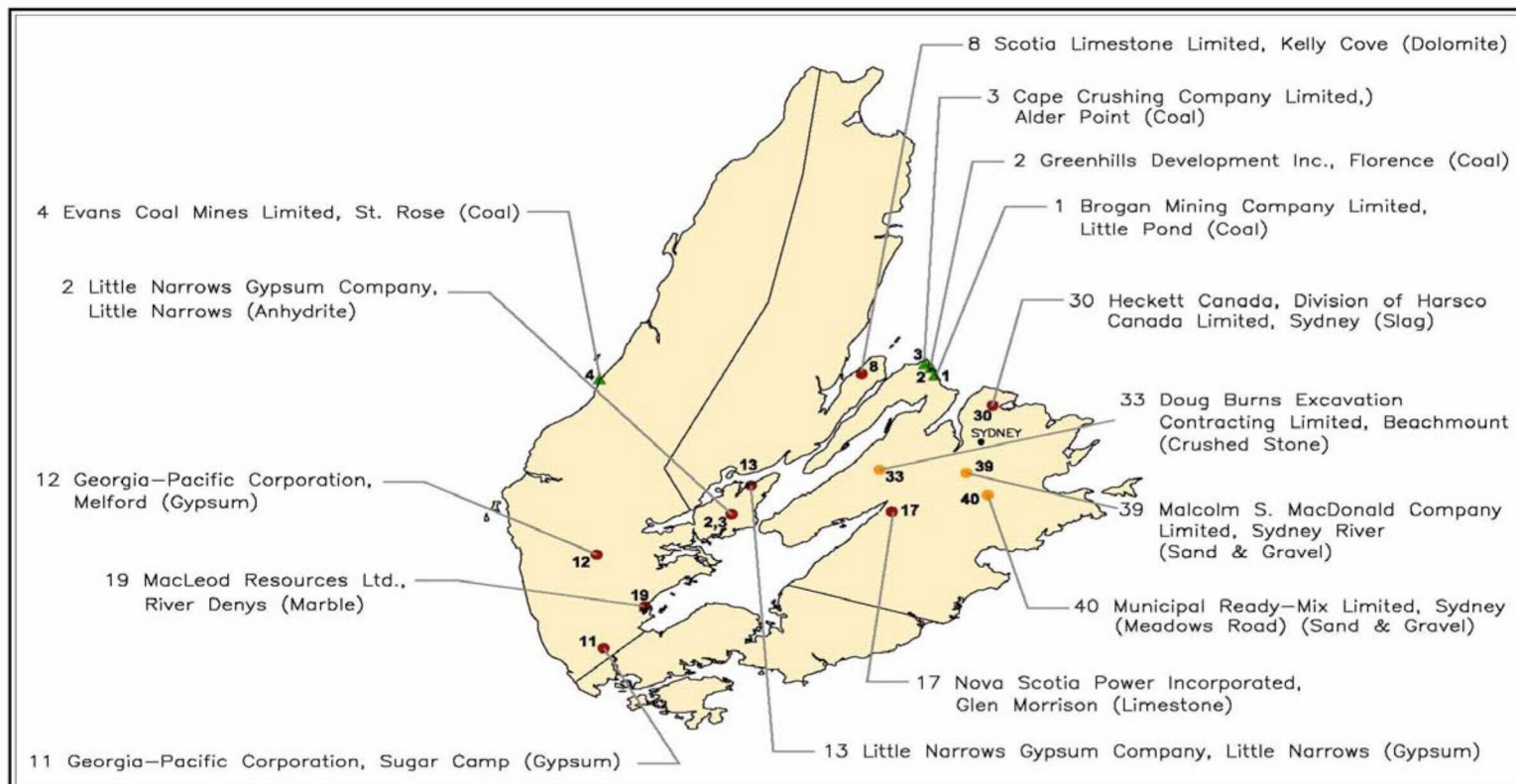


Active Mines and Quarries in Nova Scotia - Central Region

Eastern Nova Scotia

- A diversified mix of industrial minerals are produced in this region including; gypsum, anhydrite, limestone, marble and aggregate.
- Although coal production has fallen the area is host to much of the proven coal reserves in the province and there are opportunities for surface mining of these reserves.
- Work has begun to evaluate the feasibility of the Donkin coal resource.
- A wall board plant at Point Tupper is expected to resume production in 2006, this will represent an important value added activity for the mining sector.

Eastern Nova Scotia



Active Mines and Quarries in Nova Scotia - Eastern Region