Chapter 9

Management of Science and Technology Personnel

Follow-up

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Follow-up

Main Points

9.1 We are satisfied with the efforts made by the science and technology community to follow up on our audit recommendations of 1994 and the concerns we raised in our 1996 follow-up report. In our view, the community is showing leadership and perseverance in dealing with the human resource management issues we raised.

9.2 As a result of all the work done since 1994, the science and technology community is now in a position to act. But the community is faced with considerable challenges. It must give priority to resolving the oncoming changes in its demographic profile that could weaken or compromise the government's science and technology capacity. It must tackle the dual challenges of attracting and recruiting promising young scientists and technologists while retaining high-calibre employees to mentor and develop the new recruits. The community is thus seeking new measures, tools and resources for external recruitment, as it estimates that over the next five years it may have to recruit between 2,500 and 3,300 employees to build a renewed and rejuvenated science and technology work force.

Background and other observations

9.3 At 31 March 1998, the federal government had close to 20,000 scientific and technical employees working in science-based departments, agencies, Crown corporations and research establishments in the fields of natural sciences and engineering (hereinafter referred to as the "science and technology community").

9.4 The science and technology community makes an important contribution to the government's 1996 science and technology strategy, which focusses on sustainable job creation and economic growth, improved quality of life and the advancement of knowledge.

9.5 Expenditure and work force reduction in the public service has changed the profile of the science and technology community and worsened the long-identified problems of rejuvenation and recruitment. The change in the age profile is a major challenge to the future of the community. Not only have most senior and experienced scientists and technologists left the government since 1994, but the youngest and most promising as well.

9.6 Following our 1994 audit of federal science and technology activities, the community mobilized to develop a management framework and a results-oriented plan for human resources management in science and technology. It addressed such issues as the need for a more strategic approach to the management of scientific personnel; for more systematic renewal of scientific personnel; and for more effort to maintain the skills and knowledge base in research establishments. Working groups were created to study important human resource issues. Among their recommendations to the Science and Technology Senior Steering Committee on Human Resources was that new mechanisms be adopted and human resource strategies developed to improve the management of science and technology personnel in science-based departments and agencies.

9.7 In 1994, we pointed out the need to develop a stronger and more effective management capability. Since then, the community has developed a competency profile for science and technology managers. During our consultations, we noted that most science-based departments used their own competency profiles instead of the one developed by the working group. Moreover, their profiles were being used solely to identify training needs and generally not for purposes of manager recruitment, promotion or performance assessment. Present practices suggest a lack of consensus in the community on the management competency profile defined by the working group. This could eventually prevent the integration of recruitment and training activities as well as the reward, promotion and compensation systems envisioned in the *Science and Technology Blueprint for Human Resources Management*.

9.8 The Treasury Board Secretariat, science-based departments and agencies and the science and technology community have indicated that they are committed to following through on the strategies and plans developed to date.

Introduction

9.9 The federal government spends approximately $6 billion per year, or a quarter of the total investment in Canadian research and development, making it a leading stakeholder in the country's general science and technology activities. In 1996 the government released its science and technology strategy, which focussed on three objectives: job creation and economic growth; improved quality of life for Canadians; and the advancement of knowledge.

9.10 At 31 March 1998, an estimated 20,000 federal employees were involved in scientific and technological activities, in the fields of natural sciences and engineering (hereinafter referred to as the ''science and technology community" or "community"). These employees worked in the six major science-based departments — Agriculture and Agri-Food Canada, National Defence (civilian personnel), Environment Canada, Fisheries and Oceans, Natural Resources Canada and Health Canada, for whom Treasury Board is the Employer — and in science-based agencies and Crown corporations such as the National Research Council and the Communications Research Centre.

9.11 There have been many attempts over the past 30 years to resolve some of the major issues in the management of scientific personnel, particularly management capability and the maintenance of a "world-class" scientific work force. In 1994, following our audit of federal science and technology activities, the science and technology community mobilized and developed a better-structured approach to human resource management. In March 1996, the Treasury Board Secretariat released the *Framework for the Human Resources Management of the Federal Science and Technology Community.* Among other things, this document outlines objectives and the management structure put in place to address human resource issues, notably those raised in our 1994 Report (Chapter 11).

9.12 In our 1996 follow-up (Chapter 15) we noted that the Treasury Board Secretariat, in co-operation with science-based departments and agencies and the science and technology community, had undertaken a series of initiatives designed to address our 1994 audit recommendations. We pointed out, however, that the litmus test of the Framework would be the degree to which the government accepted it and the science and technology community implemented it.

The science and technology community had undertaken a series of initiatives designed to address our 1994 audit recommendations.

9.13 It is important to note that this series of initiatives was undertaken in a particularly difficult environment, when wages and salaries were frozen at their 1991 levels and the government was starting work on its "Getting Government Right" initiative by launching a number of reviews. One of these was Program Review — the scrutiny and review of "program spending" and the re-examination of the federal government's role and responsibilities in delivering programs. Program Review led to substantial expenditure and work force reductions in the public service. All of this had a significant impact on the activities and capacities of science-based departments and on the morale and job satisfaction of their employees.

This series of initiatives was undertaken in a particularly difficult environment.

Focus of the follow-up

9.14 Given the importance of the *Framework for the Human Resources Management of the Federal Science and Technology Community* and the fact that a little more than two years had passed since our last follow-up, we believed that the time was right to review the progress made in implementing the Framework.

This chapter provides our assessment of advances since 1994 in:

- addressing the problems of work force renewal, rejuvenation and recruitment of scientific personnel; and
- improving management capability by developing competency profiles for managers of research establishments.

9.15 We interviewed some stakeholders in the science and technology community and consulted various reports published by the community and others. We used the Treasury Board Secretariat's information systems to quantify certain results. Details concerning the objective, scope and approach of our work are included in **About the Follow-Up** at the end of this chapter.

Observations

Many Activities Address Problems Raised in 1994

The community's management Blueprint responds in essence to our 1994 recommendations on developing a strategy for the management of scientific personnel.

The community is developing a management blueprint and accountability agreements

9.16 In 1994 we were concerned by the government's lack of commitment to implementing the recommendations of studies done over the preceding 30 years, and by the fact that there was no one responsible for taking corrective measures. In 1996 we recognized that the support of the Treasury Board Secretariat, science-based departments and agencies and the science and technology community had contributed much to advance the implementation of the *Framework for the Human Resources Management of the Federal Science and Technology Community.* We also pointed out, however, that it would require a major effort by science-based departments and agencies to carry out the activities identified in the Framework. In that context, we raised the importance of results-oriented, time-phased plans that would include main steps, schedules, milestones and resource requirements.

9.17 On the community's behalf, in the summer of 1997 the Treasury Board Secretariat provided us with a management document, *Science and Technology Blueprint for Human Resources Management.*

9.18 The Blueprint was developed in co-operation with all the stakeholders – namely the Secretariat, science-based departments and agencies, and the unions. It sets out action plans and expected results, implementation activities and pilot projects. It identifies responsibilities, particularly those of the working groups looking at the human resource management issues raised in our 1994 audit. The Blueprint suggests priority actions and a timetable for implementation as well as the necessary resources. Finally, it presents success criteria, performance measures for the expected results, and mechanisms to ensure accountability for results.

9.19 In our opinion, the Blueprint responds in essence to our 1994 recommendations on developing a strategy for the management of scientific personnel. It offers a particular benefit as a guide to implement human resource initiatives and to integrate and co-ordinate horizontal science and technology issues. Moreover, the Blueprint contains enough information to enable science-based departments and agencies to carry out the activities needed for improved management of their scientific personnel. The accountability structure is noteworthy and the community has established what we believe are realistic expectations for meeting the short-term objectives.

9.20 The Blueprint will continue to offer these benefits if its designers and users maintain the consultative approach used so far to resolve current and emerging issues in the management of scientific personnel. Moreover, we believe that the Blueprint, regularly updated, can keep the science and technology

community informed about progress made and results achieved.

9.21 In the course of our follow-up, we noted that the working groups have reported on the status of their work to the Science and Technology Senior Steering Committee on Human Resources. It, in turn, has presented important human resource issues to the Science and Technology Community Sub-Committee of the Committee of Senior Officials (see Appendix). The community Internet site (http://www.tbs-sct.gc.ca/tb/hr/scitech) is managed by the Treasury Board Secretariat and posts, among other things, reports on the results of the working groups' efforts.

9.22 In our opinion, the accountability structure could be still more transparent by identifying, for example, how progress and results are to be reported to Parliament and the community. In 1998, the science and technology community presented its findings in the *First Progress Report on La Relève*. (Introduced in 1997, La Relève is a government initiative aimed primarily at modernizing the public service of Canada and making full use of its talents.) At the end of our follow-up work, the community was discussing the nature and the content of a progress report for 1999 and future years.

The community discusses issues of common interest

9.23 In 1994, we recommended that the government create a forum dedicated to scientific personnel management issues. At the end of our follow-up work in 1996, we were still concerned about the lack of a forum for sharing ‘‘best practices” in human resource management and discussing issues of common interest.

9.24 In December 1998, the community held a forum for science managers on the theme “The Science and Technology Workforce — Managing Your Investment”. The Treasury Board Secretariat, science-based departments and agencies, unions and the community discussed best practices and innovative solutions to current and future human resource issues, such as the management of tomorrow's science and technology personnel.

9.25 This forum was an opportunity to discuss issues of common interest and propose solutions to identified problems. To obtain the commitment and continued support of the community and other stakeholders, however, attention will have to focus on consultation and communication as well as on achieving expected results. When scientific managers, researchers and other stakeholders collaborate to identify their own human resource problems, they will be more inclined to adopt the proposed solutions and to maintain their commitment. The science and technology community continues to make communication a priority for 1999.

The Working Groups Are Recommending Action Plans

9.26 In 1996, we underscored the amount of time and effort invested by the science and technology community in addressing long-standing problems raised in our 1994 audit. These included the need for a more strategic approach to the management of scientific personnel; for a more systematic process of renewal; and for more effort to maintain the skills and knowledge base in research establishments. We were concerned that effort and momentum would dissipate because, among other things, major initiatives would have to be undertaken at the same time as Program Review and expenditure and work force reductions.

9.27 In this follow-up, we noted that several mechanisms had been proposed to ensure continuity of these initiatives. For example, the working group looking at work force mobility issues recommended to the Senior Steering Committee that the science and technology community be managed centrally, on the basis of its own

All working groups submitted reports that identified effective means, essential conditions and action plans for improving the management of scientific personnel.

particular characteristics and needs. The working group added that this centralized management system would include an infrastructure at the Treasury Board Secretariat to provide general support to the science-based departments and the community.

9.28 We noted that despite budget cuts and work force reduction, the working groups maintained continuity of effort notwithstanding a few delays. All working groups submitted reports that identified effective means, essential conditions and action plans for improving the management of scientific personnel. Their recommendations touched on a specific infrastructure for the science and technology community, the adoption of new mechanisms, the need to develop human resource strategies and the elimination of systemic constraints.

9.29 For example, the working group looking at recruitment and renewal issues recommended to the Senior Steering Committee that science-based departments and agencies develop and implement promotional programs designed to raise awareness among prospective job candidates about federal activities and successes in science and technology. The working group added that those programs should target students and encourage them to consider science as a field of study and science-based departments and agencies as potential employers. Exhibit 9.1 presents some of the recommendations made by the working groups on work force and mobility and recruitment and rejuvenation.

9.30 The working group looking at job classification and salary compression is on hold, pending decisions on the Universal

Exhibit 9.1

Some Working Group Recommendations to the Science and Technology Senior Steering Committee on Human Resources

Working Group on Work Force and Mobility	Working Group on Recruitment and Rejuvenation
• Conduct an analysis and comprehensive projection of the science and technology work force across the federal government in support of management of the community and the initiatives taken by each department. • Establish the mechanisms, processes and databases needed to implement the sharing of best practices and information among science-based departments across the federal government. • Increase mobility within the federal government by completely eliminating the obstacles that currently stand in the way of staff movement. • Maximize the use of existing official mobility and rejuvenation programs by integrating into program design and delivery a specific component for science and technology. • To complement existing programs, create an assignment-based exchange program specifically for the science and technology community with the objective of offering short- and medium-term interdepartmental assignments. The program should also focus on the exchange of rotating assignments between the regions and headquarters.	• All science- and technology-based departments and agencies should develop a long-term recruitment and rejuvenation strategy. • Federal departments and agencies should encourage the hiring of undergraduate and graduate students as well as research fellows by science and technology organizations. • The science- and technology-based departments and agencies should negotiate co-operation agreements with teaching establishments, industry and other government bodies in Canada and abroad. • All science- and technology-based departments and agencies should adopt recruitment and rejuvenation plans for science and technology managers. • More authority should be delegated to all science- and technology-based departments and agencies, along with greater leeway in the areas of staffing and recruitment.

Source: Excerpts from reports of these two working groups to the Senior Steering Committee, 1997.

Classification Standard that the government intends to implement in 1999. The community will have to reconcile the job classification and evaluation system with a promotion system for research scientists that is based on individual competencies and contributions.

9.31 In our opinion, the necessary elements of the planning phase are in place; the science and technology community is now in a position to act.

The Challenges of Recruitment and Retention Are Considerable

It is time to act

9.32 In 1994 we emphasized that renewal of the scientific work force is essential if a scientific organization is to remain creative and productive in the long term.

9.33 In 1996, we found that work force reduction had meant the loss of a significant number of experienced scientists. We noted as well that young scientists who were considered promising by departments but who were term employees had been released to protect the positions of indeterminate employees. As a result, we concluded that the challenge of renewing and recruiting scientific personnel was even greater than the community had faced in 1994.

9.34 Since then, we have performed other demographic analyses that — along with those by the community — show that the six major science-based departments for whom Treasury Board is the Employer saw a net reduction of almost 25 percent in their work force between 1994 and 1998, a decrease of almost 5,000 employees in all forms of employment. We note that around 1,300 of those employees were transferred to the Canadian Food Inspection Agency. (As a separate employer, the Agency and not the Treasury Board is the Employer of its human resources.)

9.35 Our analysis showed a sharp decrease in some occupational groups since 1994 (see Exhibit 9.2). Additional analysis also showed that indeterminate positions at entry levels were hit hardest.

9.36 The ratio of indeterminate staff to term employees dropped. In 1994, the number of term employees in the six science-based departments represented 9.5 percent of the population; in 1998, this had increased to 16.5 percent.

9.37 The change in the age profile of the indeterminate work force is a major challenge for the future of the science and technology community and its renewal. Our analysis showed that it is the young and the oldest who have left the community since 1994. From 1994 to 1998 there was a greater concentration of scientific personnel in the middle age groups. The number of indeterminate employees between the ages of 19 and 40 decreased by 10 percent, while the population over 41 increased by 10 percent. In 1998, the average age of term employees was 36; our analysis showed there had been no significant fluctuation in age among term employees between 1994 and 1998.

9.38 Some of our audit work and analyses and the analysis conducted recently by the science-based departments show similar demographic losses that could weaken their operational capacity. The problems of rejuvenation, recruitment and retention have worsened since 1994; resolving them must be made a priority. Without vigorous action, the government's science and technology capacity could be seriously compromised. Based on its own analysis, the community estimates that the six science-based departments may have to recruit between 2,500 and 3,300 indeterminate employees over the next five years to replace those who will retire or leave for other reasons. A working group has looked at the needs of the science-based departments in the short, medium and long terms.

The necessary elements of the planning phase are in place; the community is now in a position to act.

The problems of rejuvenation, recruitment and retention have worsened since 1994; resolving them must be made a priority.

Without vigorous action, the government's science and technology capacity could be seriously compromised.

The community needs to focus on recruitment activities

9.39 The recruitment strategies of science-based departments deal with common issues, particularly the need to change the perception of the federal public service as an employer and to further clarify the government's role in the field of science. To promote and demystify science, the science-based departments and agencies plan to recruit more undergraduates and graduates than they did in the past. The strategies also suggest inviting retired scientists to promote science at colleges and universities and to become mentors for new recruits. At the last Assistant Deputy Ministers Forum in June 1998, it was proposed that a co-op program for students be offered and university scholarships be directed toward specific priority sectors.

Exhibit 9.2

Distribution of Science and Technology Occupational Groups in Six Science-Based Departments[1]

All forms of employment

Occupational Groups	April 1994	March 1998	Net Decrease or Increase[2]	CFIA[3]
Technical				
Drafting and Illustration (DD)	682	373	(309)	1
Engineering and Scientific Support (EG)	6,008	4,664	(1,344)	280
Electronics (EL)	677	722	45	
General Technical (GT)	2,056	1,319	(737)	
Scientific				
Agriculture (AG)	283	35	(248)	187
Biological Sciences (BI)	1,308	1,172	(136)	95
Chemistry (CH)	460	362	(98)	62
Defence Scientific Service (DS)	569	439	(130)	
Engineering and Land Survey (EN)	1,224	1,036	(188)	2
Forestry (FO)	167	87	(80)	
Medicine (MD)	159	129	(30)	
Meteorology (MT)	621	486	(135)	
Nursing (NU)	1,025	780	(245)	
Physical Sciences (PC)	1,232	780	(452)	
Pharmacy (PH)	38	23	(15)	
Scientific Research:				50
Scientific Research Manager (SE–REM)	196	165	(31)	
Scientific Research (SE–RES)	1,945	1,527	(418)	
Scientific Regulations and Patents (SG)	438	293	(145)	216
Veterinary Medicine (VM)	587	33	(554)	423
Total	**19,675**	**14,425**	**(5,250)**	**1,316**

1 Agriculture and Agri-Food Canada, National Defence (civilian personnel), Environment Canada, Fisheries and Oceans, Natural Resources Canada and Health Canada.

2 Net decrease or increase accounts for recruitment and departures during the given period.

3 Positions transferred to the Canadian Food Inspection Agency in 1998.

Source: Treasury Board Secretariat, 1994 and 1998 Incumbent files *(not audited).*

9.40 The recruitment strategies envisioned by the science and technology community are in line with the recommendations in the recent study by the Public Service Commission, *Facing the Challenge — Recruiting the Next Generation of University Graduates for the Public Service*. The students who responded to a survey by the Commission showed little awareness of employment opportunities in the federal public service related to their field of study.

The community wants more flexible external recruitment measures

9.41 At the December 1998 forum, some science managers contended that the authority currently delegated to them allows them to hire only casual employees except in cases where there are special agreements with the Public Service Commission.

9.42 As one of the pilot projects proposed by science-based departments and the community, the Public Service Commission in 1997 adopted more flexible recruitment measures for the Minister of Agriculture and Agri-Food, so the Department could meet its priorities for co-operation with the private sector under the cost-sharing program for research and development spending. The Commission used an exclusion order, which exempts some appointments from the *Public Service Employment Act* in part or in whole. (Exclusion orders are recommended by the Public Service Commission and are approved by the Governor in Council.) Progress reports show that recruitment for that project took an average of only three days. In addition, the same exclusion order enabled two research establishments to recruit almost 200 term employees for scientific positions between July 1997 and December 1998. Eventually some of these term employees were offered indeterminate employment through the regular staffing process.

9.43 The science-based departments and some agencies are exploring other special agreements with the Public Service Commission to make external recruitment more flexible. In our opinion, new external recruitment measures are needed to build a renewed and rejuvenated work force and thereby resolve the problems we have reported since 1994. The science and technology community needs to act now and meet the challenge of recruitment. However, it should not underestimate the effort it will take to employ efficient and effective recruitment strategies while achieving employment equity objectives. Science-based departments and agencies will have to obtain the necessary tools and resources from the government, including adequate forms of rewards, recognition and incentives.

High-calibre staff need to be retained

9.44 According to studies, testimony and documents such as the Report of the Senate Standing Committee on National Finance (February 1999), the government's future capacity in science and technology depends on its ability to recruit and retain high-calibre scientists and technologists. Salary freezes, expenditure and work force reductions and their effects (increased workloads, lack of job security and reduced opportunities for promotion) and an expanding North American economy are leading some scientists and technologists to leave the public service or to question their commitment and loyalty to their employer.

9.45 In this environment, the challenge for the government and the science-based departments and agencies is to offer their employees not only adequate compensation but also a stimulating work environment with varied, enriching assignments that enable them to contribute to society.

9.46 The community must also rise to the dual challenge of recruiting promising

young scientists and technologists and retaining highly qualified employees. Central agencies and science-based departments need to take immediate action. Without high-calibre employees in place to nurture and develop young scientists and technologists, there is a risk that the community will not achieve the results it expects from recruitment.

Management Capability: Some Progress

9.47 In our 1994 Report, we noted the need to develop a stronger and more effective management capability in research and development. We expected that this management capability would be developed strategically by identifying competency profiles that describe the skills and knowledge expected at various levels of science and technology management, from project leader to research establishment director, for example. We pointed out that these competency profiles could also be used to select supervisors, managers and members of the executive group, and as a reference point for assessing their performance.

9.48 In its *Science and Technology Blueprint for Human Resources Management*, the Treasury Board Secretariat suggested developing a competency profile. It viewed this as an indispensable step in the integration of recruitment and training activities and the reward, promotion and compensation systems. In 1998, a working group looking into management and scientific development and training prepared a competency profile for science and technology managers.

9.49 In addition, as a pilot project, Environment Canada's National Water Research Institute recently developed a competency profile for its research and development (R&D) managers. Exhibit 9.3 depicts the Institute's approach.

9.50 At the same time, most science-based departments developed their own competency profiles for general and R&D management positions that reflect their own organizations. During our consultations, we noted that most science-based departments used their own competency profiles instead of the one developed by the working group.

9.51 At the end of our follow-up work, those profiles were being used solely to identify courses needed for training and development of science managers in science-based departments. We also noted that the Canadian Centre for Management Development had dropped the common training courses formerly offered to science and technology managers.

9.52 In December 1998, the Science and Technology Senior Steering Committee on Human Resources approved the recommendations of the working group on management and

Exhibit 9.3

Developing a Competency Profile for Science and Technology Managers – National Water Research Institute's Approach

- Establishment of a discussion panel made up of senior managers, internal and external human resource experts and approximately 15 research and development managers who worked on various projects and whose performance was rated superior.
- Discussion panel meetings that made it possible to put together a framework used to design, develop and apply the competency profile.
- Discussion panel meetings that made it possible to identify an array of success criteria experienced and conveyed by the research and development managers.
- Confidential individual assessment of all the Institute's managers against those success criteria.
- Compilation of individual results.
- Establishment and distribution of a dictionary containing a profile of nine competencies, including definitions, performance standards and suggested training and development methods.

Source : Adapted from information provided by the Institute, 1997–1998.

scientific development that the community develop, in consultation with the Canadian Centre for Management Development, a training module for science and technology managers and identify in this module the training elements that can be offered by science-based departments.

9.53 If the community is to increase the mobility of its science managers in the federal government, as it recommended to the Senior Steering Committee, in our view it needs to ensure that some of the management skills required are common, transferable and known to its members. For example, when the science and technology community defines the competencies of the manager of the future, it needs to distinguish between general and R&D management; and it needs to communicate those competencies to employees with or without science and technology backgrounds who aspire to management positions.

9.54 According to the Blueprint, the science-based departments and agencies are responsible for co-ordinating the training of their science and technology managers. However, it does not specify the performance expectations in terms of science management capability; roles and responsibilities for monitoring performance; or corrective measures when performance falls short of expectations. As a first step, the competency profile proposed for the science and technology manager marks a shift toward the integrated approach suggested in the Blueprint. However, if the science and technology community is to act on its own recommendations, it will have to integrate and co-ordinate its activities related to developing management capability in research and development.

9.55 In our opinion, current practices suggest a lack of consensus within the community on the management competency profile developed by the working group. This could eventually prevent the integration of recruitment and training activities and the reward, promotion and compensation systems envisioned in the Blueprint.

If the community is to increase the mobility of its managers, it needs to ensure that some of the management skills required are common, transferable and known to its members.

Conclusion

9.56 Overall, we think that the Treasury Board Secretariat, science-based departments and agencies and the science and technology community have shown leadership in the management of their human resources. Based on the strength of the community's achievements and progress despite the difficult environment, some senior officials have suggested that the science and technology community could serve as a model across the federal government.

Some senior officials have suggested that the community could serve as a model across the federal government.

9.57 We believe that the work accomplished to date completes the planning phase. At the end of their work, the working groups set up to examine the key issues recommended to the Science and Technology Senior Steering Committee on Human Resources many ways to take action. However, there are still major challenges to be met. In some cases, changes in demographic profiles have worsened since 1994 and have accentuated the problems of rejuvenation and renewal. The science and technology community now needs to implement efficient and effective strategies to recruit and retain high-calibre staff and obtain from the government the tools and resources it needs to do so.

About the Follow-up

The *Framework for the Human Resources Management of the Federal Science and Technology Community,* released in 1996 by the Treasury Board Secretariat, was designed to serve as a collection of policies and tools that science managers could use to align their organizations and their scientific and technological personnel with the science direction and activities of their departments.

Objective and Scope

Our follow-up objective was to assess the extent of progress made by the science and technology community on two major issues we had raised in our 1994 Report (Chapter 11) and that were included in the Framework: renewal, rejuvenation and recruitment of scientific personnel, and improvement in management capability.

We also assessed the progress made on issues raised in our 1996 Report Chapter 15, Federal Science and Technology Activities: Follow-up. Those issues included the need for a results-oriented, time-phased action plan and for effective mechanisms to share “best practices” and discuss issues of common interest.

Approach

We worked from a global perspective and we dealt mostly with the Science and Technology Unit at the Treasury Board Secretariat. However, we consulted stakeholders in science-based departments and agencies. We reviewed various reports issued by central agencies, science-based departments and the community. We did not audit the management of scientific personnel in science-based departments and agencies.

To quantify certain results, we used the Treasury Board Secretariat’s information systems for the years 1994–1995 to 1997–1998. More specifically, we analyzed work force changes in scientific and technological professional groups in the six main science-based departments for whom Treasury Board is the Employer. This approach was used so we could compare the results of our analyses with those carried out by the community and published in its report to the Science and Technology Senior Steering Committee on Human Resources that dealt with recruitment needs for 1998–2002.

Audit Team

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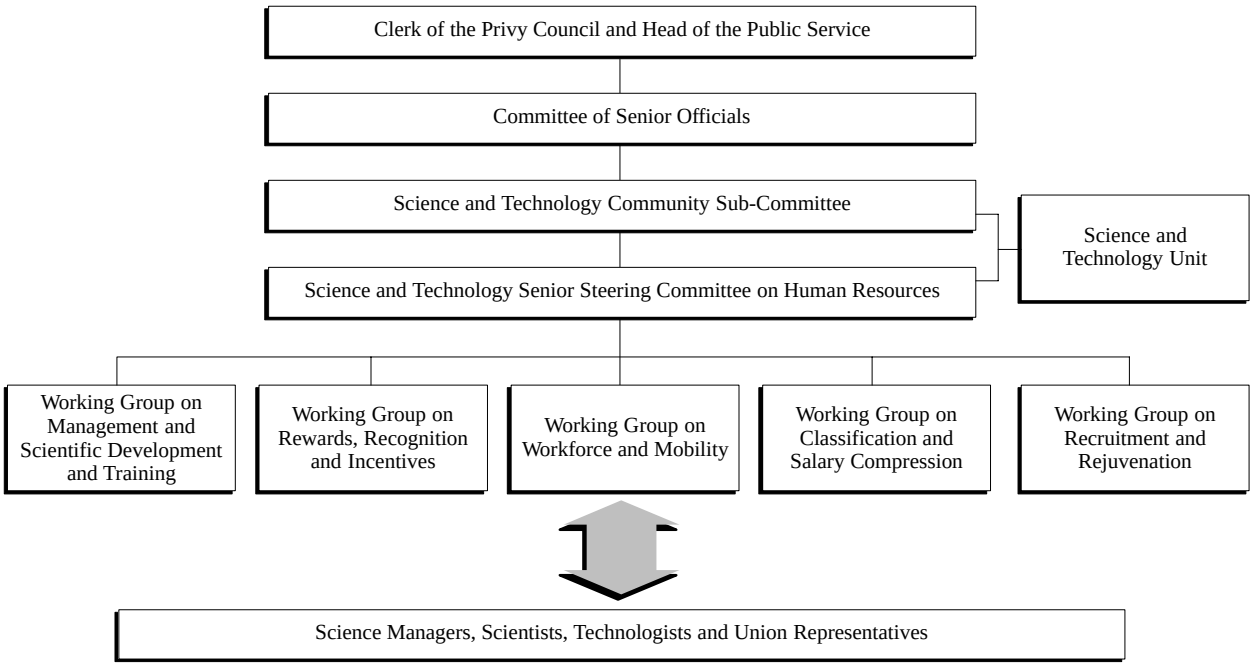
Appendix

Management Structure Adopted by the Science and Technology Community

A Response to Address Concerns Raised by the Auditor General in 1994

A management structure has been put into place to implement the *Framework for the Human Resources Management of the Federal Science and Technology Community.* The structure was modified somewhat since 1996 when the La Relève initiative was launched. La Relève is an initiative aimed at modernizing the public service through the creation of a "workplace where people are valued, recognized, given opportunities for self-development, and treated in accordance with the core values of the public service".



Clerk of the Privy Council and Head of the Public Service. The Clerk of the Privy Council has been formally recognized as the Head of the Public Service since 1993. By statute, the Head of the Public Service must report annually to the Prime Minister on the state of the public service. The Clerk chairs the Board of Governors of the Canadian Centre for Management Development and the Committee of Senior Officials.

Committee of Senior Officials (COSO). The Committee, composed of deputy ministers of departments and deputy heads of agencies, provides advice and counsel to the Clerk of the Privy Council on a number of issues — including government-wide human resource issues. The Secretary of the Treasury Board and the President of the Public Service Commission are members of the committee. The Committee of Senior Officials has had significant involvement in initiatives aimed at renewing or modernizing the public service. In the context of La Relève, sub-committees of COSO were created to champion, support or integrate departmental initiatives. A sub-committee composed of deputy ministers and chaired by a deputy minister from a science-based department was created to support initiatives by the science and technology community to address human resource issues and challenges faced by science-based departments and agencies on the eve of the 21st century.

Science and Technology Senior Steering Committee on Human Resources. The Senior Steering Committee is composed of assistant deputy ministers from science-based departments; representatives from organizations such as the National Research Council, the Treasury Board Secretariat and the Public Service Commission; and the Professional Institute of the Public Service of Canada, the bargaining agent for scientists. The Steering Committee is co-chaired by the Treasury Board Secretariat and an assistant deputy minister from a science-based department. The committee leads the implementation of the Framework and acts as "champion" for the various projects. The Science and Technology Unit at the Treasury Board Secretariat provides support to the committee.

Treasury Board Secretariat. In addition to participating in the activities of the various projects teams, the Treasury Board Secretariat initially designated the senior officials responsible for the various projects. The Secretariat also designated the policy centres responsible for working and providing specialist support to project teams examining human resource issues and developing action plans.

Working Groups. Initially, five working groups were established to examine human resource issues: management and scientific development and training; rewards, recognition and incentives; workforce and mobility; classification and salary compression; and recruitment and rejuvenation. The working groups comprise senior scientists, managers, engineers and technologists, as well as representatives of the major science-based departments, along with representatives of the Professional Institute of the Public Service of Canada, the Treasury Board Secretariat, the Public Service Commission and human resource specialists providing support. Generally, the working groups are led by departmental officials and are self-managed but with predetermined project plans and timeframes. The working groups are responsible for recommending solutions and for managing change and implementing subsequent activities such as pilot projects.

Science and Technology Unit. Housed in Treasury Board Secretariat, the Science and Technology Unit is composed of two Treasury Board Secretariat employees and one departmental scientist, who represents the Professional Institute of the Public Service of Canada. The Unit supports project teams to reduce duplication and overlap while maintaining a process for ensuring that projects keep rolling. The Unit is also responsible for informing senior officials about the status of projects and establishing a communications strategy to keep departments and the science and technology community informed about the implementation of the Framework.

Source: Adapted from information provided by the Treasury Board Secretariat.