IRAP

AN INQUIRY INTO THE INDUSTRIAL RESEARCH ASSISTANCE PROGRAM

CANADA

HOUSE OF COMMONS

Report of the Standing Committee on Industry, Science and Technology, Regional and Northern Development

Guy Ricard, M.P.
Chairman

DECEMBER 1991

IRAP

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First Report of the Standing Committee on Industry, Science and Technology, Regional and Northern Development

Guy Ricard, M.P.
Chairman

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Industry, Science and Technology, Regional and Northern Development

Procès-verbaux et témoignages du Comité permanent de l'

Industrie, de la Science et de la Technologie et du Développement régional et du Nord

RESPECTING:

Consideration of a Draft Report

INCLUDING:

The First Report to the House:

IRAP: An inquiry into the Industrial Research Assistance Program

CONCERNANT:

Étude du projet de rapport

Y COMPRIS:

Le premier rapport à la Chambre:

PARI: Une enquête sur le Programme d'aide à la recherche industrielle

Third Session of the Thirty-fourth Parliament, 1991

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Report to the House

The Standing Committee on Industry, Science and Technology, Regional and Northern Development

has the honour to present its

FIRST REPORT

In accordance with its mandate under Standing Order 108(2), your Committee initiated an inquiry into the National Research Council's Industrial Research Assistance Program (IRAP). After hearing evidence, the Committee has agreed to report to the House as follows:

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An Inquiry into the Industrial Research Assistance Program

Introduction

Canada must act now if it is to survive in today's increasingly competitive global market. It is essential that Canadian businesses and industries make use of new scientific and technological methods to design and manufacture their products if there is to be continued growth in the Canadian economy and if our current high standard of living is to be maintained.

In this context, since its inception in 1947, the Industrial Research Assistance Program (IRAP) has played a vital role in promoting the development and exploitation of technology in small and medium-sized enterprises (SMEs).

The program, which functions as part of the National Research Council of Canada (NRC), assists Canadian businesses by providing timely and direct technical assistance, critical information, and financial support. Universally praised by the private sector, IRAP has the sole aim of giving a competitive edge to Canadian industry.

The House of Commons Standing Committee on Industry, Science and Technology, Regional and Northern Development initiated an investigation of IRAP in response to disturbing news reports about the program's future. There were allegations that NRC wanted to change the orientation of IRAP so that it would become a marketing arm of the NRC laboratories, rather than a program that serves industry. There were also concerns that a turnover at the senior level of IRAP management and declining funding could impede the role and objectives of the program.

Mandate And Methodology

In view of the excellent reputation of the program, the Committee decided to undertake an inquiry into IRAP. In order to clarify the various issues, the Committee called 11 witnesses who could provide information to members. During the hearings, which took place between September 26, 1991 and November 7, 1991, seven major questions arose:

1. What has been the effect of diminishing funding on IRAP's ability to fulfil its mandate?
2. Have the changes in IRAP's management affected IRAP's operations?
3. Has there been an attempt to alter the mission of IRAP so that it would serve NRC laboratories rather than industrial clients?

4. Should IRAP remain within NRC?

5. What are the implications of IRAP's new Strategic Plan, as proposed by NRC?

   a. Are there advantages in altering the number of IRAP's cost–sharing instruments?

   b. What impact will decentralization have on the IRAP Network?

6. What is the appropriate role of the IRAP Advisory Board?

7. What should be the role of IRAP in meeting the challenge of competitiveness facing the country?

The following report thoroughly explores these issues. It is divided into two sections. Part One, which describes IRAP and explains how it operates, provides useful background information. Part Two outlines the main issues that arose from the hearings and makes recommendations.

Part One

A. A Description of IRAP

The Industrial Research Assistance Program (IRAP) has functioned as part of the National Research Council of Canada (NRC) for over four decades. The program operates on the principle of technology transfer. Through direct technical assistance and provision of information and financial support, it assists small and medium-sized businesses to acquire and make use of technology. The aim of the program is to help firms to be more competitive in both the domestic and the international marketplace.

IRAP is founded on a National Network of Industrial Technology Advisors (ITAs), who are technically competent and industrially experienced. The ITAs deliver the program all across the country; IRAP is thus readily accessible to firms wherever they are located. The first task of the ITA is to work with the client firm to define its problems. If a technical response is required, the advisor and the company must determine if the cost to the firm will be worth the expected results. By helping to make this decision quickly, the ITA is able to give the firm prompt assistance.

The advisor searches for the appropriate technical response by relying upon his or her own expertise and by consulting with other colleagues in the Network. This approach gives the Network its multi-disciplinary problem-solving capability.

Once a technical solution has been found, the ITA helps the firm to structure a good action plan based upon sound and appropriate technology. The ITAs often discuss the proposed plan of action with experts from the laboratory institutes at the NRC. Finally, the appropriate IRAP cost-sharing instrument is used to provide the firm with the necessary funds. By having a number of different instruments available, IRAP can provide a flexible service that responds to various technological needs.

In the past, there were five main cost-sharing instruments. **IRAP-H** was available for many short-term projects for product or process development that could make use of the skills of a university science or engineering student. IRAP helped to cover the cost of the student's salary and if necessary made a technical counsellor available to monitor the progress of the project and provide guidance.

IRAP-L was used for short-term projects. If a firm needed specialized outside help for product testing, product or process design, or engineering feasibility studies, IRAP contributed $5,000 (or 65%, whichever was less) provided the project's total cost was less than $12,000.

IRAP-M was available for medium-term projects. A company could receive up to $100,000 towards the salaries of technical personnel working on specific projects to develop new or improved products and processes.

IRAP-R provided funds for long-term projects. Proposed projects for funding were usually high risk but had potential for high gains. Using this funding, firms collaborated with experts in Canadian federal, provincial or university laboratories or with international groups. This funding also facilitated the transfer of technology from these various laboratories to industry. The aim was to develop new technologies for commercial exploitation.

A final element, **IRAP-S**, the International Technology Service, helped firms locate and make use of technology from foreign sources. It aimed to assist in the transfer of foreign technology for the benefit of Canadian business. It also worked to promote cooperative research and development between the foreign owners of the technology and Canadian companies. This element was discontinued in June 1990.

Overall, IRAP is relevant to the needs of its client firms. It provides technical knowledge and human resources often lacking in SMEs. Its decentralized Network results in a program that is delivered quickly and in a regionally sensitive manner.

In December 1989, the NRC reorganized the structure of IRAP ostensibly to improve financial and program management. The various elements of IRAP were reorganized into two main sections. The Regional Element encompassed the Network of Industrial Technology Advisors, IRAP-H, IRAP-L and IRAP-M. The National Element included IRAP-R and IRAP-S. The reorganization also led to the transfer of the administration of IRAP contributions to the NRC Contributions Office.

In September 1991, the National Research Council presented its "IRAP Strategic Plan." This plan, formally accepted by the Governing Council, made further changes to the IRAP cost-sharing instruments. IRAP will now consist of two program elements. **Technology, Acquisition and Information Exchange** will support small scale initiatives. Financial assistance will be limited initially to $15,000 with a maximum (future) limit of $30,000. It is hoped that this aid will enable firms to demonstrate and improve their technical competence as a basis for future innovation, development and technology management. The aid can also be used for training and student assistance projects. There will be two categories of projects: enterprise projects for individual firms and proprietary benefits and industry projects for an industry or sector. [1]

The second element, **Research, Development and Adaptation**, will include R&D projects involving applied research and development, and the adaptation of technologies of proven technical merit. It will provide financial and technical assistance for R&D projects up to and including the construction of prototypes, and for the transfer of existing proven technologies to firms intending to adapt them to improve their competitive position. This element will cover project assistance up to $350,000, which will usually be distributed over more than one year. Projects up to $100,000 will be decided upon at the regional level; projects over $100,000 will be assessed in terms of their relevance to national needs, or overall IRAP priorities and goals.

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[1] National Research Council, *The Industrial Research Assistance Program: A Strategic Plan for the 1990s*, Ottawa, September 1991, pp. 11-12.

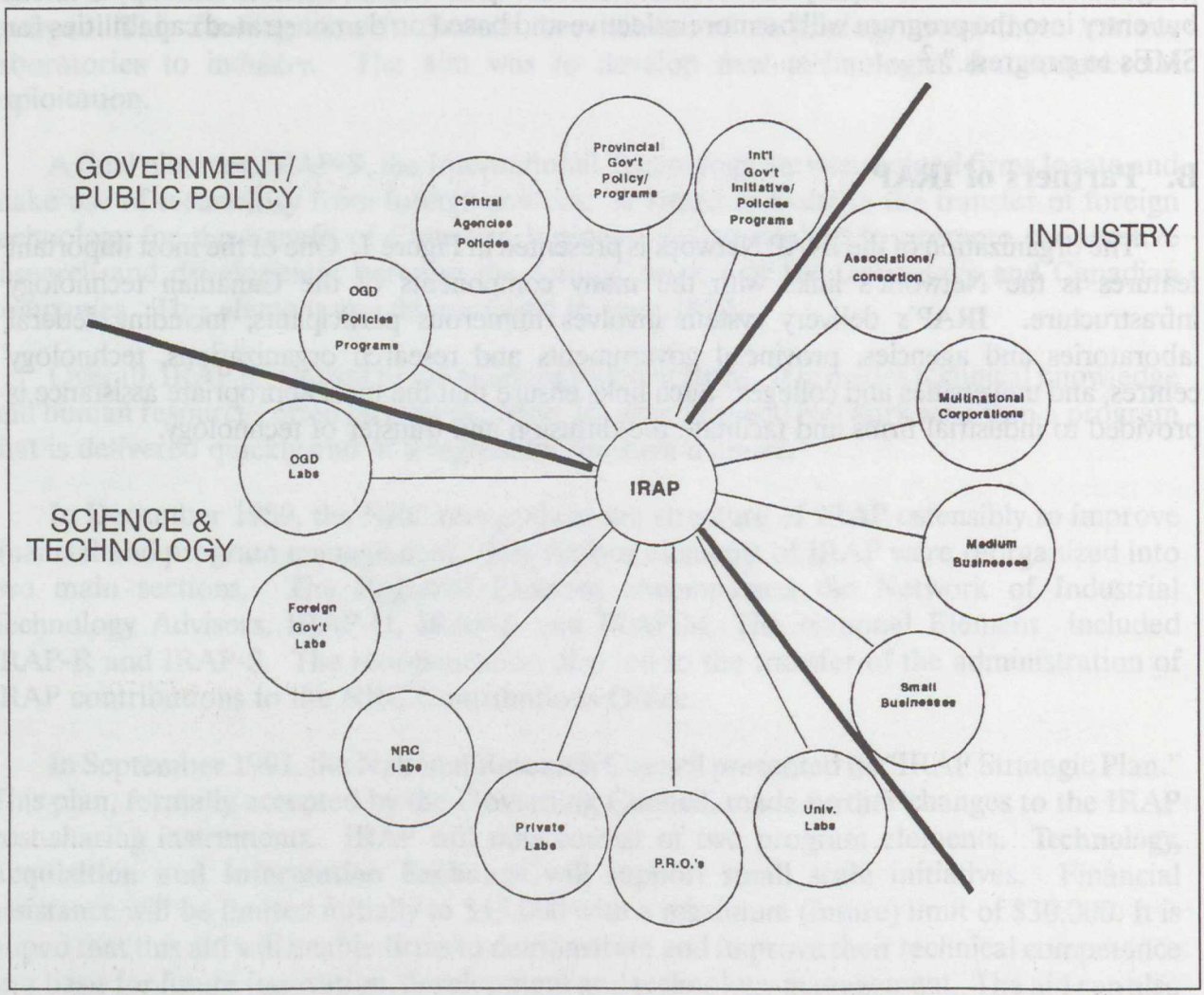
Under the Strategic Plan, operational planning and decision-making will be distributed amongst regional directors. According to NRC, terms and conditions for eligibility for IRAP programs and selection of projects "will be flexible, responsive and broad in their application; but entry into the program will be more selective and based on demonstrated capabilities for SMEs to progress." [2]

B. Partners of IRAP

The organization of the IRAP Network is presented in Figure 1. One of the most important features is the Network's links with the many components of the Canadian technology infrastructure. IRAP's delivery system involves numerous participants, including federal laboratories and agencies, provincial governments and research organizations, technology centres, and universities and colleges. Such links ensure that the most appropriate assistance is provided to industrial firms and facilitate the diffusion and transfer of technology.

[2] *Ibid*, p. 11.

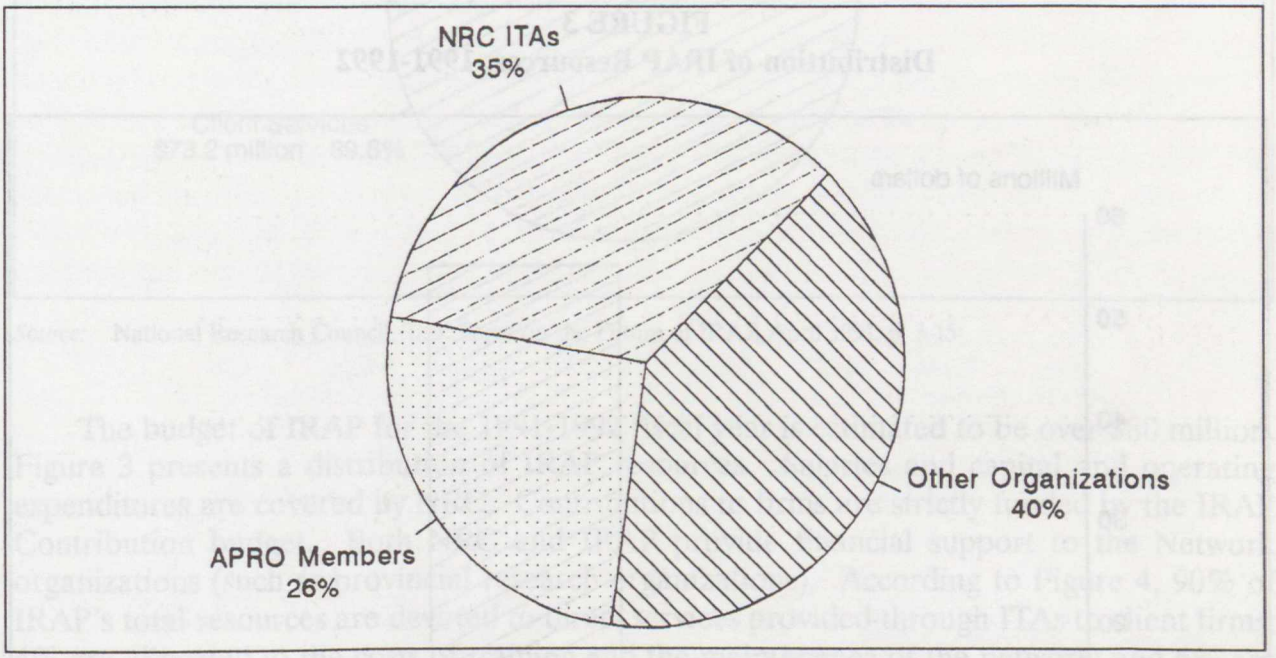
FIGURE 1
The Policy and Partner Network of IRAP



Source: NRC, IRAP Evaluation Study: Final Report, December 1990.

Although NRC laboratories provide IRAP with scientific advisors, the Network is also supported by ITAs from outside NRC, who are usually contracted from provincial research organizations (PROs), research institutes, and universities and colleges. They provide technical expertise and participate in the delivery of IRAP. The distribution of ITAs in the IRAP Network is shown in Figure 2.

FIGURE 2
Industrial Technology Advisors in the IRAP Network



IRAP is also associated with federal government departments and provincial government programs, which give IRAP access to the technologies they have developed. IRAP can then help to transfer these technologies to firms.

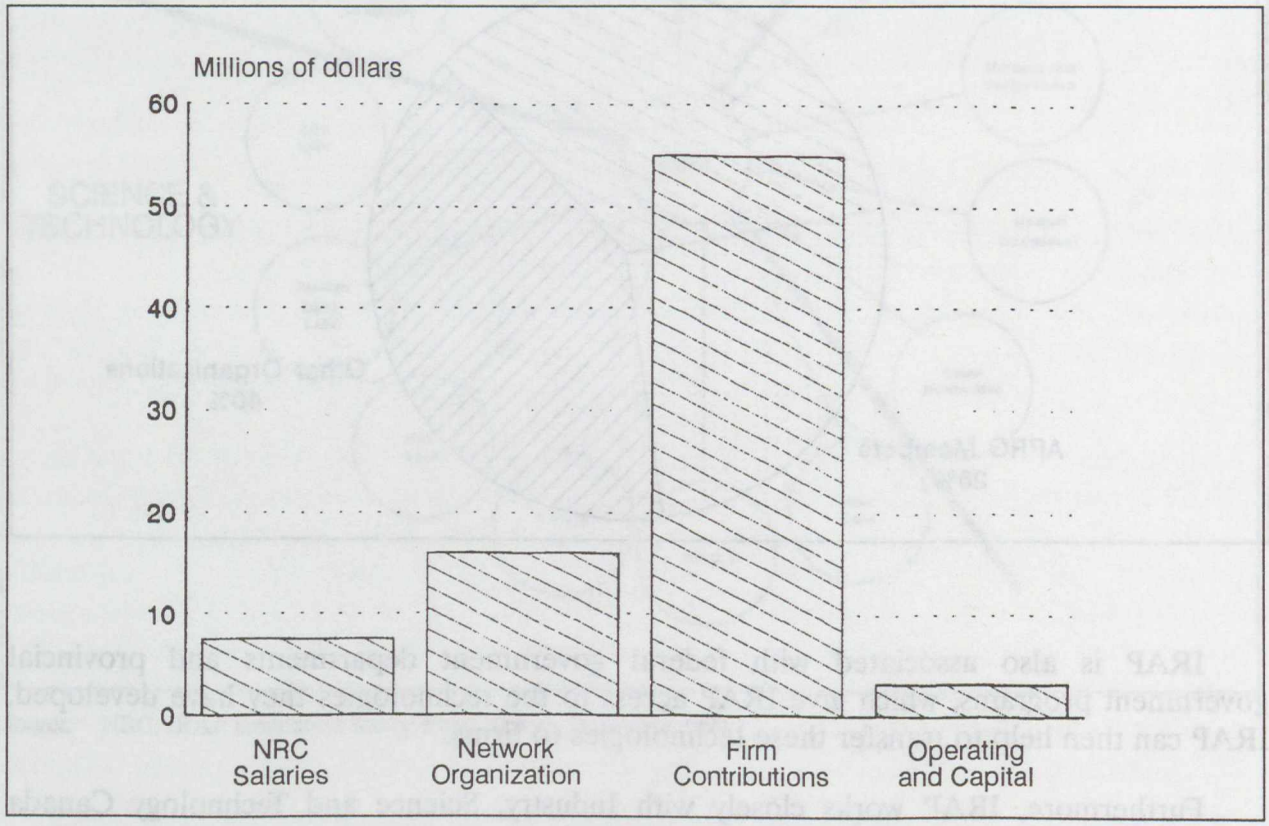
Furthermore, IRAP works closely with Industry, Science and Technology Canada (ISTC), Western Economic Diversification (WED), and the Atlantic Canada Opportunities Agency (ACOA), all of which, under respective Memoranda of Understanding, have agreed to collaborate in program delivery. Federal government agencies and programs coordinate their activities with IRAP's technology.

Through all these partners, IRAP has access to technology almost everywhere in Canada, while through its Network, which is spread across the country, IRAP can reach and respond to the needs of widely dispersed firms. IRAP can thus connect clients to the most appropriate technology. This aspect of the program helps firms to increase their technological competence, profitability and international competitiveness.

C. The Funding of IRAP [3]

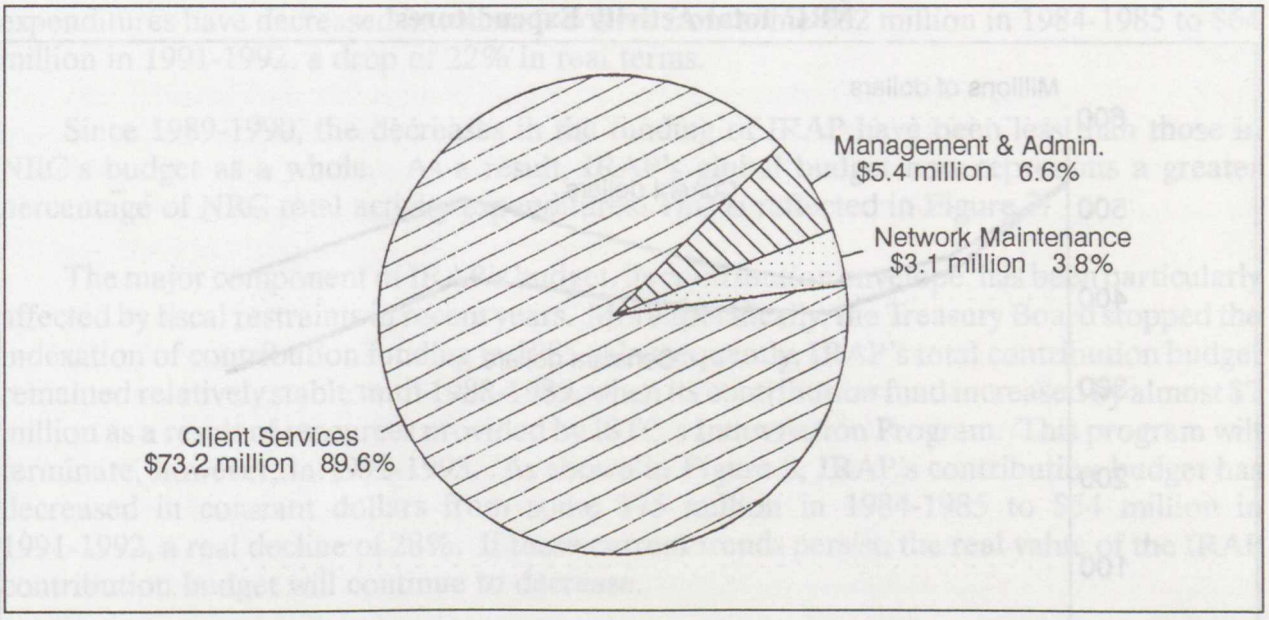
Although NRC has reorganized the structure of IRAP, the program continues to provide support to Canadian industry through indirect means (technical information, guidance and assistance) and direct financial contributions. The funding of IRAP, which allows for this support, comes from two sources. The first is a dedicated contribution envelope for IRAP and the second is the general budget of NRC. The 1991 Report of the Task Force on the Future of IRAP provided the distribution of IRAP resources, as shown in Figures 3 and 4.

FIGURE 3
Distribution of IRAP Resources, 1991-1992



[3] Data used in this section are provided in Appendix A.

FIGURE 4

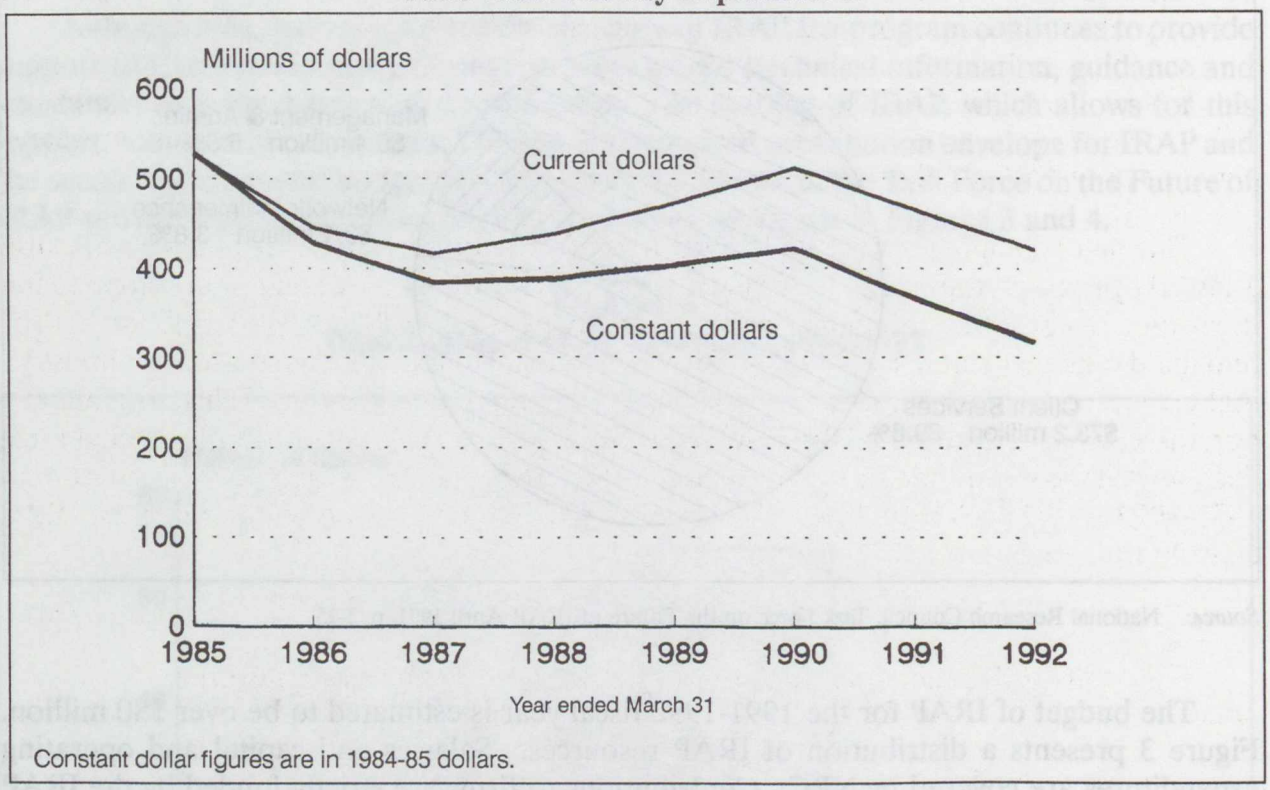


Source: National Research Council, Task Force on the Future of IRAP, April 1991, p. 3-15

The budget of IRAP for the 1991-1992 fiscal year is estimated to be over $80 million. Figure 3 presents a distribution of IRAP resources. Salaries and capital and operating expenditures are covered by NRC. Contributions to firms are strictly funded by the IRAP Contribution budget. Both NRC and IRAP provide financial support to the Network organizations (such as provincial research organizations). According to Figure 4, 90% of IRAP's total resources are devoted to direct services provided through ITAs to client firms; 4% are allocated to the costs of training and the maintenance of the network; and 6% are allocated to the management of IRAP and the administration of projects.

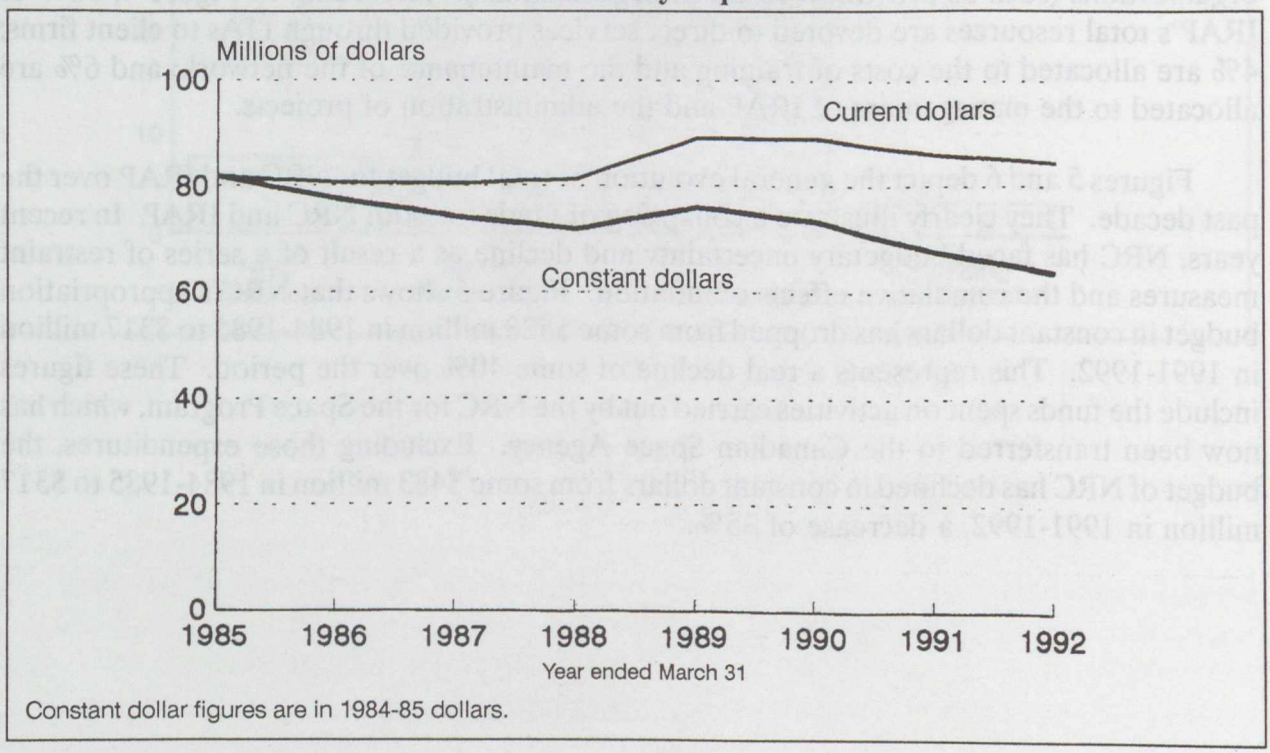
Figures 5 and 6 depict the general evolution of total budget for NRC and IRAP over the past decade. They clearly illustrate a collapsing of funds for both NRC and IRAP. In recent years, NRC has faced budgetary uncertainty and decline as a result of a series of restraint measures and the cumulative effects of inflation. Figure 5 shows that NRC's appropriation budget in constant dollars has dropped from some $528 million in 1984-1985 to $317 million in 1991-1992. This represents a real decline of some 40% over the period. These figures include the funds spent on activities carried out by the NRC for the Space Program, which has now been transferred to the Canadian Space Agency. Excluding those expenditures, the budget of NRC has declined in constant dollars from some $483 million in 1984-1985 to $317 million in 1991-1992, a decrease of 35%.

FIGURE 5
NRC Total Activity Expenditures



Constant dollar figures are in 1984-85 dollars.

FIGURE 6
IRAP Total Activity Expenditures



Constant dollar figures are in 1984-85 dollars.

N.B. : Data include Space Program

Source: Data provided by NRC, 20 November 1991

IRAP has faced similar restraints. As shown in Figure 6, IRAP's total activity expenditures have decreased in constant dollars from some $82 million in 1984-1985 to $64 million in 1991-1992, a drop of 22% in real terms.

Since 1989-1990, the decreases in the funding of IRAP have been less than those in NRC's budget as a whole. As a result, IRAP's global budget now represents a greater percentage of NRC total activity expenditures. This is reflected in Figure 7.

The major component of IRAP's budget, its contribution envelope, has been particularly affected by fiscal restraints in recent years. More specifically, the Treasury Board stopped the indexation of contribution funding in 1985. Consequently, IRAP's total contribution budget remained relatively stable until 1988-1989, when its contribution fund increased by almost $7 million as a result of resources provided by ISTC's InnovAction Program. This program will terminate, however, in 1992-1993. As shown in Figure 8, IRAP's contribution budget has decreased in constant dollars from some $75 million in 1984-1985 to $54 million in 1991-1992, a real decline of 28%. If these current trends persist, the real value of the IRAP contribution budget will continue to decrease.

FIGURE 7
IRAP Expenditures as Percent of NRC Total Activity Expenditures

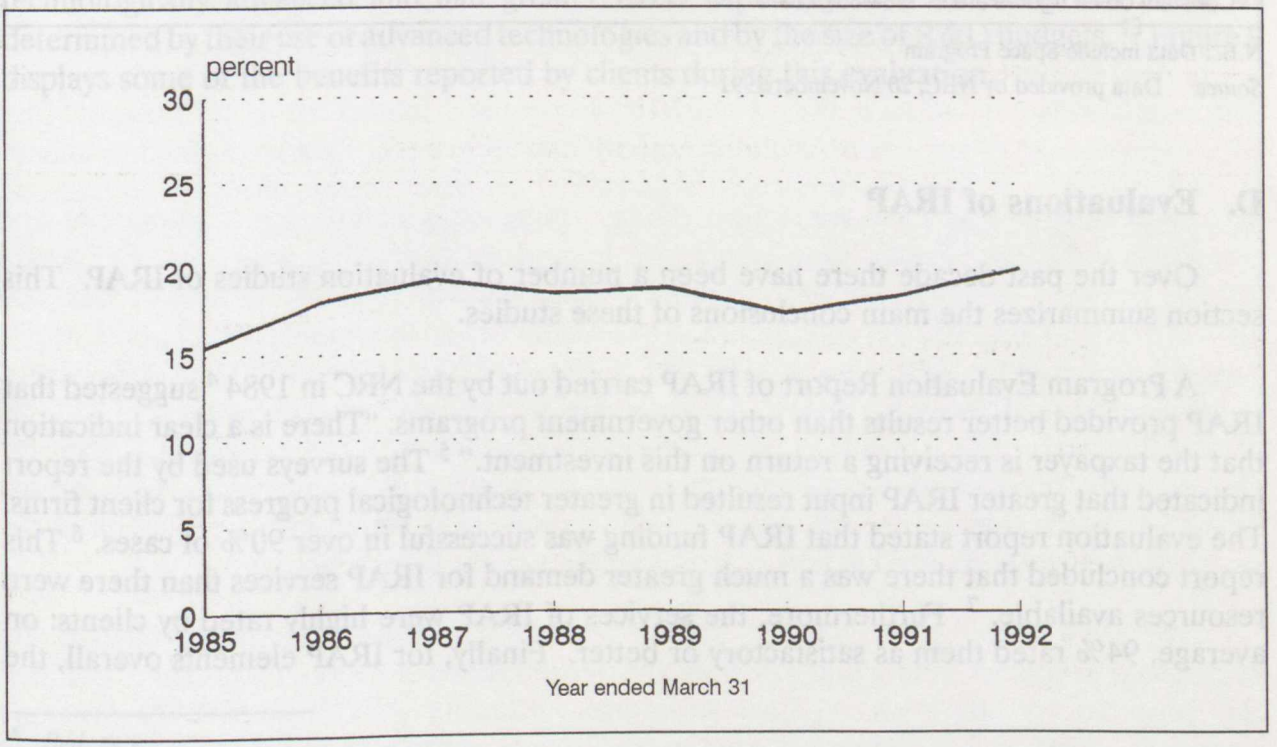
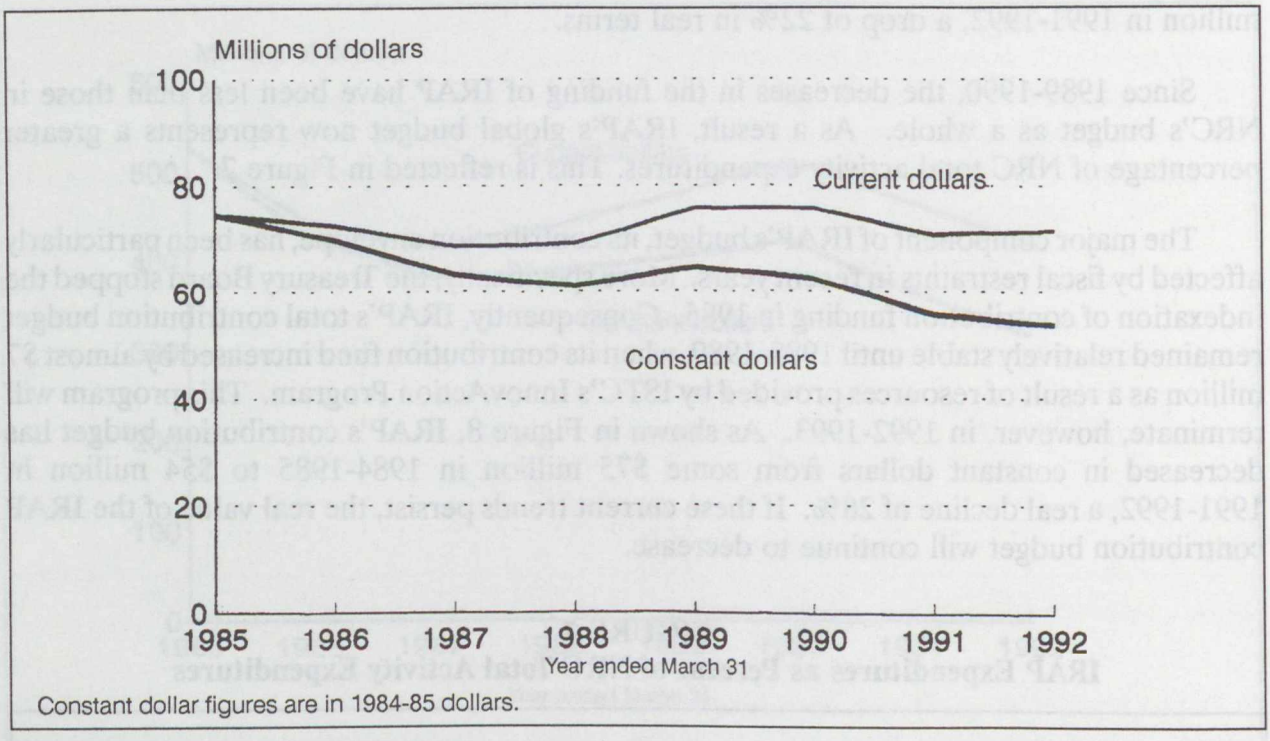


FIGURE 8
IRAP Total Contribution Budget



N.B. : Data include Space Program
Source: Data provided by NRC, 20 November 1991

D. Evaluations of IRAP

Over the past decade there have been a number of evaluation studies of IRAP. This section summarizes the main conclusions of these studies.

A Program Evaluation Report of IRAP carried out by the NRC in 1984 [4] suggested that IRAP provided better results than other government programs. "There is a clear indication that the taxpayer is receiving a return on this investment." [5] The surveys used by the report indicated that greater IRAP input resulted in greater technological progress for client firms. The evaluation report stated that IRAP funding was successful in over 90% of cases. [6] This report concluded that there was a much greater demand for IRAP services than there were resources available. [7] Furthermore, the services of IRAP were highly rated by clients: on average, 94% rated them as satisfactory or better. Finally, for IRAP elements overall, the

[4] National Research Council, *Program Evaluation Report: Industrial Research Assistance Program*, 30 March 1984.

[5] *Ibid.*, p. iii.

[6] *Ibid.*

[7] *Ibid.*, p. iv.

study found that 81% of clients found the information received to be appropriate to their needs. [8]

The Nielsen Task Force on Program Review examined IRAP and reported in 1985. It concluded "IRAP works. It could be used as the nucleus for the creation of a consolidated technology-transfer program involving IRAP, PILP and IRDP as well as for improved co-ordination of the technical advisory services available from various federal, provincial and private sector centres." [9]

In December 1990, the NRC issued another evaluation study of IRAP. [10] This study found that "IRAP's four financial elements, coupled with the advice and assistance from ITAs and project managers, provide a spectrum of assistance resulting in a broad balance in program usage... This balance is one of the perceived strengths of IRAP." The report further concluded that "the current balance across elements ensures that the needs of companies of all sizes will be fully met." IRAP was also praised for its broad approach, with minimal sectoral bias, and its reputation for being responsive to client need, which was seen as a major difference from other government programs. Finally, "program flexibility is another critical program characteristic which is valued by clients, partners and staff." [11] The evaluation also showed that for every dollar of manufacturing value added in Canada, IRAP contributed 2.09 cents in 1988-1989. [12] Furthermore, the study observed that IRAP clients were more technologically advanced and had greater R&D capability than the Canadian norm, as determined by their use of advanced technologies and by the size of R&D budgets. [13] Figure 9 displays some of the benefits reported by clients during this evaluation.

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[8] *Ibid.*, p. v.

[9] Neilsen Task Force on Program Review, *Services and Subsidies to Business: Giving with Both Hands*, 4 March 1985, p. 429.

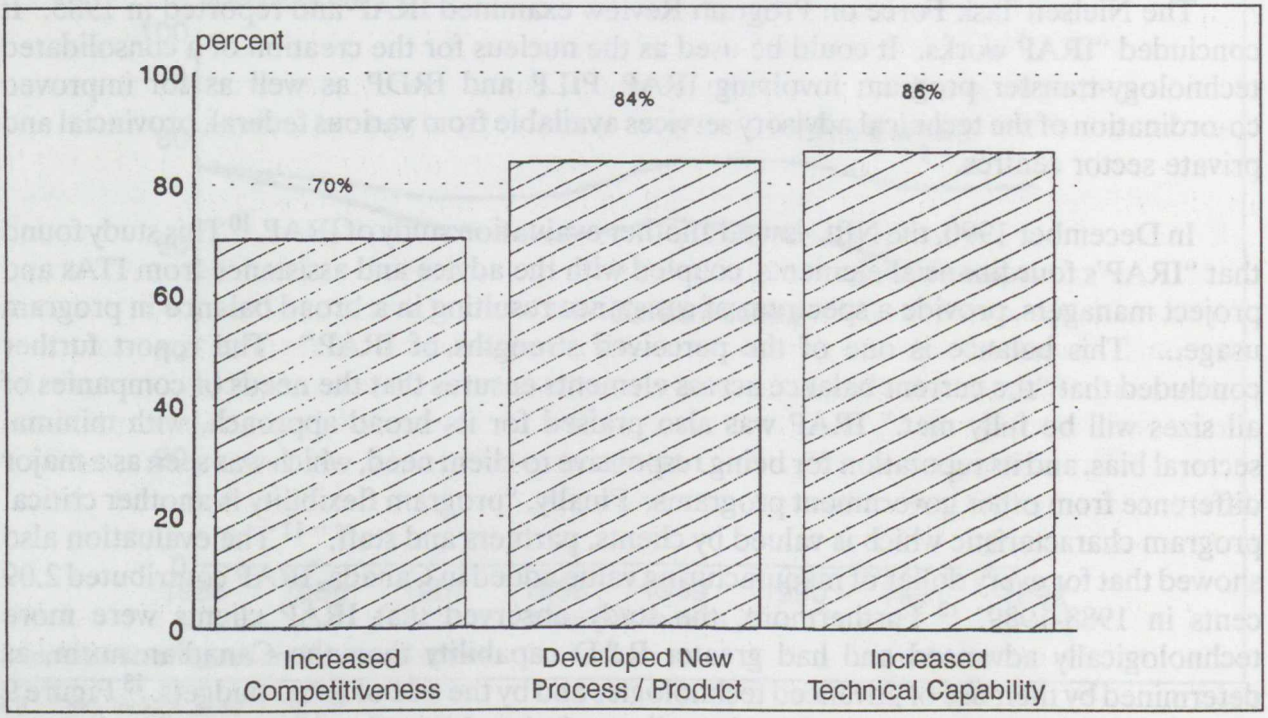
[10] National Research Council, *IRAP Evaluation Study: Final Report*, December 1990, p. 20.

[11] *Ibid.*, p. 21.

[12] *Ibid.*, Exhibit 11.

[13] *Ibid.* p. 17.

FIGURE 9
IRAP Impact on Client
Number of Clients Reporting IRAP:



Source: NRC, IRAP Evaluation Study: Final Report, 1990, p. 27.

According to the 1990 evaluation, IRAP assistance with product development and process modifications can result in increased sales and cost reductions or savings. Of IRAP's clients who were surveyed, 60% reported an average (median) increase in sales of $200,000 for the first year after project completion. The amount varied by element, with H,L,M, and R reporting average first year sales of $150,000, $250,000, $200,000 and $500,000 respectively. A small number of clients surveyed (15%) reported savings, with an average level of $30,000 for the first year.[14] IRAP clients were reported to have called for a higher level of funding for the program. They acknowledged that "money is the primary motivating factor in contacting IRAP." [15] While they valued the advice given to them, they stated that a reduction in the proportion of costs covered would probably lead to client dissatisfaction.

The 1990 report also discussed IRAP's relevance to other government science and technology programs, noting that a flexible and decentralized delivery structure had "enabled the program to link with regional programs, including ACOA and WED in some provinces."[16] In terms of its relevance to the NRC, the program is linked through both NRC's mandate and its Act. The report also noted that "IRAP is in a position to be extremely

[14] *Ibid.*, p. 27.

[15] *Ibid,*. p. 30.

[16] *Ibid.*, p. 40.

valuable to the rest of NRC; however, this is more potential than actual." [17] The report added that information gained through IRAP helped to ensure NRC's relevance to industry but there was a danger that this strength would weaken IRAP's links to other elements of the Council.

In its final section, the report made recommendations to management, suggesting that "[w]ithin a structure such as IRAP, management should cultivate and mediate strategic choices, rather than decide specific approaches. Aggressiveness and conflict are inherent in IRAP, since power is based on expertise and knowledge rather than authority." [18]

An evaluation provided in 1991 by the Task Force on the Future of IRAP revealed that: "for each dollar which IRAP invests, a total of $2.5 worth of direct industrial R&D is performed. In all, for its $55 million contribution a year, a total of $140 million of R&D is performed in Canadian small and medium sized firms. This does not take into account the additional leverage produced by IRAP assisting other programs, or the additional follow-on investment in the downstream innovation and commercialization process, noting that with IRAP's high leverage, the additional investment would probably not have occurred without IRAP's intervention." [19]

In November 1990, Dr. Perron provided the Committee with an estimate of the economic benefits associated with IRAP. [20] The results of this evaluation are provided in Figure 10 and indicate that the IRAP program has resulted in new economic activity which generated additional sales. These new sales were translated into the creation of both direct and indirect jobs, at the rate of one job per $6,000 of program funds. It was said that such results compare extremely favourably with the cost required on average to generate new jobs through other government programs. [21] These estimates must be interpreted carefully. A number of important qualifications were attached to them. Accordingly, Dr. Perron provided explanatory notes for these various estimates. They are presented in Appendix B.

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[17] *Ibid.*, p. 41.

[18] *Ibid.*, p. 52.

[19] National Research Council, IRAP Task Force on the Future of IRAP, *The Future of the Industrial Assistance Research Program: A Strategic Analysis*, p. 3-8.

[20] Letter from Dr. Perron to the Chairman of the Committee, 21 November 1990.

[21] However, no appropriate comparable figures were provided to the Committee.

TABLE 1
Estimated Economic Benefits Associated with IRAP
(Cumulated Over a Three- to Five-Year Period)

Total IRAP Costs	$75 Million
Attributable Direct Sales and Equivalent Operating Savings	$1,700 Million (20% exported)
Attributable Capital Savings of Firms	$800 Million
Attributable Taxes Generated	$300 Million
Attributable Full Time Jobs:	
Direct	13,000
Indirect and Induced	12,000
IRAP Cost per Direct Job	$6,000
Number of Expected Patents	650

E. Comments

Overall, the various evaluations revealed that client firms praise the program highly and reported that IRAP could generate benefits to individual firms as well as to the economy as a whole. Although IRAP has a long tradition in Canada, it is now at a crossroads. The reorganization of IRAP, the erosion of IRAP's budget, and the reduction in the size of the ITA Network have led to various pressures, which were perceived and interpreted differently by the witnesses who appeared before the Committee.

Part Two

Although IRAP is considered to be a very successful program, the Committee heard suggestions that it also had some problems. The main issues to do with IRAP and its future are analyzed in the following section of the report.

A. The Erosion of IRAP's Funding

The declining resource base for both NRC and IRAP has led to various pressures. In his statement to the Committee, Dr. Perron explained that the NRC has responded to the funding pressures by rebalancing its budget through a series of workforce adjustment programs. [22] These included a loss of 280 permanent positions in 1985-1986, a further reduction of 300 positions in 1990-1991 and, in the spring of 1991, a reduction of 135 more.

In his testimony, Dr. Perron added that the funding for IRAP employees comes from NRC's general budget so that the IRAP program has been subject to the same funding pressures as the rest of the NRC. He mentioned that twelve IRAP positions were eliminated in 1985-1986 and four in 1990-1991.

According to the Task Force on the Future of IRAP, more pressures have eroded IRAP's financial resources. [23] Over the past two years, IRAP's operational budget has experienced a drop of 25% through an internal allocation to other parts of the NRC. In 1989, there was also a reallocation of 35 of IRAP's administration and management positions to the NRC's central administration. A further 5% of the operational staff working on international technology networking were also transferred to central NRC administration. Finally, there was a reduction of staff through layoffs of 13% in IRAP, while at the same time the reduction for NRC employees overall was less than 10%. The net effect is that the Network has been reduced from 300 to some 250 ITAs.

The major question resulting from the declining resource base for IRAP is whether the program can fulfil its mandate. During the hearings, the Committee was informed of the various repercussions of IRAP's decreased funding.

One witness, Mr. Ken Pulfer, regarded the decreased funding as being the cause of IRAP's difficulties. [24] He maintained that decreased funding has weakened the Network because of the resulting reduction in the number of ITAs. He explained that this reduction

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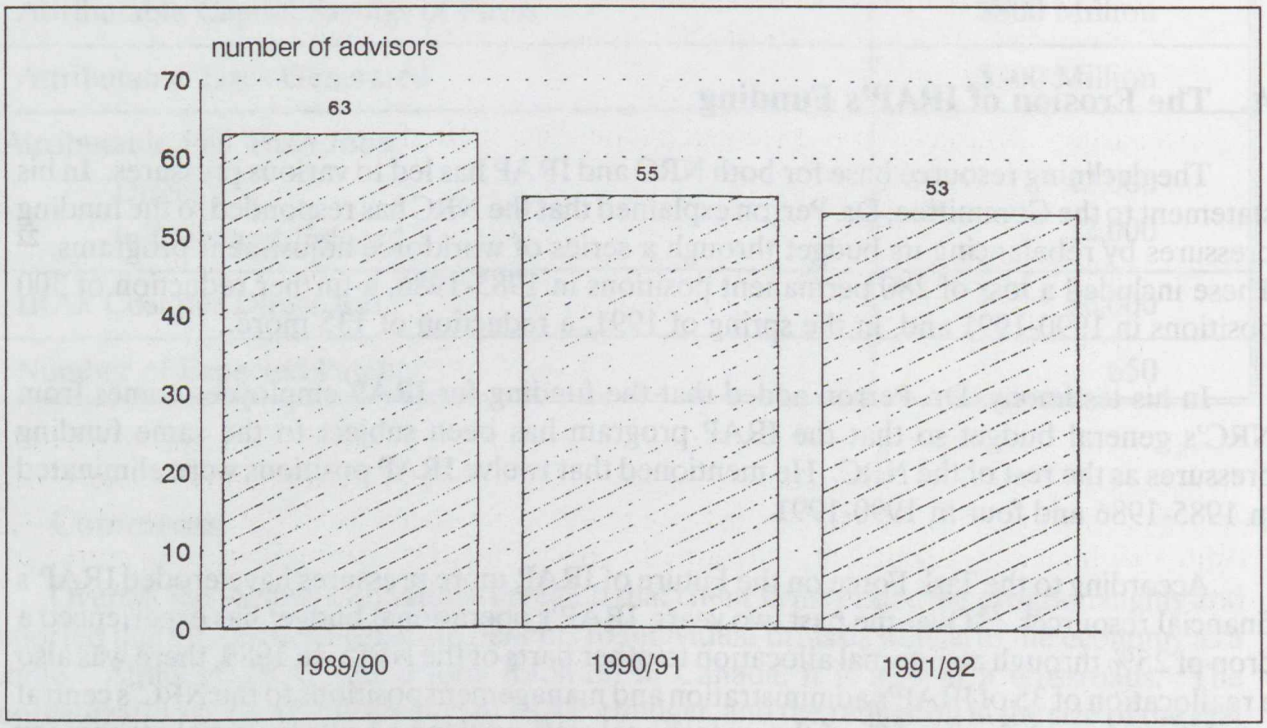
[22] Dr. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:6.

[23] National Research Council, IRAP Task Force on the Future of IRAP, *The Future of the Industrial Research Assistance Program: A Strategic Analysis*, April 1991, p. 3-16.

[24] J.K. Pulfer, *Minutes of Proceedings and Evidence*, Issue No. 4, p. 4:24.

particularly affected the number of ITAs contracted out from the Provincial Research Organizations. As shown in Figure 11, the allocation of positions to APRO members has dropped significantly over the last three years. Furthermore, Mr. Pulfer affirmed that the lack of funds has slowed down the process for project approval. For these reasons, he suggested that the funding level of IRAP be restored or increased. [25]

FIGURE 10
Industrial Technology Advisors
Contracted from Provincial Research Organizations



Source: Data provided by J.K. Pulfer, 18 October 1991.

According to Mr. Roy Woodbridge, the decline in financial resources has eroded IRAP by reducing the effective level of assistance provided to the client firms. If this trend continues, he maintained, this could ultimately result in the program's total collapse. He stated:

> This process of erosion began several years ago when the IRAP budget was cut and then frozen, which has meant that effective funding levels have been reduced by the effects of inflation. IRAP management responded to that problem by trying to do more with fewer resources, and they did that primarily by reducing the per-unit level of individual industrial contributions. That is a process that cannot continue. If it does, the impact of the program will be lost, and once that happens, total program collapse will follow... [26]

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[25] *Ibid.*, p. 4:31.

[26] R. Woodbridge, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:24.

Mr. Woodbridge also said that the decisions made on the base-level funding for IRAP would have a strong impact on the operational effectiveness and the future evolution of the program. He suggested a strong government commitment to funding IRAP at the level needed to fulfil its objectives and mandate:

> We [the members of the IRAP Advisory Board] want to see a strong government commitment to funding of the program at the level of resources required to fulfil an expanded program mandate. We do not want you to protect that program. We do not want you to make a last ditch effort to save it. We want you to understand what it could be, what it should be, and make sure that it achieves those kinds of bigger, broader objectives. We want you to make sure that this program grows and becomes what it should be in the context of the national industrial needs of this country. [27]

Mr. Richard Bourbeau also discussed the funding of IRAP. He explained:

> You cannot function when you do not know whether your budget will be cut by 10% or 15% the following year. However, I would not set that budget blindly. I would set it on a tight and very aggressive strategic plan with logical, measurable and attainable goals, and I would find a simple and dynamic way to monitor it and check the quality of its results. Only on those criteria would I base IRAP's budget. [28]

Last year, this Committee recommended that the budget of IRAP be increased to $100 million in fiscal year 1991-1992. The Task Force on the Future of IRAP found that a level of $100 million in budget "would help provide a measure of needed stability to allow IRAP to continue to function effectively." [29] During his testimony, Dr. Pierre Perron suggested a budget for IRAP of $107 million, in 1990-1991 dollars, for the fiscal year 1994-1995:

> In the context of the strategic plan, IRAP regional directors have defined the financial requirements to carry out this plan and identified an appropriate level of funding to be $107 million by 1994-95. These estimates are consistent with the recommendations of this committee, which, by the way, have been endorsed by NRC's governing council on a number of occasions. We are now in a position to bring these funding estimates to the attention of the government and to discuss their implications with IRAP's stakeholders over the coming months. [30]

Some witnesses suggested that the IRAP budget should be reestablished at its 1984-1985 level. By adjusting this level for inflation, the budget for IRAP would account for approximately $110 million in the 1992-1993 fiscal year.

According to testimony and the various evaluations discussed in Part One of this report, IRAP has been shown to generate benefits that exceed its costs. The Committee considers IRAP as a very effective instrument for strengthening the technological capabilities of

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[27] *Ibid.*, p. 3:27.

[28] R. Bourbeau, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:6.

[29] National Research Council, IRAP Task Force on the Future of IRAP, *The Future of the Industrial Research Assistance Program: A Strategic Analysis*, p. v.

[30] Dr. P. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:10.

industrial firms. Although the members of the Committee recognize the fiscal concerns of government, they believe that additional financial resources are needed to preserve the effectiveness of IRAP's Network and contributions. Therefore, the Committee recommends:

1. **That the federal government consider the advisability of increasing the total funding of IRAP to a minimum of $110 million for fiscal year 1992-1993.**

Furthermore, the Committee agrees with Mr. Woodbridge with respect to expanding the mandate of IRAP. This means that the Network should be expanded and that IRAP should support an increasing number of firms. Therefore, the Committee recommends:

2. **That the federal government consider the advisability of further doubling, by fiscal year 1997-1998, the funding of IRAP to $220 million, in 1992-1993 dollars.**

B. IRAP's Managerial Difficulties

During the hearings, some witnesses expressed their concerns about the loss of corporate memory within IRAP management, where there has been a turnover at the senior level. Witnesses also pointed to considerable changes in the way IRAP is managed. For example, the management of financial resources has been transferred from IRAP to NRC. Some witnesses suggested that all these changes have created difficulties in managing the program.

According to documents provided to the Committee, [31] there have been frequent audits of IRAP. In 1983, a study prepared by the NRC Internal Audit Office concluded that "significant improvements were required to basic management, operating controls and procedures if IRAP was to develop viable and effective management." In 1986, the internal audit reported that "IRAP's management process was significantly deficient in terms of its strategic management and planning." That study also found that "budgeting and financing controls were inadequate, resulting in the potential for significant funds to lapse each year, and that individual project monitoring was superficial, and management roles and responsibilities ill-defined." In 1988, the Internal Audit Office reported that "several recommendations as to management control remained to be completed."

Following his appointment in 1988 as Director General of IRAP, Mr. Shibly Abela was informed that IRAP was mismanaged. He then undertook to improve the managerial and financial control systems of IRAP. However, by May 1989, IRAP had expended its resources for the IRAP-R program for the fiscal year 1989-1990. A special audit requested by the Minister for Science concluded "that the managerial framework was generally sound, but that the specific roles and responsibilities of IRAP managers and financial contribution officials must be made clearer." The 1989 internal audit pointed again to the lack of adequate control practices for IRAP-R projects and noted that there were few operational policies or procedures, and no specific performance criteria. In January 1990 the Internal Auditor highlighted some improvement in the management practices of the Industry Development Office (IDO), which was in charge of IRAP's funds. In a memo addressed to the vice-president responsible for IRAP, he stated:

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[31] National Research Council of Canada, *Background Documents on NRC's Industrial Research Assistance Program*, Annex I.

> I would like to point out that the general observation on IDO being well managed was supported largely by the improvements made to the management practices in IDO since S. Abela took over, less than one year before the audit.

Despite these improvements, an internal NRC audit in 1990 recommended the establishment of a Contribution Office at NRC to coordinate all NRC's contribution funds. As a result, the IDO was disbanded and the management of contributions was removed from IRAP and transferred to the NRC's Contribution Office.

According to NRC, such restructuring, which separates project development responsibility from financial management accountability, would ensure that all contributions were allocated in accordance with financial management requirements. According to Mr. Abela, the transfer of IRAP's managerial operations to NRC "will exacerbate rather than solve the problem, because it will split the management process which of necessity is an optimization process. The art of good management demands that a manager make disciplined and informed decisions to produce effective results within his available resources." [32]

During the fiscal year 1990-1991, despite the transfer of financial management to NRC, there was a lapse in the IRAP contribution funds. This lapse added to the various management problems that IRAP had been experiencing. Subsequently, Mr. Abela was dismissed on the basis of mismanagement of IRAP.

The Committee required Mr. Abela to table a document explaining the causes of the lapse in IRAP contribution funds. In this paper, Mr. Abela contended that the direct causes "are the external economic conditions, government policy decision with respect to contributions and NRC management decision in respect of the Network and IRAP-R. To blame it as financial mismanagement by IRAP managers is a misrepresentation of the facts."[33]

During his testimony, Mr. Bourbeau discussed Mr. Abela's management approach. He maintained that:

> We [the IRAP Advisory Board] would have preferred a much more systematic and precise style than that of Mr. Abela. However, we must bear in mind the conditions under which Mr. Abela was working. There was a change in the chairman, there were four different vice-chairs, there were budget cuts, and some financial responsibilities were taken away from him. In the end, it would have been impossible for anyone to achieve any results with all the problems the position entailed. Consequently, it is out of question to evaluate Mr. Abela's performance, given what happened with IRAP over the last two years. [34]

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[32] S. Abela, *Issues Surrounding the Industrial Research Assistance Program*, p. 3.

[33] *Ibid.*, pp. 6-7.

[34] R. Bourbeau, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:16.

Other witnesses also raised the issue of management instability. For instance, Mr. Don Murray maintained that: "It is well recognized that the IRAP corporate memory really does not exist today." [35]

Mr. Woodbridge also stated:

> IRAP has also been seriously undermined by management instability and uncertainty associated with the transformations taking place within the NRC itself. The result here, as you all know, has been a loss of key people and a lack of clear direction with respect to the program's evolution. Management instability has been compounded by organizational changes that have downgraded the management status of IRAP. [36]

There is evidence that the management of IRAP contributions has been complicated by the turnover of key people. The Committee acknowledges that Mr. Abela improved the managerial and financial control systems of IRAP. However, it is crucial to have an ongoing capacity to manage IRAP in accordance with the objectives and goals set for the program. IRAP has an excellent reputation and, in the context of limited financial resources, we must ensure that the success of the program will not be compromised by management practices. Therefore, the Committee recommends:

3. That the Auditor General review the management practices and financial accountability of IRAP's contributions. Such a review should consider whether it is in the best interest of the IRAP program to re-unite financial and operational management in the same organizational structure.

C. IRAP's Mission

During the hearings, the Committee heard differing views on the future orientation of IRAP. Some witnesses argued that there was to be a re-orientation of IRAP away from its emphasis on providing clients with information and technology from any source, to an emphasis on marketing NRC technologies first and foremost. The misunderstanding of IRAP's role can be explained by philosophical differences between NRC's laboratories and IRAP. While IRAP focuses on its clients' needs, the core activity of NRC's laboratories is basic and applied research. For instance, Mr. Murray informed the Committee that only a small percentage (between 10% and 20%) of the research done by NRC was of immediate relevance to the SMEs in Canada.

Some witnesses maintained that the very wording of the Strategic Plan, as well as motions adopted by the Council of NRC, lend credence to fears that IRAP would focus on activities performed by NRC's research laboratories. For instance, the Strategic Plan says:

> Any consideration of IRAP's partnerships and relationships must start with the National Research Council. ... The key challenge will be to preserve the strengths

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[35] E.D. Murray, *Minutes of Proceedings and Evidence*, Issue No. 2, p. 2:31.

[36] R. Woodbridge, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:24.

> of IRAP while ensuring its appropriate synergy with the Research Institutes' capabilities and other NRC programs. [37]

The Strategic Plan further adds:

> NRC is developing mechanisms to enable both IRAP and the research institutes to enhance their long-term goals of serving the needs of industry. This partnership will support technology diffusion from NRC where SME needs are clearly served and NRC's capacity to serve them is evident. Finally, IRAP will be NRC's "window" on changing needs of industry to enhance the relevancy of the plans and projects of NRC's research institutes. [38]

Furthermore, a motion adopted by the council of NRC in June 1991 stated:

> IRAP will use all appropriate NRC resources including inhouse laboratory expertise and NRC mechanisms for the delivery of S&T information as a primary but not exclusive source of S&T information. [39]

According to Mr. Bourbeau, this clearly shows that NRC favours its institutions and laboratories. He maintained that this also reflects "that the senior management at the National Research Council gives little human support to IRAP."[40]

In response to the confusion concerning IRAP's future, a number of witnesses suggested opposing any reorientation of IRAP that could greatly affect the actual strengths of the program. For instance, Mr. Woodbridge insisted:

> ... we would urge resistance to management decisions that would erode the national network or shift program focus from industrial access to the best technology available through this program, to access to the best technology available from government labs. [41]

The Minister for Science presented another point of view:

> ... I don't think there is anything wrong with saying that if you are going to do a technology search, you might start with the laboratories at NRC. It seems to me that the network that NRC labs has across this country is a pretty fair place to start your search. That doesn't imply to me any downgrading of what IRAP is supposed to. [42]

He further commented:

> I really don't see anything in the [strategic] plan, nor indeed in the testimony that I've read in terms of the committee, that verifies any shift in basic philosophy with

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[37] National Research Council, *The Industrial Research Assistance Program: A Strategic Plan for the 1990s*, p. 8.

[38] *Ibid.*, p. 9.

[39] National Research Council of Canada, *Background Documents on NRC's Industrial Research Assistance Program*, Annex Two.

[40] R. Bourbeau, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:5.

[41] R. Woodbridge, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:26.

[42] W. Winegard, Minister for Science, *Minutes of Proceedings and Evidence*, Issue No. 9, p. 9:13.

> respect to IRAP. I don't see anything in the testimony I've looked at that says that NRC wants to use IRAP to market its laboratories. You know, that isn't its main function at all. [43]

In order to alleviate these fears, Dr. Perron insisted that the NRC had no intention of changing the orientation of the program. He affirmed:

> IRAP provides a vital linkage between Canadian firms and the scientific and technological resources available to them, not only within NRC but through other federal departments and appropriate external sources. [44]

In addition, Dr. Perron maintained that IRAP's mission would be preserved under the Strategic Plan:

> IRAP renews its commitment to its fundamental principle and that principle is to serve the needs of small and medium-sized firms right across the country. [45]

The Minister for Science also attempted to clarify the misunderstanding about IRAP's orientation:

> ... IRAP will continue to serve the needs of its clients by seeking the best available technology from wherever in the world it is to be found. [46]

The Committee welcomes these assurances from both the President of the NRC and the Minister for Science. However, concerns remain on the future orientation of IRAP. There is clear evidence that the wording of the Strategic Plan, as well as of the Motion of Council, has led to various interpretations. It becomes crucial to ensure that IRAP's major features, which are to be responsive to clients' needs and to rely upon the most appropriate technology whatever its origin, will not be compromised by reorienting the program. In that regard, it is essential to reinforce the current mission and orientation of IRAP. Therefore, the Committee recommends:

4. That the Minister for Science reaffirm that IRAP's mission and orientation will remain unchanged. Accordingly, IRAP should continue to serve the needs of its clients by seeking the best available technology from wherever in the world it is to be found.

D. Should IRAP Remain Within the NRC?

The apparent tendency to focus IRAP around the NRC laboratories is one of the reasons some give for removing IRAP from NRC. The Committee heard two main arguments on this issue. The first considers the management of IRAP, and the second deals with the new organizational structure of the NRC.

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[43] *Ibid.*

[44] Dr. P. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:5.

[45] *Ibid.*, p. 5:9.

[46] W. Winegard, Minister for Science, *Statement to the Committee*, 7 November 1991, p. 6.

Since the management of IRAP is now under the NRC umbrella, some witnesses considered that the success of the program might be limited by a reallocation of IRAP's financial resources. While some witnesses feared that NRC was reallocating funds out of IRAP's budget for other purposes, others claimed that IRAP's funding has not, and would not, pay for any of NRC's other operations. On the one hand, the Task Force on the Future of IRAP said that:

> With the lack of funds to finance other NRC initiatives, including training, consideration is being given to reallocate funds out of IRAP's contribution budgets for those purposes. [47]

On the other hand, Dr. Perron contended:

> It should be quite clear that the only cutbacks made to IRAP were taken from its administrative overhead, that is the part of NRC's budget that is included with NRC's overall operations. Although NRC continued to face a severe funding situation, these reductions were consistently handled in a very evenhanded way.[48]

From that perspective, the Minister for Science explained:

> ... IRAP funding comes through a grants and contributions vote, which is different from the straight NRC vote. That grant and contribution vote money cannot be used for anything but to support the IRAP network and the contributions that it gives. Even if the president or the management of NRC, or whoever, wanted to switch some of that money into running the laboratories, he couldn't do it. It's certainly my intention to make sure that nothing like that could ever happen. The grants and contributions vote will remain as a grants and contributions vote and will not be wrapped in with the total NRC vote. [49]

Consequently, while NRC can change the amount of its own budget that it can allocate to IRAP, it cannot transfer money from IRAP's contribution budget because it comes from a separate credit vote, which is designed as "IRAP money" by the House of Commons. For this reason, Mr. Pulfer stated:

> I do not think NRC has starved the [IRAP] program for funds. I think Parliament has starved it for funds. [50]

With respect to the argument dealing with the reorganizational structure undertaken by NRC in the past few years, the Committee heard evidence that this reorganization had led to a diminished representation of IRAP within the NRC. For instance, under the previous organization, there was an NRC vice-president for technology whose major responsibility was IRAP. Accordingly, it was said that this gave industry a strong voice at the executive committee level of the NRC. However, within the current structure of NRC, IRAP is under

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[47] National Research Council, IRAP Task Force on the Future of IRAP, *The Future of the Industrial Research Assistance Program: A Strategic Analysis*, April 1991, p. 3-16.

[48] Dr. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:8.

[49] W. Winegard, Minister for Science, *Minutes of Proceedings and Evidence*, Issue No. 9, pp. 9:17 and 9:18.

[50] J.K. Pulfer, *Minutes of Proceedings and Evidence*, Issue No. 4, p. 4:32.

the responsibility of a vice-president who is also responsible for six research institutes. Mr. Woodbridge stressed that the reorientation of NRC's activities has resulted in a reduced status for IRAP within the whole framework of the Council:

> NRC is understandably preoccupied by the task of downsizing and reorienting their lab activity. In the absence of any external direction regarding the role of IRAP, it is logical for them to integrate IRAP more effectively within the overall NRC management framework. This does not mean that IRAP must necessarily become "a servant of the labs" but it does mean that the management autonomy and status of the IRAP program within NRC management framework is being reduced. [51]

Fear of the integration of IRAP into NRC led many witnesses to reconsider their views on the relationship between the two. Suggestions made by witnesses ranged from according IRAP a clear mandate within the NRC but separate from the laboratories to separating IRAP from the NRC and establishing it as an independent entity. On the one hand, Mr. Woodbridge mentioned:

> We [the members of the IRAP Advisory Board] finally decided — and this decision was taken by a whisker—that the IRAP program should remain with NRC, but with the important proviso that we as an advisory council would only support it remaining there so long as NRC demonstrated an ongoing capacity to manage it in accordance with the objectives and the goals that we as an advisory board had set for the program. [52]

These conditions set by the Board were: that NRC accommodate IRAP in its own right in the NRC mandate; that NRC recognize IRAP as an institution distinct from the laboratories; and that IRAP's resource base be protected.

On the other hand, Mr. Bourbeau's suggestion was:

> ... to separate IRAP from the National Research Council and make it an independent body that reports directly to the minister. IRAP could then serve its purpose more effectively, with a minimum of government intervention. [53]

Mr. Abela also recommended that IRAP be removed from NRC and established as a separate operating agency, with a "clean and unfettered" mandate in industrial development.

Other members of the IRAP Advisory Board suggested that there were advantages in maintaining IRAP within the NRC. For instance, Mr. Pulfer explained:

> ... I think it [IRAP] is best left at NRC. There are a lot of advantages, tight linkages with the laboratories in the sense that laboratories often provide the

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[51] R. Woodbridge, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:26.

[52] *Ibid.*, p. 3:28.

[53] R. Bourbeau, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:6.

> liaison people who participate in IRAP programs and provide helpful advice and so. The program has worked well inside NRC and I think it should stay there. [54]

Furthermore, Mr. Murray stated:

> The context in which I made the suggestion of moving IRAP out was only as a last resort, because remember, [NRC] has some excellent scientists in its laboratories something like 2,800. ... The bridge between the ITAs in IRAP and the scientists at NRC has always been a strong plus, and I believe it's one of the reasons why IRAP is a jewel. So to move it out separately, you would lose some of that, which would be unfortunate. [55]

The Minister for Science shared similar views that IRAP can benefit from the NRC's environment:

> I think IRAP would lose something if it wasn't part of NRC. ... I think IRAP gains by being affiliated in a relatively loose way with the laboratories. I think there's a lot of work in the laboratories that can be used by the IRAP network people out there. Not just what's going on in the laboratories, but those people in the labs have science and technology outlets all across this country and, indeed, around the world. So they can find out things. Any attempt to make IRAP a creature of the laboratories is doomed to failure. It would not then fulfil the function of IRAP as we all want it. It would certainly not be acceptable to the government. [56]

The Minister for Science, however, also said that the arm's length relationship between the federal government and NRC prevents him from taking certain actions. As he told the Committee:

> I find it interesting that on this particular issue you want me to take some sort of action or at least change the governing structure of NRC, or give IRAP a different kind of thrust, or perhaps you want me to fire the president of NRC (. . .) and yet if I had done those things and appeared before you, I know exactly the words you would be using and the words you would say in the House . . . What right has this minister to do these terrible things, when it's an arm's length organization?[57]

Unlike the NRC, however, IRAP enjoys a different relationship with industry, and has a different place in federal industrial policy. If the Minister for Science has limited opportunities in intervening to ensure that IRAP is responsive to industry, and if the NRC rejects the advice of the Advisory Board, then there is no way to ensure that IRAP serves the needs of its clients and of federal industrial policy ahead of those of NRC.

This is particularly important since there is a different philosophy between NRC and its labs, and IRAP and its clients. NRC is built on its labs, and since all of its managers are from the labs, it is natural to fear that it will see everything it does from that perspective. This fuels suspicion that NRC intends to re-orient IRAP towards marketing NRC technology, rather than serving IRAP clients.

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[54] J.K. Pulfer, *Minutes of Proceedings and Evidence*, Issue No. 4, p. 4:31.

[55] E.D. Murray, *Minutes of Proceedings and Evidence*, Issue No. 2, p. 2:37.

[56] W. Winegard, Minister for Science, *Minutes of Proceedings and Evidence*, Issue No. 9, p. 9:16.

[57] *Ibid.*, p. 9:22.

There are also difficulties in expanding IRAP substantially to permit it to fulfil the potential identified by the Nielsen Report. This would run counter to the frozen budgets of NRC labs in general. Increased funding for IRAP within an NRC umbrella would either unbalance funding within NRC, or would come at the expense of the labs. Neither alternative is welcome. As Mr. Woodbridge said:

> "Can NRC management contemplate and argue effectively for the expansion of the program element that is IRAP, to grow within that program budget? As an advisory board, we thought in terms of doubling or tripling it over time, because that is the scale we think is required. Can they do that? Can they expand the IRAP network and strengthen that network philosophically, organizationally, emotionally, and every other way, when the budget for their main resource activity, which is the labs, is frozen or declining? Can they do that?"[58]

Finally, there are precedents for removing elements of NRC. The Natural Sciences and Engineering Research Council, Atomic Energy Canada Limited, and the Canadian Space Agency all began life within the NRC incubator, only to outgrow it.

Dr. Perron attempted to clarify the issue:

> I recognize that I said that IRAP appeared to be moving away from NRC and trying to become something that was not quite linked to the rest of the organization, and I believed that would jeopardize the future of IRAP and it was not going to facilitate the fulfilment of NRC's mission. We know that what has made IRAP a success is the fact that it finds within NRC an environment where you have a rich culture covering almost the full spectrum of science and technology. It is that milieu that creates an environment to which outside clients like to relate. There have been suggestions in the past that IRAP could become a stand-alone organization or that IRAP could be part of, for instance, the Department of Industry, Science and Technology. This, I believe, is nonsensical, because I believe that everyone outside will tell you that what has made a success of IRAP is this climate that NRC offers for IRAP's operation.[59]

In summary, some witnesses have been considering the possibility for IRAP to opt out of the NRC. Other witnesses highlighted some advantages for IRAP to remain within the NRC. Overall, the Committee considers that this is an important issue which should be addressed carefully. Therefore, the Committee recommends:

5. That the federal government re-examine the appropriateness of the situation of IRAP within the NRC in the context of the requirement that IRAP be responsive to industrial clients and the government's industrial policy.

Finally, the status of the IRAP program should be subject to greater public scrutiny; this would help alleviate the fears about changing the program. Therefore, the Committee recommends:

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[58] Roy Woodbridge, *Minutes of Proceeding and Evidence*, Issue No. 3, p. 3:28.

[59] Dr. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:10.

6. **That both senior IRAP management and the Chairman of the IRAP Advisory Board appear before this Committee on a yearly basis to discuss the status of the IRAP program.**

E. Strategic Plan for IRAP

In its Strategic Plan, NRC explains the need to review IRAP's components and strategy. First, NRC mentions that the Council has recently reviewed its organization and has accordingly established a new mission statement to guide its activities, including IRAP, over the next decade. Second, NRC believes that IRAP must adapt to the changes taking place in Canada's science and technology infrastructure. Third, NRC stated that IRAP must develop a new planning framework as well as new strategies in management and program delivery in response to fiscal restraints.[60] Furthermore, Dr. Perron testified that the Strategic Plan also responds to structural problems in the administration of contributions which had led to a problem of cash flow management in IRAP.

The Strategic Plan establishes new operating principles for IRAP. For instance, the assistance provided by IRAP for projects and partnerships will be more selective and the number of program elements will be decreased from four to two. Furthermore, the Strategic Plan reviews IRAP's mandate and mission. It also suggests shared management: while "strategic management" will be the responsibility of NRC, operational planning will be distributed amongst IRAP's regional directors.

As a result of the Strategic Plan, Dr. Perron stated that:

> IRAP will have sufficient flexibility and enough resources to support essentially the same range of projects and client requirements as before. ... As always, IRAP will continue to be supported with the very best available information, advice, and technology, whatever the source, whether within NRC or elsewhere. [61]

The Strategic Plan has, however, generated a number of questions. Witnesses appearing before the Committee raised two issues related to this plan: IRAP's elements and decentralization.

1. IRAP Elements

The changes proposed in the Strategic Plan would reduce the number of IRAP elements from four to two. Mr. Pulfer, who was a member of the steering committee that drew up the plan, attempted to explain the rationale for this reduction:

> My recollection is that the concern was that the program was difficult to manage, because it was made up of a large number of small elements. By the time it was distributed geographically and distributed into elements that way, there were too

[60] National Research Council, *The Industrial Research Assistance Program: A Strategic Plan for the 1990s*, p. i.

[61] Dr. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:9.

> many small pockets and it was difficult to be adaptable. Whether that was a correct and realistic concern, I don't know, but I believe it was one of the concerns they were trying to resolve. [62]

Mr. Murray suggested that the reduction in the number of elements would limit the flexibility of the program:

> My personal view is that the programs as developed by IRAP focused on different sectors. What we are looking at here is an attempt to mould them together into two broad classes. To my way of thinking, it is losing some of its effectiveness in that it was focused to several different areas we heard from before, such as IRAP-H, IRAP-L, IRAP-M, IRAP-R. Those focus to certain areas; those have different objectives depending on the nature of the particular program. [63]

Mr. Abela considered that the introduction of the two new elements, without sufficient analysis and experience, could affect the program:

> It is not certain why the program elements have been reduced to two components other than to simplify the program structure. The breakdown of the program into the current elements or tools such as IRAP-L, H, M, M+ and R has been useful because it allowed the ITAs to identify and prescribe specific instruments for the particular problems of firms. If the individual tools are retained as part of the two new program components, then some administrative benefits could accrue, such as the prevention of the elements being micro-managed by the NRC management, which is currently the tendency. If the elements are discarded and simply replaced by the two components, then the risk of serious application problems with firms is very high. The current program elements have been proven by the test of time. The new components are not defined beyond their most general form. They are being introduced without sufficient analysis or experience. Their application would precipitate the whole Program into an experimental mode, causing a devastating setback. [64]

2. *Decentralization*

During the hearings, it was also said that the decentralized mode suggested in the Strategic Plan would impose higher levels of program responsibility on IRAP's partners. Some witnesses believed that this could weaken the national network and ultimately mark the end of IRAP. According to Mr. Abela:

> The increased decentralization of power to provincial directors appears, at first glance, to be a step in the right direction. In reality, it is a most dangerous decision which could easily lead to the destruction of the Network in short order. The national Network of IRAP is a very fragile organizational structure. It works well when all its ITA members interact freely and collegially across organizational

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[62] J.K. Pulfer, *Minutes of Proceedings and Evidence*, Issue No. 4, p. 4:35.

[63] E.D. Murray, *Minutes of Proceedings and Evidence*, Issue No. 2, p. 2:39.

[64] S. Abela, *Review and Comments*, 3 October 1991, pp. 7-8.

> lines. It has taken years of continuous effort from the central authority of IRAP to nurture the bonds which keep the Network together as a functioning organism. This central bonding effort counterbalances and tempers the delegated authority of a decentralized regional management system from disconnecting. With the desire for strong regional leaders, a strong central authority is needed to keep the Network glued together. [65]

Mr. Pulfer and Mr. Woodbridge explained that, by giving more authority to the people in the regions, the Network of ITAs and the communication between them could be weakened. It was felt that a strong central authority was needed to keep the extensive Network together. For instance, Mr. Woodbridge explained:

> ... the intent appears to be to push higher levels of program responsibility to IRAP's partners. This is a process that, if continued, could mark the end of a marvellous national initiative. ... Those changes simply add to our concerns about the ongoing integrity of the operating style of the national network itself.[66]

He continued:

> If you take the IRAP people and you spread them across the country in association with regional labs and under the authority of an upgraded regional director for the program, as contrasted with regional coordinators, then the regional coordinator and the local organization have the task of trying to interlink with the national labs. You have made a very direct and straightforward organizational structure. You have taken that and made it very complex and cumbersome.[67]

Furthermore, Dr. Pulfer contended that, on the one hand, by building up the strength in each one of the regional directors, the Strategic Plan is weakening the communication between regional directors. On the other hand, he believed that a central organization can facilitate communication. He explained:

> The advantage of a national network is that if a small company in Alberta has a problem, and the expertise to help with that happens to be in New Brunswick, the network should be able to very quickly bring the expertise together with the company. As the organization in Alberta becomes more concerned and has more authority to deal with things locally, it will have fewer ties to what goes on in New Brunswick. [68]

Mr. D.C. Rothwell disagreed with this position. He contended:

> From a regional and economic point of view, this decentralization is an important step to assisting small and medium-sized companies meet their technology and business development requirements. ... We see NRC's strategy as an honest effort

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[65] *Ibid.*, p. 7.

[66] R. Woodbridge, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:25.

[67] *Ibid.*

[68] J.K. Pulfer, *Minutes of Proceedings and Evidence*, Issue No. 4, p. 4:26.

> to establish equity and maximize the intellectual resources across Canada. The decentralization of IRAP will mean a more regionally sensitive service and a closer working relationship between ITAs and the provinces technology and business services. In our view, the decentralization of the IRAP Network will not weaken but rather it will strengthen delivery capabilities across the country.[69]

Federal agencies and departments (ACOA, WED, ISTC) also contended that IRAP's decentralization will serve regional development. This was also the view of the Minister for Science, who believes that decentralization will allow the program to better respond to specific regional needs:

> Decentralization of the new IRAP programs will be welcome by business and research organizations across Canada. Developing strategies that respond to specific regional needs is essential. In doing this, IRAP will not be diminished as a national instrument. It will maintain its ability to obtain advice and technology from whatever source, wherever it is to be found. [70]

Overall, the Strategic Plan does not provide sufficient explanation for reducing the number of IRAP elements. Accordingly, it is hard to predict the impact of such reduction on the clients and the partners of IRAP.

There is also confusion about the likely impact of increased decentralization. There is a lack of support for it on the part of some users of the Network, while others are in favour of it. The IRAP Network already functions in a decentralized mode. The Committee heard evidence that IRAP's present program is responsive to local needs and that this responsiveness is one of the major factors in IRAP's success. The Committee is concerned that increased decentralization will not produce any benefits. Accordingly, the members of the Committee believe that it would be useful to undertake a review of this aspect of the Strategic Plan in order to ascertain if such decentralization is warranted. Therefore, the Committee recommends:

7. That the National Research Council clearly justify increased decentralization and the alteration of IRAP elements, and provide the comparative advantages of the new structure over the old.

F. The Role of the IRAP Advisory Board

There is confusion over the role of the IRAP Advisory Board. During the hearings, the members of the IRAP Advisory Board expressed frustration about not being used effectively. They informed the Committee that NRC does not always consult the Board about changes in the IRAP program.

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[69] D.C. Rothwell, Associate Deputy Minister, Saskatchewan Economic Diversification and Trade, letter addressed to Roy Woodbridge in response to his testimony, 13 November 1991.

[70] W. Winegard, Minister for Science, *Statement to the Committee*, p. 8.

For example, the members of the IRAP Advisory Board testified that they were not consulted when NRC decided to modify the mission statement for IRAP. In fact, the Advisory Board did agree on a mission statement for IRAP in December 1990. However, a new mission statement was approved by the NRC in January 1991 but was not submitted to the Advisory Board.

Furthermore, the Committee was informed that the NRC has recently changed the reporting relationship between the IRAP Advisory Board and the NRC without consulting the members of the Board. The Chairman of the Advisory Board, who formerly had to report directly to the NRC's Council, will no longer be invited to present a report to the Council of NRC. The Chairman of the Board must now report to the NRC through its Executive Committee. In addition, some members of the IRAP Advisory Board did not feel that they had participated fully in formulating the strategic plan for IRAP.

The members of the IRAP Advisory Board who appeared before the Committee explained that they had received a copy of the Strategic Plan only one night before their meeting of 19 August 1991. They said that they had therefore not really had the opportunity to read it and analyze it extensively. For instance, Mr. Murray testified that:

> I received my copy when I arrived at a hotel at midnight on Sunday — it was a 33-page document — and that applied for most of the Board members as well. So in other words, the time to review an important document did not happen.[71]

Mr. Woodbridge mentioned:

> The final straw was when we turned up at the last board meeting in August. That was the first time I saw that strategic plan document, for example. It was sitting on the table in front of me and we were asked to comment on it without even reading it. We did, by the way, and we commented very critically.[72]

Consequently, the Advisory Board did not endorse the Strategic Plan. Mr. Murray commented:

> It was very much incomplete. It was very much not well thought out. It did not represent the advice that the members of the advisory board would have provided individually or as a group. ... The advisory board advised the chairman that the board could not endorse the plan. [73]

Mr. Bourbeau also said:

> ... the strategic plan that was presented to us at the meeting of the 19th was, both in form and substance, rejected by the Board. [74]

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[71] E.D. Murray, *Minutes of Proceedings and Evidence*, Issue No. 2, p. 2:33.

[72] R. Woodbridge, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:36.

[73] E.D. Murray, *Minutes of Proceedings and Evidence*, Issue No. 2, p. 2:33.

[74] R. Bourbeau, *Minutes of Proceedings and Evidence*, Issue No. 3, p. 3:13.

In response to these comments, Dr. Perron told the Committee that:

> We [the NRC] have received advice from the Advisory Board and we took it into account as far as the substance was concerned. As to the form, there may have been disagreements, but there was never any fundamental disagreement as to the substance between the actions of the NRC and the views of the members of the Advisory Board.[75]

Dr. Perron stated that changes in IRAP do not have to be approved by the Advisory Board. [76] The Minister for Science was of the view that modest changes to the IRAP program do not have to be done with the approval of the Board. He specified, however:

> ... I would be disappointed if the NRC final objectives for IRAP did not coincide, at least to a very great measure, within the IRAP Advisory Board advice. [77]

Finally, NRC recently decided to strike an *ad hoc* working group for reviewing the mandate, mode of operation and membership of the IRAP Advisory Board. The Committee was informed that this working group reported to NRC and recommended that the Advisory Board be disbanded and that its function be assumed temporarily by the Council. NRC Council unanimously agreed with this recommendation.

Overall, the confusion over the role of the IRAP Advisory Board should be cleared up. First, the Committee recognizes that the Board is drawn from the industrial and business community and represents client firms from across the country. This is how this organization can best reflect the needs of SMEs and provide useful advice on the future orientation of the program. Input from industry is necessary for the effective transfer and utilization of technology. A clear definition of the Advisory Board's role would ensure that the IRAP Advisory Board was used to its full potential. This would also help to delineate the Board's role during the consultation process on the strategic future of IRAP. Secondly, the Committee is shocked by the decision of NRC to disband the IRAP Advisory Board. The members of the Committee are very concerned that the Board has been dismissed without proper explanation. They believe that it is part of the Board's role to present opinion about the future of the IRAP program before the Committee. Therefore, the Committee urges:

8. The National Research Council to re-establish an IRAP Advisory Board, and to clarify the role, membership, and mode of operation of that Advisory Board.

G. The Role of IRAP in the Context of National Competitiveness

The issue of competitiveness as it will affect Canada's future prosperity has been extensively analyzed over the last few months. The most recent studies, *Canada at the Crossroads*, by Michael Porter, and *Prosperity Through Competitiveness*, prepared by the federal government, recognize that innovation is increasingly important to improving Canadian productivity and competitiveness.

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[75] Dr. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:16.

[76] Dr. Perron, *Minutes of Proceedings and Evidence*, Issue No. 5, p. 5:13.

[77] W. Winegard, Minister for Science, *Minutes of Proceedings and Evidence*, Issue No. 9, p. 9:10.

However, Canadian manufacturers have a long way to go before they are considered to be among the world's leaders in adopting leading edge technology. Statistics show that Canadian industry's investment in R&D is low by the standards of other industrialized countries. In fact, very few manufacturing firms in Canada (less than 4%) carry out R&D. Furthermore, the number of research scientists and engineers in Canada (4.5 per thousand members of the workforce) is well below that of our international competitors.

From this perspective, the importance of science and technology becomes very clear. Some witnesses suggested that IRAP could play a major role in boosting Canadian competitiveness. This is consistent with the conclusions of the Nielsen Task Force, that IRAP could be used as "a nucleus for the creation of a consolidated technology-transfer program." Witnesses also contended that, by helping companies to become aware of, acquire, implement and exploit new technologies, IRAP could increase the firms' efficiency and productivity in the context of the global marketplace. It was said, however, that the federal government has not identified the attributes that qualify IRAP to play a leadership role in that area. For instance, Mr. Abela said that:

> ... IRAP, by virtue of its structure, capabilities, mode of operation and track record, has the potential of becoming Canada's technology transfer infrastructure with a capacity to help all the small- and medium-sized enterprises. It has proven to produce true investment leverage in the innovative processes of firms ranging from 2.5 to 20 times the IRAP contribution. If IRAP is explained and presented properly to Government, particularly in the context of the current concerns in industrial productivity, competitiveness, wealth generation and prosperity, it could be a formidable instrument for industrial development and economic renewal. At this juncture, IRAP presents a remarkably unique opportunity for the country, which needs a well proven instrument to build on. [78]

Mr. Woodbridge shared similar views. He stressed that, since IRAP addresses the technology side of the competitiveness challenge, its role within Canada's national competitiveness agenda needs to be clearly enunciated. He claimed that IRAP suffers from the absence of a clear government perspective on its role and responsibilities in this context. [79]

During the hearings, the Minister for Science clarified this issue. He maintained that the federal government has consistently recognized IRAP as a focus for federal technology assistance to small and medium-sized business. Furthermore, he clearly stated:

> I doubt whether anyone would argue that IRAP is a successful program. It must remain a vital part of any strategy to promote technology development and competitiveness in Canadian industry. [80]

The Minister also stated that the challenge of building technological capacity in Canadian industry is complex. He added that IRAP is an important instrument, but only one of many that have to be used to meet this challenge. In that regard, the Minister contended

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[78] S. Abela, *Issues Surrounding the Industrial Research Assistance Program*, p. 7.

[79] R.M. Woodbridge, *Notes for the Presentation to the Committee*, pp. 4-5.

[80] W.C. Winegard, Minister for Science, *Statement to the Committee*, p. 1.

that Canada needs to take an integrated approach: in addition to innovation and adaptation of new equipment and techniques, Canada future's prosperity requires the best efforts of many different players with skills in areas such as management, marketing, financing, quality assurance, and establishment of standards.

Overall, the testimony indicates that IRAP is a critical element of the national science and technology infrastructure. It is expected that the federal government's clear support for IRAP's expanded role would further enhance the program's effectiveness. Therefore, the Committee recommends:

9. That the Minister for Science clearly specify IRAP's role in the framework of the federal government's policy on science and technology, upon completion of the review by the *ad hoc* working group of NRC .

Conclusion

The Committee acknowledges that IRAP has played a vital role in promoting the development and exploitation of technology in Canadian industry. The sole aim of this universally praised program is to give a competitive edge to Canadian industry. This aim is being greatly hampered by the reduced level of funding. The members of this Committee strongly believe that an expanded mandate for IRAP would benefit both Canadian industry and the whole economy. Some recent changes to IRAP should be reviewed to ensure that the key ingredients of this program are preserved and enhanced.

List of Recommendations

1. That the federal government consider the advisability of increasing the total funding of IRAP to a minimum of $110 million for fiscal year 1992-1993.

2. That the federal government consider the advisability of further doubling, by fiscal year 1997-1998, the funding of IRAP to $220 million, in 1992-1993 dollars.

3. That the Auditor General review the management practices and financial accountability of IRAP's contributions. Such a review should consider whether it is in the best interest of the IRAP program to reunite financial and operational management in the same organizational structure.

4. That the Minister for Science reaffirm that IRAP's mission and orientation will remain unchanged. Accordingly, IRAP should continue to serve the needs of its clients by seeking the best available technology from wherever it is to be found.

5. That the federal government re-examine the appropriateness of the situation of IRAP within the NRC in the context of the requirement that IRAP be responsive to industrial clients and the government's industrial policy.

6. That both senior IRAP management and the Chairman of the IRAP Advisory Board appear before this Committee on a yearly basis to discuss the status of the IRAP program.

7. That the National Research Council clearly justify increased decentralization and the alteration of IRAP elements, and provide the comparative advantages of the new structure over the old.

8. The National Research Council to re-establish an IRAP Advisory Board, and to clarify the role, membership, and mode of operation of that Advisory Board.

9. That the Minister for Science clearly specify IRAP's role in the framework of the federal government's policy on science and technology upon completion of the review by the *ad hoc* working group of NRC.

Appendix A

TABLE 1
Distribution Of IRAP Resources (In Thousands of Dollars)

	NRC Sal	Net Org	Firm Cont	Ope	Cap	Total
Client Services	4,500	12,500	55,000	1,200	-	73,200
Network Maintenance	500	1,500	-	1,000	100	3,100
Management & Adm.	2,500	2,000	-	800	100	5,400
Total	7,500	16,000	55,000	3,000	200	81,700

Source: Report of the Task Force on the Future of IRAP, *The Future of the Industrial Research Assistance Program: A Strategic Analysis*, p. 3-15.

TABLE 2
Budget for NRC and IRAP (Fiscal Year Ending 31 March)

	NRC Activity Expenditures		IRAP Total Activity Expenditures	IRAP Contribution Budget
	Without Space	Total		
	(In Thousands of Current Dollars)			
1985	482,963	528,042	81,760	74,627
1986	427,364	445,196	80,570	72,553
1987	390,459	416,132	80,457	68,466
1988	391,490	438,186	81,268	68,957
1989	412,742	472,860	89,045	75,607
1990	415,339	510,913	89,004	75,607
1991	405,554	465,241	86,087	70,822
1992	420,710	420,710	84,523	71,322
	(In Thousands of 1984-1985 Dollars)			
1985	482,963	528,042	81,760	74,627
1986	410,836	427,978	77,454	69,747
1987	359,972	383,640	74,175	63,120
1988	346,341	387,652	71,896	61,004
1989	352,000	403,271	75,941	64,480
1990	342,544	421,367	73,405	62,356
1991	318,945	365,885	67,702	55,697
1992	317,342	317,342	63,756	53,798

Source: Data provided by NRC, 17 October 1991.

Appendix B

Explanatory Notes for Figure 10

(Extract from Dr. Perron's letter)

1. The figures in the table are estimates of the cumulative value of sales and savings that could be expected to result over a 3-5 year period starting in 1987/88 from IRAP projects active in the 1985/86 Financial Year. The estimates are based on detailed information collected at various times from hundreds of firms assisted under IRAP. The year 1985/86 was one for which a particularly detailed analysis was carried out.

2. The IRAP program is made up of several elements that are not necessarily identical in the type and degree of benefits. The most complete information available for each IRAP element related to different years in each case. But the aggregate results shown in the table reflect the actual weights of the various elements prevailing in the 1985/86 Fiscal Year.

3. The Direct Jobs figure refers to the jobs required in the IRAP firms to produce the extra sales attributed to IRAP assistance.

4. The Indirect Jobs figure refers to the additional jobs generated in supplier firms and customer firms due to new economic activity attributed to IRAP. The Indirect Jobs figures were calculated from standard input/output data for the Canadian economy, with weightings due to the distribution of IRAP firms within the various industry categories.

5. The figures for attributable taxes generated was calculated in the same way from standard input/output data. Just over 40% was calculated to be federal taxes and just under 60% was provincial. Compared with the IRAP expenditures shown, the federal portion alone of the taxes generated represents a better than break even return for the federal taxpayer.

6. The low cost per attributable job for IRAP reflects the fact that IRAP helps firms to produce critical technical information which enables the firm to formulate better and more certain venture proposals. These proposals are such that the firms can usually obtain from conventional financial sources the money required to proceed with commercialisation, thus reducing the need for follow-on financial assistance from government source.

   NRC notes that, strictly speaking, IRAP and similar programs are not the direct creators of continuing jobs in Canadian industry. Continuing jobs result from continuing purchases by customers from suppliers. IRAP helps firms with the technology needed to get their products and services right, in cost/value terms, to serve continuing customers. Hence, it is more correct to refer to jobs and other benefits as being associated with IRAP that rather due to IRAP.

NRC also notes that the sales and savings shown should not be thought of as clear net economic benefits due to IRAP (or similar programs) because (a) the firms have to make various expenditures in order to achieve them and (b) the same expenditures could have produced some measure of benefit in an alternative use. Nevertheless, there is good evidence that the IRAP figures represent economic activity that is more soundly based, more productive and longer lasting than most by being based, through IRAP on the best available technology.

7. Comparison of the results of NRC's IRAP program with the economic activity ascribed to other expenditures should be valid if estimated on the same basis.

Appendix C

List of witnesses

	Issue	Date
Individual presentations Shibly Abela, former Director General, IRAP; E. Donald Murray, Vice-President Operations, Export Packers Co. Ltd, Winnipeg	2	September 26, 1991
IRAP Advisory Board Richard Bourbeau, Chairman, (President, Venmar, Drummondville)	3	October 2, 1991
Canadian Advanced Technology Association Roy Woodbridge, President		
Gelda Scientific Dr. Sen Gelda, President	4	October 3, 1991
Association of Provincial Research Organizations Dr. J.K. Pulfer, Executive Vice-President		
National Research Council of Canada Dr. Pierre Perron, President; Dr. Clive Willis, Vice-President, Science; Dr. Clifford Baronet, Vice-President, Engineering and Technology	5	October 8, 1991
Industry, Science and Technology Canada Roberto Gualtieri, Assistant Deputy Minister, Science; Glenn Fields, Executive Director, Edmonton	6	October 21, 1991
Atlantic Canada Opportunities Agency (ACOA) Terry Thomas, Director General, Programs;	8	October 23, 1991
Western Economic Diversification Brian Salley, Senior Assistant Deputy Minister		
Minister for Science The Hon. William Winegard, P.C., M.P.	9	November 7, 1991

Request for Government Response

Pursant to Standing Order 109, your Committee requests that the Government table a comprehensive response to the Report within 150 days.

A copy of the relevant Minutes of Proceedings and Evidence of the Standing Committee on Industry, Science and Technology, Regional and Northern Development (Issues 2, 3, 4, 5, 6, 8, 9 and 11 which includes this Report) is tabled.

Respectfully submitted,

GUY RICARD,
Chairman.

Appendix D

Dissenting Opinion — Liberal Party

Should IRAP Remain within the NRC?

1. The major point on which the Liberal members of the committee differ with the majority report is on the question of whether IRAP should remain within the NRC. We recommend removing IRAP from the NRC. The Liberal members went into the hearings with an open mind on this question. On reviewing the evidence, we believe that this conclusion is inescapable.

2. Quite clearly we cannot make this decision. It is for government to make. What factors should the government consider? They were suggested to the committee by Roy Woodbridge. He told the committee that the IRAP Advisory Board had a pretty lengthy in-camera discussion of the two basic options. One was to keep IRAP in the NRC, the other was to move it out.

> "We simply asked the basic question: Can IRAP become what we, as an advisory board, would really like it to become under the NRC umbrella?... Philosophically, can NRC manage a program that is oriented towards accessing the best available technology from whatever source, as contrasted with fiddling the program a little to link it better into the labs?"

3. The IRAP Advisory Board also wondered about budget imbalance, Woodbridge continued.

> "Can NRC management contemplate and argue effectively for the expansion of the program element that is IRAP, to grow that program budget? As an advisory board, we thought in terms of doubling or tripling it over time, because that is the scale of effort that we think is required. Can they do that? Can they expand the IRAP network and strengthen that network philosophically, organizationally, emotionally and every other way, when the budget for their main resource activity, which is the labs, is frozen or declining? Can they do that?

4. Woodbridge told the committee that at its May meeting, the IRAP Advisory Board decided "by a whisker" that the IRAP program should remain within the NRC, but "with the important proviso that we as an advisory council could only support it remaining there so long as NRC demonstrated an ongoing capacity to manage it in accordance with the objectives and the goals that we as an advisory board had set for the program."

5. The Liberal members believe that the IRAP Advisory Board has suggested the right questions. Can IRAP become what we want it to become under the NRC umbrella? Can IRAP's budget grow within the NRC? If IRAP's budget were to double or triple, would this be fair to the labs? Furthermore, what answers does the record of the past year or two suggest?

6. To deal with the last question first, conclusive evidence was presented to the committee that the NRC at the least, does not fully appreciate the nature of IRAP and its potential and that IRAP is being changed from a program which serves firms by obtaining technology from all appropriate sources, to a program focused on the NRC laboratories. The evidence includes various statements from the Executive Committee of Council, motions of Council, the wording of the Strategic Plan, the changes to the mission statement and statements by the President.

7. The record also shows that IRAP has been downgraded within NRC's organization structure, that the NRC rejected the Options Paper, and that there are major deficiencies in IRAP's Strategic Plan.

8. The Liberal members concur with the majority recommendation that as a first step, funding for IRAP be increased to a minimum of $110 million in fiscal year 1992-1993, and, as a second step, that the government give IRAP an expanded program mandate. Such a mandate would see IRAP's resources double or triple over a five to six year period.

9. Could IRAP's budget double or triple within the NRC? First, the NRC has not advocated such an increase. Secondly, it is useful to consider a precedent. NSERC was spun off from the NRC in 1978. Its 1990-1991 budget is $446 million. Would its budget have grown to this size if it had remained in the NRC? We do not think so.

10. Furthermore, the Liberal members believe that it would be unfair to the labs if IRAP's budget were to grow while their budget remains frozen or declines. It would appear to the public that the NRC's budget is increasing when only IRAP's budget is increasing.

The role of IRAP in a National Competitiveness strategy

11. The evidence presented to our committee show that the former Director General of IRAP and the members of the IRAP Advisory Board understand the nature of IRAP and its potential. They have a feeling for what IRAP can become given Canada's need to compete in a knowledge-based global economy.

12. The Nielsen Task Force on Program Review examined IRAP. It concluded in its 1985 report that "IRAP works. It could be used as the nucleus for the creation of a consolidated technology-transfer program involving IRAP, PILP, and IRDP, as well as for improved co-ordination of the technical advisory services available from various federal, provincial and private sector centres."

13. Despite this recommendation, IRAP did not become the nucleus of a consolidated technology-transfer program. On the contrary, IRAP's budget has been eroded and its network has been weakened. Furthermore, we have seen a multitude of other programs which have similar objectives to IRAP yet are less effective. IRAP provides Canadians far greater value for money.

14. It is perhaps for these reasons that Roy Woodbridge told the committee that in his view,

> "(The real issue) has nothing whatsoever to do with money. It has an enormous amount to do with vision. IRAP suffers from the absence of a clear government perspective on its role and, responsibilities, not just now but also in terms of what that program should be in the context of the competitiveness challenge facing this country."

15. In Mr. Woodbridge's opinion, what is first required is for government to recognize the challenge facing Canada and IRAP's role within this challenge. He told the committee that

> "the minister should confirm... the government's intent to make the IRAP network the backbone of the country's national science and technology infrastructure. This policy statement should establish very clearly the objectives and management framework within which the IRAP program will operate."

Other Issues

16. The Liberal members believe that the majority report inadequately describes the uniqueness of IRAP or the factors which sets it apart from all other government programs. The December 1990 evaluation study concluded that "IRAP is virtually unique in its degree of flexibility and decentralization among government policy instruments." The report went on to say that "The program is a government contact point for more Canadian companies than any other S&T program."

17. Of particular significance in the program evaluation is a comparison between IRAP and some 88 federal and provincial programs which "purported to assist the firm's innovation process and thus could be considered comparable to IRAP." The evaluation study notes that

> "while these programs ostensibly have similar objectives and perform similar activities to IRAP, analysis reveals that IRAP can be distinguished from these programs in at least three important ways:" First, "Analysis found that IRAP is the only program delivered directly by technically qualified and experienced staff." Second, IRAP "is the least targeted of the innovation programs reviewed. While other programs tend to impose severe restrictions on elegibility based on sector, region and subject technology areas, IRAP has been open to virtually all industry sectors, regions and technologies. This has allowed the program to avoid the cumbersome procedures for determining eligibility and assistance which have plagued other programs" Third, "IRAP tends to address company needs earlier in the R&D process than most other program."

18. The Liberal members also feel the majority report inadequately addresses the issue of the erosion of IRAP's budget and the alleged financial mismanagement of IRAP. Indeed, the Liberal members believe that IRAP's only constraint is budgetary. As noted in the majority report, both IRAP's budget and the size of its network have been dramatically reduced.

19. The committee was told by Dr. Perron and Mr.Gualtieri, ADM Science, that IRAP's problems stemmed from administrative difficulties and financial mismanagement. In the Liberal members view, inadequate resources were the cause of the cash management

problems attributed to IRAP. The committee does not accept Dr. Perron's contention that these problems stem from problems in the administration of contributions or the lack of timely financial information.

20. It should be noted that IRAP's budget is relatively small with respect to all government technical assistance programs yet it is the one to which most firms turn to. Working with a budget that did not come close to its requirements, IRAP had to choose between making monthly allocations or funding good projects whenever they came up in the time frame of the firm. Recognizing that a good project is only good to the extent that its timing is good, IRAP chose the latter option. What this meant, of course, was that the program would run dry prior to the end of the fiscal year. Government then had to face demands for additional resources, which, were consistently turned down, as Dr. Perron told the committee.

21. The Liberal members believe that IRAP is a priority and that it should be funded adequately. The Liberal members agree with the sentiments expressed by Mr. Woodbridge. He asked for

> "a strong government commitment to funding of the program at the level of resources required to fulfil an expanded program mandate. We do not want to protect the program. We do not want you to make a last ditch effort to save it. We want you to understand what it could be, and make sure that it achieves those kinds of bigger, broader objectives. We want you to make sure that this program grows and becomes what it should be in the context of the national industrial needs of this country."

Appendix E

Dissenting Opinion — New Democratic Party

Although this is a good report, it could have been strengthened in a number of areas, particularly with regard to the recently disbanded IRAP Advisory Board.

While NRC has the right to accept or reject advice, it clearly had no intention of listening to the Advisory Board. It wanted an agenda for IRAP set according to historic NRC priorities, and not according to the needs of those businesses served by the program.

The evidence overwhelmingly shows that NRC wanted an IRAP that would emphasize the marketing of NRC lab output, regardless of whether NRC technology was what clients really needed. Just one piece of this evidence is a minute from the 390th Strategy Meeting of NRC Management Committee (Aug 14, 1990)

> "NRC's priority must remain its in-house scientific and engineering facilities and capabilities, and the use of these facilities to address the needs of the nation. All other activities, such as external and technical support programs must support and complement this core activity.

There is also this; from a June 11, 1991 letter to Mr. Bourbeau from Mr. Baronet:

> If the needs of IRAP's client firms cannot be met adequately through the technologies and the information available at NRC, IRAP may then provide appropriate financial assistance to help firms find the technology and information they need, outside of NRC.

This attempt to change IRAP's focus was vigorously opposed by its director-general, Shibly Abela. He drafted an options paper that he knew might cost him his job. As Mr. Bourbeau told our committee, "there was a power struggle between the president's opinions and Mr. Abela's, that these opinions were completely opposed, and that Mr. Abela knew full well that if he could not obtain the president's support, he would lose his job." (3:13)

Mr. Abela took his concerns to the Advisory Board. For this he was eventually fired. Nevertheless, at the time the Advisory Board agreed with a preferred option that would keep IRAP within NRC, but only on certain conditions, which NRC rejected. It is thus untrue to say that NRC accepted the Board's advice.

NRC nonetheless did its best to keep the Advisory Board out of the loop. For example, on April 29, 1991, Pierre Perron wrote to Mr. Baronet regarding the steering group that was to draft the final strategic plan.

> I agree with the proposed steering group, but without the involvement of a Council member or the Chairman of the IRAP Advisory Board. I believe we should keep the exercise internal to NRC's management.

The Committee heard shocking things about Dr. Pierre Perron's conduct regarding the IRAP Advisory Board. In his testimony before Committtee, Bourbeau said of Perron, "Mr. Perron used a sort of language no one would like to hear. (. . .) He called us imbeciles and told us we did not know what we were doing, etc."

This sort of verbal abuse has become a hallmark of NRC management. A January, 1991 report from Robertson Nickerson Limited said:

> The flow of communications, down and up the management hierarchy, may be more one-sided than is preferable. Some of those consulted referred to the extensive and rather traumatic changes that have occurred throughout the organization, including the departure of senior managers. Combined with a lack of consistency in messages from the top, they feel an environment has developed which is characterized somewhat by intimidation and a tendency to not speak out *lest one become the next to go.* (emphasis added)

Shibly Abela was the next to go. Public dissent does not go unpunished at NRC, and a Council led by Perron ordered the disbanding of the Advisory Board. Indeed, how could Council action be interpreted as anything but contempt of Parliament when the motion disbanding the Board cites as its excuse "the recent actions of some members of the Advisory Board on IRAP, in particular the nature and type of the personal comments made by the Chairman of the Advisory Board." This was clearly a reference to the appearance of several member's of the Board before our Committee.

Although government members of the Committee had their doubts about NRC's motivations, Mr. Bourbeau was quite direct when he told the Toronto Star, "I knew that if we spoke harshly about management, we would be receiving some form of punishment."

About management's denial of any involvement in the decision to disband the Advisory Board, Mr. Boubeau had this to say to the Ottawa Citizen, "He (Perron) is the guy that tries to control everything."

NRC has vaguely suggested that it might reconstitute the Advisory Board, but if it does, then how can we doubt that it will be designed to a compliant body. Despite press releases from the Chairman of our Committee expressing concern, some members were unable to summon the courage to unambigiously condemn this insult to both the democratic process, and to the Canadian businesspeople who had served on the Advisory Board.

Minutes of Proceedings

THURSDAY, DECEMBER 5, 1991
(23)
[*Text*]

The Standing Committee on Industry, Science and Technology, Regional and Northern Development met *in camera* at 9:38 o'clock a.m. this day, in Room 705, La Promenade, the Chairman, Guy Ricard, presiding.

Members of the Committee present: David Bjornson, Bill Domm, Howard McCurdy, Jim Peterson, Guy Ricard and Jacques Vien.

Acting Members present: David Berger for Len Hopkins; Darryl Gray for Louise Feltham.

In attendance: From the Research Branch of the Library of Parliament: Guy Beaumier, Daniel Brassard and Odette Madore, Research Officers. *From the Office of David Berger:* Mitchell Bellman, Legislative Assistant. *From the Office of Howard McCurdy:* Paul Paquet, Legislative Assistant.

In accordance with its mandate under Standing Order 108(2), and its Order of Thursday, September 19, 1991, an inquiry into the Industrial Research Assistance Program (IRAP). (*See Minutes of Proceedings and Evidence dated Thursday, September 26, 1991, Issue No. 2*).

The Committee resumed consideration of its Draft Report to the House.

At 11:05 o'clock a.m., the Committee adjourned to the call of the Chair.

MONDAY, DECEMBER 9, 1991
(24)

The Standing Committee on Industry, Science and Technology, Regional and Northern Development met *in camera* at 3:36 o'clock p.m. this day, in Room 307, West Block, the Chairman, Guy Ricard, presiding.

Members of the Committee present: David Bjornson, Bill Domm, Louise Feltham, Howard McCurdy, Jim Peterson, Guy Ricard and Jacques Vien.

Acting Member present: David Berger for Len Hopkins.

In attendance: From the Research Branch of the Library of Parliament: Guy Beaumier, Daniel Brassard and Odette Madore, Research Officers. *From the Office of David Berger:* Mitchell Bellman, Legislative Assistant. *From the Office of Howard McCurdy:* Paul Paquet, Legislative Assistant.

In accordance with its mandate under Standing Order 108(2), and its Order of Thursday, September 19, 1991, an inquiry into the Industrial Research Assistance Program (IRAP). (*See Minutes of Proceedings and Evidence dated Thursday, September 26, 1991, Issue No. 2*).

The Committee resumed consideration of its Draft Report to the House.

At 4:40 o'clock p.m., the Committee resumed sitting in public.

It was agreed,—That the Draft Report, as amended, be concurred in.

It was agreed,—That the said Report be entitled: IRAP: An inquiry into the Industrial Research Assistance Program.

It was agreed,—That the draft report, as amended, be adopted as the Committee's First Report to the House and that the Chairman be authorized to make such typographical and editorial changes as may be necessary without changing the substance of the report and that the Chairman be instructed to present the said report to the House.

It was agreed,—That, pursuant to Standing Order 109, the Committee request that the Government table a comprehensive response to this Report.

It was agreed,—That the Committee print 2,000 copies of this Report, in tumble bilingual format, with a distinctive cover.

It was agreed,—That the Committee thank the Research Officers for their work and dedication throughout the study.

It was agreed,—That the Committee convey its warmest congratulations to its Research Officer, Dr. Ruth Fawcett, on the birth of her son, Michael Fawcett Sarty, on Friday, November 29, 1991.

It was agreed,—That the Committee authorize the printing of dissenting opinions from the Liberal Party and the New Democratic Party as appendices to this Report.

At 5:00 o'clock p.m., the Committee adjourned to the call of the Chair.

Christine Fisher
Clerk of the Committee