

Bringing All Talent into Play – More Women in Science

Preface

There are too few women researchers in Denmark. More than half of all university students are women but only one in ten professors is a woman. Today, the Danish research community cannot attract, develop and retain women researchers to a sufficient extent; thus too few talents are brought into play and Denmark risks facing a declining level of research.

Achieving the ambition of Denmark as a leading knowledge-based society requires that we are able to cultivate talent. In the future, Denmark will need more researchers; and researchers who can measure up to the best in the world. The recruitment of more women to research will be a considerable asset and an important part of the renewal process that universities and research-based enterprises have to go through to enhance innovation and competitiveness.

Lack of women researchers is a problem known to most countries. It is not a new problem and it has many causes. The numerous Danish and international analyses and statistics show that we are speaking of an interaction between complex parameters. They also show that Denmark has performed rather poorly in handling these parameters. 11 of the EU-15 have so far performed better at attracting women to research.

In Denmark, the issue of women in research has previously been addressed in, for example, "Women, Quality, Research" (*"Kvinder, Kvalitet, Forskning"* 1987) and "Equality in Research" (*"Ligestilling i forskning"* 1998). At European level the EU-Commission has focused strongly on women in research in recent years¹. Legislative reforms in the field of research including the University Act along with the debate on Denmark's place in the global economy mean that the question of women in research is of more immediate importance than ever before.

The Minister for Science and the Minister for Gender Equality's Think Tank on More Women in Research has made its assessment of the nature of the problem based on existing information from analyses and statistics. Using their skills and experience from the research community and industry, the members have presented their views on how the situation can be altered.

The Think Tank's proposals for initiatives and solutions are to contribute to recruiting and retaining more female researchers at universities, at government research institutions and in private enterprises for the benefit of research, the research environments, and gender equality. Not least, seen in a global perspective, it will contribute to securing Denmark a prominent position economically as well as knowledge-wise.

This report is the result of five meetings of the Think Tank. I would like to thank the members for their diligent and dedicated effort.

¹ She Figures, WIR, ENWISE, Gender and Excellence in the making

Lisbeth Pedersen
Chair

Summary and recommendations

In Denmark, there are relatively few women employed in research. Today, more than half of the university students are women, but only one in ten professors is a woman. The discrepancy is not merely due to the historical fact that, previously, there were few female students at the universities. Even today, relatively few women are recruited to positions in research. Today, there are more women in research than ten years ago; so we are making progress. The progress, however, is too slow and Denmark is performing poorly compared with other countries in this respect.

It is a problem because we thereby fail to ensure that the talent achieves its full potential. It may have a limiting effect on the span of research and it leaves an unexploited research potential. In the future Denmark needs more researchers and researchers who can measure up to the best in the world. Consequently, more talented women have to be brought into play.

There are too few female applicants for positions in research. This is due to interaction between several parameters in both the research environments and among the women. The Think Tank finds that the problems will be solved best through initiatives aimed at younger women in research. It is important that the research community perceives the initiatives as legitimate and that, at the same time, competition for permanent research posts is ensured; so that the most gifted candidates fill the positions.

The problems and solutions are not necessarily the same at all institutions and in all fields. So university managements and managements at other research institutions as well as the research councils, etc., should be aware of differences between the various fields of research. For example: within the humanities female graduates seem to be rejecting and/or opting out of research at the transition from student to researcher and between research positions at different levels. By contrast, within natural science there is a relatively small number of female students among whom new researchers can be recruited.

The Think Tank's recommendations and advice are aimed at politicians, at rectors, and at heads of research institutions and research-based enterprises, at women researchers, and at students who are the potential researchers of tomorrow.

To the politicians

The Think Tank on More Women in Research makes four specific recommendations to the politicians:

Make agreements with the public research institutions

The Think Tank recommends that the Minister for Science makes agreements with the universities on increasing the share of women in research. The agreement may be part of the universities' development contracts or in the form of independent strategies on recruitment and gender equality. The agreement should state measurable objectives that are put in writing and made accessible to the public and provide for an annual follow-up on the objectives.

The Think Tank recommends that ministers responsible for government research institutions and the Minister for Culture as regards research institutions in his field (archives, museums and libraries) make similar agreements on overall objectives for the future recruitment of researchers at their institutions.

Implement research programmes that promote talented young women

The Think Tank recommends that the Parliament allocate resources for a new initiative to promote talented young women in science.

Adjust framework conditions: better possibilities for maintaining contact with the workplace while on leave

The Think Tank recommends that barriers hindering researchers' contact with the workplace while on leave be removed.

To the heads of the research institutions and enterprises

The Think Tank on More Women in Research makes two specific recommendations to the heads of the research institutions:

The Think Tank recommends that the institutions define objectives in their development contracts or in independent strategies on recruitment and gender equality. The objectives should be measurable, in writing and accessible to the public; and there should be an annual follow-up.

The Think Tank recommends that the top management at universities, government research institutions, and hospitals formulate a policy ensuring that the financing of maternity leave is not left up to the individual research teams.

For the heads of the public research institutions and leaders of research-intensive enterprises, the Think Tank has prepared a toolbox containing various management tools.

The Think Tank recommends that the individual research institutions and research-intensive enterprises select the management tools they find will be the most successful and efficient ones to use at their institution or in their enterprise.

The Think Tank proposes the following tools:

- Create attractive research environments
- Use broad announcements of vacancies
- Focus on the entire recruitment process
- Provide feedback, establish mentor systems and networks
- Consider flexible assistant professorships
- Assess research results against a background of the time actually spent on research (take leave into consideration)
- Encourage women researchers to get experience in research management early on
- Acknowledge and support research experience gained abroad
- Focus on striking a sound balance between teaching, research and other duties

Why appoint more women to research posts?

In this section we focus on four reasons why increasing the share of women researchers should be a specially prioritised objective.

1. In the future Denmark will need more researchers and researchers who can measure up to the best in the world. It is therefore important to ensure that all talent in the form of well-educated women and men comes into play when appointments to research posts are made.
2. A very uneven gender distribution among researchers may in some fields cause bias towards or against research into certain subjects.
3. Research affects the development of society. An under-representation of women in science means that women influence the development of society through this channel to a lesser extent than men. Thus it is a democratic problem when women are strongly under-represented in the research community.
4. A more even gender distribution may positively influence the working environment in a way that both women and men find pleasing. This enhances job satisfaction and promotes evolution as a researcher. An analysis of Danish research environments concluded, inter alia, that particularly dynamic environments had more women researchers and more young researchers than what is average at universities and government research institutions. The survey also found parameters such as active research management, orientation towards research abroad and a clear and visible personnel policy to be of decisive importance to the particular quality of the environments. Another study on what characterises good research singles out research environments where diversity among the researchers is not merely tolerated but encouraged.

We are making progress but the representation of women in research improves too slowly. Ten years ago many of the women researchers were in the humanities; today women researchers are found in more fields and investigating a wider range of topics. There are also a few more women in research management.

Denmark performs inadequately when it comes to attracting women to research; a number of other countries do much better in this field: among the EU-15 Finland and Sweden are in the top third, whereas Denmark, Germany and Austria are among the countries that have been least successful in increasing the number of women in research. Comparisons among European countries are, however, complicated by the fact that the countries do not use the title “Professor” in the same sense.

If we let things slide and expect the problem to solve itself it will have an adverse effect on our objective to spend 3 per cent of GDP on research and development in a sensible and qualified manner in 5 years time. If we, in the coming decades, continue to lose several talented women at every rung of the career ladder, the vision of Denmark as a leading knowledge society will be hard to fulfil.

The Think Tank on More Women in Research aims its recommendations and advice primarily at politicians, rectors and other leaders in the research

community, and at the women who wish to pursue a career in research. We hope that others will join in the reading and find inspiration.

What is the problem?

More than half of the university students are women but the share of women in research decreases markedly as they make their way up the career ladder. At PhD-level, the lowest rung of the ladder, 41 per cent are women²; at the following levels gender inequality increases: among assistant professors, 36 per cent are women; 22 per cent of the associate professors are women, while only one in every ten professors is a woman.

The situation has developed over time and there are distinct differences between the main scientific areas. If we take a closer look at individual academic fields, the picture becomes even more varied and complex, for example: within the social sciences there may be considerable variation between economics, sociology and law. Variations that go undetected when social sciences are seen as a whole. Most analyses and statistics, however, are not compiled in such detail.

In accordance with the terms of reference, the Think Tank's assessment of the underlying explanations is based on the members' own qualifications as well as existing statistics on and analyses of men and women in research. Put together this material paints a multifaceted picture of the reasons why there are few women in Danish research. The explanations are numerous and often to be found in the interaction between different parameters. Here, we present an outline of the main issues:

Is there a lack of women researchers for historical reasons? – Yes

The current composition of the research staff at universities, in hospitals, government research institutions and private enterprises is the result of appointments made up to 30 years ago. In those days there were fewer women students among whom new researchers could be recruited, and the distribution by subject areas was different from what it is today.

In time will the gap close by itself? – That is unlikely due to the persistent under-recruitment of women to research

The statistics speak for themselves: A strong basis for recruitment in the form of a large number of women in a particular scientific field does in itself not guarantee the transition of more women to the posts at the next level.

The problem is most evident in the humanities, the first field in which women came to constitute a majority of the student population. Statistics and several studies show that the transition rates from Master's to PhD level and from assistant to associate professor are particularly disproportionate within the humanities³. Even though the humanities have a substantial recruitment potential

² Ministry of Science, Technology and Innovation: Data on Danish research training 2003

³ "Data on Danish research training 2003 and 2004", Ministry of Science, Technology and Innovation, and "Hvor gik adjunkterne hen, da de gik ud?", The Danish Centre for

among women students and young researchers, it does not in itself ensure that the women make their way into research; thus research fails to attract quite a few talented women.

Talented women are lost on the career ladder in other fields as well; this is particularly true on the lowest rungs of the ladder. The scientific fields in which the largest share of students continue as PhD students after obtaining their Master's degree do only to some extent coincide with the fields that attract the largest share of women students. Furthermore, in all main scientific areas, with social sciences as the notable exception, it is still a relatively small share of the women who continue as PhD-students after obtaining the Master's degree. More women are lost in the transition from PhD to assistant professor, from assistant professor to associate professor and from associate professor to full professor.

Thus, the conclusion is that the under-recruitment of women to research persists and the question is: how do we explain it?

Women apply for research posts but are not appointed: On the whole - No

Statistics on university appointments over a number of years show that, on average, women are appointed to university posts to an extent that corresponds with their share of the applicants. There are variations between the disciplines and job categories but in open competition the women's rate of success corresponds to their representation among the applicants.

Women are reluctant to apply for the vacancies: Yes, to some extent

Men are appointed to a considerable number of university posts for the sole reason that no women apply. In general there are few applicants for university posts; and male and female candidates compete directly for only one-fourth of the university posts.

Women do not apply because they do not want to do research: No, there is no reason to think that

A recent Danish study shows that the number of assistant professors, both male and female, wishing to become associate professor is higher than the number of appointees. Besides, the far more successful foreign results with attracting women to research show that the modest Danish level of 10 per cent women professors is far from a normal level.

However, it is possible that the limited number of applications from women, in spite of their wish to obtain research posts, reflects an opting out of research environments where the working environment is not conducive to the well-being of a broader group of researchers. Another possible explanation is that few or no vacancies are announced in research fields where women are represented.

Women are not encouraged sufficiently and do not believe in themselves:

Perhaps

It is difficult to measure the importance of encouragement and belief in one's own abilities. However, several studies indicate that women are too reluctant to apply for research posts and grants, and that potential women researchers may attach greater importance to encouragement from an associate professor or professor than men do. It is possible that men are encouraged more often than women, and it is likely that women are not encouraged enough.

Research grants, research posts and female applicants are unevenly distributed in relation to each other: Yes, to a certain extent

A number of structural factors cause some women to be in a less than favourable position to pursue a university career to the top. It is difficult to quantify but some women researchers work in fields where the ratio of associate professorships to professorships makes it particularly difficult to be appointed professor. Other women researchers follow career paths that lead them to government research institutions, hospitals or private enterprises, that is lead them away from research professorships and basic research at the universities. Finally, there are considerable variations in the funding schemes of the different disciplines and main research areas.

The researchers behind *Gender in Academia* point out that there is less funding and fewer posts available in the fields where women have the strongest representation. The survey reveals the importance of having politicians, research councils etc. include an issue such as the distribution of male and female researchers in the basis for their decisions on the overall allocation of research funds. The Nordic Council of Ministers' efforts to include gender considerations in the budget process in order to clarify consequences of the grants in respect to gender issues may serve as an inspiration. The integration of gender and gender equality aspects in the budget process may thus contribute to making a more qualified basis for decisions available to the politicians.

The number of women applicants for research posts is insufficient. This is probably due to interaction between several parameters that affect women's opportunity and inclination to apply their abilities and resources to research. The Think Tank finds that the problem of too few women in research will be solved most efficiently through initiatives aimed at young researchers. It is a matter of attracting, developing and retaining young women in research. The Think Tank is very aware that the initiatives have to be perceived as legitimate by the research community.

Recommendations to the politicians

The Government and the Parliament are responsible for putting the ambition of having more women researchers on the agenda; this applies to both approach and financing. The effect of a clear signal that the country's political leadership is interested in the matter cannot be overestimated.

Specifically it is the politicians who allocate funding for most of the public research at universities, government research institutions, hospitals, national

research councils etc. This involves a number of instruments for creating incentives throughout the research community. Furthermore, the politicians also take part in determining the framework conditions that apply to all research activities including those of the private sector.

It applies to universities and government research institutions alike that they, as public institutions, enter into general agreements with the responsible ministries on which objectives they particularly should strive to attain in the next (4-year) period. It is possible to incorporate targets for increasing the share of women researchers in the control instruments that the ministers use when dealing with public research institutions.

Viewed in the light of these facts the Think Tank recommends:

Make agreements with the public research institutions

The Think Tank recommends that the Minister for Science makes agreements with the universities on increasing the share of women in research. The agreement may be part of the universities' development contracts or in the form of independent strategies on recruitment and gender equality. The agreement should state measurable objectives that are put in writing and made accessible to the public and provide for an annual follow-up on the objectives.

The Think Tank recommends that ministers responsible for government research institutions and the Minister for Culture as regards research institutions in his field (archives, museums and libraries) make similar agreements on overall objectives for the future recruitment of researchers at their institutions.

Implement research programmes that promote talented young women

The Think Tank does not advocate earmarking a certain percentage of the posts at associate professor and professor level for women. However, the Think Tank considers it necessary to promote talented women by creating posts that allow for the building up of qualifications.

The Think Tank recommends that the Parliament allocate resources for a new initiative to promote talented young women in science.

The funds should be allocated according to principles known from other European countries and from the previous Danish FREJA-initiative: i.e., if two applications are considered to be of equal professional merit, the applicant of the under-represented sex may be given preference. Men and women are equally welcome to apply. Experience shows that the signalling value of such a talent-promoting initiative alone will lead to many more applications from women than what would otherwise have been achieved. We have to make an effort at national level regarding posts for young researchers in all scientific fields. The research councils should implement the initiative. Broad announcements covering all subject areas will attract a wide range of applicants and counteract any suspicion of announcements being tailor-made to suit certain individuals. The competition will ensure that qualification requirements are maintained.

The funds of a new programme are to be allocated as grants to teams of researchers. This will, very importantly, enable young researchers who receive grants to develop the management skills that are a prerequisite for reaching the top as research manager later on. Experience shows that management experience acquired at the early stages of a research career are important, and that women often do not acquire the necessary competences in this field.

Adjust framework conditions: better possibilities for maintaining contact with the workplace while on leave

The Think Tank recommends that barriers hindering researchers' contact with the workplace while on leave be removed.

Men and women employed in research are subject to a number of general personnel policy rules. Thus, rules about maternity leave, child's first day of illness, childcare facilities etc., combined with collective agreements and rules regarding unemployment benefits and pensions provide important framework conditions on the labour market; even for researchers. Basically, these framework conditions have to be present to ensure good working conditions.

In an age of rapid progress in development and communication it is crucial to maintain contact with the labour market while on leave. This applies to all professional groups but researchers are particularly affected by absences due to (maternity) leave for two reasons:

- Research processes cannot be stopped overnight and then resumed several months later. Top-level research is elitist, international and often in the form of cross-border cooperation. Thus the framework conditions of research are to some extent decided beyond the Danish borders. A career in front-line research is incompatible with long absences.
- The average age of new university graduates in Denmark is higher than in other countries. Consequently PhD-students and researchers employed in the subsequent fixed-term qualifying positions are also older. To many of them this means that starting a family coincides with building sufficient research qualifications to get security of tenure.

Researchers need to be given the opportunity to participate in scientific activities in the workplace and to follow scientific developments locally and internationally by staying "on-line" with their workplace while on leave. Thus there should be no formal restrictions barring access to a workstation at home, to research libraries, or preventing participation in meetings, conventions, training courses, scientific symposia, etc.

Furthermore, the managements at government research institutions and research-intensive enterprises should be able to openly and actively support researchers who choose to maintain labour market contact while on leave. However, the managements are *not* to have the opportunity to assign work to employees on leave. This criterion should be sufficient to prevent abuse and possible circumvention of income maintenance schemes and rules.

Recommendations to the heads of research institutions and enterprises

Increasing the number of women in research is a management responsibility therefore the issue must be addressed by the top-management. It is a management task to state the objective of increasing the number of women in research. The management should identify objectives that are visible and anchored in the overall objectives of the institution and endeavour to attain the objectives through everyday activities. Specifically, it is up to the management to choose initiatives and tools to advance the objectives. The fulfilment of objectives should be followed up and included in regular appraisals.

The management task is strategic because it is to ensure that potential researchers, both women and men, are looked after and that all resources are exploited and developed. This management assignment does not differ from other core management tasks requiring that objectives are identified and agreed upon; and that binding agreements on the fulfilment of these objectives are made between the various levels of management at the institutions and in the organisations.

The new University Act has introduced professional managements⁴ at the universities to implement initiatives to solve the problem. The universities are mainly responsible for educating the graduates and PhDs that society and the research community require. The universities are thus important players in relation to research and education, and to the national research community at the universities as well as at government research institutions, university hospitals and in private enterprises.

A professional management does not in itself solve the problem. The objective of having more women in research needs to be formulated, prioritised and become an integral part of daily human resource management at the institution or in the enterprise. The management's initiatives and prioritisations have to be clear to the employees and the outside world; this will create stronger ties to the institution and enhance the effect. The implementation lies in turning the overall objectives into more specific and detailed targets and plans in cooperation with the leaders of the individual units and at various organisational levels; in addition to this a continuous follow-up of the objectives is required.

The universities differ in size and organisational structure; there are small universities and large faculties. Furthermore, some universities cooperate extensively with for example industry, hospitals and government research institutions at times even co-employing researchers. Thus, it is difficult to create one common template for the specific tasks to be carried out by rectors, deans, heads of department etc.; and the same initiatives and instruments may not be applicable within all the scientific fields.

At *government research institutions*, museums and archives it is the director who is to implement the objectives set out in the performance contract between the

⁴ Contrary to the former University Act according to which most of the management was elected by employees and students

responsible minister and the board and to ensure that the objectives are followed-up. The performance contracts are made between the board of the government research institution and the ministry responsible for the institution. Like the universities, the government research institutions are very diverse in terms of size, scientific field and assignments.

Research-intensive private enterprises do not enter into contracts with the politicians on specific objectives to be reached in the same manner as public research institutions do. However, the boards of research-intensive enterprises have other reasons to focus on women researchers. The enterprises are motivated i.a. by unwillingness against systematically losing many of the talents who are to bring the company forward. A wish to reflect the surrounding society as well as the management's and owners' special priorities and interests may also be determining factors. Last but not least: surveys indicate that enterprises with both women and men in the management do well compared to enterprises with all-male managements.

Define targets for recruitment

The Think Tank recommends that the institutions define objectives in their development contracts or in independent strategies on recruitment and gender equality. The objectives should be measurable, in writing and accessible to the public; and there should be an annual follow-up.

Performance and development contracts are basically good tools for ministries and managements at government research institutions and universities to define and agree on specific development targets including targets for recruitment. At the same time the contracts highlight areas of particularly high priority. Alternatively, objectives may be set out in separate recruitment and gender equality strategies. The most important thing is that the institutions have strategies, in writing and accessible to the public, describing their objectives and the means of achieving them. It is a question of having objectives and agreements ensuring that plans for achieving the objectives exist; that their actual fulfilment is monitored.

The objectives stated in the development and performance contracts should be used with flexibility and should not be isolated initiatives: a good working environment and the well-being of women in research environments should be an integral part of the management's efforts to achieve the stated objectives.

When setting recruitment targets for the underrepresented sex, the need to ensure real competition for vacancies should be taken into account.

The management should guarantee that researchers funded by private grants receive their full salary while on maternity leave

The Think Tank recommends that the top management at universities, government research institutions, and hospitals formulate a policy ensuring that the financing of maternity leave is not left up to the individual research teams.

A large number of private organisations, enterprises, and public and private foundations fund research activities at public research institutions. Some of the

funds cover the salaries of researchers and laboratory staff employed in fixed-term positions in connection with specific research projects. According to collective agreements, researchers employed at public research institutions are entitled to their full salary while on maternity leave regardless of who pays their salary.

Not all foundations, enterprises and organisations that support research are prepared to cover salaries for researchers and laboratory technicians who take maternity leave during a research project. Consequently, the individual research teams at public research institutions are often required to cover the difference between the income maintenance in the event of childbirth and the salary for staff on maternity leave. Against this background there is reason to fear that the research teams will be reluctant to recruit women researchers and laboratory technicians to externally funded projects.

It should not be left up to the individual research teams at the research institutions to solve the problem of paying full salary to employees on maternity leave; instead the managements of the institutions should establish a policy on this matter.

The management's toolbox

The management's task is to bring all talent into play. In this context it means that the management should consider whether the personnel policy supports the advancement of talented women researchers sufficiently. Moreover the need to review and reorganise the personnel policy and to use new management tools should be assessed.

Private sector enterprises, e.g. Novo Nordisk, TDC and Nykredit, and public sector employers alike have achieved positive results from dedicated efforts to support talented employees in management or specialist careers. Such initiatives have helped develop the full potential of both women and men.

Denmark may also learn from the experience of the international research community; the outcome of their initiatives may without doubt be a source of knowledge and inspiration to the Danish research community.

Enterprises and institutions that have successful talent management programmes have emphasized transparency and clear messages from the management as to the intention and purpose of such programmes in order to, among other things, disprove notions that certain posts were intended for certain persons.

Another characteristic is that the management of a number of the successful enterprises attach particular importance to the recruitment posts that form the basis of a future career in positions at higher level. Through various initiatives the managements have encouraged and motivated women to apply for the posts, courses and programmes that are important to the company in the recruitment process. By having both sexes represented at this level, the enterprises and institutions ensure variation and the possibility to select from a broader range of candidates when making appointments at higher levels of the hierarchy.

In the following sections, examples of some applicable management tools are described. It is difficult to tell which of the various tools that will suit the different institutions and disciplines best. It is very much up to the managements to decide which tools will further the objective of attracting more women researchers to their research environments.

The tools indicated by the Think Tank are to further the creation of an environment that will also appeal to women. Job-openings should be created and for these jobs women should be able to draw on support from, i.a., mentor systems and networks when applying. If needed, women should be given more leeway when building-up their qualifications e.g. through flexible assistant professorships; and they should be encouraged to carefully consider how they use their time. Furthermore, the management should support the women in their efforts to gain management experience and international experience.

1 Create attractive research environments

The perception of a career in research as being socially isolating may have a decisive negative influence on students' and young women researchers' inclination to pursue a career in research. If students see the research environment as isolated and without social and professional cohesion, the research environments' recruitment opportunities have already been limited severely since such conditions probably will make particularly women leave such workplaces out of consideration.

If the working environment constitutes a problem, the management should increase their teambuilding efforts and pay more attention to the physical and mental work environment. It is necessary to inform about the work environment to change a poor image that may be misleading. Focus is often on the hardships of being a young researcher with family obligations. However, it should be made clear that the world of research is also an exciting environment where the individual researcher is often free to plan his/her work and time to combine a research career with family life.

When specific targets for recruitment and change of the gender profile are defined in performance or development contracts on independent recruitment or gender equality strategies at government research institutions and universities, it is important to include targets for developing the workplace as a whole. In an overall perspective the ambition to have more women in research makes the most sense if attention is also focused on creating a better work environment.

2 Use broad announcements of vacancies

Many announced vacancies in research do not attract applications from women and many announcements attract only one qualified applicant. This applies to 38 per cent of the assistant professorships, 37 per cent of the associate professorships and 22 per cent of the professorships. Vacancy announcements that are too specific make it difficult to attract more applications, including applications from women; whereas broader vacancy announcements and perhaps announcing more vacancies at the same time would contribute towards ensuring a real possibility of attracting more qualified candidates and most likely also a

broader range of applicants. At the same time it will not be implied that a certain post is intended for a certain person.

However, for some specific research assignments it may be necessary to recruit a person with very specific qualifications. In such cases, very detailed announcements of vacancies may be required. In contrast to this legitimate recruitment consideration we find the research environments' inherent inclination to mostly recruit candidates with familiar backgrounds thereby opting for safety and dependability.

It is for the management to decide on priorities: when should the institution advertise vacancies in a manner that will attract only a limited number of applicants? And when should the institution use broader, open announcements that will appeal to more unconventional candidates with other qualifications and a different approach?

With a view to getting more women to apply for tenured associate professorships and professorships at the universities it may be wise to make the vacancy announcements as broad as possible and preferably to announce more vacancies at the same time. This is a sign of dynamism. It is important to have a broad range of applicants and to counter suspicions of tailor-made announcements that may discourage women from applying. Qualification requirements should be upheld through competition; while at the same time the talents should be better promoted.

3 Focus on the entire recruitment process

Explicit information about which qualities are needed to become a researcher should be made accessible to all. Uncertainty as to whether or not they possess the necessary qualities and qualifications may deter women from applying for research posts.

In order to ensure equal access to information about what is actually required to be considered for posts at the various levels, the management should contribute to making the requirements visible. By focusing on the question of future career opportunities it will also be possible to raise the awareness of those employees who have not yet considered and decided how to develop their future careers. Transparency can be increased if the faculty's or institution's website contains information about what is particularly emphasised with regard to publications, stays abroad, networking activities, teaching and communication experience, outlining of future research projects, etc.

The number of women researchers who drop out at the transition from one academic level to the next, e.g. from PhD-student to assistant professor, can probably be reduced by establishing more motivating recruitment processes that will make clear the number and type of vacancies likely to be announced when the funding currently available is taken into account. This will enable young researchers to appraise their situation and options better. Management at all levels should therefore make their plans to announce vacancies known early on – preferably a year in advance.

It should be possible to retain qualified candidates for research posts by offering them temporary appointments during the period leading up to the vacancies being announced. It should be a management task as well as an important recruitment tool also to help young women researchers obtain external funding for short-term temporary positions that will run until vacancies for tenured posts are announced. Naturally, some institutions and disciplines will find it easier than others to raise funds for temporarily retaining talented researchers. However, the management should in any case be supportive of such activities.

Furthermore, the management should actively encourage all talented young researchers in fixed-term appointments to apply for upcoming permanent posts. This will assure open competition for appointments to permanent posts and that the best qualified candidate is appointed.

4 Provide feedback, establish mentor systems and networks

Some research environments in private enterprises, at government research institutions, and hospitals when young doctors are concerned use staff development talks to systematically provide their employees with feedback on professional performance and career opportunities. Other research environments do not systematically assess and counsel the employees as to their situation and performance, development opportunities and prospects.

The process of criticising and giving each employee feedback on their performance as well as providing an opportunity to discuss their prospects is obviously an important one. It is also important to follow through on the conclusions drawn from the discussion. Within the overall framework of the institution it should be up to the local managers how to arrange these discussions.

Enterprises that target their talent management and competence development efforts often have mentor systems. These systems may be more or less formalized ranging from the simple pairing of a senior employee with a junior or new employee to detailed programmes. A characteristic shared by these programmes is that the mentor-mentee relationship is *not* that of a superior and a subordinate. It is a relationship in which the mentor has no decision authority over the mentee's salary, career or assignments. The relationship is based on confidentiality where any question can be discussed freely within the limits of an ordinary working relationship. The objectives may be more or less well defined. In some cases, the company may choose an external mentor if it is the best way to ensure a free and open exchange of views and experience.

Mentor relationships are not a new thing. The novel aspect of the organised programmes is that the enterprises have become aware of the potential of mentor relationships. Many enterprises encourage their employees to become part of or establish *networks* in fields that are central to their careers and that may support them and help them develop their skills. Networks may be established in many fields such as specific scientific subjects, management or diversity. Experience from enterprises that have encouraged networking shows that both networks consisting exclusively of women and mixed networks may be efficient. All-women networks create room for exchange of certain types of experience, e.g. on being woman in a professional environment dominated by men. At the same time

it is important that women participate in networks of a professional or general character on an equal footing with men.

5 Consider flexible assistant professorships

The transition from fixed-term qualifying posts to the first permanent post, typically from assistant professor to associate professor at universities, and from researcher to senior researcher at government research institutions, is one of the critical stages in women's research careers.

Particularly where families with young children are concerned, a more flexible interpretation of assistant professorships may be a management tool to support young researchers who are pressed for time. The ability to show greater flexibility by extending the duration of traditional 3-year assistant professorships will give young researchers a better chance of meeting the requirements for associate professorships. Researchers who are barely able to qualify for associate professorships within the usual timeframe will be much helped by increased flexibility on this point.

The introduction of 4-year associate professorships may have the advantage that young Danish researchers like foreign applicants will have more time to qualify for posts as associate professor or senior researcher. Young researchers employed in the private sector are not subject to the same requirements to qualify within a narrow 3-year timeframe. Speaking *against* 4-year assistant professorships is the consideration that it will mean extending the period before the security of tenure can be achieved. Moreover, Danish university graduates leave university at a relatively high age compared to graduates in other countries.

6 Assess research results against a background of the time actually spent doing research (take leave into consideration)

It is more important to assess applicants based on their current run of form rather than on the total length of their lists of publications. The more time doing research, the more results will have been achieved. The time *actually* spent doing research should be considered when assessing applicants.

It is the Think Tank's impression that selection committees to a large extent already take such considerations into account when they assess applicants. However, seeing that new selection committees are set up continually and that many of their members come from outside the research institutions, even from abroad, it becomes a management task to continuously ensure that the selection committees are aware of such aspects.

The current rules regarding the appointment of researchers at universities and government research institutions allow the management to make *its own* choice from the candidates that the selection committees find qualified. This possibility is an essential tool for the managements at the institutions.

For vacancies with more than one scientifically qualified candidate the management may let other recruitment considerations determine the outcome. Aspects such as increasing external recruitment including foreigners, applicants

from related scientific fields, applicants possessing new and different skills, or applicants of the underrepresented sex may be taken into consideration.

7 Encourage women researchers to get experience in research management early on

It is important that women participate in preparing applications for external funding because the successful applicants acquire valuable management experience particularly where more substantial grants are concerned. Acquiring experience in research management is an important step towards being tenured particularly as a professor.

Sometimes, individual researchers prepare and submit applications to research councils and foundations by themselves. However, where larger projects are concerned a unit, a department or an institution may be behind an application that has been prepared by a team of researchers. Young researchers should be involved in the process of preparing applications, particularly major institution-backed applications to research councils and foundations, and, if successful, in the management and administration of the grants received. In this way the management can contribute to improving talented researchers' chances of heading a research team or larger project as top researcher in the long term. It is important that women also gain this type of experience.

8 Acknowledge and support research experience gained abroad

Today, to become a qualified researcher at international level in a small country like Denmark it is imperative to acquire the insight, the professional perspective and outlook as well as the networks that arise from stays at research environments abroad. Therefore it is important to encourage and convey to young researchers that they need to plan their research careers in a way that will allow them to gain this experience. As regards young women it is particularly important to tell them early in their training to plan stays abroad; that it *is* feasible. Hence it is important to gather examples and create awareness of women who may act as role models to show how it can be achieved.

For young women wishing to opt for a career in research there may be other barriers to studying and working abroad than for men partly because qualifying for a career in research often coincides with having young children.

Some men are able to combine a stay abroad with their spouses taking leave of absence from their work; however, it is usually more difficult to bring the opposite situation about.

The management can provide support by allocating sufficient funds in the budget to make "commuting" between the research institutions at home and abroad possible. Frequent, brief and concentrated stays abroad combined with periods of working at the home institution may be an attractive solution to some families with young children. The prerequisite for such flexible stays abroad is management support in the form of a flexible approach to covering travel expenses.

9 Focus on striking a sound balance between teaching, research and other duties

It is important to assistant professors and other young researchers that *they* and the management protect their time for research to strike a sound balance between research and teaching obligations.

Women researchers often face a paradox: as soon as they research-wise are qualified at the level of associate professor they are encouraged and appointed to sit on selection committees, research councils and other bodies in the research community that make decisions on a wide range of issues concerning recruitment and awarding of grants, etc. It is good that women sit on selection committees and research councils. It ensures versatility and may help reduce the risk that fields of research and issues that particularly appeal to women are unintentionally given a low priority.

However, to women researchers at associate professor-level sitting on numerous professional and administrative committees *may* mean less time to their own research; thus the road to a professorship may become longer than necessary. On the other hand, it may be seen as a boost to research careers that some young women researchers are appointed to sit on committees and research councils at an earlier stage in their career.

A contradiction may exist between on the one hand the wish to appoint women to committees sooner and on the other hand ensuring women on the second highest rung of the ladder the necessary time to do research on their way to the top of the research community. There is no unambiguous advice to give; neither to the women in question nor to the research community in general; only that both parties should be aware of the potential problem and consider it on a case-by-case basis.

Recommendations to the women

The Think Tank on women in Danish research will not reiterate all the good advice and ideas for a successful life in research but merely wishes to emphasise the most important pieces of good advice to men and women who wish or just consider to pursue a career in research:

- Gain international experience
- Reap experience in research management
- Be actively involved in research networks
- Participate in mentoring
- Guard your time for research
- Keep yourself updated on requirements and opportunities

Getting more women in research is basically a management responsibility. However, initiatives arising from ordinary students and researchers are obviously also needed.

Initiatives such as informal networks within or across scientific fields and mentor systems are important tools to the women who *are* already in research as well as

to the young women who consider becoming researchers. The women may therefore let themselves be inspired by the management's toolbox described above.

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Annex: Initiatives in other Nordic countries regarding more women in academia

In recent years the EU has focused attention on women in research and among other things encouraged the Member States to strengthen their efforts in that respect. In 1999, one Commission initiative was to set up a committee consisting of government officials and experts from 15 Member States and 15 other countries associated with the 5th Framework programme. The committee became known as the Helsinki Group on Women and Science. In 2002 the Group published the report “National Policies on Women and Science in Europe”.

One of the report’s main conclusions is that there are considerable differences between the countries with respect to the initiatives implemented to increase the number of women researchers. Many countries have taken positive action to assist women in research e.g. in the form of supporting networks, mentoring and tutoring activities; instituting awards for women researchers; establishing individual professorships or small research funds earmarked for women; and by setting targets for how big a percentage women should constitute of the population of researchers in the long term.

Furthermore, practically all countries report increased efforts to provide detailed statistical information. Information that not only shows the number of women researchers at various levels but that will also provide a statistically better picture of career paths, output, etc.

Only a few countries have yet resorted to stricter measures. Below examples are from Sweden, Norway and Finland.

Sweden:

Specific initiatives 1995-2000:

- Post.doc scholarships earmarked for women researchers
- Special visiting professorships for foreign women researchers. Budget: 21 million SEK per year
- PhD-scholarships earmarked for women in scientific fields with few women. Budget: 30 million SEK per year
- Tham-professorships. The so-called Tham-professorships are professorships earmarked for the underrepresented sex.
- In 1997 the legislation was changed so that all university staff possessing the required qualifications are appointed professors. This has increased the share of women professors to 16% in 2004 and the aim is to reach 25% by 2008.

More information is available in the government’s general action plan for gender equality at: <http://www.regeringen.se/content/1/c4/20/69/2c27bade.pdf>

Norway:

Specific initiatives 2001:

- 40 new post.doc scholarships earmarked for women researchers
- 20 new professorships earmarked for women researchers

Furthermore, in the 1990s, courses were organised for women researchers and students to motivate them to move upwards in the research hierarchy; short-term qualifying scholarships were introduced; and special campaigns were organised to recruit women students to scientific disciplines dominated by men.

In 2002 The Research Council of Norway published the report “Kvinner i forskning – fra kvotering til integrering” (*Women in Research – from quotas to integration*)

<http://www.forskningsraadet.no/CSSStorage/Vedlegg/likestillingsrapport.pdf>

The report recommends among other things that the effort in the coming years be focused on:

- Mainstreaming, i.e. to incorporate gender equality efforts into the research system. A specific proposal is to set up a committee and make it responsible for the effort. The committee is to have an annual budget of 5 million NOK.
- Better and more advanced statistics
- Including the question of gender distribution as a criterion in the universities' budget negotiations
- The universities setting targets for gender distribution as far down as departmental level; a minimum target being that all departments have tenured women researchers
- Continued earmarking of posts for the underrepresented sex
- Introducing short-term qualifying scholarships for women at all universities
- Establishing mentor systems

Finland:

In 2000, Finland had with 20% women professors the highest share of women professors in the EU. The Academy of Finland has in a special 2001-2003 action plan for researchers funded by the Academy committed itself to pursuing i.a. the following objectives:

- Members of the underrepresented sex should hold 40% of the research posts. If two candidates are equally qualified the candidate of the underrepresented sex is appointed.
- Investigating how to increase the number of women professors in natural sciences.
- All research projects should give an account of the gender distribution of the participating researchers
- Extending research projects in cases of maternity/paternity leave
- 20% pay supplement to researchers with children who study or work abroad
- The research councils may award “encouragement” grants for a period of 2-6 months. The purpose of these grants is to further the career development of young researchers and women following maternity leave.

Terms of reference – Think Tank on More Women in Research

Background

Today, half of the new university graduates are women. Approximately 40% of the PhD-students are women and indications are that there is no significant imbalance between male and female assistant professors and they do to the same extent go on to become associate professors. Ten per cent of the professors are women; this is partly due to their having completed their university educations at a time when there were fewer women in science than today. In private sector enterprises women comprise 21 per cent of the researchers, 44 per cent of the technicians and 47 per cent of the remaining research staff.

These are the hard facts about the research community of today.

The figures also show that for many vacant posts only men apply.

This seems to indicate that, from a socio-economic viewpoint, there is an unexploited research potential among women. Seeing that Denmark is to become one of the world's leading high-tech societies by 2010 and that we face extensive generational change in the research community we have every reason to consider how to get more competent and qualified women in Danish research.

Objective

The purpose of the Think Tank is to generate ideas and make recommendations on how universities, government research institutions and research-intensive private enterprises can make research posts more accessible to women; and to provide ideas and recommendations to the women who wish to pursue a career in research.

The Think Tank is to provide recommendations to the universities, government research institutions, enterprises and the women who opt for a career in research based on existing information. The recommendations should include proposals on how to improve women's access to research posts. The Think Tank may gather information on good practice from Danish and international research institutions as well as from research-intensive private enterprises.

The Think Tank is to focus on viable recommendations and strategies and take into account that different scientific disciplines e.g. the humanities and health science may require different instruments.

Themes

The Think Tank should base its work on the good advice on women in research that emanated from the conference "More Women in Research" that was held by the Minister for Gender Equality and the Minister for Science on 27th May 2004.

Among other things, the Think Tank should contemplate how to promote a balanced gender distribution at the universities, government research institutions and in private enterprises by means of recruitment, management by objectives, clear distribution of responsibility and management involvement, talent

management in relation to young researchers, personnel policy, and working environment.

Furthermore, the Think Tank should consider how to communicate the recommendations to the different target groups e.g. enterprises, universities, government research institutions, researchers, students etc.

Expertise

Between them the members of the Think Tank should possess a thorough knowledge of gender equality issues, universities, public sector research, research-intensive private enterprises and the research advisory system.

Organisation

The individual members of the Think Tank are charged with preparing the material. There will be no honorarium to the members of the Think Tank.

The Ministry of Science, Technology and Innovation acts as secretariat to the Think Tank and handles the practical aspects of convening meetings, schedules, writing and printing the report. The Department of Gender Equality contributes to the secretariat's work.

It is intended to hold 3-5 meetings. The venue will be the Ministry of Science.

Timeframe

At the beginning of 2005, the Think Tank will conclude its work by submitting a maximum of 20 pages with specific and forward-looking recommendations to the Minister for Gender Equality and the Minister for Science who will then jointly decide how to proceed.