

The EECS Faculty Diversity Initiative

Workgroup Spring 2020 – Appendix

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The current situation at EECS

Of the approx. 180 faculty members at EECS, 23 are women. Of the 15 Divisions within EECS, $\frac{1}{3}$ have no women faculty, and $\frac{1}{3}$ have only 1 woman faculty.

Despite awareness amongst the leadership, and an outspoken will to increase diversity, this situation has not significantly changed during the past two decades.

How Bias disfavors women

We all have conscious and unconscious biases. These form a major roadblock against reaching diversity. This section provides a rapid introduction on this topic, provides examples, and includes specific recommendations.

“Many scholars argue that biases in grant review processes result in lower levels of funding for women compared to men (Pohlhaus et al. [2011](#); Shen [2013](#); Urry [2015](#); Guglielmi [2018](#); Mallapaty [2018](#)), although others have failed to find gender differences in this regard (Ceci & Williams [2011](#); Forscher et al. [2019](#)). However, even when differential funding rates between men and women are evident, the numerical difference does not mean that bias was at work. Alternatively, it is possible that there are gender differences in the quality of applications because women have less access to mentors, collaborators, and other resources in writing grant proposals (Ley & Hamilton [2008](#); Moss-Racusin et al. [2012](#); Knobloch-Westervick et al. [2013](#); Larivière et al. [2013](#); Shen [2013](#); Caplar et al. [2017](#)). The lack of clear evidence of discrimination is compounded by the fact that there are few interventions known to reduce gender bias (Galinsky et al. [2015](#); Breda & Hillion [2016](#); Tricco et al. [2017](#)). Furthermore, there is an inherent risk that trying an intervention can elicit backlash from non-beneficiaries (Goldin & Rouse [2000](#)). As a result, many funding organizations have not made substantive changes to reduce gender bias. ... An analysis of nearly 24,000 applications showed that women performed as well as men in the science-only review process but worse than men in the scientist review process (Witteman et al. [2019](#)). ... The findings are consistent with the theoretical argument that bias is more likely to occur when evaluating individuals (the scientist) rather than focusing on their work (the science) (Heilman & Caleo [2015](#)). ... Findings show that (1) there is evidence of statistical gender bias in favor of men, (2) the gender bias was reduced following dual-anonymization, and (3) male reviewers rated female PIs significantly worse than they rated male PIs before but not after the adoption of dual-anonymization.”

[Dual-anonymization Yields Promising Results for Reducing Gender Bias: A Naturalistic Field Experiment of Applications for Hubble Space Telescope Time - <https://doi.org/10.1088/1538-3873/ab6ce0>]

See also: [Wenneras, C., & Wold, A. (2010). Nepotism and sexism in peer-review. In *Women, science, and technology* (pp. 64-70). Routledge.]

Sources of bias

Known bias sources during recruitment include:

- Women are more often questioned about their independence. When women collaborate, it is more often judged as a sign of their weakness. **Suggestion:** define neutral criteria for what is meant with “(in)dependence”.
- When questioning competencies, the bar is put higher for women. **Suggestion:** define neutral criteria for what is meant with “competence”.
- “Informal information” (see below) tends to bias more negatively against women candidates. **Suggestion:** install a diversity officer that proactively interferes and stops any communication of informal information during discussions.
- Reference letters will describe the same qualities in men and women subtly differently.
- First impressions, often based on irrelevant information (clothing style, language, etc), make a strong bias during the rest of the judgement.
- People are positively biased towards persons with a similar background (nationality, school, education, language, religion, etc). **Suggestion:** have recruiters report similarities in background.

- Women suffer from the “motherhood penalty”, see section “work-life balance” below.
- “A woman is in the first place seen as a woman. In addition, she can be an engineer.”

[Ahlqvist V, Andersson J, Hahn Berg C, Kolm CL, Söderqvist L & Tumpene J (2013).

Observations on gender equality in a selection of the Swedish Research Council's evaluation panels. Stockholm: Swedish Research Council. <https://erc.europa.eu/thematic-working-groups/working-group-gender-issues>]

“Informal information”

A critical aspect is that individual reviewers must not share information that should not be included in the assessment ("informal information"). Informal information includes information on an applicant's private relationships, rumours about a workplace, or speculations about an application. Informal information or unconfirmed information about the applicant, or the research group, can affect the assessment. Informal information tends to bias more negatively against minority candidates.

Suggestion: Stipulate what kind of information must not be conveyed during or in connection with recruitment meetings. This should be included in the instructions to the members and taking up orally at the first group meeting of every recruitment. I.e., we can copy regulations from VR in this respect.

Use of language

Engineering departments are at risk of using biased language that influences one's decision to apply or not to apply to an advertised position. Examples of masculine-biased words include *force, successful, strong, individual, duties, objective, independent, ambition, impact, track record, challenge*. Replacing these words through neutral alternatives can help create more inclusive listings that will appear inviting for a more diverse demographic of applicants. Words biased towards women include: *community, cooperation*; and those towards young persons include: *dynamic, young*. These can be spotted using analyzers such as Ongig (<https://www.ongig.com/text-analyzer#/>) and Textio (<https://textio.com/>) when writing advertisements.

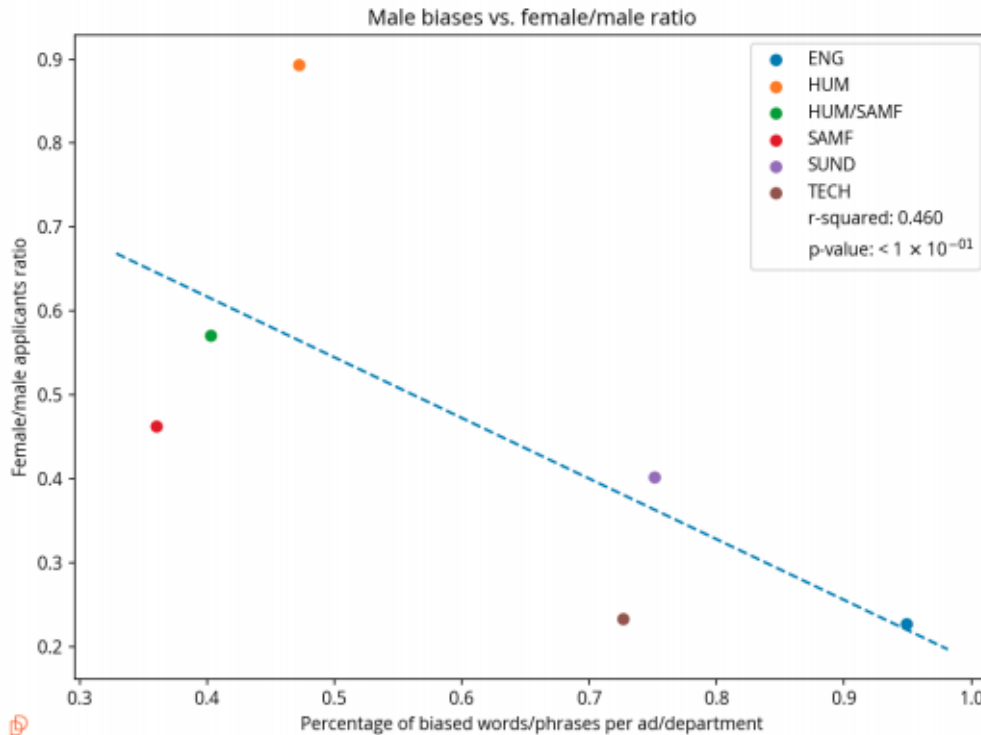


Figure 8. Correlation between the ratio of female applicants and the percentage of masculine language per department

[https://www.inside.aau.dk/digitalAssets/695/695898_aau_analysis_report_dd_20190328--002-.pdf].

Anecdotes from the Swedish Growth Agency (Tillväxtverket)

The Swedish Growth Agency reports on similarities with the Swedish Research Council's gender equality observations. Assessors have more or less unconscious notions that women who run businesses are cautious, do not dare to make large investments, only need small funds and are active in the wrong industries that are non-financing and lacking growth potential. Men are believed to dare to invest, need large funds and are active in "right" industries that are financially viable and have growth potential. In fact, there are no differences in size, growth, level of performance, financial risk or ability to pay. (ref: "Under ytan Hur går snacket och vem får pengarna?" Tillväxtverket 2015 sid 1-3.)

Anecdotes from the Swedish Research Council (Vetenskapsrådet)

Men were described as "One of the top scientists, truly amazing", "One champion", "Excellent", "This guy is a genius". Men were also considered to be good in strategically choosing whom to collaborate with. Male applicants were commented on more often on the basis that they led a strong group, had built a strong group or on the otherwise-demonstrated good ability for leadership.

For women, such arguments were used more sparingly. Instead, female applicants were often mentioned as members of a group; it was talked about "they" instead of "she". It also

seemed more difficult to convince the panel of women abilities: "Is she really a world leader", "I'm not sure she can do the job". There were also positive reviews, but they were not as strong as those for men, "She has her own line despite all the collaborations", "She strives to be visible internationally", " This candidate does not seem to be excellent, but good", " She seems to be a competent person", "She is a well-known applicant".

Women's applications were more often characterized as pleasant and ambitious, or, even more, as over-ambitious. At one point, the word ambitious was used about an application from a man, with subsequent laughter: "the word is ambitious" laughed the panel. "Ambitious" had been mentioned several times before, for applications from women, without someone laughing.

In a panel, there was a tendency to describe women's applications positive, but relatively lame, they were nice, ambitious and well-written. For men's applications, stronger terms were used: they were either exciting, innovative, or the opposite: "Under all criticism", "Worst application I ever have read ", " Terribly bad application ", " Disrespectful, outrageous bad ". [VR Rapporten "En jämställd process – en kvalitativ undersökning av bedömningen av forskningsbidragsansökningar 2019" <https://www.vr.se/analys/rapporter/vara-rapporter/2020-04-29-en-jamstalld-process.html>]

Findings from Brigham Young University

What happens when women are outnumbered? After years spent analyzing lab and real-life settings to determine what it takes for a woman to really be heard—to truly be perceived as competent and influential—these professors have found the same truth: for women, [having a seat at the table does not mean having a voice](#).

"Women are systematically seen as less authoritative," says Preece. "And their influence is systematically lower. And they're speaking less. And when they're speaking up, they're not being listened to as much, and they are being interrupted more."

However inadvertent, the gender dynamics shutting women down are real, says Preece. The environment, she emphasizes, doesn't have to be hostile. "Multiple things can be true at once. You can simultaneously like the people you're working with and still let biases creep in."

<https://magazine.byu.edu/article/when-women-dont-speak/>

Thoughts and Testimonies of EECS employees

I believe my CV is strong enough to be able to get a faculty position in other universities and equivalent or higher than current associate professor faculties at KTH. There was no relevant opening position since 2014 that I could even try my chance at KTH and build up my group. Obviously, I really like KTH and that is why I am still with KTH but I consider leaving it when no promotion happens over time, with a limited salary level as a researcher, but high duties and teaching activities. There is no surprise that several female colleagues left KTH to gain faculty positions at other universities in recent years.

I think EECS can facilitate a way to promote its current potential female candidates as future faculty members. For example, I heard researchers with a long employment contract would be promoted to faculty positions. I believe a similar approach can be applied to female researchers with sufficient competence that can be evaluated by external experts.

Finally, I would like to say that I have heard a lot about gender balance at KTH (almost in every faculty meeting) but almost seen nothing that at least could be of help in my career. I believe that if no serious move happens in achieving gender balance, such discussions might be even more destructive for current female researchers and faculties as it implies that they have been given a bonus to gain the same position while it is not.

I think it's a really important but also difficult task to increase the number of female faculty. As a member of the underrepresented gender, I feel pretty strongly about this. Hope you don't mind me sharing some of my thoughts on it! The message became a bit longer than I originally thought so I've tried to summarize here first.

tl:dr

- *Instead of prioritizing women in recruitment, it would be better to make more women stay in academia and increase the number of female applicants "organically".*
- *The main reason for young female researchers leaving academia is the maternal wall: having kids clashes with the crucial point of building your career.*
- *There needs to be a change in the attitudes within the scientific community and universities as well as in the mindsets of aspiring female researchers towards combining career and family.*
- *Effort should be put into workshops, seminars, mentoring programs etc. to make the change.*
- *Open discussion needed: It should not be a taboo for women to want both, a career in academia and a family.*

Let me know if you have any questions! I'm happy (although also a bit terrified) to discuss this topic!

Long version:

I'm quite sure you're aware of the TU Eindhoven initiative from last year to prioritize female applicants in faculty recruitment (<https://www.nature.com/articles/d41586-019-01998-7>). I think that is a good try and I'm interested in seeing how it actually turns out. However, when it comes to getting more female faculty members, my opinion is that the key point is to actually get women to stay in academia in the first place.

There was a study by Statistics Finland last year that almost 60 % of all university degrees in Finland were completed by women in 2018 (https://www.stat.fi/til/yop/2018/yop_2018_2019-05-09_tie_001_en.html). Moreover, 51% of all doctorate degrees were obtained by women.

What is interesting here, is that this is just not a one-year thing but it's been like this for the doctorate degrees since the mid-2000s. Where are all these women? One might think that with all these female PhDs there should be more female faculty members. The numbers here are of course somewhat skewed from EECS perspective as they take into account all

the possible doctorates and the numbers in STEM fields only might be very different, to begin with.

The main reason for women leaving academia and which I agree with is that we are often forced to choose between family and career. I was just recently reading an interesting opinion on the topic (<https://medium.com/@kimorenz/is-it-really-just-sexism-an-alternative-argument-for-why-women-leave-stem-cccdf066d8b1>) and came across the term "maternal wall". I think it is quite devastating that even before being at the point to hit the glass ceiling, there is another obstacle that will stop women from aiming high with their careers - only because of biology, which we obviously can't affect.

During when I was doing my PhD, there were several male PhD students who had one or more kids. They took maybe two weeks off from work when the baby was born and returned back to a normal schedule like nothing. The majority in our group at that time were women but only one female postdoc had a child during my time there. She was away for approximately half a year and returned to work first as half-time for another six months. I happen to know that her husband is also in research and to my knowledge was working full time. It is, of course, a private decision within the family how to handle these things but I think this is kind of a good example of how starting a family affects academic women differently from men.

The window for having kids for women is relatively narrow. Unfortunately, it often coincides with the timing for building one's career. This is, of course, the same issue wherever one works but I would say that in academia the pressure is extremely high with the constant need to keep publishing, mobility requirements and competition in getting funding. Many women might not be so eager to move between countries away from their support networks to work on temporary contracts and waste their eggs, so to say. Moreover, the terms for these temporary contracts might be unfavourable to women. For example, since I don't pay taxes for my current scholarship, I am regarded as being unemployed when it comes to sick compensation as well as maternity compensation (sjukpenning, föräldrapenning). In this situation, it would be financially stupid for me to get pregnant. If I was a man, on the other hand, I wouldn't need to think this as having kids wouldn't require me to stay out of work for months for physiological reasons. I personally chose to take the scholarship but many women might prioritize differently. Finally, this is, of course, specific to countries where such a thing as paid maternity and sick leaves exists but as born and raised Nordic citizen, I find this somewhat unfair.

Looking past the issue with the scholarships I just mentioned, there are a lot of support services for families in Sweden from the possibility to divide parental leaves and public childcare. What I think is missing are concrete academic career-building services, seminars and workshops including positive examples of good work-life balances of academic women that would help young female researchers to obtain the courage and affirmation that it is ok for them to have both, family and career. These should be offered (if not mandatory) already on master's and PhD level but also to postdocs. I don't know if such things already exist at KTH but as a non-employee, I am for example outside all such at the moment. It would also be important to educate PIs and university admins to change general attitudes. Finally, I think there needs to be a more open and positive discussion about the topic: it is so much of a taboo at the moment that writing this message makes me feel I am possibly damaging my career by even implying I might want a family at some point.

There are all sorts of networks where women can share thoughts and discuss topics like this (e.g. the KI-originated Women in Science network in Stockholm) but sometimes these feel like "knitting circles" unable to actually change anything. I think it would be extremely important and more effective for universities and the scientific community to show more strongly that it's ok for women too to want both career and family within academia. If the atmosphere and general attitudes were more supporting and allowing, that would definitely encourage female researchers to stay and also eventually apply for faculty positions. This won't by no means be fast but it is definitely a more sustainable solution than for example targeted recruiting.

Why not consider this a diversity initiative [instead of only gender]? KTH faculty consists of almost only people from central/north Europe. I think the distribution is even more skewed there than when considering gender.

KTH central seems to be focused on gender only, which is to be a bit behind the times... can we take this a step ahead?

I was applying to various group leader fellowships and faculty positions right after my PhD degree; I was getting comments like "too junior" and "not mature". This is where we are losing, e.g., to the US — they lock all great candidates (and especially women and minorities) right after the PhD on tenure track positions, they take the risk and try to give space to the potential. Here, a postdoc is a huge limbo, there is usually not much hope this can lead to something long term. What I want to say is that we

1) really need recruit based on the potential weighted by the academic age, not based on the absolute accomplishments; and we possibly need to take more risks when hiring, we need to hire younger people before they just get hired elsewhere;

2) we need initiatives that start way before the recruiting. What can we do for freshly graduated minorities to keep them on track and support them in growth? Can we have some exchange program for PhD students from minorities from other countries so that they think of applying to KTH when they graduate?;

3) we need a way to keep good minorities if they want to be kept.

I like a money incentive. It speaks to everyone who wants to build a strong research group/faculty and makes it more attractive to work just that little bit harder to get a female candidate to say yes.

Once we get some diversity at the faculty level, we can work on mentoring and other strategies to support young minority faculty members and make it attractive for them to stay in academia.

There is a need for diversity also in research topics. If we are building the future society through the technologies we put out there, then all sorts of perspectives (male, female, diverse, ...) are needed to make sure we bring forth good ones for all. Some topics attract more female candidates. Getting recognition and encouragement even when you pick an unusual research topic is important.

Chalmers impressed on me when it came to their position on gender equality. What they said was that it is not enough to have more female faculty if they are not allowed to be at the decision table. This is where we lack as well? At all levels, women need to be given power.

I think in general KTH must strive for more diversity within the faculty and make sure we have faculty with experience for other universities and / or industry. From my own experience, the recruitment process must be faster, preferably just some months to truly get top minority candidates. Most females in academic careers have a spouse that is equally interested as she is to get a good position in industry or academia. When I and my husband returned to Sweden after some years in the US we negotiated with two universities as a couple. One of the universities, KTH luckily, understood it and discussed it with both of us together. The other university did not get the idea of making a good two-person deal.

Personal communications with international academic organisations

From UBC

- In their last recruitment, they were federally required to only hire from 4 categories: women, people with disabilities, indigenous, minorities. People had to self-identify belonging to one of these categories via a checkbox... They got great candidates!
- Recruitment interviews are not “life” via Skype. Instead, candidates get 5 questions which they answer by video recording themselves. So everyone gets the same opportunity to do an optimal job! Personal thought: should we use Furhat for our recruitments?
- one can set hard or soft targets on minimum % of women candidates 1) amongst all applicants that fulfil official requirements; 2) amongst all applicants being asked to interview. If these targets are not fulfilled, the recruitment is cancelled.
- Be careful in phrasing your requirements for the position. Women typically only search if they tick ALL boxes; men will chance even if they miss several of the requirements...
- Have leadership that really drives these questions!

From USC

Glad to hear about this effort. I'll give a very quick summary of what we do at USC in engineering and my observations as a past dept chair.

Our shortlists must be submitted to the Dean for approval. He insists that there is diversity (gender or underrepresented minority (Hispanic, African American, American Indian, Pacific Islander)). If there is none, he may not approve the list for visits.

Prior to this, each dept picks a search committee. The search committee chair and dept chair typically are asked to attend a meeting with our Vice Dean of Faculty Affairs which addresses rules and guidelines for searches. A key point addressed is promoting diversity. This information is processed in different ways. You can adjust the language of the search advertisement, proactively reach out to candidates and faculty mentors, place advertisements with societies that focus on diverse groups, etc. But at the end of the day, the search committee is limited to the applicant pool which is limited to who happens to be looking for a job. To be successful, I think one needs to get lots of diverse applicants to apply.

There are some schools that host events for diverse applicants that are typically funded internally or through federal grants. I'm not sure how effective these are.

From EPFL

What we do typically is that if we have an open position, we MUST shortlist at least 1 female, and ideally we can then convince the direction to hire both, the female and a male. It sometimes works.

Also, each committee must have female representatives, although this tends to overburden our female colleagues' agenda a lot.

From USCD

Not sure if this can be applicable to Sweden, but I asked a colleague from USCD who helped develop a non-biased post-interview questionnaire to collect impressions of their candidates' performance. I am attaching the questions and pasting below what she wrote about the process:

"See attached. Unfortunately, bias still creeps in, but this does help to keep people on track and focus their responses. I'd suggest changing the "overall rating" question phrasing at the end as it's not really that great. (I took it from another internal rubric but it is kind of weird). There might be better phrasing. Or maybe just label the endpoints "definitely make an offer" "definitely don't make an offer" and let people choose something on the scale.

After we complete these, at faculty conclaves to discuss candidates, we start with allowing people to talk in the following order:

First: those who have completed this form AND then 1) read the file + seen the talk + met with the candidate 1-1, then 2) read the file + seen the talk, then 3) just saw the talk, etc.

Then: Anyone who didn't complete the form can comment, but should say if they saw the talk/read the file/ etc.

All form responses are readable by the department at the conclave, and the names of commenters are attached. No anonymous comments are allowed. We did this on purpose. I wasn't sure it was a good idea at first but I think it is now. (Especially because it lets you identify "inter-rater reliability", :) - e.g., people who are very negative in general. "

From UNSW

Female Academic Staff:

There are many studies that indicate that at PhD and Postdoc levels, there is no significant disparity between the number of females and males; however, there is a sharp decrease in female academics as you start looking at assistant professorship and higher levels in academia. So we considered the following:

- A set target to meet by 2025: the faculty of Science has set a target that 40% of our Level D (Associate Professor) and Level E (Professor) should be female academics by 2025. To enable this, we have set up a committee to help with promotion applications and provide mentorship overcoming impostor syndrome that research has shown females mostly suffer from. After 3 years, we have now 27% of female academics at Level D and E.
- Job recruitment: we drafted guidelines to guide job advertisement where EDI principles are clearly outlined. Some jobs are now specific for female only recruits. We also recommend that at least one of the shortlisted candidate should be a female, otherwise the school needs to justify why no female has been shortlisted. We also mandated that on each interview panel, there should be a female member to promote women in science. These actions aid in increasing the number of female academics.
- Two body problem: we are aware that offering a female the job will entail finding an opportunity for the partner, especially if we have attracted some international candidates. As such, we offer to find 2-year employment for the partner.
- Child care and carer leave: we set up small scholarships that will cover these costs to encourage women to go for conferences or international meetings.

Female Students:

As I mentioned before, at a postgraduate level, we tend to have a fair number of female students; however, in STEM, we have huge disparity at an undergraduate level. We took the following actions:

- Outreach activities to high school: here we focus on targeting Girls High School. In Australia, coed schools are not very common. We also do a lot of marketing and outreach activities. These include open day, workshops, talks. We try to target the girls in order to raise awareness that science is for all. In these activities, we also aim

to have a female academic staff presenting in order to promote the leadership of women.

- PhD students: my university has a special prestigious scheme to recruit high performing students from top universities for the PhD program. This is a competitive process where each supervisor nominates potential candidates. If a supervisor wants to nominate two students or more, at least one candidate has to be a female. Also, the selection process is weighted more towards female candidates.
- At a school level: we do workshops hosting female academics to share their lived-in experiences in academia and how to strike a work-life balance. We also ensure that each committee has female representatives.

The Swedish Research Council (VR)

(<https://www.vr.se/aktuellt/nyheter/nyhetsarkiv/2020-04-29-har-vetenskapsradet-enjamstalld-bedomningsprocess.html>)

Two interesting changes compared to previous gender equality observations have also been noted. Previously, panel members sometimes brought up informal information about the applicants during the assessment of grant applications. These could be on subjects such as an applicant's private relationships, rumours about a workplace, or speculations about an application. The gender equality observers now noted that all such discussions were always interrupted by the Swedish Research Council personnel and/or the chair of the review panel. The issue of whether or not the researcher was independent had previously been raised in discussions, particularly when women were applying. Now, no such differences between genders were noted.

Recommendations for continued work by the Swedish Research Council:

- *Make room for reflection on central concepts Let preparatory meetings and review panel meetings include the opportunity for review panel members to reflect jointly on the concepts of gender equality, objectivity and bias. For Swedish Research Council personnel, similar opportunities should continue to be arranged within the framework for in-house training.*
- *Inform about the Swedish Research Council's gender equality goal at an early stage*
- *It is important the information about the Swedish Research Council's gender equality goal reaches all panel members before they start reading and assessing the applications. The information is today included in the written instructions to the panel members (in the "review handbook"), but if the opportunity exists, it would be good if it could also be provided in other ways.*
- *Increase vigilance of gender equality in the assessment*
- *The panel chair and Swedish Research Council personnel should be encouraged to increase vigilance during review panel meetings of aspects relating to the goal of gender-equal approval rates.*
- *Continue to highlight the issue of assessment of competence and qualifications The Swedish Research Council should continue to clarify how researcher competence shall be assessed, and also investigate whether the indicators used by many panel members to assess competence impact on the gender-equal allocation of research grants.*

Documents from other institutes

These are gathered in the online folder: <https://kth.app.box.com/folder/111699578116>.

Weblink to other organisation guidelines

<https://www.universiteitleiden.nl/en/dossiers/diversity/our-vision-of-diversity>

<https://www.nwo.nl/en/common/policies/diversity-and-inclusion/index>

<https://www.chairs-chaire.gc.ca/program-programme/equity-equite/index-eng.aspx>

<https://www.tue.nl/en/working-at-tue/scientific-staff/irene-curie-fellowship/>
<https://www.chalmers.se/en/about-chalmers/chalmers-for-a-sustainable-future/initiatives-for-gender-equality/gender-initiative-for-excellence/Pages/default.aspx>

The following report contains a thorough analysis of the stereotypic language and content in your job ads and an analysis of some communication content on your website:

https://www.inside.aau.dk/digitalAssets/695/695898_aau_analysis_report_dd_20190328--002-.pdf