Eesti Teadusagentuur

Gender equality in Estonian research – current situation and ways of improving

RITA 4: RDI Policy Monitoring

Final report

University of Tartu

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RITA is a programme supported by the European Regional Development Fund aimed at increasing the role of the state in the strategic guidance of research and the capabilities of R&D institutions in conducting research of major importance for society. Through this programme, the Estonian Research Council provides funding to applied research with socio-economic objectives to meet the needs of the Estonian State.
Activity 4: research and development and innovation (RDI) policy monitoring. The objective of RITA Activity 4 is to monitor the implementation of the RDI policy and make recommendations for the formulation of new policies. The analyses and studies are conducted by the Tallinn University, University of Tartu, Tallinn University of Technology, Estonian Academy of Sciences, and the Estonian Research Council.

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RITA

TARTU ÜLIKOOL

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Abbreviations

EKA	Estonian Academy of Arts
EKI	Institute of the Estonian Language
ELM	Estonian Literary Museum
EAMT	Estonian Academy of Music and Theatre
EMÜ	Estonian University of Life Sciences
ENM	Estonian National Museum
ETAg	Estonian Research Council
ETIS	Estonian Research Information System
ETK UTK	Under and Tuglas Literature Centre of the Estonian Academy of Sciences
ECRI	Estonian Crop Research Institute
FTE	Full-time equivalent
NICPB	National Institute of Chemical Physics and Biophysics
R&D	Research and development institution
NIHD	National Institute for Health Development
TalTech	Tallinn University of Technology
RDC	Research, development and creative activities
TLU	Tallinn University
UT	University of Tartu

Introduction

Education and research statistics and previous research conducted on the subject in Estonia indicate the existence of the so-called 'leaky pipeline' problem in research (see, for example, Soomere et al., 2018). There are more women than men among higher education graduates: as of 2019, women represented 63.6% of all higher education graduates (including slightly more women among PhD graduates than men)[1]. Nevertheless, the number of women employed in academic positions (professorships) is rather modest, reaching only 26% in 2019[2]. Moreover, there also exists a wage gap between genders in academic positions[3].

Gender inequalities may be caused by structural and organisational factors (e.g. regulations, formal criteria), social norms (e.g. social pressure, prejudices, expectations, stereotypes) and individual decisions (e.g. priorities, objectives). Given the fact that the various factors have the potential to reinforce each other, it is difficult to study gender inequality.

Previous research on the topic (see, for example, Aavik, 2017) carried out in the largest Estonian higher education institutions suggests that, when reflecting on the causes of gender inequality, academics do not perceive structural obstacles, however, they do express neoliberal views that do not support tackling structural inequality by means of gender equality mechanisms. Statistics show that the higher share of women among higher-education graduates is not reflected in their employment in academia, indicating that there may be various obstructions in the career paths of men and women in research. In such cases, there may be an invisible barrier – the so-called glass ceiling – that prevents a given demographic from being promoted to top jobs due to organisational bias, meaning the management of the organisation looks out for its own best interests and either directly or indirectly shapes the career path of others through resource management, including the environment of opportunities in which members of academic staff make their choices. For instance, choices related to the private lives of academic staff (e.g. parenting, caring responsibilities, other family barriers) may lead to a (temporary) career break, which, according to previous studies, is considered a factor that affects the career path of researchers rather negatively. The idea of a career break as a career obstacle is based on the premise that academic careers are linear and without interruptions. **It is important to understand the extent to which career models and other career-affecting factors obstruct professional development and examine whether and how the system could be improved to support people in such a way as to ensure both their professional and personal development.** We must also take into account societal impacts (incl. historical baggage), as it is the prevailing perceptions in society that not only shape and influence career development but also feed into gender differences in the choice of field of study as well as gender segregation across fields of study, including gender-based educational choices. Moreover, the impact of gender on people's opportunities may also be influenced by other factors beyond their control, such as age and origin.

It is important to ensure equal opportunities for all because, for the development of life, including science, in Estonia, it is crucial that everyone can participate in and contribute to society to the best of their capacities. We cannot achieve scientific diversity and serve the interests of society when various social groups are unfairly excluded from social activities. Considering the unequal gender distribution in Estonian research, as evidenced by statistics, as well as policy priorities in the field of equality and the benefits of gender diversity (more sophisticated decisions by decision-making bodies, broader range of research fields), it is crucial to study the reasons behind the career choices of people in

[1] Statistics Estonia. Available at: http://andmebaas.stat.ee/Index.aspx?lang=et&DataSetCode=HT296.
[2] Universities Estonia. Available at: http://statistika.ern.ee/tootajad/.
[3] Estonian Research Council. Available at: https://www.etag.ee/tegevused/uuringud-ja-statistika/statistika/sooloime/.

academia and to identify ways to improve the situation on the basis of the information obtained. In order to successfully promote gender equality in science and research, it is necessary to describe the current situation of equality in Estonian research, identifying potential problems together with their causes and impact on research results.

The study will determine the current state of gender equality in the research landscape of Estonia and the factors affecting the choice of field of study and academic career as well as career development. The study is based on both quantitative and qualitative analysis, providing an overview of the proportions of men and women in academic fields (incl. by position), the research output of male and female members of academic staff and, finally, the overall salary situation. Interviews will be conducted to investigate which factors are considered important by both junior and senior members of academic staff in the development of their academic career. This information allows us to understand the obstacles that may occur in academic career paths and identify their nature (whether they are structural or social, etc.). In addition, the information collected through interviews can be used to describe how participants interpret the issue of gender equality in the world of research. Based on the information gathered, in particular the career obstacles identified, recommendations can be made with regard to activities and indicators promoting gender equality in Estonian research.

The study shows that although the share of men and women among the academic staff of public universities and R&D institutions is broadly equal, there are significant differences in the breakdown of positions and research fields by gender: female members of academic staff are concentrated in the positions of assistants and teachers, while male members of staff are more often employed in senior academic positions. Whereas the modest proportion of women in high-level academic positions is explained by the so-called lifecycle of scientific careers (for previous research on this topic, see, for example, Soomere et al., 2018; Kindsiko, Vadi, Täks, Loite and Kurri, 2017), the impact of career breaks in a research system based on the idea of a linear career path (in which structural and social attitudes clash), as well as the impact of gender roles, stereotypes and attitudes, then the gender segregation of labour is often attributed to gendered fields of study and the patterns of gendered behaviour already established and encouraged at the level of general education.

In addition, the study indicates that gender inequality is generally not perceived as a problem in the landscape of research in Estonia, instead it is associated with the strict evaluation criteria and competence levels required, which ensures “equal opportunities for all”. The participants in this study considered equal opportunities to be equivalent to (gender) equality. This is one of the reasons why a large majority of participants were not positive about the implementation of gender-sensitive measures. Participants found that the implementation of such measures would not be essential under the conditions of equal opportunities (which are considered a defining characteristic of Estonian research and research institutions), furthermore, they feared that the introduction of the aspect of gender would belittle female academic staff and their actual abilities and skills and would also damage the overall competence of science and research, despite the fact that in reality, gender equality measures do not mean making compromises on the competence of academic staff. Nevertheless, this does not necessarily mean that everyone is guaranteed equal opportunities – differences in professional and private decisions may result in inequality in academic career development due to an inflexible choice environment.

The fact that gender equality has not previously been addressed in the world of research is evidenced by the lack of coverage of this issue in institutional documents. Institutions have started to address this issue only recently, primarily to fulfil the requirements set out by the financiers of R&D projects (e.g. Horizon Europe). As a result of the above, gender equality may only be included in institutional documentation due to imposed requirements, however, it may not be reflected in other activities of the institution. Therefore, it is not surprising that the awareness of academic staff regarding gender

equality and possible solutions and procedures in cases of discrimination based on sex is still very low. It is possible that, due to a lack of awareness, cases of discrimination based on sex are not reported because people do not recognise such situations or they are afraid of consequences (including ridicule and humiliation).

1. Methodology

The main objective of the study was to find out the current state of gender equality in Estonian research, provide recommendations on how to improve gender equality – focusing on overcoming the obstacles or reducing their impact – and to develop indicators that could be used to evaluate the state of gender equality in the research landscape of Estonia.

In order to realise this objective, we sought to answer the following research questions:

1. What is the proportion of men and women in academic positions, fields of research and decision-making bodies in the six public universities and R&D institutions in Estonia?
2. Which factors cause gender inequality in the research landscape of Estonia?
3. What is the process of academic staff for choosing a field of study? How is gender segregation explained in different fields?
4. Which factors influence the choice and development of an academic career (including parenting, caring responsibilities, career breaks)?
5. What challenges are linked to international mobility, postdoctoral fellowships, and gaining work experience abroad, how can these challenges affect the careers of both male and female researchers, and do these challenges also influence gender equality, and if so, how?
    5.1. What are the reasons for pursuing / not pursuing a postdoctoral fellowship?
6. Do the foreign researchers working here influence the gender equality situation, and if so, how?

In order to find answers to the posed research questions, data were collected and analysed using qualitative and quantitative methods.

1.1. Collection and analysis of quantitative data

The primary data source used in quantitative analysis was the Estonian Research Information System (ETIS). We requested information from ETIS about the academic staff employed in public universities and research and development institutions (hereinafter 'other R&D institutions') from 2010 to 2020. The sample thus included academic members of staff from the following institutions:

- University of Tartu (UT),
- Tallinn University of Technology (TalTech),
- Tallinn University (TLU),
- Estonian University of Life Sciences (EMÜ)
- Estonian Academy of Arts (EKA),
- Estonian Academy of Music and Theatre (EAMT),
- Institute of the Estonian Language (EKI),
- Estonian Literary Museum (ELM),
- Estonian Crop Research Institute (ECRI),
- National Institute for Health Development (NIHD),
- National Institute of Chemical Physics and Biophysics (NICPB),
- Under and Tuglas Literature Centre of the Estonian Academy of Sciences (ETK UTK)
- Estonian National Museum (ENM).

As part of the data request, we requested the following data:

- employment (position, workload, institution);
- publications;
- participation in projects;
- supervision of doctoral theses;
- creative work;
- main fields of research;
- research awards and honours;
- administrative work and activities in research organisations.

The human resources (HR) departments of institutions served as a second source of data, the following data were requested:

- employment (position, workload, institution);
- mobility data (information about secondment abroad, including the number of secondments per year and their duration);
- number of minor children;
- time spent on parental leave.

Obtaining personnel data proved to be more difficult than expected, as it became clear that most institutions do not store the requested data in unified databases (for instance, HR management software was introduced over the last decade, as a result of which data are readily accessible only in part). In addition, institutions do not store certain data separately (e.g. number of children). As a consequence, in some cases, data are provided in part (e.g. data are not available for each year requested) as some larger institutions were not able to manually enter all the data due to the large amount of records. However, for other R&D institutions with fewer academic staff than universities, the main problem with submitting data was of an ethical nature and thus several institutions refused to compile the data: since the number of employees in these institutions is very small, it would be possible to identify the employees even if non-personal data were grouped on the basis of certain characteristics (e.g. position or gender). Therefore, due to such an ethical issue, these institutions considered it impossible to share the data that employees submitted to the institutions upon employment with third parties. The third factor that prevented some institutions from providing data was lack of time and fluctuations in staff responsible for data compilation (e.g. change in management).

Data were received from the human resources departments of the following institutions:

- University of Tartu (period 2010–2020);
- Tallinn University of Technology (period 2015–2020);
- Tallinn University (period 2010–2020);
- Estonian University of Life Sciences (period 2015–2019)
- Estonian Academy of Arts (period 2015–2019);
- Under and Tuglas Literature Centre of the Estonian Academy of Sciences (period 2010–2020).

In addition to data obtained from ETIS and HR departments, data from Universities Estonia were also used to analyse average basic wages and average gross wages, as information on the remuneration of academic staff in Estonian public higher education institutions[4] is collected by them. Data were available for the period 2013–2019.

[4] The database of Universities Estonia only includes information on the wages of the staff of public higher education institutions, not all R&D institutions.

Basic principles of quantitative analysis

In the course of quantitative analysis, results were broken down by gender, by gender and institution, and by gender and position. In the main text of the report, the results will be highlighted when the differences between groups (usually grouped on the basis of gender) are statistically important and when the number of observations in the group exceeds five. The methods of descriptive statistics were used and various pivot tables were created. If the result was not significantly different statistically, it will be indicated separately in the report.

Given the fact that R&D institutions are quite small in terms of their number of employees, then, for the purposes of analysis, an aggregate variable was created for these institutions, expressing the total academic staff of all R&D institutions. This was necessary as otherwise the groups broken down, for example, by position or institution, would have been too small to draw conclusions. Therefore, the results of R&D institutions have been summarised in the main part of the report. However, we will also provide the results of individual R&D institutions to the client in the Annex to this report.

In the period covered by this study, academic staff included individuals working at the following career levels:

- professor, including extraordinary professor,
- associate professor, including extraordinary associate professor,
- lecturer, including extraordinary lecturer,
- assistant, including senior assistant and junior assistant[5],
- teacher, including senior teacher[6],
- lead researcher, including extraordinary lead researcher,
- senior researcher, including extraordinary senior researcher,
- researcher, including extraordinary researcher,
- junior researcher.

Analysis of employment relationships

Data from ETIS were used to analyse employment relationships as several public R&D institutions did not wish to share human resources data. Thanks to the data from ETIS, it was possible to compile data on all the target institutions. The results of employment relationship analysis are presented in a summary infographic. An overview of employment relationships has been provided by person and through full-time equivalents. In this context, it is important to note that using full-time equivalents as a basis may understate the number of academic staff, as in a few cases the workload of an academic member of staff was not specified in ETIS, thus their data could not be included in this analysis. Employment relationships were analysed in total by men and women, by institution and gender, and by position and gender. In addition, employment relationships are also provided by institution, position and gender. In the annex to the report, we also give a short overview of employment relationships by age groups and workload.

Fields of research

Data on fields of research were obtained from ETIS (Estonian Research Information System fields of research). In the case of fields of research, the broadest categories were used:

- Biosciences and Environment;
- Culture and Society;

[5] Junior and senior assistants were classified as assistants because in separate categories there would not have been enough observations to draw conclusions. In the data submitted by the University of Tartu, assistants and teachers were aggregated. As a result, the data obtained from HR departments include one additional position: assistant, teacher.

[6] Senior teachers were classified as teachers because in a separate category there would have been too few observations.

- Health;
- Natural Sciences and Engineering.

In this context, it is important to note that not all academic members of staff have specified their main field of research in their CVs, as a result of which their data could not be included in this analysis[7].

Publications, projects and supervision of doctoral theses

Information on publications, projects and supervision was obtained from ETIS. Publication data were provided for the years 2014–2020. Considering the fact that data were extracted from the database by autumn 2020, many publications for 2020 had not yet been entered into ETIS by that time. In terms of publications, the following types of articles and other publications that universities take into account in academic career development (particularly 1.1., 1.2., 3.1.) and which constitute important outputs of research were included in the analysis:

- scholarly articles indexed by Web of Science Citation Index Expanded, Social Sciences Citation Index, Arts & Humanities Citation Index, Emerging Sources Citation Index and/or indexed by Scopus (excluding chapters in books) (1.1),
- peer-reviewed articles in other international research journals with an ISSN code and international editorial board, which are circulated internationally and open to international contributions (1.2),
- book/monograph (2.1),
- dissertations published in a series of dissertations (excluding manuscripts) (2.3),
- published research project report or study (2.5),
- articles/chapters in books published by the publishers listed in the Annex (including collections indexed by the Web of Science Book Citation Index, Web of Science Conference Proceedings Citation Index, Scopus) (3.1),
- articles/chapters in books published by the publishers not listed in Annex (3.2),
- specific research publications (dictionaries, lexicons, sets of maps, (field) guides, text-critical publications) (3.3),
- textbooks and other study materials (excluding university textbooks) (6.2).

In addition to these article types, we also created an aggregate variable that combines all articles published within the year (classifier items 1.1.–6.9.). In the evaluation of the performance of academic members of staff, problems may arise in connection to those engaged in creative professions. According to EKA and EAMT, the research output of artists is not usually in the form of a research article. Currently, they have the option to select the classifier item 6.7 (Other publications) in ETIS; however, according to the representative of EKA, this does not allow them to present their output very well. The representative of EKA also submitted that ETIS does not reflect the creative work of performers, composers, actors and directors in an effective way, but at the same time, no other national database for artists has been created.

The analysis of publications revealed that in terms of most classifiers, the differences between groups were not statistically significant – for this reason, these results were not separately discussed in this report, however, the calculations were forwarded to the client. In the main part of the report, an overall assessment of classifiers 1.1., 3.1. and all publications is provided.

In terms of project participation, projects funded under the following funding programmes were taken into account: Estonian Language Technology: Basic Technologies and Resources; Estonian Language Technology: Introduction of Language Technology in Solutions and Applications; Estonian Language

[7] For instance, in the case of employment relationships obtained from ETIS as of 2020, the field of research was not specified in 26% of the cases.

Technology: Introduction of Language Technology in Solutions and Applications; Institutional Research Funding; Mobilitas Pluss returning researcher grant; personal research funding; personal post-doctoral research funding; personal research funding: team grant; personal research funding: start-up grant; national programme: Estonian Language and Culture in the Digital Age; national programme: Estonian Language and Cultural Memory; National Programme for Estonian Language Technology; targeted funding.

The analysis showed that across projects there were no statistically significant differences between groups, therefore, these results will not be discussed separately in this report. Instead, an aggregate variable was created for project participation, taking into account participation in all projects.

In the supervision of doctoral theses, the entire period of doctoral studies of the student is taken into account.

In addition to publications, projects, and supervision of doctoral theses, data on creative work, activity in research organisations, administrative work, as well as research awards and honours, are also presented in the annex to the report. Regarding these three aspects, academic members of staff have filled in these subsections in ETIS at their own discretion or not at all, thus there are many missing values. In addition, the information that people choose to include in these sections in their CVs varies greatly: in some cases, all possible creative works, awards and administrative work are listed, in other cases, only the most prestigious awards and honours are provided. Therefore, it cannot be said that the sections which have not been filled in mean that the employee has not done any creative work, has no administrative obligations or has received no awards – there is insufficient information regarding these aspects and no conclusions can be drawn. As a result, these data are provided in annexes to the report instead of the main part of the report.

International mobility data

Data on mobility were obtained from human resources departments. In the analysis of mobility, the number of secondments and time spent on secondment in a year were taken into account. As data received from HR departments varied by period, information on secondment abroad is provided for the period of 2015–2019, for which data are available from all institutions that provided their data, thus allowing for comparison.

Parenting data

Data relating to parenting (number of minor children, time spent on parental leave) were obtained from HR departments. Analysis of this data is rather short and concise as members of academic staff are not obliged to provide information about their children to the employer. Therefore, only people who provided relevant data can be included in this analysis.

1.2. Collection and analysis of qualitative data

In order to gain a more comprehensive picture of the phenomenon in question, qualitative methods were used in addition to quantitative analysis. In the study, we refer to the scientific literature review, document analysis and the analysis of individual and focus group interviews with different target groups. The scientific literature review provided valuable input to answer the fourth research question, which gave an insight into good practices and sparked ideas on how to improve gender equality in Estonian research. Document analysis provided an overview of the legislation and documentation of R&D institutions and helped explain whether and how gender equality is taken into account in the formulation of staff policy and in the election of representative bodies, thus providing an answer to the fourth research question. Individual and focus group interviews with different target groups were used to map the career paths of teaching staff and researchers, including the issues and challenges

encountered and the participants' interpretations of their causes. Therefore, through the interviews, answers were sought for research questions 2–6.

Scientific literature selection and review

EBSCO Discovery and Google Scholar search engines were used to search for scientific literature. Various combinations of keywords were used to search for data (e.g. gender, academia, academe, academic, science, research, rank, productivity, careers, differences, disparity, equity, limitations, mobility, female, male). In addition, snowballing was used to find other relevant literature on the same topic on the basis of initially identified articles. In the selection of articles, preference was given to the most recent studies with larger samples. However, due to lack of relevant material, qualitative studies that were published earlier or had a smaller sample were not automatically excluded. As part of the literature review, we examined relevant literature on the topic and provided an overview of the main factors characterising the state of gender equality.

Document analysis

For document analysis, job descriptions and guidelines for academic staff were obtained from the websites of institutions involved in the study. Additionally, heads of institutions and representatives of HR departments also provided documents on gender equality and equal treatment. It became evident that in several institutions the documents governing these issues were only implemented in 2020 to meet accreditation requirements, meaning that, until then, the issues of gender equality and equal treatment were mostly governed by other rules (e.g. study regulations, complaint procedures). As a result, it is not possible to assess within the framework of this study the extent to which the content of the updated documents is communicated to staff and students and how they receive (and use) this information, as of the time of completion of this study, the updated documents have not yet been formally implemented in the institutions or have been in force for a short period of time. Qualitative content analysis was used to analyse the data, allowing for themes to be identified in the documents examined.

Individual and focus group interviews

In the selection of the interview sample, snowball, systematic and purposeful sampling methods were used. Interviews were conducted with four different target groups:

1) policy makers and decision makers on research and gender equality issues;
2) heads of institutions under review, academic secretaries and representatives of HR departments;
3) members of academic staff at various career levels (assistants and lecturers, junior researchers, researchers and senior researchers, associate professors, professors);
4) doctoral students.

In the case of target groups 1 and 2, the interviewees were selected due to their positions in relevant bodies (e.g. advisory body on equality) and institutions. Target groups 3 and 4 are based on systematic sampling: sample members were selected from members of academic staff of the institutions, on the basis of contact recommendations from interviewees and targeted research choices (to balance the number of interviewees regarding their gender and field of research). Many of the people invited to participate in the study did not respond or refused to participate in the study due to lack of time or experience. The appreciable amount of people who refused to participate in the study may indicate that the issue of gender equality does not interest the academic community, the issue is too personal or its significance has not been discussed in the unit or research group. Interestingly, men were more likely not to respond to the invitation or refuse to participate, stating that they do not have much to say on the topic.

Interviews were conducted individually or in focus groups either in person or online (using Teams, Zoom, BigBlueButton or Skype). Interviews took place between September 2020 and January 2021. In total, 60 participants were interviewed (33 people from target groups 1, 2, 3 and 27 people from target group 4), approximately two-thirds of which were female. Prior to the interviews, the participants had to sign a consent form to indicate that they agreed to participate in the study. Interviews were conducted by one to two interviewers simultaneously. In agreement with the interviewee, the interviewers either recorded the interview or produced a summary on the basis of the interview which they then sent to the interviewee to supplement upon request. Summaries or transcripts were also drawn up for recorded interviews. Interview data were analysed by research question using the method of qualitative content analysis. The wording of interview excerpts in the report has been corrected for clarity.

2. Literature review

2.1. Scientific literature review

2.1.1. Studies on the research landscape of Estonia

Studies on Estonian research, including those assessing the gender perspective in research, focus on the analysis of both the nature of the research system (and its neoliberalism) (see, for example, Aavik, 2016; Aavik & Marling, 2018; Mägi, Koppel, Kõiv, Kindsiko & Beerkens, 2019) and its impacts, as well as the initial choices in the career path of researchers (see, for example, Eigi, Põiklik, Lõhkivi & Velbaum, 2014; Kindsiko et al., 2017; Mägi et al., 2019). At the same time, none of the studies have focused on the factors of career development in Estonia.

Previous studies have indicated the presence of a gender hierarchy and a 'leaky pipeline' when describing the state of Estonian research. Research is considered an area that is meritocratic in the sense that it is capacity- and efficiency-oriented, criteria-based and, therefore, those active in this area have attributed a gender-neutral image to it (Aavik, 2016). The development of a criteria-based way of thinking is, in turn, related to the (previous) experience of academic members of staff in an underfunded research system reflected in the low stability felt in academic positions. Additionally, historical experience can also contribute to the idea of a linear career path, in which the organisation of society driven by transition culture is characterised by competitiveness and the establishment of western standards as the ultimate societal objectives (Talves, 2018).

As with elsewhere in the world, a debate has emerged in Estonia about the equal treatment of employees which also gives an indication of the quality of governance of an institution. As a result of the widespread cultural patterns in society, gender inequality is not considered an actual issue in universities. Although the importance of the topic is mentioned in some supporting documents (e.g. codes of ethics, good academic practice), it is not actively applied in daily management, for instance. A majority of the members of academic staff in Estonia (67%) indicated that there is no discrimination on the basis of sex, nationality, age or disability at their institution (Mägi et al., 2019). Previous studies on this topic have revealed that, in the academic landscape of Estonia, women consider unequal treatment to be a more serious issue than men. For example, in the study by Mägi et al. (2019), 60% of the male members of academic staff found that everyone is treated equally at their institution. However, only 47% of the women felt the same way. In an investigation into gender-based and sexual harassment in Estonian higher education, Järv et al. (2020) found that 12% of students thought that gender-based and sexual harassment was either somewhat of a problem or a serious problem in their higher education institution. 6.5% of respondents reported that sexual harassment was a problem in

their higher education institution. Compared with men, female students in this study also considered gender-based and sexual harassment to be a more serious issue.

With regard to the gender perspective, Talves (2018) investigated the self-positioning strategies of Estonian female researchers in terms of academic career and excellence. The study showed that female researchers sense both the gender neutrality of the research system and the lack of concern for gender-based issues. Women's self-positioning strategies also involved in downplaying their success. Therefore, in light of the above, it is evident that there are dominant gender roles and procedures in the academic sphere. The fact that female researchers in Estonia are generally opposed to the implementation of gender equality measures, emphasising the gender-neutral image of research, without recognising that gender neutrality does not allow for career factors dependent on gender to be taken into consideration, has also been observed by other researchers (see, for example, Laas, Lamesoo & Talves, 2008).

Education and research statistics in Estonia show gender segregation by fields of research. The reasons for this, including the background of the stereotypes of scientific careers and the attractiveness of this career, are already evident in studies on the attitudes of the youth. For example, Meiesaar (2010) has explained in their master's thesis that students associate the profession of researcher with men or masculinity and older age, whereas junior positions and soft sciences are associated with women and younger age.

2.1.2. International studies on the gender dimension in research

An important input for the study is the description of key issues related to gender equality in international literature, allowing for important factors causing inequality to be highlighted for analysis.

International studies on gender equality in research have found that the causes of gender inequality are not considered to be systematic or structural, instead they are explained by other factors (e.g. experience). At the same time, it has been repeatedly confirmed that stereotypes, attitudes and the environment of personal choice put women at a disadvantage in research. Studies focused on assessing the measurable aspects of academic careers (e.g. number of publications) often overlook how structural obstacles, such as workload, the nature of duties, organisational barriers and personal matters, can affect academic productivity. However, studies that take into account both social attitudes, individual choices, and organisational and work culture show that these factors negatively affect women in terms of gender inequality (see, for example, Van den Brink, 2010; Symonds, Gemmell, Braisher, Gorringe & Elgar, 2006; Ledin, Bornmann, Gannon & Wallon, 2007; Bornmann, Mutz & Daniel, 2007; Monroe, Ozyurt, Wrigley & Alexander, 2008; Van den Besselaar & Sandström, 2016).

An important duty of an academic employee is introducing and publishing their research, with a particular focus on publishing in high-profile scientific journals with a wider readership and prestige level (Lynn, Noonan ja Sauder, 2019). Research indicates that the research productivity of men and women is different: **on average, men publish more research articles than women.** However, there is no clear consensus on whether men and women have roughly the same amount of citations or not (see also Abramo, D'Angelo § Caprasecca, 2009; Ledin et al*.,* 2007; Symonds et al*.,* 2006; Taylor, Fender & Burke, 2006; Sandström, 2009, Tomei et al., 2014; Abramo et al*.,* 2009, Van den Besselaar & Sandström, 2017). Van Arensbergen, Van der Weijden and Van den Besselaar (2012) discovered that **gender-based differences in scientific productivity among early-stage researchers were small**, if not non-existent. However, it has been found that differences in scientific productivity become evident at the later stages of a scientific career: male authors in senior academic positions publish more than

women, however, in general, publication rate decreases as seniority increases among both men and women (Elsevier report, 2020).

Raising funding for research and maintaining quality and productivity in publishing requires researchers to apply for and participate in research projects. Prior studies have noted that female researchers submit fewer grant applications and, compared to men, their applications are approved less often (Burns, Straus, Liu, Rizvi & Guyatt, 2019; Elsevier report, 2020). Even in the context of Estonia, it is clear that more men apply for grants than women: for example, in 2020, 65% of personal research grant (PUT) applicants were men.[8] The success of researchers in receiving grants depends on a number of factors, such as the number of applications in that respective fund/measure, the quality of the application, individual prominence of the applicant, and the excellence of the research team.

International experience and mobility are considered important for academic career development. Thanks to mobility, researchers gain personal benefits (new experiences, expansion of network), but can also receive an advantage in career development. The results of Mägi et al. (2019) showed that although men engaged more in external research, teaching in cooperation with external partners was more common among female members of academic staff. In the case of some positions, mobility may be one of the criteria for assessing the suitability of a candidate for the position. Meeting the mobility requirement may prove to be difficult for those members of staff who have partners and children or persons under their care – the living arrangements of these members of academic staff and their family would be disrupted and temporary contracts with other institutions do not normally justify the costs incurred as a result of relocating (Millard, 2016). Having children decreases the mobility opportunities for career development of both male and female researchers, however, in this case, women have more to lose, as men generally have stronger ties to local networks which provide support in finding a job (Nikunen and Lempiäinen, 2020).

Factors affecting scientific productivity also include the workload of researchers and the division of work duties between different work strands. The volume of research may be reduced due to high teaching load or the organisation of the work of the institution, especially in situations where a lot of undergraduate students need to be supervised (Taylor et al., 2006). In addition to teaching, the specifics of the institution (whether the focus is on teaching or research) and the work of colleagues may also influence scientific productivity – active and high-level research carried out by colleagues can help increase the number of publications of all research group members (Maske, Durden & Gaynor, 2003; Carayol & Matt, 2006). Previous studies show that gender differences in research productivity are caused, among other things, by the fact that women are more likely to engage in teaching and administrative duties, which are associated with more stability but also lower pay. Due to gender stereotypes, female employees are often expected to perform other duties in addition to teaching and research, such as hosting guests and other related activities, which affect the equal career advancement of male and female employees in research, as women, instead of conducting research, have to spend their time and mental and physical resources on performing duties that do not help them achieve academic excellence (Burford, Bosanquet & Smith, 2020).

There are a great deal of factors that influence the decisions of researchers in shaping or giving up their academic career. **Low wages in research**, for instance, may be one of the factors causing researchers to quit their academic careers. Low wages combined with instability of the sector (e.g. part-time work or fixed-term contracts, financial instability of research) may be reasons why the requirements for career development (e.g. publication productivity or success in applying for research grants) are not met (Aavik, 2017; Millard, 2016; Mägi et al., 2019). **A work culture that does not allow**

[8]Estonian Research Council. Available at: https://www.etag.ee/wp-content/uploads/2020/12/PUT2021-taotlusvooru-kokkuv%C3%B5te.pdf.

for a work-life balance affects women more than men and, in conjunction with social expectations, it may give men a leading edge in research. This, in turn, can lead women to give up their work in academia and find a more suitable job in a field where the working conditions better suit their needs (Caprile, Addis, Castaño Collado & Klinge, 2012).

The differences in the choices and development opportunities of men and women in academia have been explained by the **complexity of achieving a work-life balance**. Studies have shown that there are differences in the success of male and female researchers in the early stages of their career, which is linked to starting a family and having children. Research indicates that, compared to women, the academic career of men is considerably more successful in the first 13 years, during which men are twice as likely to be promoted to associate professor or professor (Van den Besselaar & Sandström, 2016). One of the reasons why female researchers have less time to conduct research in the early stages of their careers may be the fact that women are often responsible for most of the household tasks and taking care of children (Akram & Pflaeger Young, 2020; Symonds et al*.,* 2006; Ceci & Williams, 2011), which puts them in a situation where they have to work extremely hard for the rest of their careers to catch up with their male colleagues (Symonds et al*.,* 2006). However, several studies have also revealed that although female researchers spend significantly more time on housework compared to their male counterparts, it does not affect the number of papers they publish or the time spent on research. Having children and its impact on parents' research also depends on the specific country and society: state parental leave benefits may hinder women's career progression more than that of men's, depending on whether these benefits are available for men and how often men actually make use of them (Kyvik & Teigen, 1996). If such benefits are provided by the state, parents can afford to take parental leave and, thus, a career break. In other words, the availability and use of benefits is one of the reasons that explains career breaks.

Social attitudes constitute another factor that can explain gender differences in academic career paths. Being career-oriented is often seen as a 'masculine' trait, which is why women sometimes avoid higher positions (Chesterman, Ross-Smith & Peters*,* 2005). Women may also be under greater pressure when applying for senior positions, as bystanders often interpret the similar behaviour of men and women in leadership positions differently, i.e. judging women more harshly when their actions do not align with the traditional notion of femininity (Spanò, 2020).

The fact that senior positions are male-dominated may also mean that female researchers do not have the **social network** necessary to support their application – when it comes to social capital, the evaluation committee, consisting of excellent researchers, is in favour of maintaining the status quo, i.e. promoting the individuals in their social networks (Van den Brink, 2010). However, it has been found that gender differences in social networks affect the career development of women less and less over time (Van den Besselaar & Sandström, 2016; McDowell, Singell Jr & Stater, 2006). Nonetheless, the selection procedures of academic staff are not always transparent and, in some cases, positions are created with specific employees in mind (Teelken, Taminiau & Rosenmöller, 2019). This means that creating and maintaining a network is a key factor in enhancing career development. Relevant scholarly literature also indicates that the evaluation criteria are not always unambiguous or straightforward. A qualitative analysis of the actual selection process of professors in Dutch universities (Van den Brink & Benschop, 2012) revealed that formal evaluation criteria are understood and applied very differently; moreover, in addition to explicit indicators, hidden indicators, such as from which university the candidate received their doctorate or which academic networks the candidate belongs to, also play an essential role in assessing scientific success. What is more, compared to men, women are often subject to different (stricter) standards. A similar study carried out under the GARCIA project in the universities of seven countries (Herschberg et al*.,* 2016) confirms that both formal and informal criteria used in the evaluation of researchers upon recruitment put women at a

disadvantage compared with men. The decision on a candidate's success rate depends on how important the assessor deems the candidate's certain qualities to be and how the indicators are interpreted (Van den Brink, 2010).

Historical baggage is another factor that can impact gender roles and the adoption of the principles of gender equality. Therefore, in the context of Estonia, such a factor may be the post-Soviet social background that continues to this day to influence people's actions and attitudes as well as openness to the implementation of equality measures (Aavik, 2017).

2.2. Document analysis

2.2.1. Academic career system of Estonian research institutions

In the definition of academic staff in this study, we proceeded from the definition of academic staff provided in the Higher Education Act[9], according to which a member of academic staff is "*a person whose employment duties are related to teaching or to research, development or creative activities or both at the level of higher education*". This means that in the analysis of academic career the career path opportunities of all members of academic staff (including professors, associate professors, researchers, teachers, lecturers, assistants) were looked at. In the context of this study, an academic research career means a career path of a member of academic staff in a research or teaching position, and academic staff participating in the study means people who are actively pursuing a career in research (i.e. the study did not include as part of academic staff people who are currently not employed in academia). Academic staff members participating in the study due to their involvement in a participating institution assessed factors affecting career and mobility from a vertical, horizontal and spiral perspective based on the factors shaping their career as well as personal experience.

In Estonia, the career criteria of academic staff are primarily governed by institutional job descriptions, which set out the qualification requirements for different positions. All participating public universities (see combined overview of requirements annex 11) and R&D institutions have prepared their own job descriptions which we analysed with a particular focus on the division of working time between teaching, research, development and creative activities (hereinafter 'RDC activities'), administrative work and social activities, as well as requirements linked to international activities, and requirements and duties related to publishing. However, the above information was not available for all institutions and positions or the above criteria were not required for all positions. In order to gain access to these job descriptions, the public documents of institutions were examined, where no public documents were available, the HR departments were contacted to obtain the documents (or request information).

Requirements applicable to academic staff

In the analysis of job descriptions of public universities, it became clear that the **specific requirements** applicable to the work of academic staff **vary** greatly by university. In most cases, percentage points are used to express the division of workload between different tasks (teaching, research and administrative duties, social activities), i.e. different tasks account for an estimated percentage of the working time. In some institutions, normal working hours are specified in hours or direct outputs (e.g. number of publications). Regarding institutions whose job descriptions do not specify the share of workload or division of work, such agreements are made directly between the staff member and the unit, according to HR departments. Negotiations are also held to conclude agreements on replacement of job responsibilities (e.g. replacing teaching with research). On the one hand, internal agreements may give rise to inequalities, as the agreements depend on both the attitudes of the employer and their level of subjectivity in evaluation as well as the assertiveness and negotiation skills of the

[9] Higher Education Act. https://www.riigiteataja.ee/akt/116062020009.

employee. On the other hand, individual agreements provide more flexibility to employees. However, in both cases, it is important to keep in mind that the organisation of work, announcement and filling of potential vacant posts, and the promotion of employees greatly depends on the **state of mind and decisions** of the people **in leadership roles** – positions and relations of power start to play a key role in potential career development.

Job descriptions or procedures for the selection of academic staff set out the prerequisites for application and/or job responsibilities and the expectations of the institution regarding performance. The requirements and expectations for academic staff are presented in succinct form, leaving room for interpretation. In some cases, specific expectations are linked to measurable research outputs, including publishing (e.g. in EKA, EAMT or Estonian Crop Research Institute). At the same time, requirements and expectations for teaching have only been described in general terms. For instance, only the Estonian Academy of Arts has established a criterion for the size of the study group in the case of normal working hours. In other institutions, teaching load is specified as a percentage of working time, as working hours or as a precondition that the employee participates in the teaching and supervision of students at different levels.

With regard to participants, including doctoral students, academic staff and representatives of institutions, female members of academic staff are more involved in teaching. Members of academic staff and representatives of institutions attribute this to the choices of female staff members (women are less likely to refuse tasks), on the one hand, and to managerial decisions, on the other. In such cases, the lack of specific guidelines may constitute a conscious or subconscious effort from decision-makers to create or reinforce situations of inequality in which female members of academic staff who, according to the descriptions of participants, are more inclined to participate in teaching and accept teaching positions or teaching tasks, regardless of their position, which slows down career development (as meeting set research requirements becomes more difficult) due to the high teaching load.

An important requirement for academic staff (particularly in universities) is international experience. However, the terms 'international recognition' or 'international experience' in the job descriptions of several institutions leave considerable room for interpretation as international activities do not necessarily only refer to international mobility but also to cooperation with international partners. For instance, in Tallinn University, international experience is recommended for most academic positions, which means staying abroad for study or professional purposes (for at least three months over a period of five years), however, in the University of Tartu, international experience is defined as follows: *"International experience means acquiring a doctoral degree or an equivalent qualification, completion of postdoctoral fellowship, completion of professional continuing education, leading a large-scale collaboration project in a foreign country or active professional work in an academic institution, influential enterprise or international organisation in a foreign country."*[10] The National Institute for Health Development links international experience with participation in the substantive work of international research and development projects. In the case of UT, the definition of international experience is much broader as it involves both collaboration and staying abroad. In addition, UT (no longer) has a time limit for gaining such experience, which is a rigid criterion that may be difficult for those doctoral students and staff members who are unable to participate in long-term mobility schemes abroad due to caring or other responsibilities to fulfil. Furthermore, in the Estonian Research Council's guidelines for evaluating starting grant applications 'recommended international experience'

[10] Job descriptions of academic staff at the University of Tartu. 2020. http://webdesktop.ut.ee/wd/?page=pub_get_ttxt_dokv_file&pid=88569118&lang=est&u=20210303103059&desktop=57835&r_url=%2Fwd%2F%3Fpage%3Dpub_list_dynobj%26pid%3D%26tid%3D69329%26u%3D20210303103059.

is defined as high-level research experience acquired abroad[11]. All in all, the concept of international experience remained vague in both the documents and communication with participants. However, this issue may become more marked in an intra- and post-COVID-19 world as the form of international cooperation has already changed.

In some institutions, a **tenure system or junior researcher positions** have been established with the aim of promoting faster career development and increasing the effectiveness of doctoral studies for capable young researchers (e.g. EMÜ, TalTech). This will help recognise the work of talented young researchers and keep them in the academic sphere by offering job security. Nonetheless, positions created for such purposes also partly assume an **uninterrupted career path**. For instance, in the case of the first stage of tenure, the Junior Professor position, at the Estonian University of Life Sciences, the following has been pointed out: "T*he employee is expected to progress to the next career level within five years*"[12]. At the National Institute for Health Development, junior researchers are elected for up to five years, after which it is decided "*whether the employee is promoted to the next level or transferred to another position*".[13] The establishment of such a timeline allows the heads of units and institutions to assess the employee's performance (e.g. when applying for funding), which is especially important if the position is financed through baseline funding. This further reinforces the stance that breaks are not natural in academic careers: although breaks (e.g. parental leave) are formally taken into account, the period needed for returning employees to readjust during which they may not be able to fully perform their duties is not taken into account (e.g. returning employee starts applying for projects, waits for funding, all of which may cause delays in research).

The documents of universities and other R&D institutions also specify that the time spent on leave is taken into account in recruitment and evaluation. In most cases, leave is taken into account in the event of maternity leave, parental leave, conscription or alternative service. However, some institutions have expanded the justified reasons for leave that are also taken into account. For example, the University of Tartu also takes into account the period during which the employee was on leave without pay for more than six months consecutively or had temporary incapacity for work. In this case, in addition to regular reasons for leave, absence due to health problems is also taken into account. In Tallinn University, reasons for leave that are taken into account also include suspension of employment contract (due to administrative activities or international or cross-sectoral mobility)[14]. In other words, the main factors of career breaks have been highlighted, i.e. those related to parental leave or conscription service. At the same time, there are other factors that cause employees to take career breaks, such as health reasons, that can create inequality, but which institutions try to take into account.

Overall, it became apparent that the requirements for academic staff set out in job descriptions and rules of institutions are worded in a manner that allows for flexibility in interpretation. This is to be expected considering that the guidelines are aimed at the entire staff of the institution (not just specific units or faculties). At the same time, this also means that the expectations for the work and work outputs of employees (incl. what is considered participation in an international or national research community) are formed within the units (teams) and the fitness of an academic staff member for a post is evaluated by immediate superiors, the evaluation committee or other decision-making unit on

[11] Conditions and Procedure for Starting Grants. Decree of Management Board of Estonian Research Council of 6 January 2020. Available at: https://www.etag.ee/wp-content/uploads/2020/01/PSG-kord-2020.pdf.

[12] Academic Career Management at Estonian University of Life Sciences. Senate Regulation of 27 February 2020.

[13] National Institute for Health Development Employment Relationship Rules for Academic Staff. Adopted by the Scientific Council on 9 September 2019.

[14] Tallinn University Employment Relations Rules. Tallinn University Senate Regulation of 15 April 2019. Available at: https://www.tlu.ee/sites/default/files/TUKO/Dokumendid/TT_toosuhete_eeskiri_02032020.pdf, and annexes at https://www.tlu.ee/sites/default/files/Personaliosakond/Dokumendid/TLU_toosuhete_eeskiri_lisad_22042020.pdf.

the basis of perception. In addition, it should be noted that, in the case of several institutions, the analysed documents were either adopted or updated fairly recently (within the last 2-3 years), therefore, the opinion of academic staff and the impact of the updated system are areas for further research.

Accordingly, the formal aspects of an academic career were analysed retrospectively in this report, however, we can still provide the employees' assessment of the changes in the career model, primarily concerning the opportunities for promotion in certain academic positions. When it comes to **changes in the career model**, participants have diverging views. On the one hand, participants found that enhanced career opportunities can potentially help improve gender equality, as talented employees can apply for promotion even without support from their work unit or management. For example, it was explained that with the new career model "*employees do not have to push forward as much, as promotion does not depend on whether the manager decides to open a post or not. /…/ The [previous] reluctance to promote employees stemmed from other fears that someone may be moving upwards too fast."* On the other hand, members of academic staff feel that promotion criteria are much stricter than in the case of open competition, as a result of which they have reservations as to how likely it is that the new model will actually bring about change in the research landscape. In discussing the necessity of the tenure system and providing feedback on it (if such a system had been implemented in the institution, e.g. in TalTech), the participants had conflicting views and on several occasions they mentioned that the concept and definition of tenure is not clear to them. Respondents submitted that the opportunity for young researchers to climb the academic career ladder would help ensure the next generation of researchers, but at the same time, the tenure system alone might not be enough to change the current situation, as the creation of a tenure post largely depends, for example, on the capacity of the unit and the number of specialists.

It is important to keep in mind that after the collection of data on career models of academic staff for the purposes of this study, the career models in universities have changed (including job requirements, job titles and promotion opportunities), and their impacts on academic career as well as gender equality are not analysed in this report (the changes are recent). The impact of the new career model should be further analysed in the future when the changes have had time to take effect.

2.2.2. Documents governing equality in Estonian research institutions

In addition to the constitutional right to equal protection, gender equality and equal treatment are governed at state level by the Gender Equality Act[15] and the Equal Treatment Act[16]. These acts also set out the definitions and scope of direct and indirect discrimination (based on sex) and sexual and gender-based harassment with the aim of protecting people from discrimination and ensuring the promotion of gender equality and equal treatment as a human right. In this regard, participating representatives of policy makers explained that these legislative acts do not prescribe the consequences (and their extent) in the event of failure to comply with the law. In addition, at a more general level, the work organisation of the institutions under review is also governed by the Organisation of Research and Development Act[17] and the Higher Education Act[18]. Moreover, the work of institutions is also regulated by various institution-specific rules and procedures (e.g. evaluation procedure, job descriptions, procedures for formation of decision-making bodies) and acts (e.g. the Estonian Academy of Music and Theatre Act, Estonian University of Life Sciences Act) and, in the case of other R&D institutions, by the statutes (e.g. the Statutes of the National Institute for Health

[15] Gender Equality Act. https://www.riigiteataja.ee/akt/110012019019.
[16] Equal Treatment Act. https://www.riigiteataja.ee/akt/126042017009.
[17] Organisation of Research and Development Act. https://www.riigiteataja.ee/akt/834781?leiaKehtiv.
[18] Higher Education Act. https://www.riigiteataja.ee/akt/119032019012?leiaKehtiv.

Development), which, among other things, establish the election principles of decision-making bodies, duties and other rules concerning the functioning of the institution. Labour relations are regulated by the Employment Contracts Act[19].

Educational and research institutions have **an obligation** to ensure the equal treatment of employees, however, so far, only the University of Tartu has introduced separate guidelines for equal treatment[20], which according to the representatives of UT, were prepared due to certain situations involving the university which reached the public and the consequent need to address the issue. The objective of the guidelines adopted in 2016 is to explain the nature of unequal treatment and to provide guidelines for the university in resolving such situations. Whereas the relevant laws, on which the University of Tartu's guidelines for equal treatment are also based, only provide general principles for detecting situations of unequal treatment, the guidelines of the University of Tartu are more specific, providing examples of situations that can be considered cases of unequal treatment. The guidelines set out the recommended procedure for resolving cases of unequal treatment in different stages for both students and academic staff. As of 2020, the guidelines for equal treatment at the University of Tartu are planned to be updated.[21] In addition, a Counsellor-Chaplain post has been created at the UT, the responsibilities of which include resolving various conflict situations (including those concerning equal treatment). What is more, as part of the **Baltic Gender project**, a Gender Equality Plan[22] has been prepared in the Estonian Marine Institute of the University of Tartu, which, according to current data, has not yet been adopted by any other unit or institution under review. The plan defines gender equality and gives examples of general situations that are considered discrimination and provides an overview of gender equality at the Estonian Marine Institute and the proposed strategic improvement plans (e.g. in the case of equal candidates, giving preference to the under-represented gender if there are gender balance issues in the department offering the post; encouraging paternity leave; staying in touch with academic staff who are on parental leave).

The feedback received from participating HR staff and managers during interviews indicates that in several institutions specific documents governing gender equality and equal treatment have only been developed recently or are still awaiting approval or, at the time of qualitative data collection of the study, changes are still actively being implemented (including the development of new, more specific equality guidelines). The reason for this, according to representatives, is that, in order to ensure the competitiveness of the institution in international funding schemes, it is **necessary to have formal gender equality and equality regulations in place** (however, up until now, the existence of these regulations was not considered strictly necessary). In addition, managers and HR staff noted that although they have not had a lot of cases of gender inequality, they think that people's awareness and understanding of unequal treatment has increased. As a result, they considered it important to have specific regulations in place to address gender inequalities and support discussions on this topic in their institution. During interviews, both managers and HR staff explained that the procedure for the resolution of equal treatment cases has been enshrined in other regulations (for example, study regulations would be the basis for resolving cases of gender inequality affecting educational outcomes; in the case of unequal treatment of staff, the Working and Rest Time Act, the Employment Contracts Act, work procedure rules, job descriptions, the framework for academic ethics, including the Code of

[19] Employment Contracts Act. https://www.riigiteataja.ee/akt/112072014146?leiaKehtiv.
[20] University of Tartu. (2016). Guidelines for equal treatment. https://www.ut.ee/et/vordse-kohtlemise-juhend, http://dok.ut.ee/wd/?page=pub_pub_dynobj_file&pid=25566590&file_id=46411185&desktop=57835&tid=1&u=20180906091613.
[21] Order for setting up a working group for renewal of the guidelines for equal treatment.
[22] Gender Equality Plan 2019–2023. University of Tartu, Estonian Marine Institute. Available at: https://mereinstituut.ut.ee/sites/default/files/mereinstituut/emi_soolise_vordoiguslikkuse_kava.pdf.

Academic Ethics, the Estonian Code of Conduct for Research Integrity, the European Charter for Researchers, and other internal work organisation documents could be applied).

Based on the documents available on the websites of institutions, interviews with representatives, and the shared working documents, we are able to provide an overview of the existence and content of equality documents and guidelines of the institutions participating in the study. We examined the mission, values, strategy, guidelines, rules, and development plans of institutions and analysed how the principles of gender equality and equal treatment were expressed in these documents. The representatives of different institutions noted that since the issues of gender equality **had not** been previously **discussed** internally, the introduction of such procedures was not based on the need to deal with cases of inequality, but rather on the **need to meet legal and accreditation requirements**; additionally, such procedures and guidelines form **an integral part of the operation of modern research institutions**.

The Estonian University of Life Sciences does not currently have a separate strategy document dealing with equality and gender equality. Various documents describe gender equality and the related issues and situations in general terms, which means that the ways of resolving gender equality and equality problems are scattered between several different places. In 2020, the Estonian University of Life Sciences adopted a **regulation on good academic practice and implementation of principles of academic ethics** that highlights the importance of equal treatment of the membership of the university and also points out that the Academic Ethics Committee will be responsible for introducing the principles of equal treatment and for solving any problems related to unequal treatment.[23]

Similarly to the Estonian University of Life Sciences, the Estonian Academy of Music and Theatre also recently developed and updated their equal treatment documentation. A representative of EAMT confirmed that the "**Equal Treatment Measures and Complaints Procedure at the Estonian Academy of Music and Theatre**" was adopted by EAMT Senate Regulation in June 2020[24]. The document mentions that the EAMT protects its members in the work and study environment from discrimination on the basis of gender identity and sexual orientation, among other things, and that the academy undertakes to raise the awareness of its members and monitor the situation (at a meeting of the senate), and appoints an Equal Treatment Officer. Nevertheless, the document is rather general in nature, saying that "appropriate measures" will be taken to raise awareness and complaints will be handled "within a reasonable time", provided that they are submitted within three months of the occurrence of the case. All relevant links, guidance materials and additional information are available to the university membership on the intranet.

The representatives of **Tallinn University of Technology** acknowledged that while there is no separate document governing gender equality in the institution at the moment, a **draft text of such a document is being prepared**. The representatives of TalTech emphasised that a **formal regulation on this issue is absolutely necessary** and that current principles of conflict resolution together with the resolution bodies are too fragmented as the management chain is too short (for instance, it is not always possible to seek resolution through management, which is why thought has been given to the establishment of a conciliation committee under the Rector's Office), for these reasons, documents are being amended. Unlike other institutions, TalTech has created a **whistleblower form**[25] for making complaints, which

[23] Good Academic Practice and Implementation of Principles of Academic Ethics in Estonian University of Life Sciences. Senate Regulation.

[24] Equal Treatment Measures and Complaints Procedure at the Estonian Academy of Music and Theatre. EAMT Senate Regulation of 15 June 2020. Available at: https://eamt.ee/wp-content/uploads/2020/09/Vo%CC%83rde-kohtlemise-tagamise-meetmed.pdf.

[25] The procedure for whistleblowing and verification of whistleblowers' complaints. Directive of 5 November 2019. Tallinn University of Technology.

was first introduced in 2019 in light of the so-called Nurkse case that also made the news. Although its possibilities are limited (i.e. cases can only be solved if the tips include specific information about the victim and/or the accused), its existence was considered important to allow university members to communicate their problems under appropriate conditions. At the same time, such an anonymous tool also opens the door for misuse.

In the beginning of 2020, the Senate of Estonian Academy of Arts approved the "**Code of Ethics of the Estonian Academy of Arts**"[26] by a regulation, emphasising that, inter alia, the university membership should treat fellow members **equally, irrespective of their sex and other characteristics**. The same document also directly condemns harassment, humiliation and exploitation, and describes the resolution process of cases of unethical conduct. In the case of unethical conduct, the document specifies the following: "I*f necessary, an ethics committee formed on conditions set forth in the Academy*
statutes shall meet to discuss unethical conduct, including behaviour that can be considered indecorous in accordance with the Academy's Rules of Study Organisation." As with other institutions, this further proves that cases of unequal treatment (including cases of gender inequality) are linked to other problematic situations, the resolution of which is currently governed by other relevant documents (e.g. study regulations, employment contracts). In addition, it is worth mentioning that the above code of ethics also points out that it is not "*a complete set of rules for moral conflict resolution, instead it contains principles and guidelines that provide assistance in the selection of appropriate behaviour, as well as in the discussion of potential complaints in the Academy*." This means that the interpretation and resolution of cases of unethical conduct remain open.

The documents of **Tallinn University** do not feature the principles of equality and gender equality. However, the Development Plan of Tallinn University repeatedly highlights the importance of **cultural diversity** which is in line with their research focuses, what is more, they "*/…/ consider the development of the cultural competence of all of our employees and students very important in order to better cope in the globalising world.*"[27] This shows that they highly value, support and respect cultural diversity.

Whereas it became evident that universities are starting to introduce separate documents on gender equality as previously the related principles were scattered between various guidelines and documents, then in the case of other R&D institutions, the principles of equality were not highlighted in key documents. The public websites of several other national R&D institutions mention that they have joined the Estonian Code of Conduct for Research Integrity Agreement, which considers gender equality to be one of the values of research integrity, and highlights the importance of ensuring the equal treatment of staff and the establishment of a procedure for dealing with breaches of equal treatment (incl. harassment and bullying at work)[28]. However, in other governing documents of the institutions the topic of equality was generally not addressed.

For instance, none of the operational documents available on the website of the **National Institute for Health Development** explicitly list the principles of gender equality. The importance of equal treatment is indirectly mentioned in the Development Plan of the National Institute for Health Development: "*NIHD employees consider mutual respect to be an unconditional precondition for work. We are open-minded, care about ourselves and others, and recognise and value each individual. We advise and listen to each other, take other people's views into account, and understand the importance*

[26] Code of Ethics of the Estonian Academy of Arts. Available at: https://drive.google.com/file/d/1N1y07-t5Ye7Dqn21DdISuTUoTP3ngA8r/view.
[27] Tallinn University Development Plan 2020–2022 Available at: https://www.tlu.ee/sites/default/files/TUKO/Dokumendid/Tallinna_Ulikooli_arengukava_2020-2022.pdf.
[28] Estonian Code of Conduct for Research Integrity (2017). Available at: https://www.eetika.ee/sites/default/files/www_ut/hea_teadustava_trukis.pdf.

of dialogue /.../."[29] According to an NIHD representative, **no cases of gender inequality have occurred** at their institute, which is why equal treatment has not been brought up as a separate topic of discussion.

In the Institute of the Estonian Language, the principles of equal treatment and diversity have been set out in the "**Development Plan of the Institute of the Estonian Language 2020–2023**"[30], however, the procedure for the attainment of these values and the identification and resolution of potential bottlenecks **has not been described**.

In the case of the **Estonian Literary Museum**, none of the operational documents available on their website explicitly list the principles of gender equality. The development plan of ELM sets forth the **plan** to *"/.../ implement a career model which guarantees **permanent job security (tenure)** to full-time (1.0) top researchers at ELM (lead researchers and senior researchers of major research topics)."*[31] However, linking tenure to full-time positions may disadvantage those members of academic staff who cannot work full time for various reasons (for instance, staff members and representatives agreed that the introduction of flexible working hours would be one way to support better reconciliation of work and family life).

In the case of **Under and Tuglas Literature Centre of the Estonian Academy of Sciences, Estonian Crop Research Institute, Estonian National Museum,** and the **National Institute of Chemical Physics and Biophysics,** none of the operational documents available on their websites explicitly list the principles of gender equality.

The fact that the principles of gender equality an equal treatment are generally not outlined in the operational documents of other R&D institutions does not necessarily mean that these institutions do not consider this topic to be important – **they may just not have the necessary experience or knowledge**. The representatives of other national R&D institutions expressed that this topic has not been raised within their institutions. They pointed out that, on the one hand, the staff of these institutions is very small (and the number of academic employees is even smaller) which is why problems do not arise, but on the other hand, if there were problems, it would be reflected in satisfaction surveys (however, according to representatives, the surveys have not indicated any gender inequality related issues to date). This may explain why the principles of equal treatment are not covered in operational documents – for instance, in universities, the need for separate guidelines and procedures also stemmed from actual cases of inequality which were widely publicised in the press. However, it is possible that **not all cases** of inequality within the institution **are linked to gender inequality**, thus the existing resolution procedures are considered sufficient to also address these cases. For example, participants explained that there have been salary disputes, in the case of which differences in the amount of salary were caused by differences in post or duties, not gender. In other words, cases of inequality are linked to other issues and, in this situation, it may be difficult for involved parties to understand the underlying causes of the conflict, including whether gender played a role in it or not. The lack of attention to equality and equal treatment in institutions can be explained by the fact that it is not considered relevant with regard to the activities of the institution, as unequal treatment has not been an issue there in the past. Unfortunately, failure to mention these principles reinforces ignorance as the importance of these principles is not reflected in the values of the institution.

[29] NIHD Development Plan 2016–2020. Available at: https://www.tai.ee/images/TAI_arengukava_2016-2020.pdf.
[30] Development Plan of the Institute of the Estonian Language 2020–2023. Available at: http://portaal.eki.ee/images/phocadownload/EKI_arengukava_2020_2023.pdf.
[31] Estonian Literary Museum Development Plan 2019–2022. Available at: https://www.kirmus.ee/sites/default/files/2019-11/EKM_arengukava_IT-lisaga_2019-2022.pdf.

It is difficult to assess to what extent the members of the institution are aware of the existing documents and their content, as in several agencies the documents on gender equality and equal treatment have only just been adopted. Nevertheless, even in the case of institutions where these principles have been in place for a longer period of time, the staff members and doctoral students often expressed uncertainty as to whether and where this topic has been covered and how to act in situations of inequality. The UT guidelines for equal treatment were mentioned by several other interviewees outside the institution, but even then people **acknowledged its existence, rather than its content**. In addition, the interviewees noted that they would not intuitively know where to turn if the need arose, but believed that they would be able to find the necessary contacts on the website of the institution. However, there are no relevant keywords or links on the homepages of any of the institutions that would provide quick access to additional relevant information to those in need. In order to find relevant information, the search bar or keyword panel must be used. Moreover, according to representatives, such information, links and guidelines are often available on the intranet.

Ignorance stems from lack of experience. In order to analyse the potential conduct in a situation involving gender inequality, we asked participants to describe their behaviour in a hypothetical situation of gender inequality. An overwhelming majority of the interviewees stated that they would not know where to turn or whether their institution has a relevant regulation in place and where to find it. Several doctoral students also mentioned that, as a first step, they would turn to their supervisor for assistance: "*I would definitely contact my supervisor /…/ as they are the person I trust the most at the university /…/.*" Academic staff members said that their first point of contact would be their immediate supervisor. Additionally, interviewees pointed out that they would contact external experts (e.g. a lawyer) to obtain a neutral assessment. Others were more pessimistic in their views:

> *"The general atmosphere is highly competitive and there are quite a few 'bad apples' who are nice to your face but gossip behind your back; I wouldn't know where [to turn] and I am afraid that would only do more harm than good as the decision makers sit together at the council or wherever, making decisions [about me]. What goes around comes around – and that is true in this case as well."*

Since the issue of gender equality is not regulated in most institutions or there are no sanctions for such behaviour, critical situations are not met with the appropriate consequences:

> *"Looking at the situations that have occurred... there is a sense of impunity – if you have brought in a lot of money for the university or have a prominent place in the society, it doesn't matter what you do... It could also be that because there are so few people in Estonia, some fields only stay afloat thanks to one person, which is why people maybe don't have the courage to cut off that one particular part. Clearly, more clear-cut decisions and courage are needed, along with appropriate terms and definitions for these things: if you have overstepped your authority, it should be called out as such."*

3. Gender equality and non-discrimination based on sex in research and innovation: interpretations of academic staff

Interviews with academic staff and doctoral students strongly indicated that gender equality and non-discrimination based on sex were viewed from a **traditional perspective**, primarily associating the matter with the **situation and opportunities of women**. In this regard, several male participants emphasised that instead of talking to them, we should consult their female colleagues on this matter, as they are more aware of the areas of concern: "*I am a white heterosexual man... I am in the majority and hold stereotypical views."*

Although in most of the cases, gender equality was defined through the creation of equal opportunities for women, some interviewees maintained that men are actually facing bigger problems, referring to the **gender gap in higher education**. The interviewees felt that female students outnumber male students and do better in their studies, as a result of which they are better placed to succeed in society and research: "*in this context, people usually talk about why there are so few women in top posts. My /…/ issue, though, is why there are so many women in university. It has been said that girls are more capable, thus more of them pursue higher education, which has become a serious problem in some fields, such as physical work. Girls have better grades and we have set criteria – no equality guaranteed there because Estonian society is built upon examinations, rules, and comparison."* The root cause for this was thought to already stem from the time of basic education: boys do not fit into the system because the overall l**earning environment and attitudes are gender-based** (the majority of teachers are female and the gender stereotypes of girls being hard-working and boys being lazy are enforced). Students, potential future academic staff, found that the higher proportion of women is a (possible) concern primarily in fields that involve a great deal of physical work (e.g. due to heavy equipment) as it increases the workload of men if they are required to perform most of the physically demanding tasks. However, they said that currently these concerns have not been raised at their workplace.

Although many participants concluded that generally there are fewer women in senior academic positions and in decision-making bodies, it is usually not a matter of gender equality or discrimination based on sex. On many occasions participants emphasised that gender is not relevant in research and science because all the criteria and requirements and thus opportunities are the same for everyone. **Research and academic posts were viewed as being gender-neutral, as a result of which, during the interviews, many participants did not associate issues and obstacles with gender at all.** In many cases, the discussion on gender equality was limited to equal opportunities and the prevailing opinion was that **as long as equal opportunities are guaranteed in the field of research, there will be no gender equality problems**: "*In my opinion, gender equality is an issue if the access of one gender to something is legally restricted.*" Moreover, gender differences by position or field of research were thought to be linked to personal choices and gender-specific patterns of behaviour, i.e. men take more risks and are more vain. This, in turn, reflects the attitude that the **system is not the problem, people are**, therefore, the latter are responsible for changing their behaviours: "*we are not dealing with a situation where a man is sitting down and refuses to let women in. It is also a question of whether the woman is strong and determined enough to manage the whole thing, it is a time-consuming process."*

During the interviews, the attitude that one's career depends on **personal choices within the system** became apparent, and in the context of an academic career, such choices were associated with difficulties in achieving a work-life balance. This also includes a conscious choice to not pursue career development, as it entails additional responsibilities: "*The reality is that some women feel impaired by fatigue at one point. They decide not to take on any additional duties because participation in committees and other such activities comes at the expense of their free time. All these additional activities require time, but if you were to deal with them during working hours, you would get less work done and thus publish less papers, which in turn would give grounds for others to say that you are not a good researcher. Women make their own decisions because they simply cannot do everything at once.*" Personal choices are most often linked to parental leave which usually affects women more than men.

As a weak point of the system, participants mentioned the **overall nature and organisation of research**, including the funding policy and criteria-based process, which were thought to be factors promoting inequality: "W*omen fall behind in their academic careers because they have to take a break due to natural processes. One of the reasons for gender inequality is the constant praise for competition and rankings in which women always lose."*

At the same time, the **reluctance** of academic staff **to change the system and implement gender-sensitive measures** was also apparent: "*/…/ several top researchers and candidates have said that if they were to be selected on the basis of sex, it would not be acceptable to them and they would not participate."* Many think that the incorporation of a gender criterion is going to reduce the importance of competence, and fear that gender will become more important than professional excellence in the evaluation process: "*A forcible change in cohorts where there are no female researchers significantly undermines the credibility of the research system as well as the notion of gender equality."* Competence, however, is a measure of academic research: "*I do not understand this gender-based selection system. What is it then that drives our decisions? Is it competence, be it in the area of nuclear physics or economics, or the voices of men and women? /…/ Personally, I would not introduce a gender quota for bodies that decide on the fate and funding of so many people. It would be ridiculous to say that "two posts must be filled by women" – this does not sound right in academic context. Some other competence should be more important in that situation."* During the discussion it also became apparent that some participants considered gender quotas to be an expression of unequal treatment: *"In order to achieve equal numbers of something, only restrictive or indicative methods can be used, but isn't this considered reverse discrimination? Is gender more important than professional competence?"* In addition, it cannot be ruled out that reluctance is only linked to the incorporation of gender criteria, because to an extent, we can talk about certain membership shaping criteria at the level of decision-making bodies, on the basis of which seats are allocated between academic staff and students. However, this topic did not spark a lively discussion. The reason for this may be that gender is not considered to be a factor restricting activities and opportunities in academia.

What is more, participants also described that, over the years, they have noticed a gender shift or movement towards gender balance in the academic sphere. When looking at the profile of the new generation of researchers and handling of the matter, they anticipate that the issue of gender equality is going to be **self-resolving**, as the current situation of inequality reflects the impact of the Soviet era: "*Balance is being restored in the scientific world, as it takes approximately 30 years to train a researcher. Starting with the smallest inequalities, it takes about one full generation or one and a half generations, i.e. 30–40 years, to restore equality in numerical terms*."

Negative attitudes towards gender-based regulations and measures are also related to the idea that such measures are not necessary in the context and culture of Estonia: *"The problem in Estonia is that people **do not look at matters from the point of view of Estonia**, but rather from the point of view of the outside world. We should spend more time working on ourselves. We should think about what and how is good and right for us, instead of thinking about what the EU says or what Finland and Sweden have done."* As such, gender equality is considered an issue at the European level: *"They used very many words to describe what [gender equality] should be like, however, when I asked what should be done, I was met with a bunch of EU jargon."*

When discussing the issue of gender equality and gender equality, **none of the participants considered the issue to be irrelevant**. They pointed out that the pursuit of gender balance or proportional representation is essential as it diversifies and enhances decision-making processes and puts different issues at the heart of the debate. However, the achievement of these targets through equality measures was not supported. **In some cases, gender equality was not considered an issue in research, but rather outside it**: *"It is an important topic, although somewhat blown out of proportion. It is not an irrelevant issue, on the contrary, it is essential to address it as there are situations and places where problems arise. For example, the press with its haphazard columns should slow down and take a step back. In science and research, however, it is not a prominent issue."* In academia, equality was not considered an issue due to the indicators and competence-based nature of research, which further supports the perception that gender neutrality is inherent in academic staff and activities: "*In my*

opinion, in terms of research, it is a false problem because research should only be managed and conducted by the most talented." Another aspect that may have contributed to such a view is that interviewees may have experienced unequal treatment outside the field of research. For example, several doctoral students mentioned during interviews that they had personally experienced discrimination on the basis of sex in general and in the context of work primarily outside the university: *"In this regard, I have two reference points: entrepreneurship and academia. /…/ in my opinion, the contrast is huge. I have only received support from the university."* Female doctoral students of natural and exact sciences, in particular, described the existence of strong stereotypes outside the world of research: *"To this day, the stereotypes of women not belonging in engineering and technology persist. This is not something I experienced in university."*

The perception of the issue of gender equality is linked to both personal experiences, observations and knowledge of the topic, e.g. due to the nature of work or field of research. Among the academic staff, representatives of HR departments sensed the issue of gender equality the most, as they are the ones dealing with internal conflicts, using the documents governing such topics, and preparing overviews of various indicators, including those involving inequality (e.g. wage statistics, number of men and women by position). Other national R&D institutions differ from universities in that gender-based inequalities are not an issue there due to the small size of the teams, as cases of unequal treatment within the institution are noticeable and people feel like they can talk about their problems and a solution will be found. Overall, other R&D institutions do not collect gender-specific statistics and the topic is not discussed internally.

In addition, during interviews with different groups, the topic of how to identify cases of gender equality arose. Interviewees admitted that they **do not always recognise whether a certain situation constitutes discrimination based on sex or is caused by other factors**, such as previous professional experience or the nature of collaboration. Doctoral students, in particular, described their hesitations and even **self-censorship** in recognising situations of gender inequality: *"I often think about these things and try to analyse situations specifically from the perspective of how I could recognise that something like that has happened to me. Thinking about it right now, I don't think I've personally experienced it. But maybe I just didn't realise it was happening in some situations?"* In addition, participants sought reassurance as to which situations should be addressed: *"It is a question of when do we feel that a certain threshold has been exceeded and we are dealing with an actual problem, instead of just a coincidence or something that is in my head."* However, finding sufficient "proof" is another matter: *"I have this rather pessimistic feeling that /…/ if I was discriminated against on the basis of sex, there would be nothing I could do about it. Because they will come up with some logical reasons as to why it had to be that way. For example, why a male colleague must receive a higher salary – they have more experience or a different area of responsibility or..."*The fact that the issue of gender equality is being **ridiculed** and the details of critical cases are being minimised in the public sphere leads to hesitation and self-censorship. The handling of **critical cases in the public eye does not foster the promotion of gender equality**: *"Looking at the solutions to certain cases involving the university that made it to the press, the solutions were rather odd – these persons are still working here because they are researchers and bring in money."*

4. Overview of men and women in academia

While the share of male and female members of academic staff is generally more or less equal in the academic landscape, there are **differences** in the gender distribution of academic staff by **position**. This study confirms that there is a lower proportion of women in top academic positions compared to

men, whereas in the case of assistant and teacher positions, the share of women is significantly higher and has increased over time which, in turn, increases gender equality by position. In terms of gender, the situation is rather equal in the first stage of an academic career, the Junior Researcher position.

Based on the interviews conducted under this study, the lack of women in top academic positions, which became apparent during quantitative analysis, can be explained by the so-called **lifecycle of a scientific career**. In other words, interviewees found that the current gender issues in research can partly be attributed to the lack of support for the system at the end of the Soviet period and during the early days of re-independency, as a result of which women were forced to leave science and research: *"Women have not reached high positions due to the crazy 90s when research was underfunded and choices had to be made. It was even more difficult to choose when work and family life had to be reconciled, which means that we lost one full generation of women because there was no maternity pay or other such benefits.* This is evident now – those who left in the 90s are currently my age [in their early 50s] and there are not many of us in research." Consequently, it was presumed that since an increasing number of women are pursuing higher education and a career in research, a change in gender equality (gender shift) may occur within the next few decades. The current situation thus partly reflects the historical gender imbalance.

Furthermore, participants found that **career breaks** may also be one of the reasons why the career development of female members of academic staff has slowed down. Such career breaks were associated with pregnancy and maternity leave or other caring responsibilities which must often be borne by women. These factors may also hinder the activities necessary for academic career progression, such as obtaining international experience abroad, without which it may be more difficult for researchers to advance to higher positions. In addition, the impact of **gender stereotypes** and **social attitudes** cannot be fully excluded. The impact of these factors is primarily reflected through the role of the **manager**: whether or not the manager has the means and the desire to contribute to the career development of female members of academic staff by assigning more appropriate duties to them or promoting them to higher positions. The activities of a manager which hinder professional development may, on the one hand, be explained by the fear of competition and, on the other, by the lack of funding for the research system: "*Lack of funding is always an issue today, therefore, it is easier to have three lecturers rather than one professor, but managers do not think of the fact that everyone should have their own career."* The factors affecting the career progression of academic staff are discussed in more detail in Chapter 7.

Whereas the gender distribution of top academic positions is primarily explained by historical reasons, the high share of women in teaching positions (assistants, teachers, associate professors) is associated with **gender roles and structural factors**. For instance, one reason was considered to be the wage level. The wage level of assistants and teachers is rather low. However, higher wage ambitions in order to support one's family were most often associated with men, family maintenance was not considered the role of women. The same reasoning was used to explain the higher proportion of women in low-paid positions. Regardless of the wage level, teaching positions provide more stability compared to research positions where job security is project-based. To that end, gender-specific patterns of behaviour, including the risk-taking of men and the tolerance of women together with their need for stability, were also highlighted as reasons. However, teaching responsibilities were not considered very prospective, especially in the context of academic careers. Ambition and prospects for action were also considered to be more important for male members of academic staff. At the same time, participants pointed out that high teaching load hinders research activities – there is simply not enough time to conduct research as the organisation of teaching is extremely time-consuming. As a result, academic staff with a high teaching load are at a disadvantage regardless of their gender if their aim is to advance to higher academic positions that focus more on research.

The composition lists of main decision-making bodies of institutions (i.e. council, senate) show that, in terms of gender, these bodies are relatively balanced (with the exception of TalTech where both the senate and council have fewer female members than male members. The academic staff of TalTech overall features less women than men). It is important to point out that the formation of decision-making bodies of institutions takes place at multiple levels. Certain members have the **obligation to participate in the work of the body** due to their **academic position** (e.g. managerial staff of the institution, heads of units, professors in councils). Considering the fact that men outnumber women in higher academic positions and management, a certain degree of gender inequality is built into the system. It is also evident that the gender inequality in the proportions of academic staff in some faculties is also reflected in decision-making bodies, as the pool of potential candidates is larger in terms of the dominant sex among both the appointed and elected members. For instance, this can be observed in the composition of faculty councils of the University of Tartu: whereas in the Faculty of Arts and Humanities and the Faculty of Social Sciences, the number of men and women is roughly equal, in the Faculty of Science and Technology, the share of women in the Faculty Council is below 30%.[32] **The appointment of external members is decided by specific institutions** (e.g. council members may include external members from the Estonian Academy of Sciences, other universities or R&D institutions, ministries, etc.). The remaining members are **elected**, i.e. academic staff and students can elect their representatives to the decision-making bodies. In the case of elected members, the pool of candidates plays a key role. In this regard, some female interviewees believed that many female members of academic staff in Estonian research are too shy to stand as a candidate in decision-making body elections or that they sense a lack of support:

> *"/…/ from personal experience I can say that while you would expect other women to support you, it is actually the men who do. /…/ There are a lot of complaints about how not enough women reach top positions, but in situations where there is both a male and female candidate, not all women always prefer the female candidate either."*

Although participants considered the achievement of gender balance in management and decision-making bodies to be of utmost importance, they also agreed that certain systems, in which some members are elected on the basis of their position, are justified. They pointed out, for instance, that this helps to ensure that the voices of representatives of all faculties are heard in all major decision-making bodies (who may otherwise not get elected as the size of the staff in different faculties varies) and that the decision-making process includes people who are involved in day-to-day management: *"If heads of research groups were not included in faculty councils, they wouldn't be real decision-making bodies. This hierarchy should be in place there to discuss the budget, etc. Second jobs at university level ensure that everyone is represented in terms of both content and field. For example, in the event of public election, there would be no natural sciences representatives, because the faculties are of different sizes. And [it is crucial for there to be] people who can disseminate the information as fast as possible and where necessary, i.e. deans and academic staff."* At the same time, it also creates a situation of systematic inequality in which power is concentrated in one group that may not have sufficient opportunity to participate in meaningful decision-making: *"Only one step can open up other playing fields, which leads to there only being one active group of people everywhere while others are structurally excluded. /…/ This is good to a certain extent, but at one point, the limit to a person's abilities is reached and then they just sit in the councils or get too much power."*

[32] Website of the University of Tartu. Composition of Faculty Council. Available at: https://www.ut.ee/et/ulikoolist/valdkonna-noukogu.

In the case of decision-making bodies, the need for and benefits of gender diversity were emphasised: the inclusion of female members in these bodies has resulted in comprehensive and forward-looking decisions and brought attention to matters that had never been previously discussed.

With regard to gender balance measures in decision-making bodies, virtually all of the interviewees in the target group of academic staff and management considered gender quotas to be the main measure for achieving gender balance, however, they did not believe that the implementation of such quotas is a sustainable solution in the long-term. According to the interviewees, one reason for this is the fact that the pool of potential candidates is extremely unbalanced in many disciplines (e.g. in engineering the balance is in favour of men, but in humanities, especially in education, it is in favour of women), as a result of which, the introduction of quotas would hinder the selection of the best candidates to decision-making bodies. Moreover, several female members of the academic staff mentioned that if they were to be **elected purely on the basis of quotas, they would feel humiliated**. Attitudes towards quotas reflect fear – fear that instead of competence, gender will become the most important deciding factor and that this will not be a temporary measure, but a substantive change in the organisation of management and academia, which can undermine the competence of the bodies.

It became apparent that participants' reluctance towards quotas was only targeted at gender-based quotas. However, the membership of decision-making bodies is already being determined by various indirect criteria and quotas that are based on other characteristics. For instance, in some cases, it has been formally agreed that decision-making bodies must comprise a certain number of students. Such a reservation of seats also constitutes the establishment of criteria for the selection of members, yet this does not spark any discussion. But the establishment of similar gender-based criteria causes strong reactions. This demonstrates that gender measures are a sensitive topic in science and research or, on the contrary, this issue is not considered important, which leads to reluctance in discussing it.

Below is an infographic overview of the gender distribution of academic staff in Estonian research institutions[33] based on ETIS data. Detailed results of the qualitative analysis of factors affecting the choice of field of study and career development are presented in Chapters 5 and 7.

[33] The list of institutions is provided in Chapter 1.1.

4.1. Employment totals

The number of academic staff has increased by 8.6% over ten years. The number of women has increased by

13.6%

(the share of women in academic staff has thus increased by 2.3 percentage points).

In 2020, the share of men and women in academia was virtually equal: 51% women and 49% men. In 2010, women accounted for 48.7% of academic staff and men 51.3%.

A significant number of academic staff are employed part time. Converted into full-time equivalents (FTE) the number of academic staff is significantly lower. Moreover, converted into full-time equivalents, the number of men and women in academia is nearly equal.

Overall, there are more women employed part time, with their share increasing over time: in 2010, women accounted for 50.7% of part-time employees, by 2020, the same figure was already 55.1%.

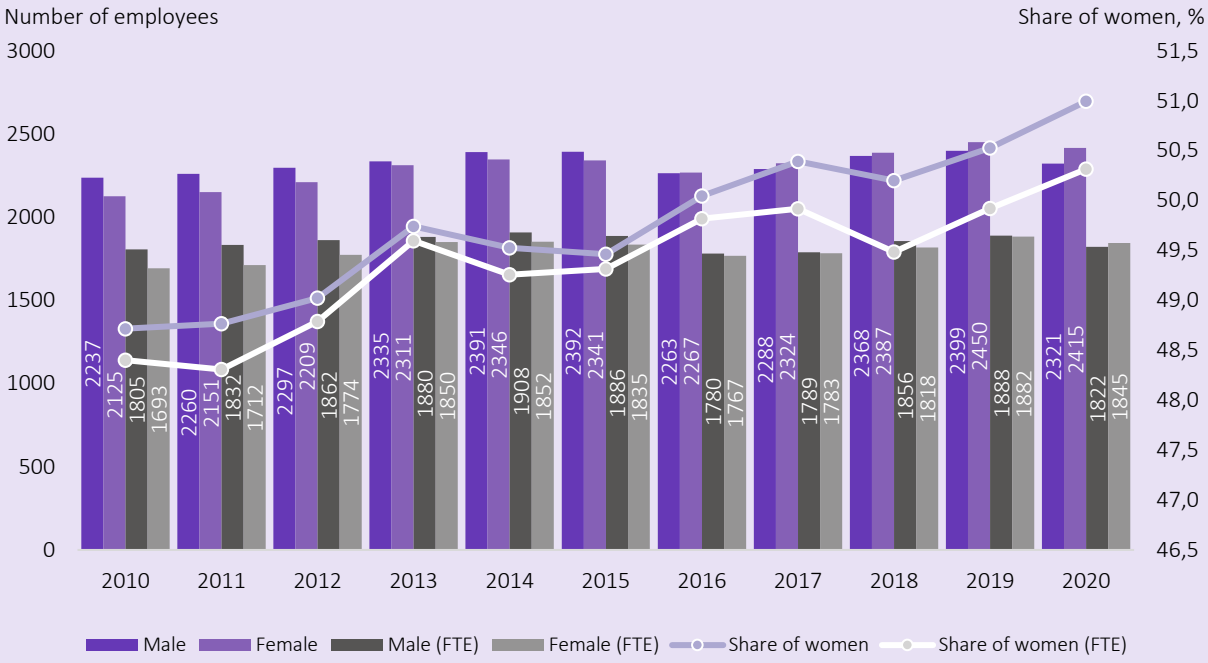

Figure 1. Total employment in public universities and other R&D institutions

4.2. Employment by institution

In terms of the number of employees, the University of Tartu is the largest institution, with their number of employees having increased by 14%. Converted into full-time equivalents, the number of employees rose by 10%.

In the University of Tartu, the share of women among academic staff has increased, reaching 52% by 2020.

The share of women among academic staff is the highest at Tallinn University, where, as of 2020, 62.7% of the academic staff were women.

The share of women among academic staff is also high in the Estonian Academy of Arts, where women accounted for 62.2% of the academic staff in 2020. The share of women there has steadily increased year-on-year, as in 2010, the same figure was only 52.9%.

The proportion of women is the lowest at the Tallinn University of Technology, for their share among the academic staff was 37.4% in 2020.

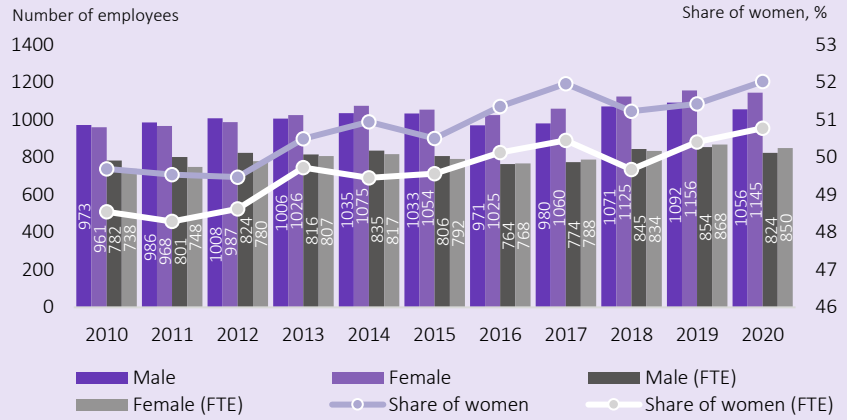

Figure 2. Employment at the University of Tartu

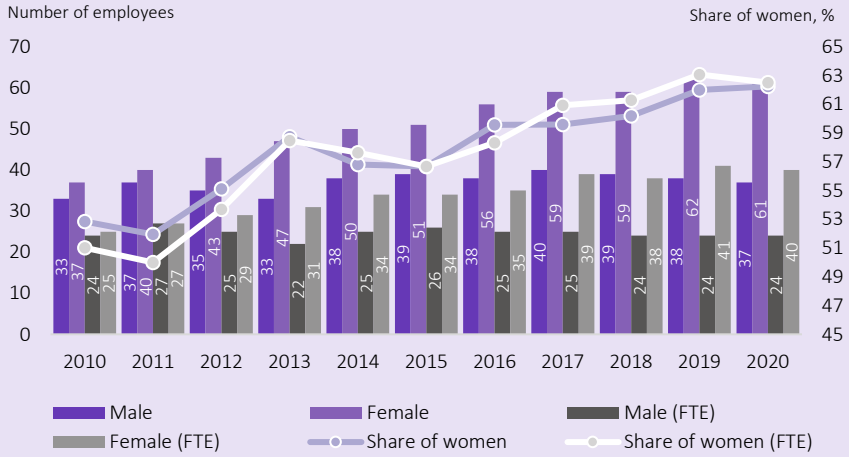

Figure 3. Employment at Estonian Academy of Arts

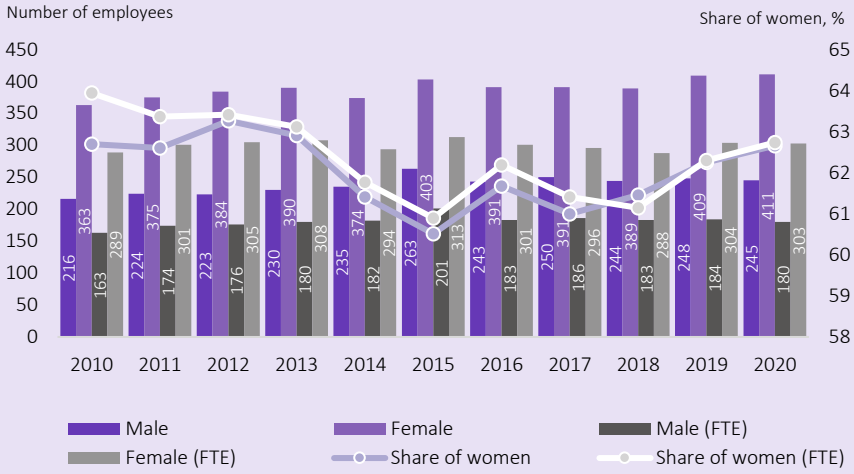

Figure 4. Employment at Tallinn University

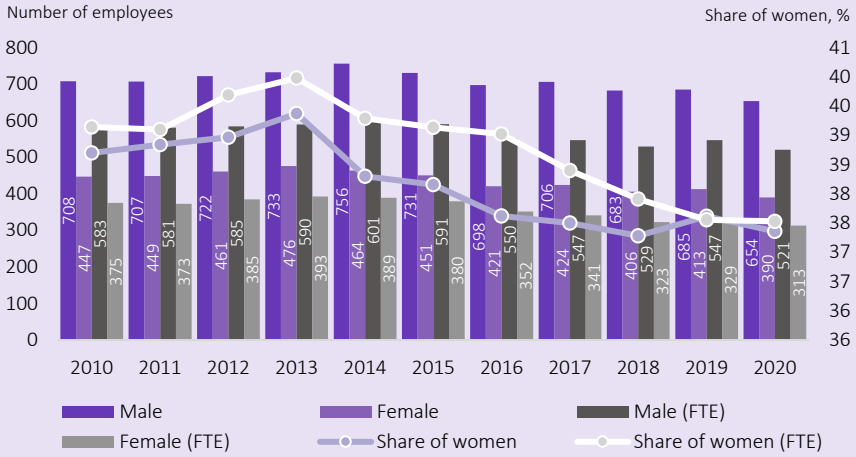

Figure 5. Employment at TalTech

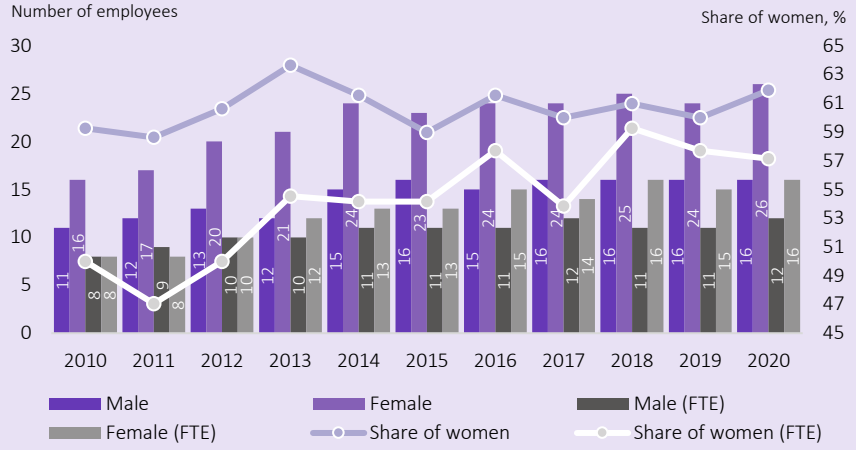

Figure 6. Employment at Estonian Academy of Music and Theatre

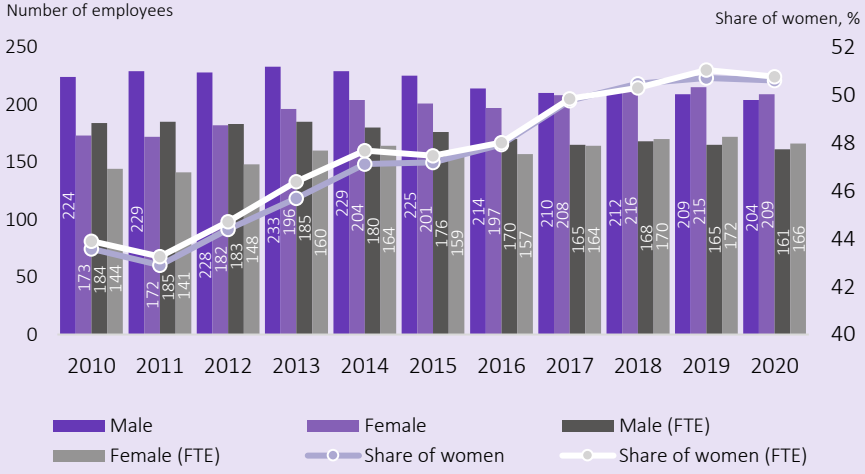

Figure 7. Employment at Estonian University of Life Sciences

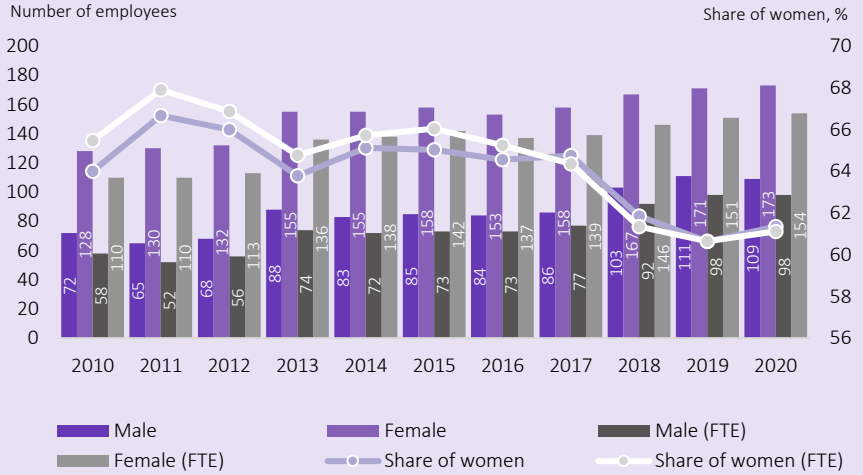

Figure 8. Total employment in other R&D institutions

4.3. Employment by position

While the share of men and women among academic staff is roughly equal, there are differences in their academic positions (vertical segregation).

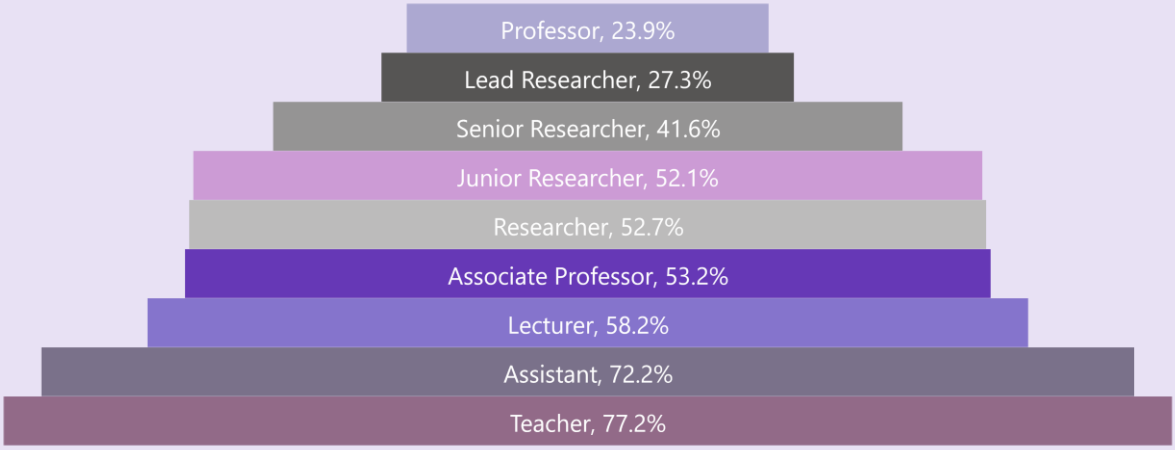

Figure 9. Share of women in various academic positions in 2020

In 2020, the share of women was the lowest among professors (23.9%) and lead researchers (27.3%). Compared to 2010, the share of women among professors has increased (21.3%), while among lead researchers it has decreased (35.1%). *(It is important to note that there are very few lead researchers, thus small changes significantly affect the overall ratio.)*

In 2020, the share of women was the highest among assistants (72.2%) and teachers (77.2%). Compared to 2010, the share of women among assistants has increased, however, among teachers it has remained the same.

The share of women among associate professors has also increased: in 2010, 41.8% of associate professors were women, in 2020, the same number was 53.2%.

Among junior researchers, the share of men and women is virtually equal: women account for 52.1%, a figure that has remained the same during the whole period.

Converted into full-time equivalents, the shares of men and women by position are similar to the distribution of all academic staff by position. The share of women is even higher among assistants (74.5% in 2020) and teachers (81.1% in 2020).

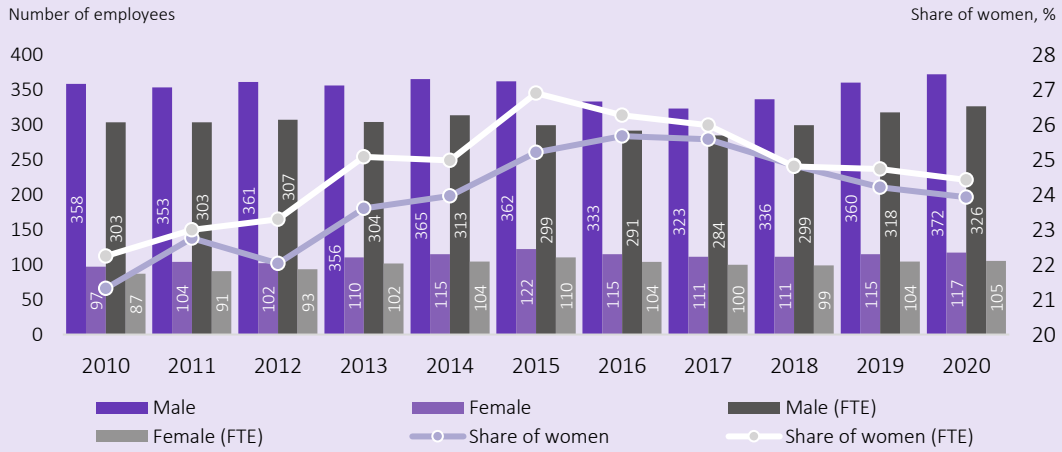

Figure 10. Professors

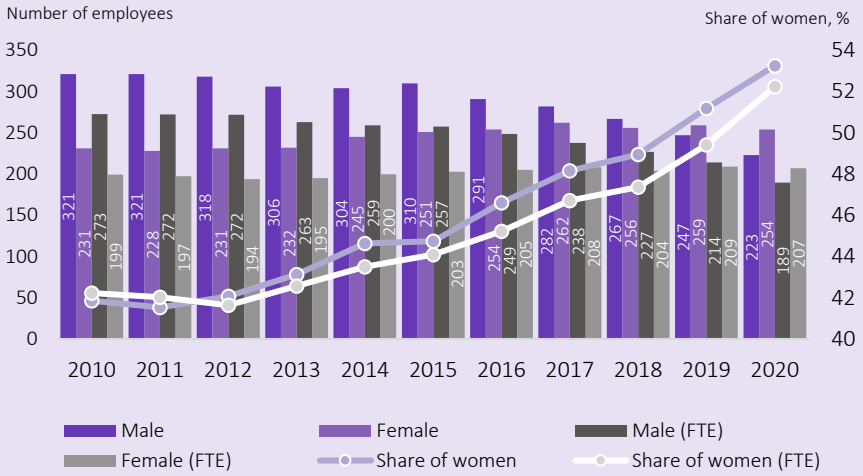

Figure 11. Associate Professors

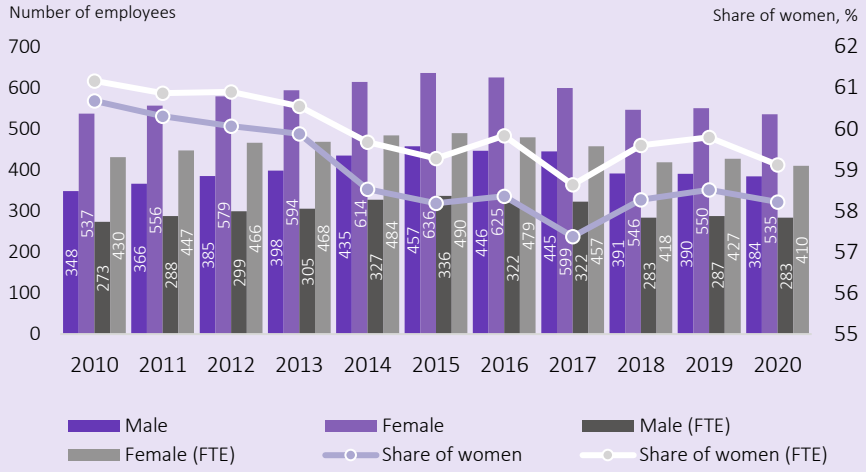

Figure 12. Lecturers

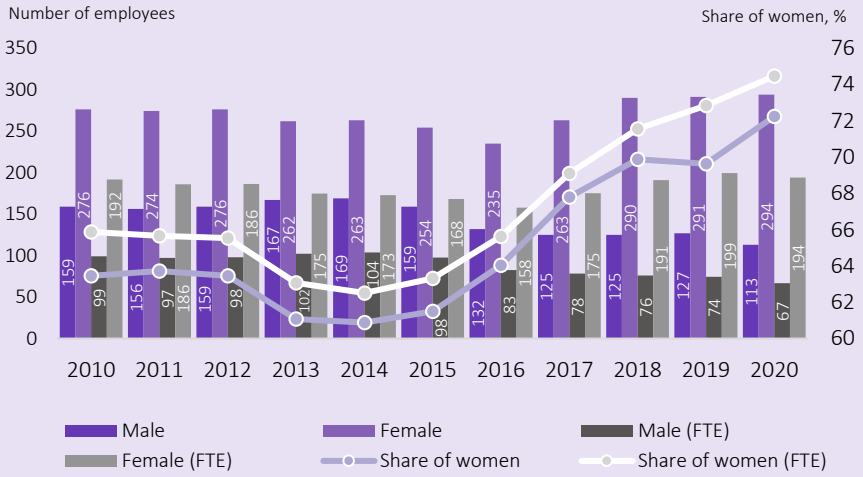

Figure 13. Assistants

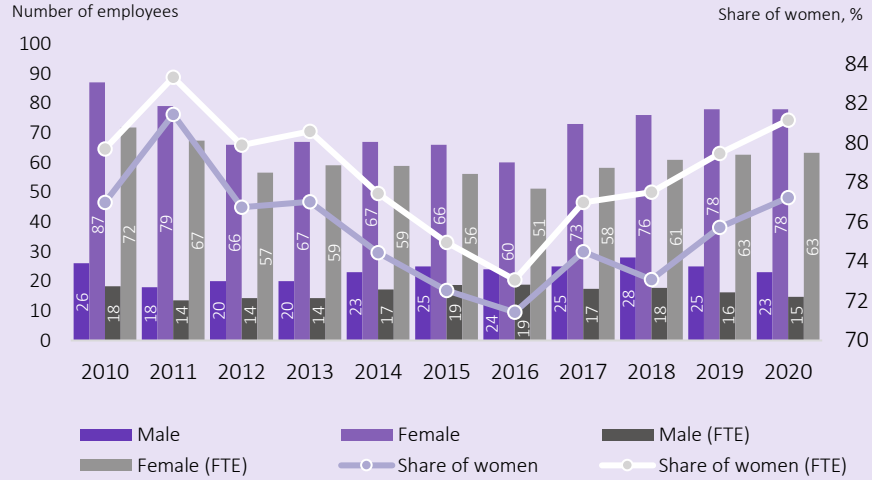

Figure 14. Teachers

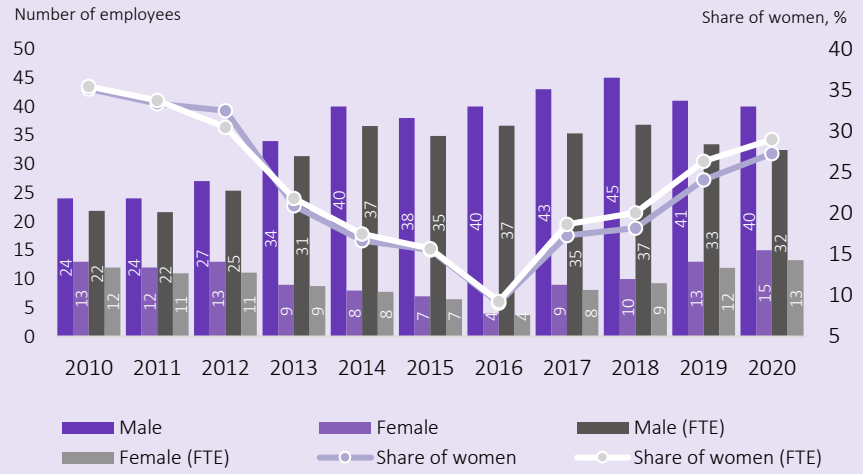

Figure 15. Lead Researchers

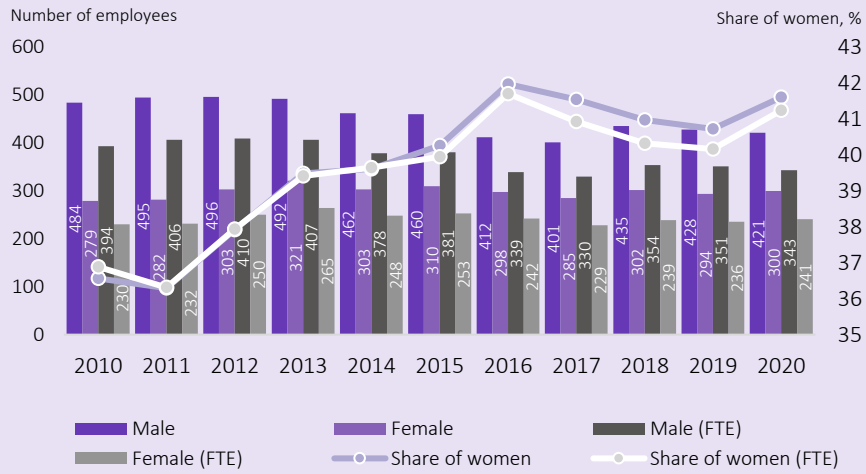

Figure 16. Senior Researchers

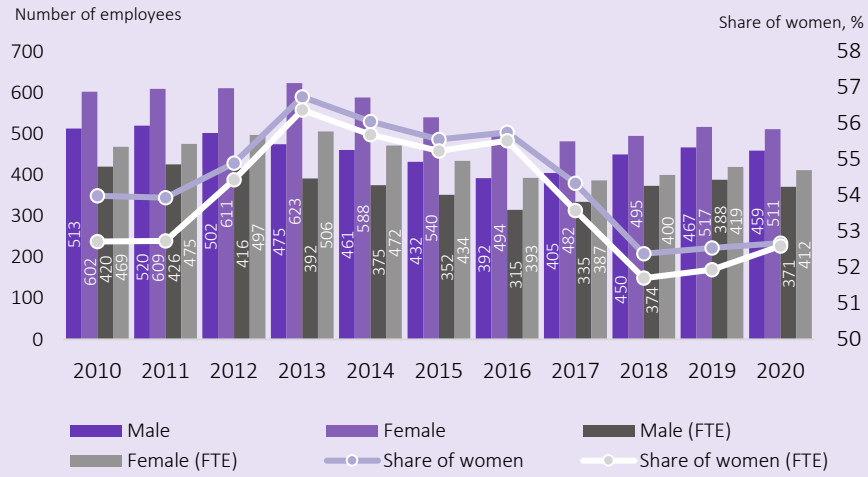

Figure 17. Researchers

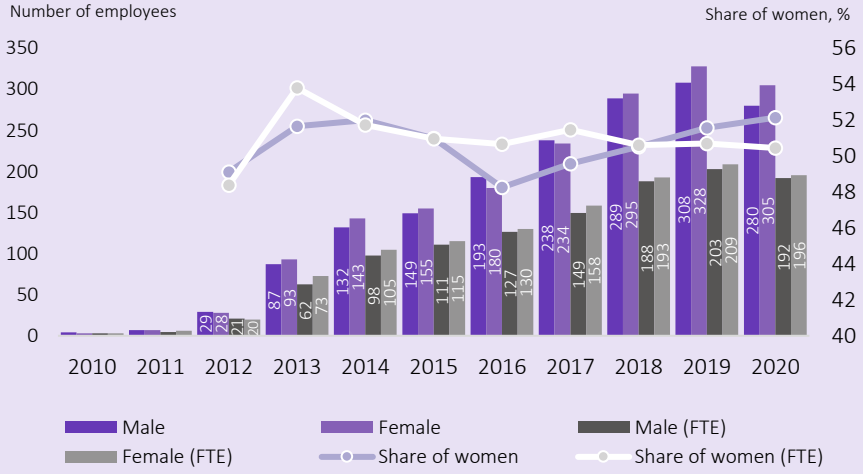

Figure 18. Junior Researchers

4.4. Employment by institution and position

The share of women among professors is the highest at Tallinn University: In 2020, 41.3% of professors at TLU were women, however, over the past five years, the share of women among professors at TLU has decreased rather than increased. In general, the share of women is the highest at Tallinn University.

The share of women among professors has increased at the University of Tartu, reaching 24.3% in 2020. Nevertheless, the number of men and women at the University of Tartu was more or less equal among all academic staff (women accounted for 52% of all academic positions at UT in 2020).

The lowest share of women among professors was at TalTech (13.7% in 2020) and the Estonian University of Life Sciences (16.2% in 2020). Compared to other institutions, TalTech has by far the lowest number of women among all academic staff. In 2020, the overall share of women at the Estonian University of Life Sciences was 50.6%, a figure that has increased over time.

The share of women is higher in all universities (except TalTech) among assistants, lecturers, researchers, and junior researchers.

The share of women among associate professors has increased at all universities.

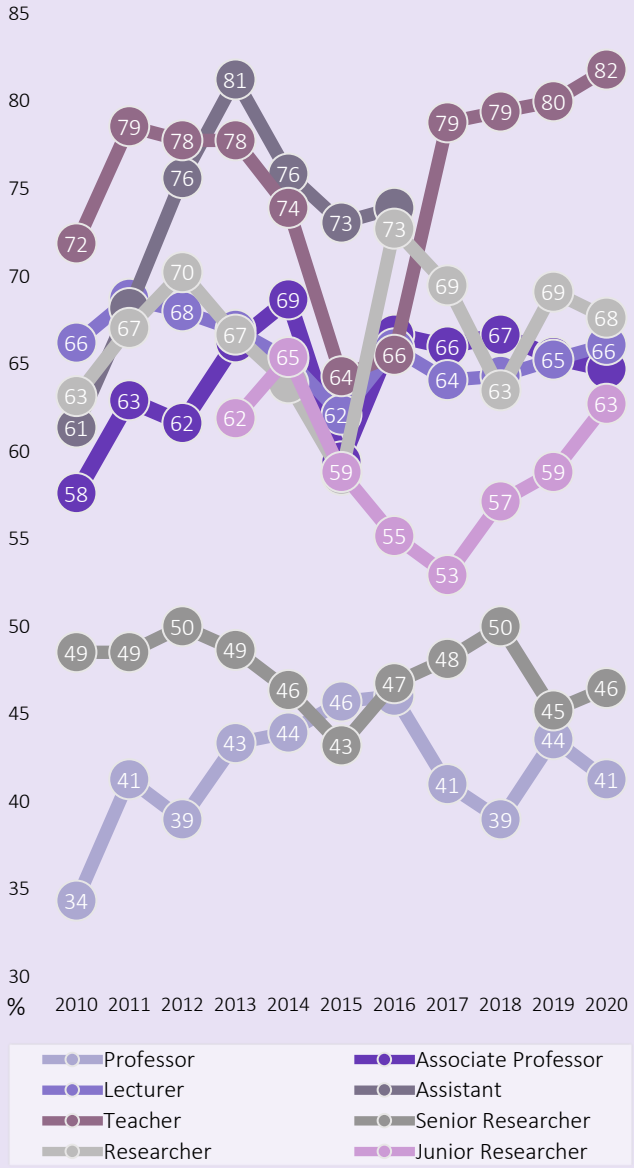

Figure 19. Share of women at Tallinn University

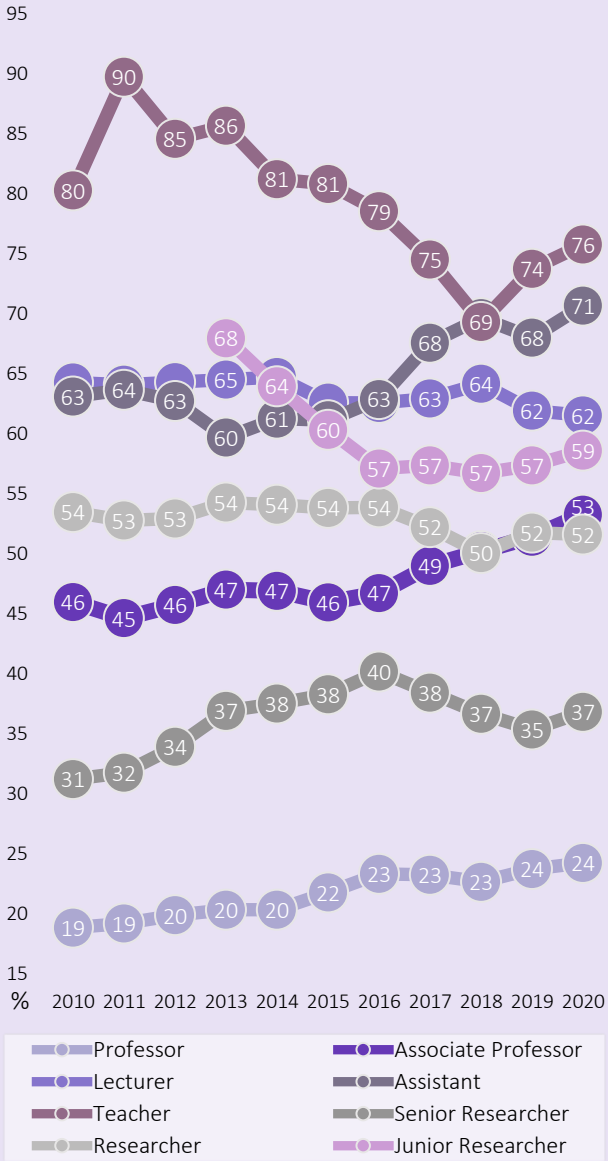

Figure 20. Share of women at the University of Tartu

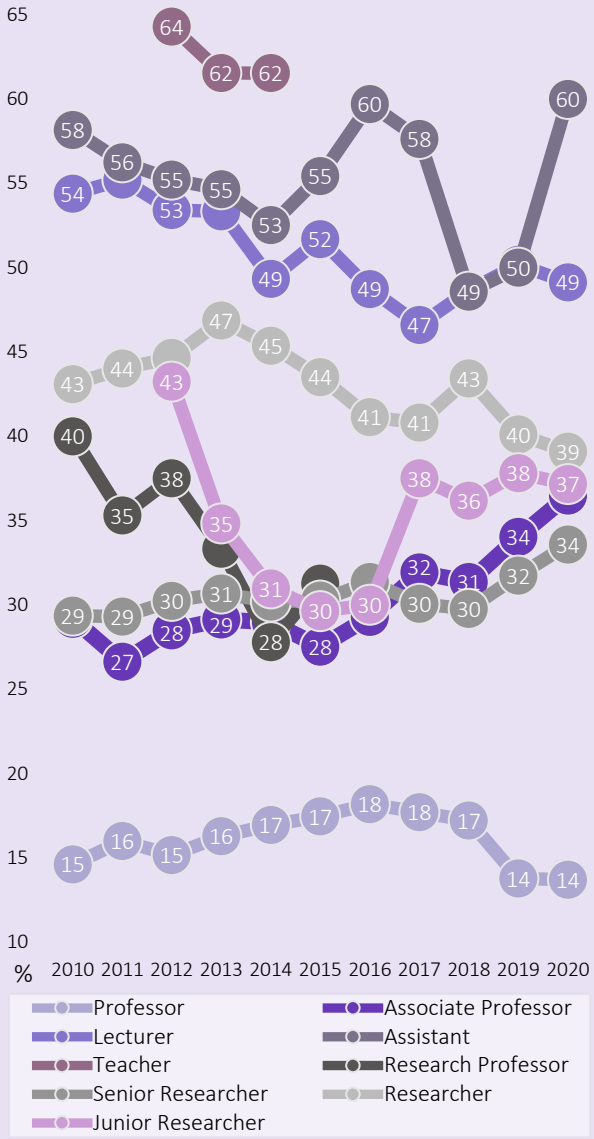

Figure 21. Share of women at TalTech

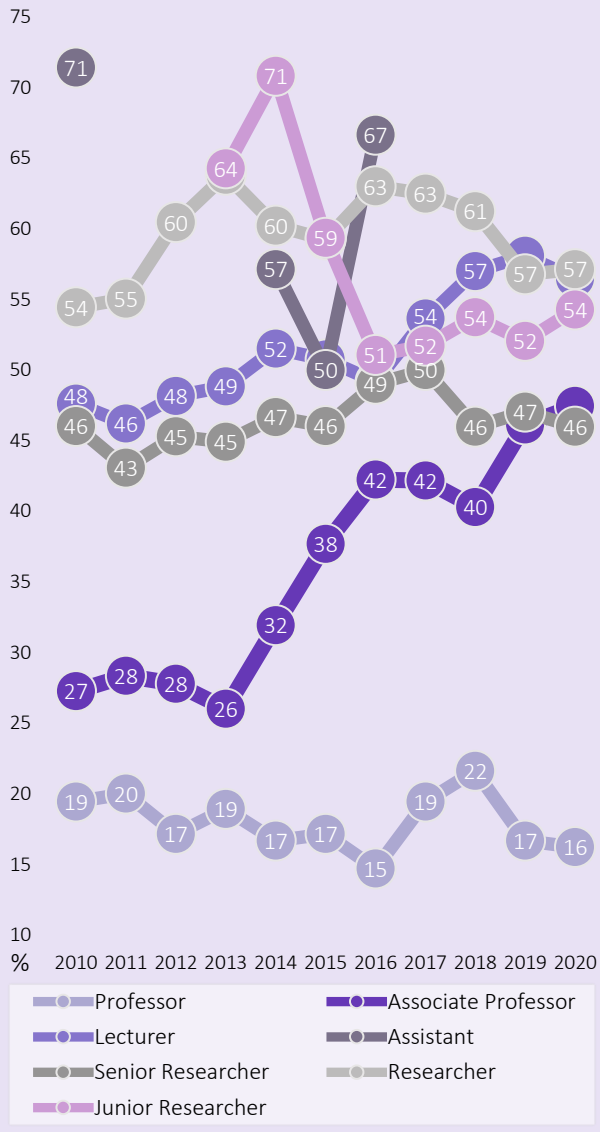

Figure 22. Share of women at the Estonian University of Life Sciences

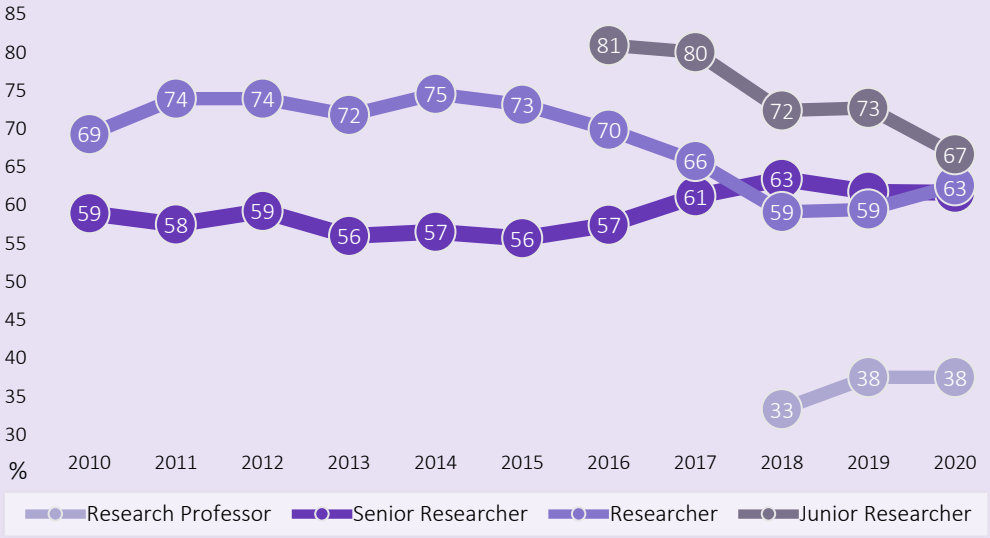

Figure 23. Share of women in other R&D institutions

4.5. Decision-making bodies

Table 1. Decision-making bodies as of 20 January 2021

Institution	Decision-making body	Male	Female	Total	Share of women, %
University of Tartu	council	6	5	11	45.5
	Senate	12	10	22	45.5
Tallinn University	council	9	2	11	18.2
	Senate	18	17	35	48.6
Tallinn University of Technology	council	8	3	11	27.3
	Senate	19	7	26	26.9
Estonian Academy of Music and Theatre	council	5	2	7	28.6
	Senate	12	13	25	52.0
Estonian Academy of Arts	council	4	5	9	55.6
	Senate	9	13	22	59.1
Estonian University of Life Sciences	council	5	2	7	28.6
	Senate	12	7	19	36.8
Institute of the Estonian Language	scientific council	8	9	17	52.9
Estonian Literary Museum	scientific council	8	9	17	52.9
Estonian Crop Research Institute	scientific council	8	5	13	38.5
National Institute of Chemical Physics and Biophysics	scientific council	13	5	18	27.8
Under and Tuglas Literature Centre of the Estonian Academy of Sciences	scientific council	6	7	13	53.8
National Institute for Health Development	scientific council	3	6	9	66.7

High-level academic decision-making bodies are responsible for making decisions affecting the general research and development and organisational operation of the institution (e.g. approval of statutes, adoption of budget). Institutions with a higher share of female academic staff also have more gender-equal decision-making bodies (although this is not always true for councils, e.g. as is the case with TLU). In part, this can be explained by the fact that candidates are appointed on the basis of their academic position – thus, the gender imbalance in higher academic or management positions is also reflected in the membership of decision-making bodies. Elected candidates, however, are selected based on the support they receive during the election. The gender balance among candidates depends on various factors, such as how many men and women meet the application criteria, how many of them decide to apply, as well as the overall mindset of electors (how much their ideas overlap with those of the candidate, personal relationships, and attitudes towards the candidate).

5. Choice of field of study

As of 1 September 2020, a total of 3,842 members of academic staff had specified their field of research in the ETIS database. In terms of field of research, in 2020, the largest number of academic staff were engaged in Culture and Society, i.e. 1,366 employees or 35.6%. Researchers in the field of Natural Sciences and Engineering accounted for 31% of all academic staff (1,191 employees in total) in 2020. Finally, 20.9% of academic staff (804 employees) were active in the field of Biosciences and Environment, and 12.5% (481 employees) in Health.

The share of women in different fields of research has changed relatively little. The highest increase took place in Biosciences and Environment, while the smallest increase was in Natural Sciences and Engineering. A more detailed breakdown of absolute figures is provided in the annex (annex 5, table 21).

Table 2. Share of women by field of research 2010–2020, %

Field / year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Change in percentage points (2010–2020)
Natural Sciences and Engineering	27.8	27.3	29.3	28.5	27.7	27.9	28.0	28.5	28.1	28.8	28.7	0.9
Culture and Society	60.8	60.9	61.7	61.5	61.5	61.2	62.7	62.7	63.1	63.5	64.2	3.4
Biosciences and Environment	48.0	48.3	51.4	51.6	51.5	51.8	52.3	52.8	51.9	52.4	52.6	4.6
Health	58.9	59.9	60.3	62.2	61.5	61.5	61.1	62.2	63.0	63.0	63.0	4.1

The distribution of women between fields of research within institutions is similar to the overall distribution between fields of research. In all institutions, there are significantly less women than men in the field of Natural Sciences and Engineering. In 2020, the highest share of women in the field of Natural Sciences and Engineering was in the Estonian Academy of Arts, where the overall proportion of women among academic staff is also one of the highest. The share of women is highest in the field of Health in nearly all institutions surveyed. For instance, at TalTech, women accounted for 37.4% of all academic staff in 2020, however, in the field of research they made up 70.4%. In all the institutions, women also outnumber men in the field of Culture and Society.

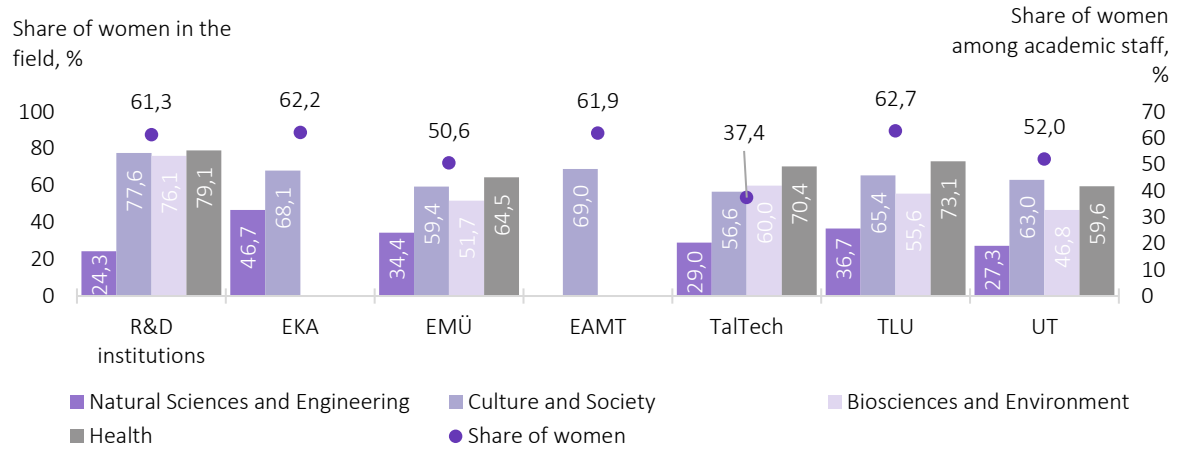

Figure 24. Share of women in research fields by institution, share of women among academic staff by institution in 2020, %

It is important to note that the field of research varies greatly depending on the specific R&D institution: in the National Institute for Health Development, the main field of research is Health, whereas in the Institute of the Estonian Language the focus is on Culture and Society. In the case of universities, it is clear that the lowest number of women are employed in Natural Sciences and Engineering. Compared to other universities, more than a third of the women in the field of Natural Sciences and Engineering are employed at TLU (although this figure has decreased by approximately nine percentage points over the ten-year period) and EMÜ, where women accounted for 34.4% in 2020 (an increase of nearly five percentage points). This is not surprising, considering that EMÜ is more focused on the field of Natural Sciences and Engineering. A more detailed breakdown by year is provided in the annex (annex 5, table 22).

A breakdown of academic positions by field shows that in senior positions (professors and lead researchers), where the proportion of women is generally low, female members of academic staff are especially underrepresented in Natural Sciences and Engineering. The largest number of female professors are in the field of Culture and Society, where women outnumber men in general. A more detailed breakdown by year is provided in the annex (annex 5, table 23).

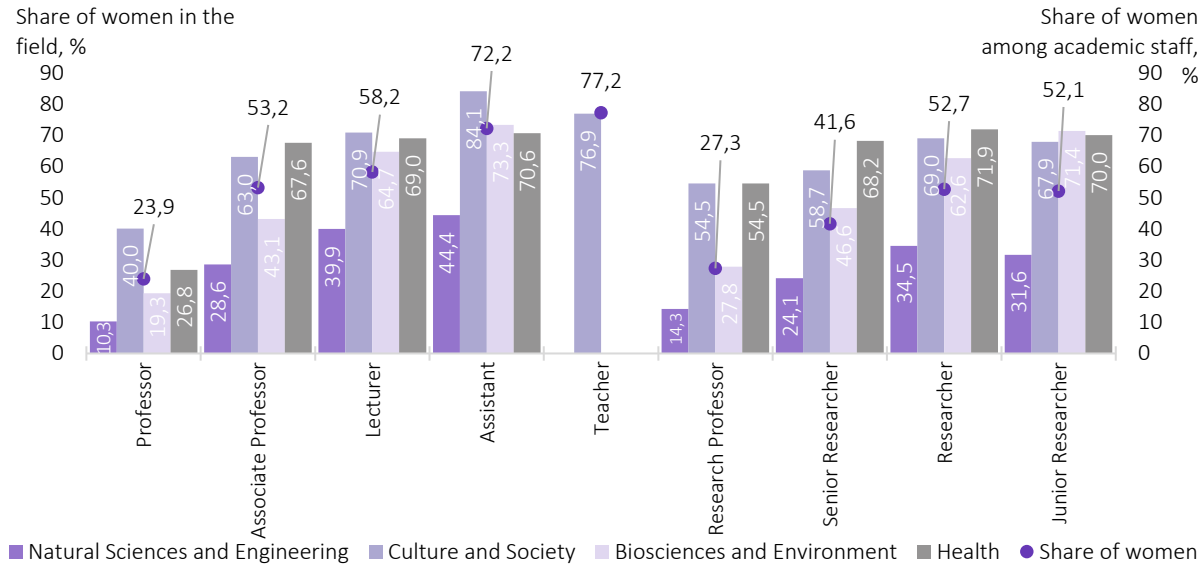

Figure 25. Share of women in research fields by position, share of women among academic staff by position in 2020, %

Circumstances affecting the choice of field of study of academic staff and doctoral students

Academic staff pointed out various key factors affecting the choice of field of study. On the one hand, participants mentioned **family background** and **living environment** as important factors in their choice of field of study. For example, one academic staff member working in the field of environmental sciences explained that they "*grew up in the countryside, which affected [their] choice of study field. My goal was to study something nature-related in university."* Several interviewees also said that their choice of field of study was affected by **burning issues** in society at the time that offered practical research opportunities and created a need for competence: *"During my coming-of-age years, the key topics were the Phosphorite War and first signs of climate change (acid rain). It was the global issues that sparked my interest."*

In addition, long-term **interest** in the topic that had already started in early school years was pointed out as a factor affecting the choice of study field. In this regard, interviewees considered that the attitudes, behaviour and good example of teachers in basic and secondary education to be important factors: **the teacher and their actions determine whether a student's interest and gift in a certain area is encouraged or suppressed**. One participant described their experience as follows: *"I feel like I got on well with my physics teacher at school, but with my mathematics teacher I felt like even though I had the best results, one boy in my class was still considered more talented than me, that he understands more than I do. It seemed like the attitude was that 'you have good grades because you study, but boys are naturally talented'. Such attitudes kill girls' interest in sciences.*" The reinforcement of such stereotypes may also explain the gender segregation in higher education.

However, **chance** also plays a role in the choice of study field. For instance, participants mentioned that their choice was prompted by lack of options (e.g. failing to qualify for competitive programmes due to state examination results). Moreover, study plans sometimes changed due to new experiences and encounters. In some cases, choices were made **strategically***: "I hated history when I was in school and even when I came to university I didn't want to study history, I ended up there by coincidence. In the end, I realised that history covers all my interests and at the end of my master's studies I decided that I was a historian."*

Gender segregation in different fields of research

Quantitative data revealed that Estonian research is characterised by gender segregation between different fields of research. The dominance of one gender in some fields of research raises questions as to what the forces behind such a trend would be. A significant gender imbalance may be problematic as it changes the freedom of action of minority groups and thus also the nature and content of the knowledge created. For example, one female doctoral student pointed out that, in a currently predominantly male-dominated field, it is difficult for women to make their voices heard: *"I think similar ways of thinking and approaches are accepted then. /.../ Sometimes, for example, when a female person says something, she either has to talk a lot more or talk more loudly."*

According to the participants, there is horizontal gender segregation in different fields of study, which is caused by **social attitudes** and **gender stereotypes**. Quantitative data suggest (see, for example, table 2) that there are fewer women in natural sciences and engineering, and more in the fields of health, and culture and society. The reason for such a distribution is, among other things, **gendered** activities and knowledge in different fields of research. The overall nature of and personal qualities necessary for research were viewed through the prism of gender. For instance, empathy and openness to different interpretations, which are essential qualities in the field of humanities and social sciences, were often associated with feminine values: "*/…/ humanities and social sciences are fields of empathy, and since women are often more empathetic, it can explain the psychological trend."* The same was observed in the context of health: "*Women may have a stronger urge to help people and the topic of*

health may be closer to their hearts." Engineering and technology, however, were considered to be masculine: "*/…/ this field attracts more men. Product development and robotics seems like a masculine area."*

The **emergence of such social attitudes was linked to the general education system**, in which the teachers were thought to play a key role again: *"Women are afraid of physics and school [at basic and upper secondary level] generates this feeling in them. Today, girls are encouraged to undertake more technical projects, although this largely depends on the teacher – whether they mock or criticise girls or encourage them instead. This does not depend on the teacher's gender, but rather on their personality."* In some cases, teachers may be the ones enforcing gender stereotypes regarding different fields of study: *"/.../ a physics teacher once got angry at a male classmate of mine for not winning the county biology Olympiad, /…/ saying something along the lines of 'how can a boy be so stupid that he loses to a girl'."*

Even if students are considering more technical fields initially, female students often end up choosing another field completely: "A training programme [Young Engineer Programme] has just ended. Girls accounted for one-third of the participants in this programme, while two-thirds were all boys. Meaning that, among the students who are still choosing their field of study, the gender balance is more equal, and in that programme it seemed like women are interested in this field, but in the end they still don't come here. I don't know why, maybe because of friends, they still go and study something else." At the same time, in this context, the social image of the fields of research not related to gender must also be taken into account. For example, the argument that some fields of study are not very prospective is used to influence people's choice of field of study regardless of their gender: "At 15 years old, I decided that I wanted to study physics, and I did. Although people tried to convince me not to do it. /…/ some adults were of the opinion that 'there's nothing to do with physics, you should study economics or law instead'."

Participants stated that while they experienced teachers' gendered attitudes towards different fields of study in general education, then at bachelor's and master's level such experiences became less frequent. At the same time, female participants also described situations in which the expectations for male and female students in the field of natural sciences and engineering differed: *"[I experienced] the stereotype that 'you are a girl, your excellent grade is equivalent to boys' good grade'. The requirements were sometimes lower."* In the field of health, stereotypes could be seen in the attitude that women do not make good doctors or in situations where male students were subject to stricter evaluation criteria or given more concessions. Doctoral students of natural sciences and engineering who had experience in both entrepreneurship and academia noted that, in general, there are fewer gender stereotypes in academia. In addition, one female member of academic staff in exact sciences acknowledged that the higher up you move in your education and career, the less gender stereotyping there is: "*The further you move in education, the easier it gets. People understand that if you have made it so far, you can probably manage in the future as well. You have to continuously prove yourself in school and during the first years of university, that is the real bottleneck. Of course, the attitudes of fellow students in university may vary, but as you progress and gain more experience, it gets easier to defend yourself."*

On the other hand, the interviewees submitted that differences in the choice of field of study may also be related to stereotypical **gender roles**: how the role of women and men is seen in the society, especially with regard to who the breadwinner of the family is: *"I suppose the lack of men [in this field] is caused by low and unstable wages (don't know if you'll get paid next month), as is also the case with teachers and doctors."* Acceptance of lower wages was considered to be more common in the case of women.

While at the moment female members of academic staff outnumber men in some fields of research (particularly in culture and society and health), then according to experienced members of academic staff, a **gender shift** has taken place in some fields of research over the years – more women are starting their studies and reaching higher academic positions in certain fields: *"We can no longer talk about gender inequality in its traditional sense. There is no shortage of women or female professors, on the contrary – there are significantly more women. This has not always been the case. When I was a student in the 90s, the situation was completely reversed in Estonia. All but one of the professors were men. Today, the situation is completely reversed. Now almost all of the professors [of social sciences] across Estonia are women. A gender shift has taken place over a longer period of time."* Such a shift was linked to **structural inequality** caused by *"/…/ wage gaps between different fields of research. Men who traditionally see themselves as the main breadwinners in the family choose other fields of study [instead of social sciences] or, if they do choose these fields of study, they pursue their career outside of academia where wages are higher. Wage gaps between different fields of research and sectors [academia vs. other sectors] have caused the gender shift. It can be said that women are more willing to accept lower wages."* Interviewees also considered wages to be one of the factors that may not motivate men to continue their careers in academia in the long term: *"In our society, men are expected to be the breadwinners, but wages here are relatively low."* This further supports the fact that women are more willing to accept lower wages.

6. Research output (publication, participation in projects, mobility)

This chapter explores whether and how the activity of male and female members of academic staff with regard to publication, project participation and secondment abroad differs (including by position). **It is essential to provide an overview of research outputs as they directly influence the career progression of researchers. Unless a researcher meets the promotion requirements necessary to advance to the next level, they will not be promoted.**

In some fields of research (especially the fine arts), the output of academic staff also includes creative work: these results are provided in an annex to the report (annex 10). As the fulfilment of the creative work section in the CVs in ETIS is very irregular and the data are incomplete, we did not consider it appropriate to present those results in the main part of the report. For the same reasons, data on activities in research organisations and administrative work (annex 9) as well as research awards and honours (annex 8) is presented in the annexes. In addition to providing a quantitative overview of research outputs, we shed some light on the research choices of academic staff and doctoral students as well as their perceived impact on career development.

6.1. Publications, projects, supervision

Publications

On the one hand, publishing is a natural part of the transfer of research results (knowledge created), on the other hand, it is an obligatory duty for academic staff that confirms their activities and competence. Publication activity is taken into consideration during evaluation and also serves as a prerequisite for career progression. Therefore, it is relevant to examine whether and what gender differences occur with regard to the publication activity of academic staff.

The analysis of publications revealed that men have published more than women in all years surveyed, both in terms of article types 1.1. and 3.1. as well as the integrated assessment of all articles. It is

important to note that the data for 2020 were extracted from ETIS in the middle of the year, therefore, more publications may have been published in the second half of the year.

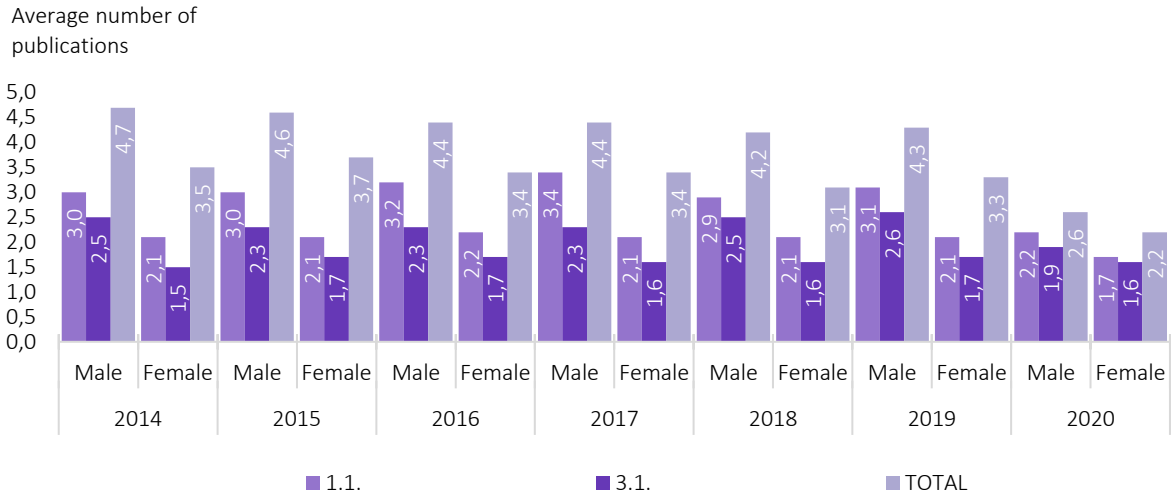

Figure 26. Average number of publications per year per researcher who published at least one article by gender in 2014 to 2020

Between 2014 and 2020, women accounted for 43–44% of those who published at least one type 1.1 publication. In the case of type 3.1. publications, the share of women who have published at least one publication of that type has increased: in 2014, the share was 35.9%, but in 2020, the same figure was 45.6%. In total, women accounted for 46.5% of those who have published at least one publication in 2020. This figure has been relatively stable during the survey period (45–47%). At the same time, considering that women accounted for 51% of all academic staff in 2020 (see Chapter 4.1), it is evident that women have published slightly less publications than men.

Analysis of the average number of publications by gender and institution showed that men have published more during the year in all institutions, except EKA and EAMT. In EKA and EAMT, women have published more during some years, however, it must be said that publication of articles is not the only research output for those in creative fields. A short overview of creative work (annex 10) and a table of average publications (annex 2, table 11) is provided in the annexes.

The share of women who have published at least one publication is the highest in other national R&D institutions (not universities), in EKA and EAMT. On average, the female members of academic staff of TLU have also published at least one publication more than men. A more detailed breakdown by institution is provided in the annex (see annex 2, table 14). Publication activity (the share of both male and female academic staff who have published at least one publication) shows that researchers in other R&D institutions publish more than those in universities. In 2019, 71.3% of female staff and 64.9% of male staff in other R&D institutions published at least one publication (see annex 2, table 12).

Analysis of publication by academic position indicates that men have published more publications over the years in almost all positions. The only exceptions are the positions of associate professor and lead researchers, where women have published more publications than men over several years. The share of women among associate professors has increased over the years (see Chapter 4.3). Professors and lead researchers are the most prolific publishers, however, the share of women in these positions is far lower than in other positions (see also annex 2, table 15). In 2019, 87.2% of male professors published at least one article. For female professors, the same figure was 86.1%. In the case of associate professors, though, women published more than their male counterparts in almost all years. In 2019, 71% of female associate professors published at least one article, compared to 66.8%

of men. Publication activity among lecturers and assistants is significantly lower: the proportion of those who have published at least one publication is lower among both male and female assistants and lecturers than among their senior colleagues. Over the 2014–2019 period, more than 80% of both male and female senior researchers have published articles, with women publishing more frequently than men (84% of women and 80.6% of men in 2019). The publication activity of junior researchers is lower than that of senior researchers, however, it is still significantly higher than that of lecturers and assistants (see annex 2, table 13).

The slight differences in publication activity by position are caused by different factors. For instance, publication activity may depend on the **other work duties** of the academic staff member. In this regard, interviewees pointed out **teaching** and **supervision** related duties that require a great deal of time and attention: "*High teaching load may hinder research-related activities – that's the bad thing about teaching.*" At the same time, participants submitted that, in their opinion, female staff members have higher teaching loads than men, sometimes even regardless of position.

> *"Already from a young age, when I should have conducted research, the high teaching load has affected my career in research. /…/ In our institute, there are at least two women, one with a degree and the other without – she has not been able to defend her degree because she is a woman. She has all the articles, but still teaches with a high workload. When women give up and start to teach, it is difficult. And when they have a family, it is even more difficult. If you try to do research while also working as a full-time lecturer, it's not going to be a regular 40-hour work week anymore."*

In addition, doctoral students felt that they are often made responsible for various **organisational duties** and that male and female students are treated differently:

> *"Somehow I have become one of the few female doctoral students. /…/ As a result, my supervisor has used me in the planning and organisation of various events, telling me to contact such-and-such, take care of paperwork, make sure that the classroom has all the necessary markers and flip charts... Which makes me wonder: Would they give these same tasks to male students? They have invited male doctoral students to these events that I have organised more often for the purpose of them giving a lecture."*

In addition, the writing of **project applications** was also mentioned as a factor that can take away time from other research-related duties: *"/.../ a significant amount of hours are required to rewrite rejected applications."*

Nevertheless, the deep-rooted traditions in science and research cannot be completely disregarded in the case of publication, as these traditions can cause gender differentiation:

> *"/.../ for instance, I have noticed that in writing, my text is corrected a little bit too much, but none of my female colleagues have done the same to male colleagues. This may be due to some earlier practices where men had to review everything. Even the previous generation of women here have said that when they were in university and submitted a paper then nothing was accepted before a male researcher had rewritten something in it. I feel like this is sometimes still happening or, for example, that my text has been altered to contain an idea that is not mine, without me knowing, and I don't like that."*

Participation in projects

Similarly to publications, participation in projects is a key output of research. The average number of projects of both men and women is virtually the same in all years and most frequently, one academic staff member is involved with one project at a time. The share of women who participate in at least one project is just under 50% (figure 27). As a reminder, women accounted for approximately 51% of all academic staff in 2020.

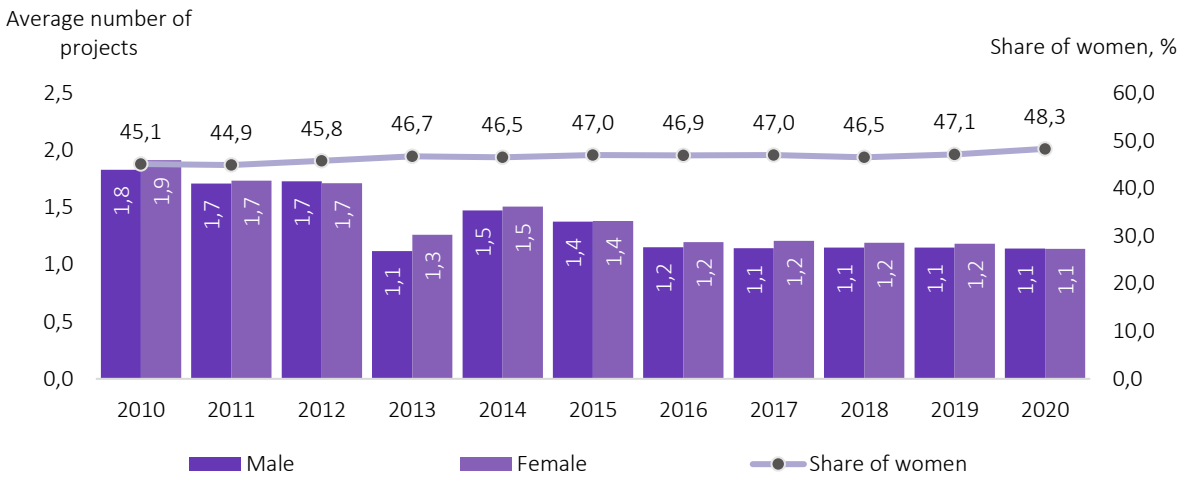

Figure 27. Average number of projects by gender in 2010–2020

The same trend can be observed in institutions: the average number of ongoing projects has decreased over the years and the average number of projects that men and women participate in during the year is the same. More detailed data on project participation is provided in the annex (annex 3, table 16). Overall, the average number of projects per academic staff member across institutions is more or less the same. In total, the academic staff of other R&D institutions has participated in projects slightly more, but even then, there are no significant differences between men and women. This is to be expected, considering that the main task of other R&D institutions is participation in research projects (which means that, compared to universities, the work duties of the staff of R&D institutions do not include teaching as such).

The share of women participating in projects is once again the highest in other R&D institutions, EKA, EAMT, and TLU: the overall share of women in academic staff is also highest in these institutions, thus, it is logical that there are also relatively more women among those participating in projects. In UT and EMÜ, women accounted for 50% of those participating in projects, with the share of women increasing in project participation in both universities. It is important to note that the share of women among project participants is similar when taking into account the overall distribution of women among the entire staff of the institution. At TalTech, women accounted for one-third of all project participants and 37.4% of all academic staff in 2020 (see annex 3, figure 29).

Comparison of the share of men and women who have participated in various projects reveals that, during the 2010–2020 period, men have generally participated in more projects than women, however, the gap has narrowed over time. Analysis by position shows that, for instance, female professors, senior researchers, researchers and junior researchers have participated in projects more than their male counterparts. It should be noted that, at the beginning of the period under consideration, female professors participated in projects less than their male colleagues, however, over time their participation surpassed that of men. More detailed data on project participation are provided in the annex (annex 3, figure 30).

With regard to projects, the profiles of project managers should also be taken into account: in the context of this analysis, principal investigators of projects are considered project managers. In most cases, principal investigators are professors, associate professors, lead researchers, senior professors, and researchers. In a limited number of cases, principal investigators may also be lecturers or assistants. The number of female principal investigators was the lowest among professors during the entire survey period, however, in general, the proportion of women has also been the lowest among professors in all years. The highest number of female principal investigators can be found among

researchers and associate professors, but again, there are more women in these positions overall (see annex 3, figure 31).

However, if we look at the share of female principal investigators by position in relation to the total number of female employees who participate in projects in the respective positions, it is clear that the number of female principal investigators by position is lower, although the difference with male colleagues is relatively small (see Table 3). The one exception is the lead researcher position, where differences are greater in some years[34]. Male and female professors who participated in projects were principal investigators in more than half the projects.

Table 3. Principal investigators by gender and position in relation to all project participants in same positions in 2010–2020, %

Year	Gender	Professor	Associate Professor	Lead Researcher	Senior Researcher	Researcher
2010	Male	64.5	25.5	54.5	31.1	10.1
	Female	59.4	28.7	76.9	35.2	9.3
2011	Male	59.8	23.2	65.2	30.6	9.0
	Female	58.2	25.0	75.0	33.3	9.9
2012	Male	56.8	25.7	84.6	31.5	10.1
	Female	60.6	28.8	69.2	33.6	10.9
2013	Male	56.7	19.4	64.5	25.4	7.2
	Female	47.1	26.0	62.5	30.8	8.9
2014	Male	55.7	20.4	57.1	29.1	9.6
	Female	48.6	26.7	50.0	31.0	10.0
2015	Male	66.4	24.5	48.5	30.8	14.1
	Female	50.7	25.5	57.1	26.6	10.1
2016*	Male	52.8	23.5	55.6	24.3	12.8
	Female	50.0	18.2	66.7	20.2	12.1
2017*	Male	58.5	23.6	51.4	23.7	15.0
	Female	53.1	21.0	57.1	24.7	13.2
2018	Male	69.5	29.3	64.5	28.5	14.5
	Female	61.8	25.8	66.7	27.9	15.1
2019	Male	56.1	23.6	65.5	29.0	14.9
	Female	52.5	17.6	75.0	24.2	12.7
2020	Male	67.7	30.6	65.4	35.0	21.1
	Female	63.0	28.6	42.9	35.0	17.0

Note: An asterisk (*) indicates that in these two years the results between groups were not statistically significantly different.

In most cases, gender balance or minimal gender differences in project participation can be attributed to the fact that **gender diversity in research teams is a criterion or value that both financiers and evaluators take into account:**

> *"As a researcher, I have not thought about it [gender equality], but as a leader, I have thought about it. /…/ When I write project applications, I realise that this is one of the criteria I need to think very carefully about… In March, I was writing an important application and had to think about every possible layer: who are the leaders of work packages, which institutions are involved,*

[34] It should be taken into account that since the number of lead researchers is low, even the smallest changes in absolute numbers lead to significant changes in the ratios.

are their heads male or female, is there a chance that the majority will be men, and how will the tasks be allocated. I understood then that these things are becoming more and more relevant, but I hadn't thought about it before. The issue that female researchers weren't represented enough was bigger with PUT applications.

Supervision of doctoral theses

In the supervision of doctoral theses, the entire study period of the doctoral student is taken into account, supervision ends when the student either quits the PhD programme or defends their doctoral thesis. Doctoral thesis supervision is an excellent descriptor of academic work in terms of publication activity – during supervision, the supervisor collaborates with the student on the output of the research to be published. The higher the number of doctoral students supervised, the more collaboration opportunities to publish research. Academic staff with doctoral degrees are responsible for the supervision of doctoral theses.

Men have supervised more doctoral theses than women: on average, male members of academic staff supervise more doctoral students per year than female staff members. However, the average number of doctoral students supervised has increased for both men and women over the years (figure 28).

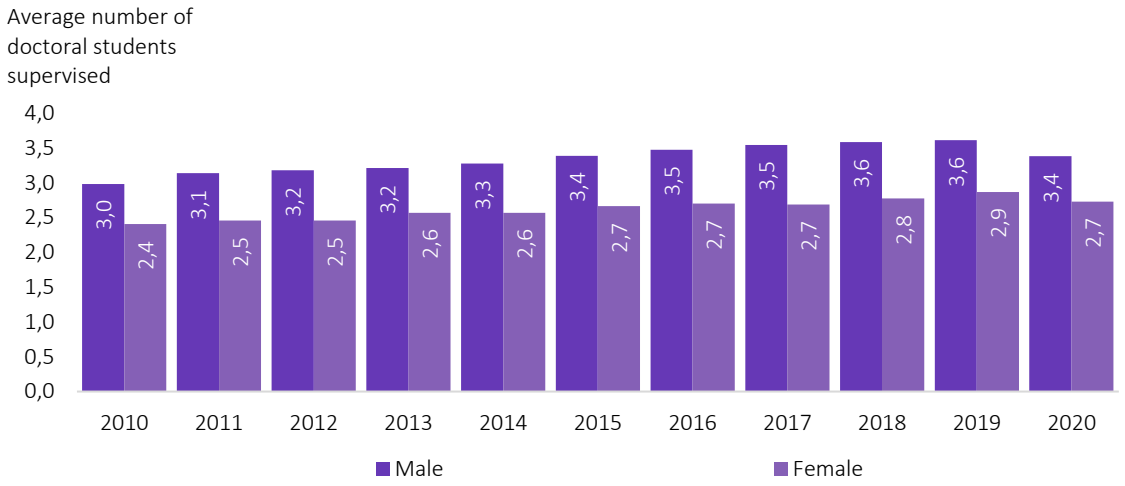

Figure 28. Average number of doctoral students supervised in 2010–2020

Analysis by institution (see also annex 4, table 20) shows that male members of academic staff supervise more doctoral theses at a time than women. The exception here is other R&D institutions where men and women either supervise the same amount of doctoral students or women supervise slightly more.

However, analysis by academic position indicates that male and female professors have the largest number of doctoral students to supervise, with the average number of students supervised being roughly the same for both men and women. Lead researcher also supervise the largest number of doctoral students. Associate professors and senior researchers supervise less doctoral students, with male associate professors and senior researchers supervising slightly more doctoral students compared to their female counterparts. A more detailed table on average number of doctoral students supervised by gender and position is provided in the annex (annex 4, table 18). In the period from 2010 to 2020, more than 80% of male and female professors have supervised doctoral theses. If, in 2010, male professors outnumbered females in thesis supervision then, in 2020, there were more female professors among supervisors. In the case of associate professors, the gender distribution of supervisors is as follows: in 2020, a total of 61% of female and 61.4% of male associate professors supervised doctoral theses. When it comes to senior researchers, men have supervised more doctoral theses than women. In 2020, a total of 63.7% of male and 57.7% female senior researchers supervised

doctoral theses. A more detailed table on the proportions of supervision is provided in the annex (annex 4, table 19).

The number of doctoral theses supervised is one of the criteria taken into account in career progression. Some of the differences in positions can once again be explained by the way in which and at what levels academic staff are engaged in teaching: for example, an associate professor who is mainly teaching and supervising bachelor's and master's level students may be far too overloaded to also supervise doctoral theses. According to participants, bachelor's and master's level students require more supervision and time. As a result, teaching at this level may not be attractive to male members of academic staff in particular (regardless of their position). Therefore, it may be a conscious choice as they are aware that teaching takes time away from doing research.

6.2. Mobility

Mobility provides an opportunity to introduce research results to others in the field and create networks for international research cooperation.

In all years, there have been more men among those who went on secondment, accounting for 53%[35] of the total. According to HR departments, the number of employees who have been sent on secondment has increased over the 2015–2019 period. In 2019, a total of 55.9% of male members of academic staff went on secondment (51.1% in 2015), for women, the same figures were 52.5% in 2019 and 47.4% in 2015. On average, men went on secondment slightly more often than women: 3.6 times per year (women 2.9 times) and this has not changed significantly over the five-year period (in 2015, these figures for men and women were 3.4 and 2.6, respectively). Moreover, men spent an average of 20.7 on secondment per year, women 15.3 days.

Comparison by institution shows, for example, that in 2019, the male academic staff of TalTech and female academic staff of EKA went on the most secondments. In all institutions, men have been sent on secondment abroad more times than women, with the exception of EKA. During the five-year period, women have been on secondment more than men in TLU and TalTech. At UT, the number of secondments among men has increased more than that of women. Compared with women, men spent more time on secondment per year, which is to be expected as they also went on secondment more often. The duration of secondments among men has significantly increased at TalTech, TLU and EMÜ. The duration of secondments among women has decreased at TLU, UT and TalTech. Although women in these institutions have started to go on secondment more often, the duration of their one secondment is still likely to be shorter than that of men.

Table 4. Number of secondments and days spent on secondment by institution and gender in 2015–2019

		Average number of days spent on secondment per year					
Institution	**Gender / year**	**2015**	**2016**	**2017**	**2018**	**2019**	**Change**
EKA	Male	12.5	18.7	12	15.2	14.4	
	Female	12.1	14.2	13.4	15.1	16.8	
EMÜ	Male	17.6	20.1	18.7	20.1	20.9	
	Female	13.8	13.9	13.4	14.1	15.6	
TLU	Male	11.6	15	15.5	20.8	15.6	
	Female	14.4	12	12.3	14.4	14.3	
UT	Male	21	21.2	21.5	21.6	20.4	

[35] In 2015, men accounted for 53.6% of those who had been on secondment at least once; 53.8% in 2016; 52% in 2017; 53% in 2018; 53% in 2019.

	Female	14.9	15.1	14.3	15	14.7	
TalTech	Male	20.5	17.8	19.6	21.9	23.1	
	Female	17.9	16.9	17.3	15.5	17.1	
Average number of secondments per year							
Institution	**Gender / year**	**2015**	**2016**	**2017**	**2018**	**2019**	**Change**
EKA	Male	1.9	3.3	2.4	2.9	2.8	
	Female	3	3.1	2.2	3.6	4	
EMÜ	Male	3.3	3.7	3.5	3.5	1.7	
	Female	2.6	2.6	2.5	2.6	1.9	
TLU	Male	3.4	4	4.1	4.2	3.9	
	Female	2.2	2.9	3.2	3.1	3.2	
UT	Male	3.4	3.6	3.6	3.6	3.8	
	Female	2.7	2.8	2.8	2.8	2.9	
TalTech	Male	3.3	3.2	3.5	3.6	4.1	
	Female	2.8	2.6	2.6	2.7	3	

Note: Green indicates a change greater than +10%, red indicates a change greater than -10%, yellow indicates a change between -10% and +10%.

The male academic staff of EKA go on secondment the most: in 2019, 87.5% of all male members of academic staff of EKA went on secondment abroad. It should be noted, however, that the overall number of academic staff of EKA is very small, which is why small changes in absolute numbers lead to significant changes in the ratios. The female members of academic staff of TLU go on secondment more often than men. At UT, secondments have somewhat decreased among both men and women. At TalTech, on the other hand, secondments have increased among both men and women, with more female members of academic staff being seconded at least once a year (see also annex 6, table 25).

Analysis by position reveals that professors and lead researchers[36] are seconded most often among both men and women. In 2019, a total of 86.5% of female professors went on secondment. Female associate professors, senior researchers and lecturers go on secondment more often that their male counterparts. However, among junior researchers, men are seconded more often. A more detailed overview of secondments is provided in the annexes (annex 6, table 24 and table 26).

According to the interviewees, the factors that can influence international mobility (i.e. the frequency and duration of secondment, postdoctoral fellowships abroad) are, in particular, those related to **personal life**. In that vein, parenting and caring responsibilities are one of the reasons that can affect long-term mobility. According to the interviewees, the way that personal responsibilities affect the short-term mobility of both male and female members of academic staff depends on the **family model, agreements, and support structure**. They added that, in part, the shorter stays of female employees abroad can thus be linked to personal factors, including what their role is in the family model.

With regard to long-term mobility, personal factors were also highlighted. For instance, interviewees explained that, in the consideration of postdoctoral fellowship opportunities, doctoral students have to take into account not only their own but also their partner's possibilities. In addition to personal factors, doctoral students also mentioned **structural factors that are inherent in the system** – finding a suitable postdoctoral position is not always easy as competition can be fierce and "finding one's own place" after doctoral studies is considered an unstable time:

[36] It should be taken into account that since the number of lead researchers is very low, even the smallest changes in absolute numbers lead to significant changes in the ratios.

"Getting postdoctoral positions is difficult and I'm also afraid of being stuck – I see some of my colleagues who have already obtained their doctoral degree constantly looking for new postdoctoral positions or short-term research projects. They are jumping from one place to another without actually finding a permanent or long-term position."

International mobility was considered beneficial in terms of further training and creating a cooperation network and, in particular, because in some fields refresher training is not available to all in Estonia. Additionally, long-term experienced members of academic staff also pointed out that the importance of mobility in terms of career development has also changed: "*Currently, the evaluation system does not take international mobility as much into account. At one point, it was almost compulsory, i.e. there was a set number of days or months that you had to have to spend abroad. I fought against that because it seemed to be discrimination not only on the basis of parenthood but also other caring responsibilities (e.g. caring for parents). Another point is that, in this day and age, where the majority of international cooperation is carried out online, the requirement to spend a certain amount of time physically abroad is irrelevant."* Some members of academic staff felt that the requirement of mobility (formal or expected) is one source of gender inequality.

Considering the COVID-19 pandemic of 2020 and the resulting mobility restrictions, it can be assumed that there were significant changes in secondment, some of which will be permanent. Representatives of the management of the institutions noted that the pandemic virtually stopped secondments, but at the same time, the organisation of research cooperation and activities (e.g. conferences, training) through other channels (webinars, online training courses) has increased.

7. Factors affecting academic careers: structural impact, stereotypes and social attitudes

In the description of factors affecting academic careers, it must be taken into account that gender equality and discrimination on the basis of sex are complex issues that may occur at different levels (structural, social, family, personal beliefs). Therefore, the impact of gender-based inequality is visible or amplified when structural or systemic bottlenecks are combined with social attitudes, gender roles and stereotypes.

Academic vs. non-academic career: reasons for choosing an academic career. Early career in academia

A large proportion of academic staff, regardless of gender, said that, similarly to their choice of field of study, their choice of career was a matter of **chance**. In this regard, interviewees explained that a career in academia was not their objective when they chose their field in previous study levels, instead it just happened in the course of their studies as a result of many factors. The following were considered the most important so-called random factors which prompted participants to decide in favour of an academic career: already participating in research activities or collaborating with academic staff during studies; academic staff actively giving referrals and recommendations for doctoral study places, postdoctoral fellowships or posts in foreign R&D institutions; creating a cooperation network. Supervisors and colleagues play a particularly crucial role in the early stages of the academic career as they are responsible for guiding master's and doctoral students and inviting them into the academic sphere, especially considering that if doctoral students begin their doctoral studies partially by chance, they may not realise right away that this **decision will shape the rest of their career**: *"I didn't see doctoral studies and my activities in the university as a job, but rather as studies. Now I realise that embarking on a doctorate is a decision that combines both studies and career."* The support of the academic community is critical in situations where cooperation with the

supervisor is not working or cooperation is interrupted in fields where doctoral studies are not research team based.

At the same time, people also enter the academic sphere for **strategic reasons**, for example, to build bridges between science and society: *"I started doctoral studies because /.../ I wanted to forge closer links between entrepreneurship and universities. Since I work in IT, I saw a disconnect between what the universities need and what businesses expect, and vice versa, what businesses have to offer to universities."* The participants found that opportunities, such as industrial doctorates, help to combine research and professional experience in the private sector and should be promoted as they also create practical possibilities for entering the world of research.

In addition, interviewees mentioned that their choice of academic career and early activities were also largely influenced by **important people** or positive role models around them. In this regard, the role of doctoral supervisors was highlighted together with support from family. Of course, the support and understanding of supervisors is also important in combining doctoral studies and private life: *"A lot depends on how you get on with your supervisor. In my case, when my kids are sick and I say that I won't be coming anywhere the next week the reply is 'OK'."* Managers and academic staff said the same about the reconciliation of work and family life: the support of management and colleagues makes it easier to continue one's career in research even if breaks occur.

However, abandoning one's path in academia was attributed to structural factors, such as **research funding** and **academic community**. The outlook of having to continuously find ways to fund your research creates fear in people, regardless of their gender, as well as doubts about the future. According to those who have experience with the preparation of grant or project applications and who have seen the ins and outs of academia, the future does not seem stable: *"The biggest question is: Am I brave enough to only dedicate myself to science and research, considering the fact that I have other responsibilities as well and the funding of research is so unstable and project-based?"* In certain fields, e.g. IT, doctoral students do not consider the wages to be competitive, thus they prefer continuing their career in the business sector rather than in academia.

Factors promoting and impeding academic career development: international experience

According to academic staff, **international mobility** is one of the factors consciously used to develop one's academic career. Senior members of the academic staff explained that postdoctoral fellowships, doctoral studies in foreign research institutions or study visits to foreign research institutions during studies were the key factors in their academic career development: "*Definitely a postdoctoral fellowship abroad, because if you stay in the same place, surrounded by the same people all the time, that does not help you advance your career."* It should be stressed that international mobility is an important career development factor, primarily in universities, in which having international recognition or international experience is recommended when applying for a position (as stated, for example, in TLU job requirements). However, the representatives of other R&D institutions considered international experience to be useful but definitely not a priority. In terms of international mobility, there are also **differences between different fields**, for instance, in medicine, clinical experience is highly important, therefore, if a postdoctoral position abroad would mean getting no clinical experience, international experience would not be the number one priority.

Moreover, interviewees pointed out that long-term international mobility (lasting for a semester or longer) may prove to be a **challenge due to family circumstances or lack of resources**. Academic staff and managers noted that, in some cases, their subordinates or supervisees have turned down international job or study offers due to personal reasons. This was also confirmed by doctoral students when they described their choices – international mobility becomes a challenge when their significant other cannot go abroad with them or they have caring responsibilities: *"On the one hand, I have not*

looked into it too much due to lack of interest and, in part, due to family reasons, as my partner and I have an agreement that we won't be leaving Estonia yet because we have elderly people who need our help and we prefer to live close to them." In addition to having job opportunities for partners, participants found that moving abroad with a family is simpler if children are still small because they are somewhat more flexible in their needs (only depend on parents), while school-age children were seen as a potential further obstacle as it would also mean a radical change in the social environment of the smallest members of the family. Alternatively, some academic staff members mentioned that they stayed abroad for work or study purposes for shorter periods of time. Such an arrangement is possible upon agreement. At the same time, those who had done postdoctoral fellowships abroad described a sense of pressure or being trapped: the number of postdoctoral positions is limited and competition is high, as a result it may not be possible to make strategic choices in terms of location (e.g. get a position in a neighbouring country to be closer to family), instead they have to accept an offer that best ties in with their field of research and interest and where they beat the competition. According to participants, these choices are morally complex – **a choice between career and family**. In most cases, people decide in favour of international mobility if it brings significant added value that outweighs other problems.

However, **long-term international mobility** may be a potential **structural factor** that generates inequality (including **gender inequality**). For instance, experience abroad was considered an advantage in applying for research funding. One participant described the inequality inherent in such a prerequisite or requirement. Insofar as the participants' responses revealed that caring for family is primarily associated with the role of women, which hampers mobility opportunities, it can also partly explain the current state of Estonian research as it hinders or has previously hindered the fulfilment of strict requirements necessary or recommended for career progression.

> *"It is possible to indicate parental leave in grant applications. It helps to a certain extent. In my opinion the most problematic part of starting grant applications is the question asked there: has the applicant (early-stage researcher) completed postdoctoral studies abroad? That is a very rigid evaluation criterion. If a person has completed a postdoc abroad, they have an advantage, if they haven't, they don't. Completing postdoctoral studies while raising children is a difficult task. The current arrangement gives the impression that if you haven't found a way to get your postdoc abroad, it is your own fault. This can often be a deciding factor in one's career as it creates path dependency: if you are not awarded the starting grant, you also cannot apply for team grants (the next level grant) and that can hinder your overall career development. Such a criterion that essentially requires traineeship abroad is practically discriminatory, but it is not completely obvious."*

However, in the case of the referenced starting grants of the Estonian Research Council, all researchers who have *"acquired research experience after obtaining their doctoral degree or equivalent qualification (e.g., as a postdoctoral fellow, researcher at an R&D institution or similar, preferably not in the same country where the doctoral degree was obtained)"*[37] are eligible to apply for the grant, but it is apparent that the interviewees have interpreted the recommendation for international mobility to be a rigid criterion. This can also be caused by the fact that in the work instructions of institutions international mobility may be relatively broadly defined (this was discussed in more detail in Chapter 2). Therefore, issues can arise in the interpretation of international experience: institutions, employees, and financiers may not understand this concept in the same way.

[37] Conditions and Procedure for Starting Grants. Available at: https://www.etag.ee/wp-content/uploads/2021/02/PSG-kord-2021.pdf.

Considering that the impact of parenthood has been highlighted as a key factor affecting career both in the context of this study and previous research, we further examined its relationship with mobility on the basis of quantitative data.

Of the factors influencing academic careers, we analysed on the basis of quantitative data the existence of children and the mobility of academic staff taking into account the existence of minor children. The analysis is rather superficial, primarily because academic staff are not required to provide data about their minor children to their employer. As a result, HR departments only have data about children if the employee has provided such information to them. This, in turn, means that if an employee has not indicated that they have minor children, it is possible that they have no minor children or that they just not have provided any information about their children.

The following table shows that women are more likely to tell their employer that they have minor children.

Table 5. Academic staff with minor children[38]

Gender / year	2015	2016	2017	2018	2019
Male	411	407	425	444	431
Female	555	508	565	592	595
Share of women (%)	57.5	55.5	57.1	57.1	58.0

Comparison[39] of the men and women who have been seconded shows that, although the share of women who have gone on secondment abroad has increased over the five-year period, women with minor children go on secondment less frequently than men. Compared to women, men with minor children have gone on secondment abroad more often (four times per year on average), as a result, the total duration of their secondment is significantly longer than that of women (men spent 23.7 days on secondment in 2019). Moreover, men's average duration of secondment is also longer than that of women (men's 5.9 days and women's 5.2 days in 2019).

Table 6. Duration and number of secondments and the share of men and women with minor children who have gone on secondment in 2015–2019

Number of secondments					
Gender / year	**2015**	**2016**	**2017**	**2018**	**2019**
Male	3.7	3.8	4	4	4
Female	2.6	2.7	2.8	2.8	2.8
Duration of secondment in days					
Male	20.3	21.4	22.4	22.9	23.7
Female	13.4	12.8	14.4	13.7	14.5
Share of those seconded (%)					
Male	55.7	59.7	61.2	65.1	63.6
Female	47.7	47.8	48.3	52.5	53.8

HR departments also provided information on parental leave. According to the information provided, men account for less than 10% of those on parental leave[40].

[38] This means academic staff who have indicated that they have minor children.

[39] Given the fact that TLU did not provide information on minor children, it is not appropriate to compare the overall figures with the data on all those who were seconded.

[40] Academic staff on parental leave by gender

Obstacles in academic career development: career breaks

Career breaks were considered to be the most significant factors impeding academic career development. In this regard, women's leave due to **starting a family** was pointed out most often, especially due to biological reasons at the end of pregnancy and shortly after childbirth. In addition, participants noted that women are expected to shoulder family responsibilities more often than men in our society, the same is thought to be true in the case of women in academia.

Career breaks for various reasons were seen as an obstacle in linear academic career paths, primarily because the gaps are difficult to bridge later on. The prevailing assumption seems to be that vertical career development is the ideal.

One concern regarding career breaks that interviewees pointed out was that in research and science, gathered data can become morally outdated, as a result of which even short-term breaks (e.g. a period of 1 to 1.5 years) may give an advantage to someone who has not taken such a break. The premise of an uninterrupted career path is further amplified by the research funding system, in which project-based funding puts academic staff under constant pressure. Consequently, participants noted that it is common in their academic community for members of staff who are on parental leave to return to work part time as soon as possible.

According to documents for academic staff recruitment and evaluation, it is possible in the evaluation and application process to indicate leave from research work, for example, due to parental leave. However, academic staff and representatives of institutions consider this to be a cosmetic measure: *"Taking the career gap into account in evaluation means that you stay on the same level, you do not drop out. /…/ When the gap is taken into consideration, you do not drop out within the institution, but when it comes to external colleagues and sources of funding, you lose, and that is difficult to make up for."* In other words, this measure ensures that the academic staff member does not lose their position within the institution, but the time that they have to spend trying to advance their career and catch up with colleagues who have not been on leave can result in male members of academic staff reaching higher positions compared to their female colleagues, as the ones taking leave are usually women. What is more, the system only takes into account the time spent on leave, and the time required to readjust after returning from leave during which the employee should be writing applications and working on other project and research activities is not taken into consideration. Participants considered this readjustment period not being taken into account to be one of the problem spots in evaluation that can lead to inequality: *"I think it is worded in such a way in the election rules of all universities or at least used in such way that the time dedicated to research is standardised and the person's development path is examined in the context of that timeframe. One aspect that is difficult to consider is that when women are away from research for three years, the research will continue to develop, and women will need another year to find their place after returning from leave."*

In this regard, the participants also mentioned that while the **academic system takes leave into account on the basis of position, it does not do so on the basis of circumstance.** This means, for example, that staff returning from administrative posts to academic posts are granted a period of readjustment so that the employee can return to academic activities (including apply for grants and projects, wait for funding) without having to worry about funding and job security. This, however, is not the case for maternity or other types of leave.

Gender	2015	2016	2017	2018	2019
Male	7	7	11	10	8
Female	94	70	99	87	111

Although career breaks due to parenthood were considered one of the main reasons for the lower share of women among senior academic positions, parenthood was not considered to be a factor that completely halts one's career development. Both the academic staff and management noted that having children makes academic staff more effective, regardless of their gender. Those members of academic staff who had children explained that this is due to the fact that the reconciliation of work and family life requires better time management and motivates them to perform tasks productively during conventional working hours (outside of which it would be difficult or impossible to work). To some extent, it can also mean an overall change in the work culture, especially with the manager: *"After having children they do not expect /.../ you to get things done by Monday if an e-mail is sent on Friday evening. People are more respectful of working time and personal life, I see this especially with women."*

Although parental leave may put members of academic staff to a difficult situation due to the performance-oriented nature of academia, which may include making concessions in the activities supporting career development (working time, international mobility) or family (having children and starting a family, returning early from parental leave), some members of academic staff also perceived **positive discrimination in relation to parenthood**. This means that, in terms of the division of work tasks and allocation of workload, managers have offered more flexible options to those members of academic staff who have children, thus leaving those without children at a disadvantage. Depending on the career model of the institution, such decisions may hinder the career development of academic staff. For instance, one member of the academic staff described a situation in which a female colleague with children refused to accept a reduction in her workload on the grounds of family maintenance. This, however, mean that her male colleague who did not have children had to agree to a part-time position, while full-time workload is a prerequisite for career development in that institution.

Although participants concentrated more on the impact of family on academic careers, the interviews also revealed situations in which the academic career influenced personal decisions. For example, pursuing an academic career and having a high workload has meant that some academic staff have decided to **give up on having a family**: "*I do not have children. Becoming a university teacher at a young age led me not to have children. I am married but that also happened quite late in life.*" In addition, participants also mentioned the dilemma of having to choose whether to prioritise family or work, a difficult choice especially faced by women: *"This [having children] is also a question of conscious scheduling. Unfortunately, the number of academic positions, especially high-rank positions, is limited. New positions are not added, on the contrary – they are removed. Therefore, women have to base their decisions on whether they want to forcibly advance their career in certain life periods, reach a specific level, and then create a family, or vice versa. In the latter case, there is a risk that once they come back, all the positions have already been filled."*

Obstacles in academic career development: limits and personal choices

Participants regarded parenthood and its impacts on academic career, in particular, as a **personal choice**: *"From my personal experience with doctoral students I can say that some of them give up research after receiving their PhD and having children, but that is their personal choice /…/."* It can be said that the work organisation of the research system and institutions faces employees with a dilemma: family or career. The increasing amount of work duties at higher academic positions – due to the structural organisation of academic careers, i.e. position-based membership in decision-making bodies, and stricter criteria for senior positions – also increase the workload of academic staff, while the amount of personal responsibilities does not decrease. Interviewees also mentioned that sometimes promotions and career development activities are turned down due to people **reaching their limits**. People need to balance their responsibilities and duties, as well as make choices. In this

regard, participants pointed out that it is primarily the female members of the academic staff who need to make such choices: *"[Women] decide not to take on any additional duties because participation in committees and other such activities comes at the expense of their free time. All these additional activities require time, but if you were to deal with them during working hours, you would get less work done and thus publish less papers, which in turn would give grounds for others to say that you are not a good researcher. Women make their own decisions because they simply cannot do everything at once."*

Moreover, these choices are also influenced by the opportunities available in research or work units. For example, participants explained that academic staff are not motivated to work towards the position of a lead researcher as it comes with increased work duties and responsibility (for applying for funding for a research team), but at the same time, due to limited funding and the unit's capabilities, the promotion may not be reflected in a (significantly) higher salary. If a structural unit does not have stable baseline funding and wages are completely dependent on the success of the projects, it is not always possible to offer a salary proportional to duties.

Interviews with doctoral students revealed that one of the reasons why women give up senior positions is that their social roles outside of work already require too much attention: *"I have been a manager and I have been offered this position later as well, but I have refused, because taking care of children is constant management in itself – you always have to manage someone, which is why I don't want to do it as a job."*

Obstacles in academic career development: social attitudes, perception and gender stereotypes

The interviews with participants allowed us to study the social attitudes, perceptions and stereotypes in the field of research. It appeared that foreign staff members and Estonians with international experience noticed stereotypes and attitudes more often. This may be at least partly due to the fact that the culture and norms are gender-blind, thus people only start to notice social norms only when they realise that there are other alternative norms (that are specific to other societies and cultures) besides their own. The internationalisation of research has thus highlighted some of the gender equality issues for the Estonians who participated in this study.

Foreign staff members, for instance, noticed a **post-Soviet communication culture**: *"In general, there is a post-Soviet communication culture in Estonia which is shocking at times. In other words, it is reflected in the way male colleagues communicate with their female colleagues or male colleagues, gender isn't relevant here. It is just an unethical way of communicating, of pressuring."* Such a communication culture involves raising one's voice and competing with one another, as well as an increased concentration of power and failure to address unethical or unfair cases (e.g. do students' or employees' complaints actually bring about consequences). In addition, they pointed out that women in Estonia are modest and shy, which may also explain why women do not reach top positions: *"Estonian women's perception of themselves and the public discourse about the role of Estonian women should change significantly. I am surprised by how conservative and structurally modest women are in the way they behave and communicate. It does not seem to be completely imposed on them, but I don't know, don't understand why women don't want to do it themselves."* Here it was suggested that the problem lies with women and their behavioural patterns (also resulting from social attitudes), not necessarily the system itself. In the opinion of foreign staff members, family models and the roles of men and women in family seemed to be linked to stereotypes. For instance, one foreign researcher pointed out the following: *"Whether children and motherhood are the most important to every woman is a personal choice, but we also have to accept that there are women who have other priorities. To tell a female master's student 'don't you pursue a doctorate yet, make babies instead' is awfully disrespectful and I have heard it said a lot. Not only have the professors said it, but also other senior*

colleagues who give good advice, but having children shouldn't be an obstacle in doing science. In my opinion, this is a greater and wider problem in the Estonian society."

Interviews with doctoral students – early-stage researchers – revealed many observations in terms of attitudes regarding research and society at large. However, not all unpleasant situations and cases of unequal treatment are necessarily caused by gender-related attitudes. For example, intergenerational communication and competition were thought to be an issue in science and research: *"In my opinion, the main problem in higher education is not gender inequality, but fear of generational change and fear of adjusting to new things."* Stereotypical thinking was also evident in the image of a researcher: *"When I think of a professor, the first image that comes to mind is of a 50–60-year-old man."*

Academic career opportunities: career system in practice

Formally, the academic career of employees (including election and promotion) is shaped by the decision-makers and decision-making bodies at various levels. Institutions have their own rules that set out the criteria and requirements for the announcement and filling of academic positions. The basis for appointing employees is the fulfilment of the selection criteria.

Considering that the need for a certain position (mainly in early career stages) and the opportunities for promotion are discussed in the management and decision-making bodies of units, academic staff considered their immediate superiors to be the key persons whose actions may advance or impede people's academic career development, regardless of actual career requirements. One female staff member, for example, described her experience with career development in academia as follows:

> *"I was a lecturer for 13 years or more after obtaining my doctorate. When I defended my dissertation, lecturers were not required to have a doctorate degree. Therefore, I was overqualified at my position for more than ten years and nobody cared that I met all the criteria for the next level position. I was not promoted. They kept saying that there is no point as everyone will become an associate professor, but then [two men] were employed in our institute and given the associate professor position right away. When the posts were created for them, then my saying that I have been here working for them for over ten years, just waiting, it finally started to dawn on them."*

The unit managements also play an important role in the division of academic work, including **teaching load**, which the academic staff considered to be a factor hindering research work and career development due to its time-consuming nature. At the same time, it cannot be ruled out that the allocation of higher teaching load to female members of academic staff at this level is the result of attitudes or stereotypes that is reflected in gender differences in academic positions. Nevertheless, academic staff members noted that the cases of unequal treatment at management level are not a systematic issue (but rather situation based) and have more to do with the personality of the manager and the relationship between the manager and employee.

Interviewees pointed out that managers may keep specific candidates in mind when deciding on the announcement of academic positions and using the profile of these candidates to create the application criteria. This results in an unequal situation in recruitment. Representatives of institutions described that on a few occasions they had come across academic job offers where the requirements of which were not justified in their opinion. In most cases, this meant language requirements that excluded foreign candidates. In other words, such specifically designed criteria create inequalities on the basis of nationality and language. According to interviewees, candidates have not been excluded on the basis of gender, however, doctoral students mentioned a **semantic issue in academic titles**: *"When you talk about a professor, you usually talk about a man."*

Academic staff were aware of the announcement of such specifically aimed positions and did not necessarily consider them to be a negative thing. On the one hand, interviewees admitted that it can

limit competence as the international scene could provide some strong candidates, but on the other hand, they thought it to be a good practice that can attract already notable players in the field (e.g. preliminary negotiations provide security in finding a job to people returning from postdoctoral studies).

Overall, the participants considered the academic position election and appointment system to be fair, emphasising reliance on the academic activities and performance indicators of candidates. According to the interviewees, such quantification of candidates' activities also excludes the possibility of better candidates being excluded on the basis of gender. Indicator-based evaluation can, however, generate inequality to a certain extent because it is unclear, for example, how family-related leave and its impacts on academic activities are actually taken into account. It was also pointed out that, in the case of two equal candidates, the final decision is made by decision-making bodies on the basis of their feelings. Meaning that each member of the decision-making body selects a candidate who they consider the most promising. This is where the profile of the decision-making bodies comes into play – if all indicators are excluded, members may be inclined to choose the candidates most similar to them: *"The problem with academia at large is that they only elect others similar to themselves."* Therefore, it is possible that even in formal processes, there is a tendency towards gender-based decisions as the membership profile of decision-making bodies may be biased towards the representatives of one or other group, while the impacts of this are not recognised. Furthermore, participants noted that there have been no or very few instances in which equal candidates were of different gender. During interviews, participants proposed that, in order to minimise such (subconscious) bias in recruitment and other decision-making processes (e.g. award of funding), a blind assessment method could be used.

The participants in the management target group explained that they have started to include support for diversity (gender, cultural, etc.) particularly in job offers to highlight the principles of equality, as well as gender equality, within the unit.

Gender equality and internationalisation of research

In the context of the internationalisation of research, two main ideas were brought up. Interviewees found that the inclusion of foreign researchers in Estonian research institutions has not put the academic careers of Estonian researchers under pressure nor has anyone been excluded from getting certain academic positions. The proportion of foreign academic staff coming to Estonia is small and, in most cases, they come here for a short period of time (on specific fixed-term positions or as part of projects). In addition, it was pointed out that Estonian research institutions cannot offer competitive wages, as a result of which there are no indications of a large number of foreign researchers looking to join Estonian research institutions. According to the representatives of HR departments, the gender balance among foreign researchers is more or less equal, although, in the case of some institutions, the academic staff cannot be distinguished by citizenship in personnel data[41]. Nevertheless, the personnel statistics of UT show that there are more male foreign researchers than female foreign researchers (women accounted for 30% of foreign researchers in 2017–2020). The different factors influencing the choices of foreign researchers should be further investigated in a separate study.

The second idea related to internationalisation has to do with the impact of international experience on the perception of gender equality. Compared to academic staff without international experience, foreign academic staff and those with international experience (employees who studied, worked or did their postdoctoral fellowship abroad) considered the issue of gender equality to be a bigger

[41] According to the data of Estonian Research Information System, Estonian universities employed 92 male foreign researchers and 33 female foreign researchers in the academic year of 2020/2021 (the register only includes information on researchers who have a teaching load of at least 3 credit points).

problem in Estonian research, regardless of whether they had experienced it or not. Such a tendency was apparent among both male and female foreign members of academic staff as well as among those with international experience. Many Estonians with international academic experience pointed out that, compared to other countries (mainly Western European countries), the discussion about gender equality in Estonia has lagged behind: while abroad the impact of social processes generating inequalities is being analysed and addressed as part of the discussion on equality (e.g. gender equality in education, gender mainstreaming in research and innovation, as well as in urban planning, etc.), in the context of Estonia, gender and gender responsiveness seem to be taboo subjects. The opinions of foreign doctoral students who participated in the study varied in several aspects, mainly due to previous life experience but also due to cultural perceptions of Estonia. For example, participants pointed out that, on the one hand, gender equality was significantly better in Estonia compared to other post-Soviet countries but, at the same time, when addressing this issue, people have "*not gone overboard with it, as they have in some other places*". On the other hand, foreign researchers and doctoral students noted that Estonian research institutions were not ready to formally tackle the issue of gender equality due to lack of corresponding regulations or due to the relevant working documents not being applied in practice. In addition, the absence of an Equality Ombudsman post and lack of equality plans were surprisingly also mentioned.

8. Wage level in academia

The wage data published by Universities Estonia for the period 2013–2019 were used in the study. The analysis included both the average basic wages and average gross wages of men and women by position. The highest-paid position in all universities is that of a professor: the highest paid professors being at TalTech and lowest paid at EKA. Between 2013 and 2019, the wages have increased across all positions, with the wages of women growing more than those of men in many positions. An exhaustive table of the average gross wages of men and women and its changes has been provided in the annex (annex 1, table 8). In terms of average basic wages, the trends are similar: professors have the highest wages. The average basic wages of both men and women have increased, with those of women having increased more. An exhaustive table of the average basic wages of men and women and its changes has been provided in the annex (annex 1, table 9).

The gender wage gap is an important indicator in the comparison of the wages of men and women: it shows the difference between the average gross hourly wages of male employees and female employees. In this analysis, the wage gap has been calculated on the basis of average monthly gross wages and basic wages. Data on gross wages reveal that the wages of men are higher than those of women in most institutions. Interestingly, in the UT and EKA, the wages of female professors were slightly higher than those of male professors by 2019. The wages of female employees are often higher than those of men in positions where women outnumber men: assistants, lecturers, teachers. A table on the gender wage gap in the gross wages of men and women is provided in the annex (annex 1, table 10).

Looking at gender wage gap only in terms of basic wages, the wages of male employees were higher than those of women in several positions and institutions, indicating that bonuses accounted for a larger share of women's wages than of men's. Nevertheless, the gender wage gap has narrowed in many academic positions over the years: for example, among professors of UT, TLU and TalTech, as well as among associate professors in all institutions. Moreover, the share of women among associate professors has increased over the years (see Chapter 4.2).

Table 7. Gender wage gap in the average basic wages of men and women (%) by institution and position in 2013–2019

Institution	Position	2013	2014	2015	2016	2017	2018	2019
UT	Professor	15.8	17.9	8.8	8.2	7.2	5.4	2.6
	Associate Professor	10.4	9.2	10.0	8.6	8.3	7.3	1.1
	Lecturer	7.0	6.5	6.6	8.3	9.4	9.4	14.1
	Assistant	0.5	3.8	5.1	6.9	7.8	7.3	8.0
	Teacher	-6.3	-4.7	-1.1	8.2	12.7	19.1	13.4
	Senior Researcher	1.7	-0.6	-2.6	-3.6	2.2	3.7	-2.4
	Researcher	6.9		7.6	7.3	5.9	6.5	1.7
	Junior Researcher	5.0	11.4	7.3	7.2	3.7	0.8	4.3
TalTech	Professor	19.0	8.5	13.2	15.8	8.9	12.9	3.6
	Associate Professor	22.1	11.4	2.9	9.6	13.2	11.8	9.6
	Lecturer	9.3	8.4	14.9	6.4	6.8	11.7	14.1
	Assistant	14.8	-0.7	-7.1	-2.1	0.5	-6.7	-0.4
	Lead Researcher	-0.3	-1.4					
	Senior Researcher	16.1	13.6	15.1	13.2	12.4	10.2	11.8
	Researcher	21.0	6.3	12.2	15.4	14.3	13.0	7.8
	Junior Researcher	17.4	12.1	10.8	14.0	10.8	27.4	15.0
TLU	Professor	39.8	35.8	22.5	14.6	19.0	14.6	7.8
	Associate Professor	11.0	14.8	22.2	26.2	12.0	8.8	4.1
	Lecturer	8.2	12.6	11.3	11.6	10.7	8.5	5.2
	Assistant	1.6						
	Teacher		-3.4	-4.9	-1.6	4.7	7.4	
	Lead Researcher						-1.5	
	Senior Researcher	6.4	-3.6	-1.9	-4.1	-1.9		-10.3
	Researcher	-1.0	6.5	5.0	0.1	-12.6	-2.6	-8.9
	Junior Researcher	3.7	-11.7	-26.9	0.1	4.3	-1.3	-12.4
EMÜ	Professor	11.9	5.5	12.2	14.5	21.2	14.6	11.7
	Associate Professor	15.0	12.7	9.7	4.9	9.6	12.6	1.3
	Lecturer	-5.3	-5.6	-6.2	-2.4	2.4	-0.6	-1.5
	Assistant	-26.6	-27.4	-33.0		-19.0	-9.8	-33.6
	Senior Researcher	8.7	13.8	4.7	5.1	10.8	5.9	3.9
	Researcher	7.1	12.7	15.5	21.3	17.0	14.3	8.2
	Junior Researcher	1.3	6.4	15.3	11.6	7.5	-0.8	-4.2
EAMT	Professor	1.8	10.7	-4.6	-7.8	7.9	5.2	-4.1
	Associate Professor	2.0	-2.5	-10.0	-1.8	-7.6	14.4	-0.9
	Lecturer	3.7	2.6	-0.6	1.5	-5.2	-10.6	4.7
EKA	Professor	8.7	25.8	6.5	8.5	9.3	-1.4	-8.2
	Associate Professor	39.7	65.6	-13.4	7.6	8.8	-3.8	2.9
	Lecturer						-26.3	-10.0

Note: purple indicates positions in which the gender wage gap is biased towards men.

Participants attributed gender wage gaps to **gender-specific patterns of behaviour and gender roles**, noting that men are generally more individualistic and less complaisant, whereas women try to ensure the well-being of everyone and make their demands on the basis of that (e.g. wage demands):

> *"In terms of money, we should also pay attention to the gender wage gap. This may have objective grounds, such as men doing more work and in a more complex way, but in my opinion, men ask for higher wages more boldly and use financial aids more often wherever available. Women behave in science the way they do at home: they put children first, and they put others first in the working group as well. Women mainly make sure that everyone's needs in the working group are met and that everyone is happy."*

Wage gaps in different fields of research were linked to the **inflow of research funding** in those fields (and the main institutions representing those fields) as well as **resource management** within the units and institutions: *"There are objective wage gaps between different fields of research due to a number of factors. One such factor, which we cannot ignore, is access to research funding. The second factor lies in different organisational cultures and the related values."*

In interviews with doctoral students, wage issues were linked to several other major topics, such as the nature of the work duties of researchers in today's world of science, and the advantages and disadvantages of research careers, including uncertainty about future prospects especially compared to careers in the private sector. This indicates that **wage-related decisions, including those related to wage gaps between sectors, are of key importance when choosing whether to stay in or leave academia**:

> *"[When working in a private company,] I never felt like it was my responsibility to scrounge up my salary from somewhere... This is one disadvantage of an academic career. [In the university,] we have so-called earmark funding, from which a certain percentage goes to the common budget. I guess I will have to pay a sum to my employer for accountants and other maintenance, and so on. And then I will also have to pay for having my own office at work. And then I have to make sure that I have the same amount the next year or in a couple of years. Stability, I think, is a huge sore point."*

Doctoral students pointed out that the **issue of economic uncertainty is structural and affects the entire life of a researcher**: *"Security and certainty shouldn't be limited to one gender only. According to the traditional model, the woman stays home and the man is the breadwinner. In today's world, these roles have changed, and if the income of one partner is uncertain, it creates uncertainty in the whole family, which kills the ambition to press ahead."* What is more, **specific economic consequences** were also highlighted: *"/.../ when I applied for a home loan, the bank was somewhat concerned about what was going to happen once my doctoral studies ended. They thought I was just extending my childhood."* In some cases, the idea that **doctoral studies and/or a career in research is just private entertainment** echoed through: *"I am just really interested in my field of study and wish I could spend all my time on it, but I can't do it all the time because I have children and that's just one part of my life. I need to work to provide for my children – that's another thing. Doctoral studies is what I would spend all my time on if I could, but I have to do other things, to enable myself to do it."* As a result, some doctoral students have clearly decided to **join the private sector after completing their doctoral studies**.

On the other hand, participants emphasised the advantage of academia over the private sector: greater flexibility of work, especially with regard to family life (e.g. it is possible to take courses while on academic leave due to childcare leave). Working part time in the private sector may constitute an obstacle in career development:

"I imagine if I was working in the private sector at the moment, I would be on full maternity leave, I would not be working. But right now I have the opportunity to continue my work. /.../ It would be much more difficult to do in the private sector or it would mean that if I can't work as many hours some weeks, I would also get paid less."

9. Conclusions, recommendations and gender equality indicators

9.1. Conclusions

- **The share of women in the field of natural sciences and engineering has not significantly increased over the years.** Qualitative analysis showed that those in the field of natural sciences and engineering sensed the presence of social **attitudes** and **gender stereotypes** that reinforced the idea that these fields are "men's business". Such views do not attract women to continue their higher education studies in these fields. The general education system and attitudes of teachers, particularly at basic and upper secondary school level, were considered to be the main factors contributing to gendered subjects and fields of study.
- Quantitative analysis showed that **although the share of men and women among academic staff is virtually equal, there are significant differences within academic positions – women reach top positions (professors and lead researchers) significantly less often than men.** Such a trend is caused by several factors. The current situation can partly be explained by the **so-called lifecycle of scientific careers** – as reaching top positions takes years or even decades of hard work, the lower share of women in research in previous years is reflected in the current share of women in senior positions. Such a gap is also attributed to the fact that female members of academic staff were forced to give up their careers due to lack of adequate family policy in the 1990s. Additionally, it is apparent that an **uninterrupted career path is an implied prerequisite of an academic career**, which has been shaped by the requirements governing the world of research (reliance on criteria and quantitative achievements), the nature of the research funding system, on the basis of which the people in academia have also created the construct of so-called genderless researchers whose academic career choices are not gender-specific. Moreover, the share of female academic staff members has mainly increased in teaching positions, whereas among professors, the share of women has either decreased or stayed at the same level, which further increases gender inequality.
- **The prerequisites and nature of academic careers** are caused by structural reasons which explain gender inequalities in different positions and which, among other things, stem from various **requirements**, the **work culture of the institution** and the **wage levels**. Career requirements, both written and unwritten, in combination with general **attitudes** and **stereotypes** also promote unequal treatment.
- One factor that significantly minimises the importance of the issue of gender equality is the lack of consequences for activities related to unequal treatment (especially on the basis of gender). None of the national and/or institutional regulations on the topic set out the procedure for taking responsibility and provide for consequences. In turn, the lack of (perceivably fair) consequences in the cases of unfair or unequal treatment further reinforces the sense of impunity and the idea that this issue is not important.
- The world of research and science is **hierarchical** by nature. Its operation is guided by the decision-making bodies at various levels with different election mechanisms and compositions. **The imbalance in the composition of decision-making bodies is partly due to the gender imbalance in various positions**, as some members of the bodies are elected on the basis of their position – generally a senior academic or managerial position.

- For the most part, there is an **attitude in the academic sphere that the world of research is gender-neutral and equal opportunities prevent any gender-based unequal treatment from occurring.** The idea of research being gender-neutral is based on the assumption that a system that is based on the assessment of criteria rules out the possibility of unequal treatment. In general, discussions on the implementation of gender-sensitive measures are met with reluctance, as the implementation of such measures clashes with the idea of achieving competence – there is a sense of fear that the introduction of a gender aspect would be at odds with supporting those most competent. While members of academic staff do not see the shortcomings of the system, they can give specific examples of them (by presenting them as personal choices). It is apparent that in the Estonian research landscape there exists gender-blindness which prevents those working in the academic sphere from recognising the signs of inequality as problems, as a result of which they reproduce the same system.

9.2. Recommendations

Recommendation for the state, Estonian Research Council and research institutions

A public debate is needed on the topic of gender equality, in addition, relevant guidelines must be prepared to minimise both self-censorship, misinterpretation of the issue, and confusion and ignorance in the detection and resolution of such cases. Interagency organisations and institutions that have an advisory or other influential role in research and science can promote ways of mainstreaming gender equality in research and integrating such values into institutional activities. For example, the Estonian Research Council can do so by offering short lectures or training sessions on the topic to representatives, management or other key personnel of institutions (e.g. HR department, members of the Centre for Ethics or Ethics Committee). The aim and result of such training should be to **raise awareness of gender equality as a value and to integrate the principles of gender equality into the work and teaching practices of institutions**, e.g. by incorporating them into work institutions for new employees, refresher training for existing employees, or doctoral seminars. In addition, such training would help reduce prejudice against the implementation of gender equality measures that so many participants of this study considered to be a threat to research competence and the recruitment of the most suitable candidates. The Gender Equality Plan[42] of the Estonian Research Council also sets out the provision of such training. In order to support the introduction of gender equality documents in institutions, a national incentive package could also be considered.[43]

Support should be provided for the readjustment of employees returning from breaks. According to Kutser (2020), in other countries, the re-entry of academic staff after a career break is supported by so-called re-entry grants which are primarily aimed at employees who are employed under a fixed-term contract. In addition to financial resources, returning employees are supported by a flexible work and evaluation culture which also takes into account the time needed for readjustment (e.g. time for preparing new study materials, any delays in publishing articles, etc.).

Support for flexible mobility opportunities (incl. cross-sectoral mobility) and a common definition of international mobility (which is currently rather ambiguous as it refers to both a physical stay abroad for the purpose of conducting research as well as to work and study experience in an international community) would help encourage these members of academic staff who are not able to stay abroad

[42] Estonian Research Council. *Gender Equality Plan.* Available at: https://www.etag.ee/wp-content/uploads/2020/09/ETAg-soolise-v%C3%B5rd%C3%B5iguslikkuse-kava.pdf.

[43] In order to support the introduction of gender equality documents in institutions, a national incentive package could also be considered.[43] In Norway, for example, where gender mainstreaming measures and values are integrated into the activities of research institutions, such activities are supported not only by providing advice but also financially, i.e. a yearly Gender Equality Award is granted to reward the research communities' gender equality efforts (Husu, 2015).

for long periods of time due to caring responsibilities or lack of resources, or in whose fields other outputs are considered more important than postdoctoral studies abroad (e.g. clinical practice in medicine) to use various mobility opportunities.

Recommendation for the Estonian Research Council, research institutions and decision-making bodies

Diversity as a value should be promoted in recruitment and election activities. In the recruitment of academic staff and in the formation of commissions, committees and bodies, a diversity criterion should be included in job offers to break down stereotypical images related to academic positions (e.g. an image of a professor as an old man), emphasising the importance of diversity in (work) teams and inviting everyone to apply. Such a criterion is not only gender-specific, but also promotes diversity and equality in other target groups (e.g. ethnic minorities, disabled persons). Moreover, it reflects the values of the institution or unit. For instance, the Estonian Research Council considers the diversity of decision-making bodies to be a value.[44]

Recommendation for the Estonian Research Council and research institutions

Based on the opinions of the participating doctoral students, the introduction of a **blind evaluation process** should be considered to reduce potential subjectivity in evaluation (at least in the process of pre-selection). Additionally, blind evaluation should also be considered in recruitment procedures.

The development of **interagency** equal treatment guidelines (e.g. descriptions of discrimination cases) or a **framework document** should be considered to ensure **consistent** handling of gender equality issues and cases across institutions – **unequal treatment is not specific to one institution, it is a general ethical issue**. A good example is the Estonian Code of Conduct for Research Integrity, which provides guidance and inspiration to institutions and their members for the development of more specific guidelines.

Recommendations for the state

It is important to promote gender-sensitive pedagogy in teacher training (in both primary, basic-, secondary and higher education) and develop gender-responsive teaching methods[45], meaning basic knowledge and skills on gender-responsive teaching methods should be an integral part of teacher training (i.e. included in curricula and in refresher training). Additionally, it can serve as a measure for addressing gender segregation across different fields of study, including providing support to boys, in the case of whom poor performance, dropping out of school, and low enrolment in higher education indicate that the education system does not advance their potential, and to girls who abandon their interest in science and engineering due to previously established attitudes in early education. Furthermore, it is essential to support initiatives which aim at increasing the interest of both boys and girls in different fields of study at an early stage. A good example here is the HK Unicorn Squad[46] that provides technology education to girls.

Recommendations for research institutions

In order to deepen the common understanding of gender equality as a value of the institution, this topic should be **included in the working documents of the institutions**. While the evaluators of

[44] Estonian Research Council. *Gender Equality Plan.* Available at: https://www.etag.ee/wp-content/uploads/2020/09/ETAg-soolise-v%C3%B5rd%C3%B5iguslikkuse-kava.pdf.

[45] Considering the role that participants in this study attributed to the general education system in establishing and promoting gendered attitudes towards different fields of study, a finding that is also supported by previous studies in Estonia (see, e.g. Aavik, Uusma, Ümarik, 2016), it is necessary to introduce teaching practices that combat gender bias.

[46] Website of HK Unicorn Squad. Available at: https://unicornsquad.ee/.

Horizon Europe applications[47] may require the existence of plans and guidelines, the documentation of principles alone may not be sufficient to bring about substantive change. As a good example of monitoring and improving gender equality, the participants highlighted the development and promotion of the principles of a gender equality plan. Due to the nature and characteristics of research, it is recommended to encourage people to prepare these principles in working groups or at unit level. In the preparation of such plans, it would be useful for the units or managers to be able to consult with experts in the field (e.g. from the HR department, Centre for Ethics). In addition to addressing the principles of gender equality in working documents, it should be kept in mind when developing various academic and career criteria that not all formal equal opportunities constitute gender equality – this aspect should be considered separately in the development of criteria.

Recommendations for data collection and improvement of data quality

Estonian Research Information System (ETIS) is the central research database of Estonia. At the time of data collection, only the employment data of the University of Tartu were automatically forwarded to ETIS. In other institutions, the academic staff were responsible for filling out their own CVs, thus different subsections contained data with different levels of detail or were left completely empty. In the case of other sections (supervision, career, projects, publications) that provide specific forms and criteria on the basis of which the data can be entered, these are filled out in more detail. For further monitoring, the consolidation of the system with the systems of at least the other public universities (and, where possible, with other R&D institutions) should be considered to ensure automatic data flow. This ensures that ETIS has the most up-to-date and correct employment data, which allows for better monitoring of the distribution of men and women in different institutions and positions in the future.

Currently, people have quite a significant degree of freedom in filling in the data in certain categories in ETIS (awards, honours, creative work, etc.), which means that the level of detail in the data entered varies greatly. It is crucial to review the data entry forms in ETIS (make essential fields compulsory, add relevant categorisation features) to ensure uniform data entry that would also allow for more substantial data analysis afterwards.

Recommendations for future research

The impact of COVID-19 on research and gender equality. It can be expected that the pandemic will impact academic careers. Therefore, it is possible to study whether and which obstacles occurred due to travel restrictions, and what measures will be taken to account for the break caused by travel restrictions in the evaluation of international mobility. In addition, it can be assumed that COVID-19 may also impact the careers of academic staff, as it hit two of the target groups hard: parents who had to take on the role of a teacher at home, and academic staff with high teaching load, whose workload and nature changed, and among whom there were more women, according to quantitative data.

Changes in the Higher Education Act have resulted in **changes in the career models of universities**: new academic positions (including tenured positions) and/or promotion opportunities were added. These changes have only been introduced in institutions recently, thus their impact on academic career paths and gender equality cannot be assessed until later – it would be beneficial to conduct a follow-up study at a later stage that would examine gender equality in Estonian research. Initial feedback

[47] Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committe and the Committee of the Regions. *A Union of Equality: Gender Equality Strategy 2020-2025*. Available at: https://letsgeps.eu/wp-content/uploads/2020/10/090166e5ccc86ea5.pdf.

from participants suggests that the new career models support equality, including gender equality, as promotions are no longer dependent on immediate superiors or decision-making bodies of units.

A separate line of research could involve the reasons as to why foreign researchers decide to join Estonian research institutions. In the case of some institutions, the academic staff cannot be distinguished by citizenship in personnel data. However, statistics for the University of Tartu show that there were more male foreign researchers than female (women accounted for less than 30% of foreign researchers in 2017–2020).

In addition to public universities, the state of gender equality should also be studied in private universities.

9.3. Indicators for monitoring gender equality

The state of gender equality in research can be observed at different levels: at national level, which provides a general overview of the situation across all institutions, but provides little opportunity for identifying areas of concern; at institutional level, which allows for monitoring within the institutions and comparison between them; at the level of structural units or working groups, which allows for the use of specific indicators that take into account the nature of the research field (e.g. participation in fieldwork or expeditions in natural sciences). In the latter case, it must be taken into consideration that each individual unit or working group may not have the capacity to monitor the situation (there is no employee responsible for such a duty), however, it has a greater value on the management of the unit.

In the measurement of gender equality in research, it is essential to keep in mind that inequality has different causes but also different outcomes. These also arise from different levels that are closely linked – social, organisational, family, personal level (O'Brien et al., 2019). The measurement of gender equality also involves several levels; therefore, when making choices in this context, it is important to bear in mind that although some factors can be quantified, it is useful to look at specific levels (e.g. unit, working group or field level) to identify the causes. When interpreting indicators and making conclusions and recommendations, the following must be considered: 1) what is the ideal state or aim of gender equality – whether it is, for example, achieving gender balance or proportionality; 2) who is collecting and analysing the data; 3) what is the purpose of monitoring (providing a gender overview by field, monitoring the work of institutions and employees, monitoring the development in the higher education system, including monitoring the study behaviour of students).

There are a number of indicators that can be used to monitor the situation (see, for example, Baltic Gender…, 2019)[48]. The following are indicators that can be used for the monitoring of gender equality, the selection of which was based on the topics highlighted in this study (career development of men and women, reconciliation of work and family life, gender wage gap), the indicators underlined in relevant scientific literature, and the assessment of existing/relevant data. This list does not exclude other indicators, rather it depends on the purpose of monitoring and what can be concluded or changed on the basis of the new knowledge obtained from the collection and analysis of data. Below are institutional-level indicators that can be used to monitor gender equality within and across institutions.

- **Monitoring the career development of academic staff**, i.e. the share of men and women by academic position over time. With this indicator, it is possible to monitor whether men and move on their career paths at same speed, and if they do not, it is possible to specify the (gender-based) obstacles in the

[48] Baltic Gender project. Gender-sensitive indicators. 2019. https://www.baltic-gender.eu/documents/1199638/1385310/MS23-Indicators.pdf/d192d45f-c351-45c7-a80a-36234f406730.

career path. In addition, it provides an overview of how long people stay at a certain academic position (how long someone has been at a position before they are promoted).
Potential problem areas: different institutions have different career models, as a result of which comparison between institutions may not be possible. Career breaks should be taken into account in the interpretation of results.
Recommendation: potential differences should be analysed qualitatively, i.e. if differences in career development are identified, it is recommended to conduct interviews within the institution or working groups to clarify the reasons.
Data necessary for indicator calculation: employment data by institution, beginning and end of employment. The necessary data can already be extracted from ETIS.

- **Gender distribution in top positions**, i.e. monitoring the share of men and women among the management of institutions. This indicator allows for the gender situation to be observed in senior positions.
Potential problem areas: a clear distinction should be made between medium- and top-level managers, although it may be difficult to categorise certain positions into target groups. It may also be difficult to compare data between institutions due to differences in medium- and top-level positions, especially in the comparison of universities and other R&D institutions.
Recommendation: leadership positions should be analysed with regard to top-level positions (e.g. Rector's Office, Dean's Office) and medium-level positions (e.g. heads of units).
Data necessary for indicator calculation: the necessary data are already available on the websites of institutions and their HR databases.

- **Monitoring of academic work.** This indicator provides an overview of the extent to which male and female members of academic staff are engaged in academic work and whether there are any gender differences between academic positions. As an example, teaching load could be monitored. While teaching is an integral part of academic work, it is often seen as a factor hindering career development. Participants noted that regardless of academic position, the teaching load of female members of academic staff was often higher than that of men – the quantitative data also confirmed that more and more women are employed in teaching positions, which further increases inequality.
Potential problem areas: it may be difficult to assess the workload of an employee on the basis of the size of the study group and study level – for example, the management of a large study group may require less time than the teaching of a small group, because in larger groups (e.g. courses with 200–300 participants), learning tasks are usually automated (e.g. electronic examinations). Additionally, it may be difficult to measure the workload or time spent on teaching of an employee if several teachers teach the same course – the teacher responsible may not perform substantive duties, e.g. homework assessment, which may require more time. Teaching load can primarily be measured in the case of universities, not other R&D institutions in which teaching is not an important part of academic work. The time spent on other activities (e.g. administrative work, activities related to societal engagement, such as appearing in media) may be difficult to measure if there are no appropriate records of such activities. Moreover, ETIS data may not provide the most up-to-date information on research activities, as only the data from the UT are automatically updated.
Data necessary for indicator calculation: the number of courses taught by male and female members of academic staff, course volume in credit points, number of students registered for the course. Such data are available in the study information system. Data on participation in research activities (e.g. project participation, publication of articles) can be obtained from ETIS.

- **The glass-ceiling index** compares the proportion of men and women in all academic positions with the proportion of men and women at top academic positions. If women and men are equally recruited/promoted to the next career step the index is 1 (Baltic Gender…, 2019).
  Potential problem areas: in the interpretation of results, it must be taken into account that the glass ceiling may not always be caused by unequal career development opportunities, the decision to stay at a certain position may be the conscious choice of the employee (meaning that the employees, regardless of their gender, may not be interested in the work duties that come with other positions).
  Recommendation: potential differences should also be analysed qualitatively. Inequality at academic positions may be caused by different factors. This indicator is also valuable in the monitoring of internal equality situation, for example, at the level of different research fields.
  Data necessary for indicator calculation: employment of men and women by position and institution. The necessary data can already be extracted from ETIS.

- **The indicator of gender wage gap** monitors the wage gap of men and women by position. This indicator is particularly appropriate for identifying potential differences in institutions by position.
  Potential problem areas: In the primarily research-focused career paths (junior researcher, researcher, senior researcher, lead researcher), the wages can greatly depend on the number of funded projects, including bonuses. Therefore, it is essential to take into account the full-time equivalent wages. However, in such a case, it is still a "raw" gender wage gap, meaning that the overall wage gap is analysed, not the explained and unexplained parts of it[49].
  Data necessary for indicator calculation: basic wages of men and women by institution. Currently, Universities Estonia collects the wage data of public universities. Other national R&D institutions should thus start forwarding data on the basic wages of their employees to separate monitoring institutions.

- **Part-time work indicator** provides an overview of the share of men and women working part time in academia. This indicator allows for the detection of gender-based differences in workload, the subsequent analysis of which helps us to understand the reasons behind such decisions (should differences arise).
  Potential problem areas: It should be kept in mind that although part-time work supports the reconciliation of work and family life of employees, it may also occur due to the nature of research work – due to small workloads it may not be possible to work full time on projects at times.
  Recommendations: In order to clarify possible differences, it would be necessary to conduct an additional qualitative analysis which would aid in identifying the factors underlying part-time work. There may be differences with regard to the combined impact of gender and age (it would not be appropriate; however, to study the impact of children in this regard, as it would constitute an invasion of privacy). If workload is a factor affecting career development within the institution, this indicator may also be used to clarify differences in positions.
  Data necessary for indicator calculation: employment of men and women by institution. The necessary data can already be extracted from ETIS.

- **The indicator on the gender composition of decision-making bodies** provides an overview of the share of men and women in the most important decision-making bodies of the institution. The diversity of decision-making bodies (incl. gender diversity) serves as a basis for the adoption of multi-level and inclusive decisions.

[49] The explained wage gap is the wage gap arising from factors that objectively influence wages (e.g. wage level depends on the field, previous professional experience, additional duties, qualifications, i.e. training, skills), whereas the unexplained wage gap results from factors which cannot be identified, meaning the wage gap may be the result of discrimination. Anspal, S., Biin, H., Kallaste, E., Karu, M., Kraut, L. (2009). *Gender wage gap: overview of theoretical and empirical literature.* Estonian Centre for Applied Research CentAR, Praxis Centre for Policy Studies, Tallinn.

Potential problem areas: The principles of membership formation must be taken into account – in other words, it must be taken into consideration that the membership of decision-making bodies is, in part, formed on the basis of position (e.g. heads of units, professors) and, in addition, external members who are not elected by the institution are also appointed to higher bodies. While a proportion of representatives are also elected from among the staff (and students). Therefore, the composition of decision-making bodies may partly reflect the gender distribution at senior academic or managerial positions or the choices of external decision-makers. In the analysis, it is important to understand what the result indicates or what the objective is – is the objective a gender-balanced membership? Does equality guarantee better decisions (will a reduction in vertical inequality mean a reduction in horizontal inequality)?

Recommendations: in addition to higher academic decision-making bodies, the compositions of decision-making bodies within different units should also be analysed. In order to assess the composition of decision-making bodies and the impact of its activities on gender equality, it would be beneficial to also use qualitative methods, for instance, in the analysis of the minutes or discussion topics of these bodies. The compositions of managerial councils and advisory bodies should be analysed separately.

Data necessary for indicator calculation: the public data can already be obtained from the websites of institutions.

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Annexes

Annex 1. Gross wages of academic staff

Table 8. Wages of academic staff by institution and gender

Institution	Position	2013		2014		2015		2016		2017		2018		2019		Change 2013–2019, %	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
UT	Professor	2,755	2,526	2,892	2,648	2,885	2,803	2,963	2,944	3,173	3,177	3,379	3,401	3,538	3,631	28.4	43.7
	Associate Professor	1,691	1,529	1,835	1,704	1,973	1,783	2,055	1,923	2,241	2,072	2,338	2,228	2,451	2,542	44.9	66.3
	Lecturer	1,160	1,116	1,233	1,187	1,341	1,301	1,461	1,381	1,604	1,508	1,793	1,648	1,906	1,792	64.3	60.6
	Assistant	988	981	1,080	1,037	1,235	1,179	1,347	1,246	1,443	1,339	1,497	1,438	1,621	1,531	64.1	56.1
	Teacher	780	903	865	959	936	1,015	1,096	1,084	1,290	1,160	1,467	1,254	1,561	1,374	100.1	52.2
	Research professor	1,722	1,681									3,681		4,064		136.0	
	Senior researcher			1,840	1,846	1,916	1,957	1,946	2,024	2,115	2,065	2,173	2,129	2,247	2,327		
	Researcher	1,351	1,259	1,424	1,337	1,508	1,394	1,576	1,467	1,645	1,552	1,758	1,642	1,861	1,843	37.7	46.4
	Junior researcher	1,039	961	1,215	1,069	1,294	1,191	1,298	1,219	1,286	1,235	1,339	1,327	1,529	1,455	47.2	51.4
TalTech	Professor	3,231	2,590	3,177	2,871	3,192	2,811	3,680	3,189	3,902	3,549	3,654	3,254	4,201	4,074	30.0	57.3
	Associate Professor	2012	1,489	2,003	1,743	1,931	1,804	2,431	2,096	2,738	2,389	2,588	2,270	2,605	2,351	29.5	57.9
	Lecturer	1,274	1,162	1,344	1,243	1,545	1,341	1,722	1,612	1,885	1,760	1,867	1,665	2,049	1,744	60.8	50.1
	Assistant	1,391	1,189	1,276	1,282	1,364	1,417	1,611	1,671	1,758	1,752	1,639	1,785	1,766	1,815	27.0	52.6
	Teacher		989		894												
	Research professor	2,733	2,706	2,715	2,745	2,667						3,000					
	Senior researcher	1,877	1,508	2,025	1,704	2,144	1,809	2,103	1,841	2,264	2,008	2,453	2,182	2,790	2,440	48.6	61.8
	Researcher	1,546	1,265	1,699	1,342	1,733	1,517	1,645	1,407	1,928	1,655	2,110	1,839	2,284	2,134	47.7	68.7
	Junior researcher	1,004	858	1,096	977	1,218	1,079	1,418	1,219	1,446	1,280	1,639	1,164	1,721	1,450	71.4	69.0
TLU	Professor	2,920	1,981	2,920	2,121	2,524	2,258	2,593	2,301	2,836	2,427	3,379	2,916	3,589	3,631	22.9	83.3

Institution	Position	2013		2014		2015		2016		2017		2018		2019		Change 2013–2019, %	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	Associate Professor	1,350	1,249	1,523	1,273	1,746	1,371	2,090	1,559	1,842	1,664	2,101	1,983	2,263	2,184	67.6	74.9
	Lecturer	1,084	1,062	1,193	1,090	1,250	1,087	1,378	1,252	1,473	1,347	1,681	1,585	1,800	1,761	66.1	65.8
	Teacher	1,063	1,043	1,067	1,209	1,082	1,197	1,127	1,093	1,244	1,211	1,454	0,1369		1,553		48.9
	Research professor	1,809				2,194											0.0
	Senior researcher	1,388	1,355	1,451	1,536	1,481	1,495	1,683	1,714	2020	2,090	2,100	2,128	2,138	2,366	54.0	74.6
	Researcher	1,283	1,247	1,347	1,307	1,474	1,378	1,854	1,666	1,397	1,524	1,578	1,667	1,710	1,934	33.3	55.1
	Junior researcher	1,004	1,039	967	1,104	1,022	1,288	1,355	1,376	1,202	1,140	1,234	1,325	1,266	1,434	26.1	38.0
EMÜ	Professor	2,233	2,084	2,325	2,193	2,479	2,240	1,840	2,161	2,975	2,367	3,500	2,908	3,498	3,181	56.7	52.6
	Associate Professor	1,414	1,134	1,458	1,212	1,534	1,307	1,608	1,558	1,729	1,623	2,024	1,788	2,241	2,160	58.5	90.5
	Lecturer	1,020	1,054	1,078	1,117	1,125	1,171	1,232	1,243	1,367	1,325	1,413	1,412	1,572	1,616	54.1	53.3
	Assistant	733	961	773	1,015		1,042	849	1,064	905	1,085	1,062	1,082	948	1,197	29.3	24.6
	Research professor			1,621	1,395												
	Senior researcher	1,453	1,371			1,630	1,519	1,777	1,676	1,896	1,674	2,028	1,930	2,192	2,031	50.9	48.1
	Researcher	1,341	1,196	1,412	1,213	1,518	1,244	1,625	1,277	1,670	1,380	1,793	1,529	1,818	1,668	35.6	39.5
	Junior researcher	838	860	931	883	1,078	888	1,162	1,028	1,166	1,076	1,106	1,119	1,182	1,231	41.1	43.1
EAMT	Professor	1,537	1,506	1,719	1,533	1,908	2,005	1,840	2,161	2,200	2,239	2,224	2,225	2,166	2,369	40.9	57.3
	Associate Professor	1,163	1,144	1,248	1,256	1,449	1,578	1,440	1,442	1,486	1,570	1,604	1,379	1,549	1,542	33.2	34.8
	Lecturer	879	855	945	939	1,108	1,122	1,125	1,127	1,209	1,279	1,232	1,332	1,565	1,345	78.0	57.3
	Assistant		814		889		1,085		1,054		1,172		1,184				
	Teacher														1,172		
	Researcher								1,130				1,155		1,147		
EKA	Professor	1,481	1,344	1,717	1,264	1,581	1,476	1,799	1,731	1,925	1,872	2,024	2,073	2,091	2,203	41.2	63.9

Institution		2013		2014		2015		2016		2017		2018		2019		Change 2013–2019, %	
	Position	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	Associate Professor	1,546	954	2,502	868	1,183	1,349	1,277	1,234	1,627	1,505	1,456	1,541	1,770	1,792	14.5	87.8
	Lecturer		960								1,508	1,532	1,818	1,405	1,575		64.1
	Assistant		824		753		990		1,013		1,207		1,213		1,336		62.1
	Teacher																
	Research professor				1,158												
	Senior researcher						1,194		1,502		1,501		1,577		1,455		
	Researcher		823												1,416		72.1
	Junior researcher							927									

Note: purple cells indicate that the change was bigger than 50% during the 2013–2019 period.

Table 9. Basic wages of academic staff by gender, institution and position

Institu-tion	Position	2013		2014		2015		2016		2017		2018		2019		Change 2013–2019, %	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
UT	Professor	2,468	2,079	2,594	2,130	2,564	2,339	2,617	2,403	2,784	2,584	2,951	2,792	3,127	3,045	26.7	46.5
	Associate Professor	1,541	1,380	1,687	1,531	1,813	1,631	1,873	1,712	2,004	1,838	2,115	1,960	2,242	2,218	45.5	60.7
	Lecturer	1,082	1,006	1,162	1,087	1,266	1,183	0,1369	1,255	1,500	1,359	1,660	1,504	1,976	1,697	82.6	68.7
	Assistant	945	940	1,031	992	1,184	1,124	1,271	1,183	1,376	1,268	1,419	1,316	1,534	1,412	62.3	50.2
	Teacher	776	825	860	900	936	946	1,072	984	1,223	1,068	1,378	1,115	1,465	1,269	88.8	53.8
	Lead Researcher											3,505		3,864			
	Senior Researcher	1,659	1,630	1,784	1,795	1,854	1,902	1,880	1,947	2,037	1,993	2,109	2,030	2,148	2,199	29.5	34.9

Institu-tion	Position	2013		2014		2015		2016		2017		2018		2019		Change 2013–2019, %	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	Researcher	1,311	1,221	1,398	1,310	1,469	1,358	1,531	1,420	1,594	1,500	1,699	1,588	1,797	1,767	37.1	44.7
	Junior Researcher	987	938	1,178	1,044	1,257	1,165	1,270	1,178	1,249	1,203	1,306	1,295	1,476	1,413	49.5	50.6
TalTech	Professor	2,836	2,297	2,783	2,546	2,836	2,463	3,363	2,832	3,792	3,454	3,565	3,106	4,106	3,959	44.8	72.4
	Associate Professor	1,810	1,410	1,852	1,640	1,752	1,701	2,206	1,995	2,676	2,324	2,503	2,208	2,524	2,281	39.4	61.8
	Lecturer	1,171	1,062	1,246	1,141	1,439	1,225	1,589	1,487	1,839	1,714	1,827	1,614	1,976	1,697	68.7	59.8
	Assistant	1,325	1,129	1,223	1,231	1,219	1,305	1,522	1,554	1,721	1,713	1,623	1,731	1,751	1,758	32.2	55.7
	Teacher		985		890												
	Lead Researcher	2,514	2,521	2,498	2,532	2,537						2,866					
	Senior Researcher	1,741	1,460	1,898	1,640	2,034	1,727	1,997	1,733	2,244	1,965	2,410	2,164	2,717	2,396	56.1	64.1
	Researcher	1,480	1,169	1,625	1,262	1,674	1,469	1,595	1,349	1,908	1,636	2,093	1,821	2,260	2,083	52.7	78.2
	Junior Researcher	988	816	1,070	941	1,195	1,066	1,400	1,204	1,434	1,279	1,601	1,162	1,691	1,438	71.2	76.2
TLU	Professor	2,645	1,592	2,659	1,706	2,388	1,851	2,481	2,120	2,735	2,214	3,157	2,697	3,373	3,111	27.5	95.4
	Associate Professor	1,225	1,090	1,363	1,161	1,592	1,239	1,995	1,473	1,782	1,569	2,007	1,831	2,143	2,055	74.9	88.5
	Lecturer	991	910	1,091	954	1,130	1,002	1,316	1,163	1,397	1,247	1,587	1,452	1,727	1,637	74.3	79.9
	Assistant	899	885														
	Teacher			972	1,005	1,011	1,061	1,034	1,051	1,214	1,157	1,421	1,316		1,502		
	Lead Researcher	1,617				2,113											
	Senior Researcher	1,275	1,194	1,319	1,367	1,399	1,425	1,548	1,611	1,902	1,938	1,944	1,973	2014	2,221	58.0	86.0
	Researcher	1,156	1,167	1,286	1,203	1,346	1,279	1,528	1,526	1,298	1,462	1,513	1,553	1,649	1,796	42.6	53.9

Institu-tion	Position	2013		2014		2015		2016		2017		2018		2019		Change 2013–2019, %	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	Junior Researcher	988	951	935	1,044	990	1,256	1,348	1,346	1,151	1,101	1,189	1,205	1,231	1,384	24.6	45.5
EMÜ	Professor	2,065	1,819	2,088	1,974	2,187	1,921	2,241	1,915	2,549	2,008	3,045	2,599	3,117	2,752	50.9	51.3
	Associate Professor	1,257	1,069	1,303	1,138	1,357	1,226	1,433	1,363	1,537	1,390	1,729	1,512	1,868	1,844	48.6	72.5
	Lecturer	932	981	988	1,043	1,038	1,102	1,116	1,143	1,232	1,203	1,255	1,262	1,403	1,424	50.5	45.2
	Assistant	702	889	737	939	755	1,004			849	1,010	920	1,010	839	1,121		26.1
	Senior Researcher	1,329	1,213	1,509	1,301	1,502	1,432	1,658	1,574	1,741	1,553	1,843	1,734	1,986	1,909	49.4	57.4
	Researcher	1,192	1,107	1,292	1,128	1,390	1,174	1,468	1,155	1,507	1,251	1,627	1,394	1,685	1,547	41.4	39.7
	Junior Researcher	819	808	906	848	1,031	873	1,123	993	1,133	1,048	1,053	1,061	1,143	1,191	39.6	47.4
EAMT	Professor	1,441	1,415	1,621	1,447	1,776	1,857	1,666	1,796	2,027	1,867	2,025	1,920	1,993	2,075	38.3	46.6
	Associate Professor	1,109	1,087	1,162	1,191	1,356	1,491	1,357	1,381	1,402	1,508	1,527	1,307	1,480	1,493	33.5	37.4
	Lecturer	867	835	932	908	1,083	1,089	1,107	1,090	1,173	1,234	1,147	1,269	1,328	1,266	53.2	51.6
	Assistant		803		874		1,056		1,037		1,139		1,140				
	Teacher														1,133		
	Researcher								1,057				1,126		1,143		
EKA	Professor	1,349	1,231	1,681	1,247	1,535	1,435	1,550	1,418	1,765	1,600	1,702	1,726	1,965	2,127	45.7	72.8
	Associate Professor	1,508	909	2,490	857	1,097	1,244	1,190	1,100	1,514	1,381	1,335	1,386	1,734	1,684	15.0	85.3
	Lecturer		960								1,394	1,382	1,745	1,342	1,476		53.8
	Assistant		824		748		885		948		1,119		1,143		1,212		47.1
	Senior Researcher				1,145		1,147		1,406		1,416		1,540		1,414		
	Researcher		823												1,355		64.6

Institu-tion	Position	2013		2014		2015		2016		2017		2018		2019		Change 2013–2019, %	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	Junior Researcher						879										

Note: purple cells indicate that the change was bigger than 50% during the 2013–2019 period.

Table 10. Gender wage gap in the average gross wages of men and women (%) by institution and position in 2013–2019

Institution	Position	2013	2014	2015	2016	2017	2018	2019
UT	Professor	8.3	8.4	2.8	0.6	-0.1	-0.7	-2.6
	Associate Professor	9.6	7.1	9.6	6.4	7.5	4.7	-3.7
	Lecturer	3.8	3.7	3.0	5.5	6.0	8.1	6.0
	Assistant	0.7	4.0	4.5	7.5	7.2	3.9	5.6
	Teacher	-15.8	-10.9	-8.4	1.1	10.1	14.5	12.0
	Lead Researcher	2.4						
	Senior Researcher		-0.3	-2.1	-4.0	2.4	2.0	-3.6
	Researcher	6.8	6.1	7.6	6.9	5.7	6.6	1.0
	Junior Researcher	7.5	12.0	8.0	6.1	4.0	0.9	4.8
TalTech	Professor	19.8	9.6	11.9	13.3	9.0	10.9	3.0
	Associate Professor	26.0	13.0	6.6	13.8	12.7	12.3	9.8
	Lecturer	8.8	7.5	13.2	6.4	6.6	10.8	14.9
	Assistant	14.5	-0.5	-3.9	-3.7	0.3	-8.9	-2.8
	Lead Researcher	1.0	-1.1					
	Senior Researcher	19.7	15.9	15.6	12.5	11.3	11.0	12.5
	Researcher	18.2	21.0	12.5	14.5	14.2	12.8	6.6
	Junior Researcher	14.5	10.9	11.4	14.0	11.5	29.0	15.7
TLU	Professor	32.2	27.4	10.5	11.3	14.4	13.7	-1.2
	Associate Professor	7.5	16.4	21.5	25.4	9.7	5.6	3.5
	Lecturer	2.0	8.6	13.0	9.1	8.6	5.7	2.2

Institution	Position	2013	2014	2015	2016	2017	2018	2019
	Teacher	1.9	-13.3	-10.6	3.0	2.7	5.8	
	Senior Researcher	2.4	-5.9	-0.9	-1.8	-3.5	-1.3	-10.7
	Researcher	2.8	3.0	6.5	10.1	-9.1	-5.6	-13.1
	Junior Researcher	-3.5	-14.2	-26.0	-1.5	5.2	-7.4	-13.3
EMÜ	Professor	6.7	5.7	9.6	-17.4	20.4	16.9	9.1
	Associate Professor	19.8	16.9	14.8	3.1	6.1	11.7	3.6
	Lecturer	-3.3	-3.6	-4.1	-0.9	3.1	0.1	-2.8
	Assistant	-31.1	-31.3		-25.3	-19.9	-1.9	-26.3
	Lead Researcher		13.9					
	Senior Researcher	5.6		6.8	5.7	11.7	4.8	7.3
	Researcher	10.8	14.1	18.1	21.4	17.4	14.7	8.3
	Junior Researcher	-2.6	5.2	17.6	11.5	7.7	-1.2	-4.1
EAMT	Professor	2.0	10.8	-5.1	-17.4	-1.8	0.0	-9.4
	Associate Professor	1.6	-0.6	-8.9	-0.1	-5.7	14.0	0.5
	Lecturer	2.7	0.6	-1.3	-0.2	-5.8	-8.1	14.1
EKA	Professor	9.3	26.4	6.6	3.8	2.8	-2.4	-5.4
	Associate Professor	38.3	65.3	-14.0	3.4	7.5	-5.8	-1.2
	Lecturer						-18.7	-12.1

Note: purple indicates positions in which the gender wage gap is biased towards men.

Annex 2. Publication of articles

Table 11. Average number of articles by gender and institution

		2014		2015		2016		2017		2018		2019		2020	
Institution	Type of article	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
R&D institutions	1.1.	7.8	2.9	7.8	1.9	9.2	2.9	12.2	2.4	4.7	1.9	5.9	2.3	2.0	1.8
	3.1.	1.3	1.8	1.4	1.3	1.2	1.4	1.9	1.5	2.0	1.3	1.4	1.8	1.6	1.3

Institution	Type of article	2014		2015		2016		2017		2018		2019		2020	
		Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
	Total	8.0	5.2	7.8	3.9	9.1	4.1	11.9	4.7	5.4	3.2	6.4	3.5	2.2	2.2
EKA	Total	3.0	3.1	1.6	2.2	2.3	2.3	2.3	3.0	2.6	2.3	2.0	2.8	1.6	1.7
EMÜ	1.1.	2.5	2.2	2.9	1.8	2.8	2.3	2.9	2.0	2.8	1.8	3.4	2.1	2.4	1.8
	3.1.	1.8	1.5	1.7	1.4	1.6	1.1	2.2	1.2	1.5	1.2	2.1	1.5	1.3	1.3
	Total	4.2	3.7	4.6	3.0	4.0	3.0	4.2	3.1	3.9	2.6	4.2	2.9	2.8	2.2
EAMT	Total	2.4	2.6	2.6	2.6	2.0	2.7	2.1	3.3	1.3	2.8	1.4	2.8	2.0	1.3
TalTech	1.1.	2.1	1.9	2.4	2.1	2.2	2.0	2.3	2.1	2.7	2.4	3.0	2.2	2.2	2.0
	3.1.	3.0	1.8	2.5	1.8	2.5	2.2	2.7	2.0	3.3	1.8	3.2	2.2	2.3	1.9
	Total	4.4	3.5	4.1	3.1	4.0	3.3	3.8	3.3	4.8	3.4	4.8	3.5	3.0	2.5
TLU	1.1.	2.0	1.6	2.0	1.6	1.9	1.7	2.0	1.7	1.8	1.6	1.7	1.8	1.5	1.3
	3.1.	2.5	1.3	2.5	1.8	2.3	1.8	0.7	0.8	1.9	1.6	2.1	1.7	1.4	1.7
	Total	3.9	3.1	4.0	3.4	3.4	3.0	3.1	3.0	3.4	3.0	3.8	3.4	2.2	2.0
UT	1.1.	3.4	2.1	3.4	2.3	3.6	2.3	3.6	2.2	3.1	2.2	3.2	2.2	2.4	1.8
	3.1.	1.9	1.5	4.0	1.7	2.2	1.3	2.1	1.5	1.8	1.4	2.0	1.5	1.5	1.6
	Total	5.1	3.5	4.9	3.6	4.7	3.6	4.7	3.4	4.1	3.1	4.0	3.2	2.5	2.1

Table 12. Proportion of academic staff who published at least one article (%) of all staff of respective institution by gender

Year	Institution / Gender	R&D institutions	EKA	EMÜ	EAMT	TalTech	TLU	UT
2014	Male	83.1	47.4	69.0	46.7	70.4	68.9	72.6
	Female	81.9	54.0	63.2	75.0	55.6	65.0	63.3
2015	Male	76.5	43.6	71.6	50.0	64.4	68.4	70.3
	Female	80.4	45.1	70.6	60.9	55.2	62.3	63.1
2016	Male	73.8	47.4	67.3	53.3	67.5	62.6	72.3
	Female	83.7	50.0	64.5	62.5	53.9	56.5	62.1
2017	Male	74.4	45.0	70.5	43.8	63.7	62.8	70.9
	Female	82.9	44.1	64.9	66.7	52.4	56.0	59.5

2018	Male	71.8	35.9	70.8	37.5	61.9	60.7	70.5
	Female	76.6	39.0	65.3	68.0	56.2	54.5	61.2
2019	Male	64.9	39.5	65.1	43.8	66.7	57.7	67.8
	Female	71.3	43.5	59.1	66.7	53.3	51.1	58.8
2020	Male	46.8	13.5	50.0	***	52.1	41.2	48.1
	Female	49.1	27.9	47.4	26.9	39.2	38.2	39.7

Table 13. Proportion of academic staff who published at least one article (%) of all staff in respective positions by gender and position

Year	Position / Gender	Professor	Associate Professor	Lecturer	Assistant	Teacher	Lead Researcher	Senior Researcher	Researcher	Junior Researcher
2014	Male	87.1	67.4	47.1	36.1	***	100.0	88.3	75.9	74.2
	Female	85.2	75.5	47.7	35.4	7.5	100.0	88.4	73.0	69.2
2015	Male	84.3	69.4	43.8	28.9	20.0	100.0	84.6	72.9	69.8
	Female	82.8	72.1	46.5	35.4	7.6	100.0	85.8	75.0	69.7
2016	Male	86.5	68.4	40.4	34.8	20.8	95.0	86.4	77.0	71.0
	Female	81.7	75.2	42.7	30.2	8.3	100.0	87.2	74.5	61.7
2017	Male	86.1	70.2	39.1	27.2	***	93.0	85.5	72.8	68.1
	Female	87.4	70.6	43.1	23.6	15.1	88.9	87.7	70.1	67.9
2018	Male	84.5	68.2	37.1	30.4	21.4	91.1	83.2	72.0	61.9
	Female	87.4	72.3	40.8	26.2	13.2	100.0	88.1	71.5	67.5
2019	Male	87.2	66.8	35.6	31.5	***	95.1	80.6	69.2	61.7
	Female	86.1	71.0	38.5	27.5	14.1	100.0	84.0	66.7	58.8
2020	Male	68.3	51.6	21.4	16.8	***	80.0	62.7	46.6	41.4
	Female	76.9	51.6	25.2	15.0	9.0	80.0	65.0	46.0	36.4

Table 14. Proportion of women (%) among those who published specific types of articles in 2014–2020

Institution	Type of article	2014	2015	2016	2017	2018	2019	2020	Share of women in institution in 2020
Other R&D institutions	1.1.	56.6	61.6	57.6	63.9	57.2	55.0	60.4	61.3
	3.1.	85.0	46.7	52.6	58.8	54.2	47.1	70.6*	
	Total	64.8	66.1	67.4	67.2	63.4	62.9	62.5	
EKA	Total	60.0	57.5	60.9	59.1	62.2	64.3	77.3	62.2
EMÜ	1.1.	43.9	45.4	42.7	43.1	46.9	49.0	50.3	50.6
	3.1.	41.3	35.1	33.3	33.3	24.6	26.8	43.8	
	Total	44.9	46.9	46.9	47.7	48.5	48.3	49.3	
EAMT	Total	72.0	63.6	65.2	69.6	73.9	69.6	77.8	61.9
TalTech	1.1.	34.1	35.1	32.9	32.6	32.9	31.4	29.9	37.4
	3.1.	25.6	24.0	25.2	25.8	26.0	23.3	28.7	
	Total	32.7	34.6	32.5	33.0	35.0	32.5	31.0	
TLU	1.1.	56.8	55.8	60.2	64.7	64.4	60.0	57.6	62.7
	3.1.	55.7	54.8	53.1	49.0	55.8	52.1	54.3	
	Total	60.0	58.2	59.2	58.2	58.9	59.4	60.9	
UT	1.1.	42.4	42.8	44.5	44.5	43.5	45.9	44.3	52.0
	3.1.	40.0	50.2	37.9	42.6	43.5	44.7	52.8	
	Total	47.6	47.8	47.6	47.6	47.7	47.9	47.2	

Note: an asterisk (*) indicates that the result was not statistically significant, i.e. the share of women who published articles was not significantly different from that of men in the same institution.

Table 15. Average number of articles published by position and gender in 2014–2020

Position	Gender	2014	2015	2016	2017	2018	2019	2020	Share of women in position in 2020
Professor	Male	7.3	7.0	6.8	6.3	6.5	6.6	3.9	23.9
	Female	6.2	6.7	6.4	6.3	5.0	5.4	3.2	
Associate Professor	Male	4.1	4.0	3.6	3.9	3.6	3.5	2.3	53.2
	Female	3.9	4.1	3.8	3.7	3.8	4.0	2.7	
Lecturer	Male	2.3	2.2	2.1	2.3	2.4	2.5	1.7	58.2
	Female	2.2	2.2	2.1	2.2	2.2	2.4	1.5	
Assistant	Male	2.4	2.3	2.1	2.4	1.8	2.2	1.4	72.2
	Female	2.2	1.9	2.1	1.7	1.9	1.7	1.2	
Lead Researcher	Male	10.0	9.2	8.9	9.7	7.5	9.1	3.9	27.3
	Female	17.0	9.7	9.0	7.0	7.8	6.8	4.7	
Senior Researcher	Male	5.4	5.3	5.1	5.3	4.9	4.8	2.8	41.6
	Female	4.7	4.3	4.3	4.7	3.7	4.2	2.4	
Researcher	Male	3.8	3.6	4.0	4.2	3.6	3.7	2.0	52.7
	Female	3.3	3.2	3.2	3.2	2.9	3.1	1.9	
Junior Researcher	Male	3.2	3.2	2.6	2.6	2.7	2.5	1.6	52.1
	Female	2.7	2.4	2.8	2.4	2.4	2.2	1.7	

Annex 3. Participation in projects

Table 16. Average number of projects by institution and gender

Institution	Gender	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
R&D institutions	Male	1.9	2.0	2.0	1.7	1.5	1.4	1.4	1.4	1.3	1.3	1.2
	Female	2.2	2.0	2.0	1.8	1.8	1.6	1.4	1.5	1.3	1.3	1.2

Institution	Gender	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
EKA	Male	1.2	1.0	1.0	1.2	1.1	1.0	1.2	1.2	1.5	1.5	1.0
	Female	1.3	1.3	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	***
EMÜ	Male	1.7	1.6	1.5	1.4	1.4	1.3	1.1	1.0	1.2	1.2	***
	Female	1.8	1.6	1.6	1.5	1.5	1.2	1.1	1.1	1.2	1.2	1.3
EAMT	Male	1.7	1.5	1.6	1.3	1.2	1.1	1.0	1.1	***	***	***
	Female	1.7	1.5	1.9	1.6	1.3	1.2	1.1	1.1	***	***	***
TalTech	Male	1.7	1.6	1.6	1.5	1.4	1.4	1.1	1.1	1.1	1.1	1.1
	Female	1.8	1.7	1.6	1.6	1.5	1.3	1.1	1.1	1.1	1.1	1.1
TLU	Male	1.6	1.4	1.5	1.3	1.4	1.3	1.2	1.1	1.1	1.1	1.1
	Female	1.7	1.5	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.1	1.1
UT	Male	2.0	1.8	1.8	1.6	1.5	1.4	1.2	1.2	1.2	1.2	1.2
	Female	2.0	1.8	1.8	1.6	1.5	1.4	1.2	1.2	1.2	1.2	1.1

Table 17. Proportions of men and women who participated in projects by institution and position

	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Institution	**Share by institution**																					
R&D institutions	83.3	85.9	86.2	85.4	88.2	83.3	64.8	67.1	68.7	67.7	67.1	62.7	64.3	64.1	65.1	60.8	63.1	53.9	61.3	54.4	50.5	41.0
EKA	18.2	16.2	18.9	20.0	14.3	16.3	15.2	21.3	18.4	16.0	15.4	17.6	15.8	19.6	12.5	16.9	10.3	13.6	10.5	14.5	5.4	13.1
EMÜ	49.6	57.2	48.0	58.7	47.4	57.1	42.5	53.6	34.1	43.6	32.9	41.3	32.7	35.5	33.3	35.6	26.4	29.2	26.8	30.2	22.5	24.4
EAMT	54.5	37.5	50.0	35.3	61.5	35.0	50.0	33.3	40.0	33.3	43.8	39.1	46.7	29.2	50.0	33.3	***	***	***	***	***	***
TalTech	57.8	46.3	57.3	46.5	60.0	47.9	56.8	45.4	46.3	39.9	41.2	35.9	40.5	34.4	41.1	35.8	40.1	32.8	39.4	31.2	29.8	24.4
TLU	45.4	40.8	46.9	41.1	41.3	39.8	35.2	36.9	30.6	33.2	26.2	29.3	23.5	24.8	23.2	23.8	22.1	20.3	23.0	20.0	14.3	13.1
UT	70.6	59.3	74.8	60.5	70.9	62.1	67.8	58.8	67.0	55.0	65.8	55.9	61.7	52.0	60.4	50.2	49.5	42.8	49.5	43.9	41.7	38.4
Position	**Share by position**																					
Professor	69.3	66.0	70.5	64.4	69.3	64.7	64.9	61.8	62.5	60.9	60.8	58.2	59.8	53.9	58.2	57.7	48.8	49.5	50.0	53.0	34.9	39.3
Associate Professor	43.9	43.7	47.0	42.1	45.3	45.0	42.2	43.1	37.2	41.2	34.2	40.6	27.8	34.6	31.6	30.9	28.1	25.8	29.1	26.3	22.0	19.3
Lecturer	21.3	21.6	21.6	23.4	20.0	22.1	17.6	19.4	16.3	15.5	14.2	14.3	13.9	13.0	13.5	13.9	11.5	10.4	11.8	11.5	8.6	9.0

	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Assistant	32.7	34.4	35.9	34.3	34.6	32.6	34.7	28.6	29.6	25.1	22.6	18.9	22.7	14.5	21.6	12.5	16.8	11.0	18.9	10.0	13.3	12.6
Lead Researcher	91.7	100.0	95.8	100.0	96.3	100.0	91.2	88.9	87.5	100.0	86.8	100.0	90.0	75.0	81.4	77.8	68.9	60.0	70.7	61.5	65.0	46.7
Senior Researcher	89.0	89.6	90.3	92.6	90.1	93.4	83.9	86.9	77.5	84.2	74.8	82.6	73.8	81.2	74.6	79.6	63.0	68.9	65.2	70.4	48.9	52.3
Researcher	77.4	80.4	78.7	81.3	79.1	81.3	73.3	75.8	69.8	71.1	69.0	71.5	67.9	68.8	65.9	66.2	55.3	56.2	53.3	54.9	45.5	45.0
Junior Researcher	***	***	***	***	58.6	75.0	64.4	65.6	58.3	59.4	57.0	63.2	48.7	56.1	46.2	60.3	40.5	47.8	35.1	46.3	34.6	43.9

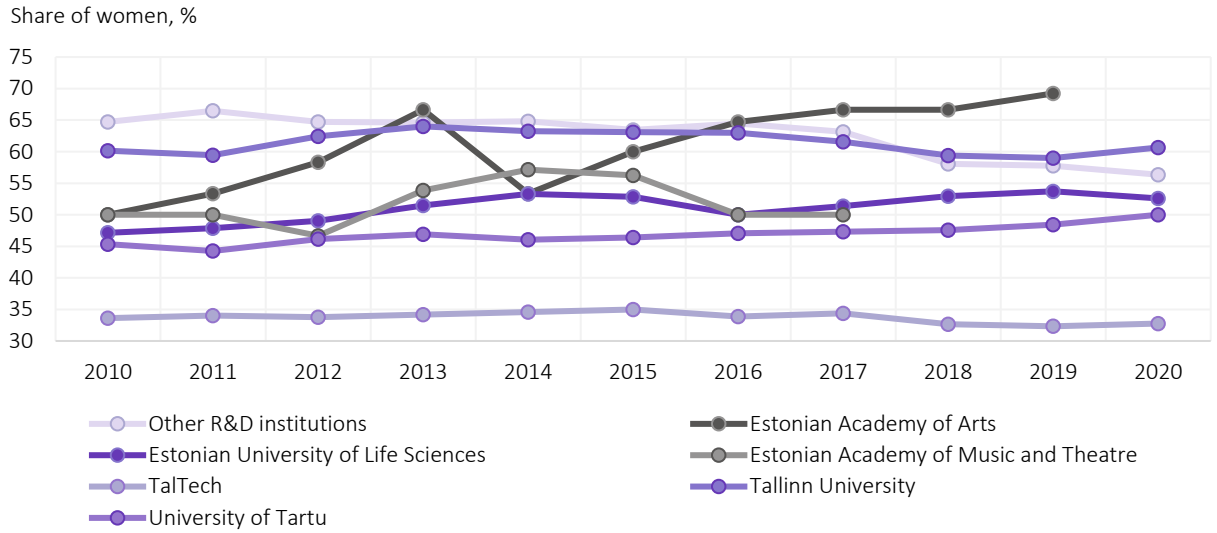

Figure 29. Share of women among project participants in 2010–2020, %

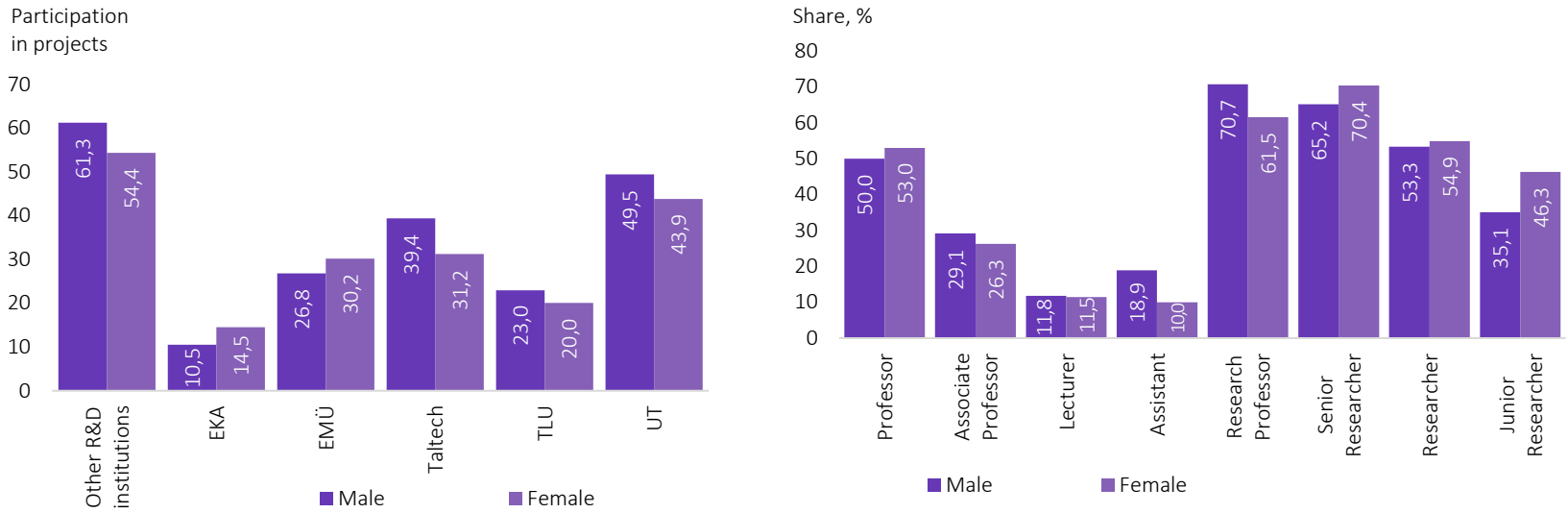

Figure 30. Men's and women's participation in projects in 2019, share of all men and women by institution and position, %
Note: EAMT is not included in the figure because in 2019 their staff participated in projects very few times.

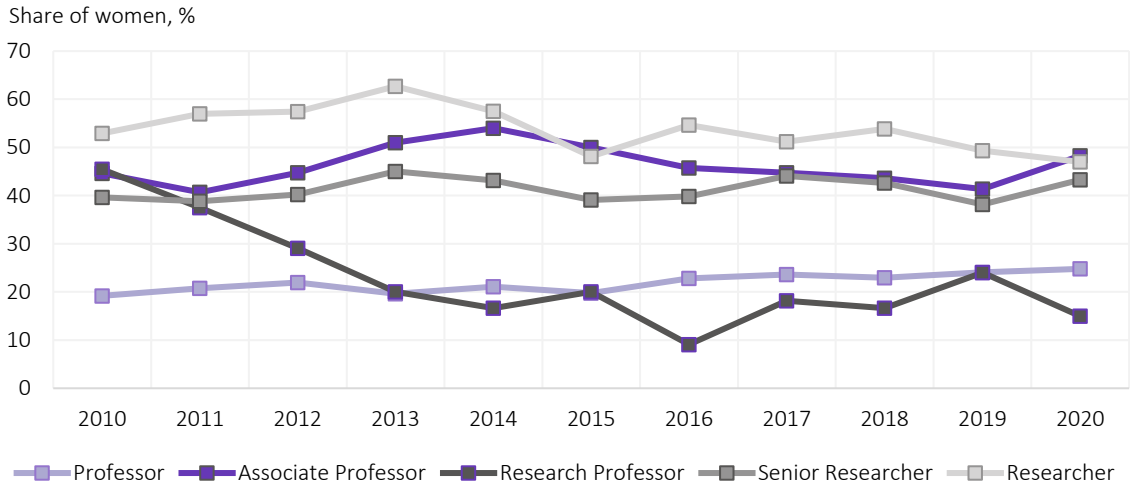

Figure 31. Share of female principal investigators in projects by position in 2010–2020, %

Annex 4. Supervision of doctoral students

Table 18. Average number of doctoral students supervised by gender and position

Position / Year	Professor		Associate Professor		Lecturer		Lead Researcher		Senior Researcher		Researcher	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
2010	4.5	4.3	2.3	2.3	1.3	1.6	3.2	2.5	2.2	2.1	1.5	1.5
2011	4.9	4.7	2.5	2.3	1.3	1.8	3.2	2.2	2.3	2.2	1.6	1.5
2012	4.8	4.5	2.5	2.3	1.4	1.8	3.4	3.0	2.4	2.3	1.6	1.5
2013	4.9	4.9	2.7	2.3	1.7	1.4	3.4	3.3	2.4	2.4	1.6	1.5
2014	5.1	4.7	2.7	2.4	1.6	1.6	3.3	4.0	2.6	2.4	1.8	1.5
2015	5.3	5.1	2.7	2.4	1.3	1.5	3.3	3.0	2.7	2.4	1.9	1.7
2016	5.3	5.0	2.8	2.4	1.4	1.4	3.8	3.8	2.8	2.7	2.0	1.6
2017	5.4	5.3	2.9	2.4	1.5	1.5	3.9	3.4	2.9	2.7	2.0	1.6
2018	5.7	5.6	2.9	2.6	1.5	1.6	3.7	3.5	2.8	2.5	1.9	1.7
2019	5.7	5.8	2.7	2.7	1.7	1.6	4.4	2.8	2.8	2.7	1.9	1.8
2020	5.3	5.2	2.4	2.6	1.6	1.5	3.2	3.0	2.5	2.4	1.7	1.8

Table 19. Share of male and female doctoral thesis supervisors of all staff in respective positions

	Position / Gender	Professor	Associate Professor	Lecturer	Lead Researcher	Senior Researcher	Researcher
2010	Male	83.0	44.2	5.2	79.2	52.7	17.2
	Female	81.4	45.0	4.5	100.0	53.0	11.8
2011	Male	84.4	46.7	5.7	91.7	56.4	16.5
	Female	80.8	47.8	5.8	100.0	62.8	15.4
2012	Male	85.3	48.1	6.0	92.6	56.9	18.1
	Female	84.3	50.6	4.7	76.9	62.4	17.0
2013	Male	85.4	49.7	6.0	91.2	59.1	21.7
	Female	86.4	54.3	5.2	77.8	61.4	17.0
2014	Male	84.4	51.0	8.0	85.0	61.7	24.9
	Female	86.1	55.5	5.7	75.0	60.7	19.6

2015	Male	84.5	55.2	8.3	86.8	62.6	26.2
	Female	86.9	56.2	4.9	85.7	61.3	22.4
2016	Male	88.6	57.4	8.5	87.5	65.3	29.8
	Female	91.3	58.3	6.9	100.0	61.4	24.9
2017	Male	88.2	58.9	7.4	86.0	66.1	28.1
	Female	90.1	59.9	10.4	100.0	59.6	24.1
2018	Male	87.2	60.3	10.0	82.2	65.7	27.1
	Female	87.4	62.9	12.5	100.0	60.9	24.6
2019	Male	86.9	62.8	11.5	85.4	64.0	24.8
	Female	88.7	62.5	13.3	100.0	60.2	24.6
2020	Male	87.4	61.4	10.4	85.0	63.7	23.3
	Female	88.0	61.0	12.5	86.7	57.7	21.9

Table 20. Average number of doctoral supervisees per supervisor by institution in 2010–2020

Year/institution	Other R&D institutions		EMÜ		EAMT		TalTech		TLU		UT	
	M	F	M	F	M	F	M	F	M	F	M	F
2010	1.8	1.8	2.8	2.0	4.2	2.6	2.8	2.1	2.6	2.7	3.3	2.7
2011	1.5	2.0	3.0	2.3	4.8	2.8	2.9	2.1	2.7	2.8	3.5	2.7
2012	1.7	2.0	3.1	2.2	4.6	2.4	2.9	2.3	2.8	2.8	3.5	2.6
2013	1.7	1.9	3.4	2.3	5.5	2.4	3.0	2.5	2.9	2.8	3.4	2.7
2014	1.6	1.7	3.5	2.5	5.7	2.5	3.1	2.5	3.1	2.8	3.5	2.7
2015	1.6	1.7	3.6	2.8	5.3	2.6	3.3	2.5	3.2	3.1	3.5	2.8
2016	1.4	1.8	3.8	2.8	5.6	2.8	3.4	2.4	3.4	2.9	3.6	2.8
2017	1.7	2.2	3.9	2.6	5.2	2.3	3.5	2.4	3.6	3.0	3.6	2.8
2018	1.7	2.1	3.9	2.6	4.4	1.9	3.6	2.5	3.6	3.2	3.7	2.9
2019	1.8	2.2	3.9	2.6	4.8	1.9	3.5	2.4	3.6	3.3	3.8	3.0
2020	1.7	1.9	3.6	2.5	3.8	1.8	3.2	2.3	3.6	3.1	3.5	2.9

Note: as there were less than five observations in several years in EKA, these results will not be highlighted here; M – men, F – women.

Annex 5. Distribution of men and women by field

Table 21. Distribution of men and women by field

Field	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Natural Sciences and Engineering	866	334	898	337	922	362	937	374	941	361	921	357	866	337	876	349	904	354	888	359	849	342
Culture and Society	521	809	540	841	540	852	550	878	564	901	569	896	520	875	522	878	513	878	513	893	489	877
Biosciences and Environment	384	355	385	360	391	383	407	434	413	439	405	435	388	425	381	427	402	434	394	434	381	423
Health	175	251	169	252	172	254	163	268	170	272	170	271	171	269	174	286	175	298	178	303	178	303

Table 22. Share of women by field and institution

Institution	Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
R&D institutions	Natural Sciences and Engineering	30.0	27.8	26.3	20.9	21.4	24.5	23.5	21.4	22.4	23.3	24.3
	Culture and Society	78.9	80.2	81.1	78.3	79.1	81.3	83.1	81.7	78.8	76.9	77.6
	Biosciences and Environment	64.7	66.7	67.6	69.0	69.9	69.7	70.3	75.0	73.5	71.6	76.1
	Health	76.7	77.8	75.9	75.0	76.5	70.4	80.5	81.0	78.6	77.5	79.1
EKA	Natural Sciences and Engineering	33.3	20.0	25.0	25.0	36.4	45.5	46.2	42.9	46.7	50.0	46.7
	Culture and Society	57.6	59.0	61.5	67.4	62.5	60.9	67.3	66.0	64.6	67.3	68.1
EMÜ	Natural Sciences and Engineering	29.9	31.0	31.3	29.3	31.7	32.1	34.2	36.0	34.7	35.9	34.4
	Culture and Society	48.8	48.8	51.2	52.5	50.0	51.4	52.8	58.8	62.5	59.4	59.4
	Biosciences and Environment	44.2	44.9	47.1	48.5	49.6	50.0	51.1	52.1	52.2	52.9	51.7
	Health	50.0	46.9	50.0	57.9	56.8	64.7	61.8	59.4	67.7	66.7	64.5
EAMT	Culture and Society	62.5	61.1	61.9	66.7	65.4	63.0	66.7	66.7	67.9	66.7	69.0

TalTech	Natural Sciences and Engineering	28.1	27.7	28.7	29.1	27.7	27.3	26.8	28.8	28.6	29.2	29.0
	Culture and Society	49.1	50.6	48.0	48.7	48.2	48.4	50.0	50.6	54.5	55.7	56.6
	Biosciences and Environment	58.4	59.9	58.7	58.5	55.9	57.5	58.3	58.4	57.1	58.3	60.0
	Health	69.4	66.7	62.5	72.4	65.6	67.9	62.1	67.9	65.4	70.4	70.4
TLU	Natural Sciences and Engineering	45.6	47.5	49.2	46.2	42.6	45.5	41.8	40.0	40.3	37.7	36.7
	Culture and Society	67.5	66.6	67.6	67.4	65.3	64.3	65.3	64.4	64.6	64.8	65.4
	Biosciences and Environment	53.7	55.8	61.0	60.0	53.8	57.5	56.3	56.3	53.6	57.1	55.6
	Health	63.2	70.0	66.7	76.2	75.0	69.2	71.4	72.4	73.1	73.1	73.1
UT	Natural Sciences and Engineering	23.9	23.1	23.8	25.7	25.3	25.3	26.6	25.4	24.9	26.2	27.3
	Culture and Society	58.0	57.9	58.2	58.8	61.1	60.7	62.3	62.1	61.8	62.4	63.0
	Biosciences and Environment	43.5	42.5	43.7	46.0	47.1	46.5	46.3	46.8	45.9	46.6	46.8
	Health	56.7	58.3	58.4	59.5	59.2	57.9	57.5	58.7	59.8	59.8	59.6

Table 23. Share of women by field and position

Position	Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Professor	Natural Sciences and Engineering	8.2	8.8	9.1	9.7	10.1	9.6	10.4	11.3	10.1	9.9	10.3
	Culture and Society	35.4	37.9	37.0	39.5	40.8	42.6	43.1	42.1	41.0	41.8	40.0
	Biosciences and Environment	14.8	14.8	14.6	16.0	15.3	17.6	18.2	19.8	17.9	16.7	19.3
	Health	19.3	19.0	18.3	25.0	25.4	26.5	29.7	34.5	27.7	25.0	26.8
Associate Professor	Natural Sciences and Engineering	22.7	22.6	23.8	19.7	19.0	19.9	21.5	24.5	24.3	26.2	28.6
	Culture and Society	55.6	53.2	55.3	56.0	57.4	56.6	58.1	59.4	60.2	62.7	63.0
	Biosciences and Environment	43.7	44.4	41.9	42.1	48.7	41.3	46.1	45.2	40.3	40.5	43.1

Position	Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	Health	57.6	57.4	56.9	66.1	66.7	63.2	70.7	66.2	71.6	67.6	67.6
Lecturer	Natural Sciences and Engineering	37.4	35.7	36.0	40.7	42.3	44.4	43.4	39.6	41.8	41.3	39.9
	Culture and Society	66.5	68.0	67.6	66.7	65.5	65.3	67.9	66.8	69.6	69.9	70.9
	Biosciences and Environment	43.6	46.3	51.4	50.7	49.3	54.1	53.7	56.9	63.6	65.7	64.7
	Health	82.4	78.4	81.1	83.7	78.0	72.9	62.3	72.5	70.8	71.4	69.0
Assistant	Natural Sciences and Engineering	51.4	51.3	50.7	42.7	43.1	42.9	45.3	50.0	43.3	48.4	44.4
	Culture and Society	74.4	72.7	74.4	78.0	78.3	81.9	83.8	87.3	83.3	83.1	84.1
	Biosciences and Environment	62.5	63.6	60.9	63.6	60.9	57.1	60.0	72.7	84.6	71.4	73.3
	Health	65.7	66.2	67.7	65.1	66.1	61.7	64.9	64.3	68.4	74.3	70.6
Teacher	Natural Sciences and Engineering	***	***	***	***	***	***	***	***	***	***	***
	Culture and Society	76.9	78.3	77.8	80.0	76.2	81.0	77.3	73.1	72.4	77.8	76.9
Lead Researcher	Natural Sciences and Engineering	31.8	30.4	26.9	23.1	20.0	19.2	9.1	9.5	8.3	15.0	14.3
	Culture and Society	***	***	***	***	***	***	***	36.4	45.5	38.5	54.5
	Biosciences and Environment	44.4	40.0	44.4	33.3	18.2	***	***	17.6	16.7	27.8	27.8
	Health	***	***	***	***	***	***	***	***	***	41.7	54.5
Senior Researcher	Natural Sciences and Engineering	19.8	19.9	20.7	21.2	21.0	21.7	22.3	23.8	24.2	23.9	24.1
	Culture and Society	56.3	56.4	57.6	57.2	57.1	55.9	55.6	56.5	57.5	56.8	58.7
	Biosciences and Environment	47.3	45.7	46.3	47.1	45.5	47.6	48.6	49.0	46.4	46.3	46.6
	Health	62.7	63.6	61.0	61.6	62.3	63.3	65.8	58.7	64.2	65.7	68.2
Researcher	Natural Sciences and Engineering	37.3	35.5	37.1	38.7	36.1	35.8	36.7	33.9	32.7	33.5	34.5
	Culture and Society	68.5	67.3	67.0	67.7	67.9	68.9	72.0	69.2	68.3	69.7	69.0
	Biosciences and Environment	58.6	60.1	62.4	64.5	64.2	64.5	65.1	65.0	63.0	62.0	62.6

Position	Field	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	Health	63.4	67.7	68.3	70.7	69.8	74.5	70.8	69.2	69.9	73.9	71.9
Junior Researcher	Natural Sciences and Engineering	***	***	37.9	36.2	29.8	30.1	26.6	30.1	31.3	33.3	31.6
	Culture and Society	***	***	72.7	68.4	70.2	63.9	63.0	64.5	62.1	63.7	67.9
	Biosciences and Environment	***	***	***	70.4	71.7	70.5	67.5	65.2	67.0	70.1	71.4
	Health	***	***	***	80.0	84.6	80.0	68.4	74.3	71.4	72.2	70.0

Annex 6. Secondments

Table 24. Number and duration of secondments by gender and position in 2015–2019

		Average number of days spent on secondment per year					
Position	Gender / year	2015	2016	2017	2018	2019	Change
Professor	Male	26.8	25.3	26.6	29.3	29.4	
	Female	34.4	24.4	22.5	25.7	27.6	
Associate Professor	Male	17	15.9	18.1	18.6	16.1	
	Female	14.7	14.5	15.1	15.2	15.6	
Lecturer	Male	10.1	11.5	10.9	10.9	11.7	
	Female	11.6	9	9.4	10	11.2	
Assistant	Male	9.7	8.8	12.4	29	18.3	
	Female	10.9	7.6	8.3	7.9	10	
Lead Researcher	Male		32.6	37.9	38.9	31.9	
	Female		10	13.8	42.4	35.6	
Senior Researcher	Male	19.4	21.7	22.7	24.3	22.7	
	Female	15.7	16.4	18	19.1	17.9	
Researcher	Male	22.2	21.8	19.6	19.6	18.2	
	Female	12.3	16	15	15.9	13.6	
Junior Researcher	Male	17.6	18.4	13.5	17.5	18.7	
	Female	18.4	20.4	16.9	13.8	12.4	

Assistant, teacher	Male	7.1	6.7	8	7.9	8	
	Female	7	7.6	6.9	7.6	9.7	
				Average number of secondments per year			
Position	**Gender / year**	**2015**	**2016**	**2017**	**2018**	**2019**	**Change**
Professor	Male	4.9	5.3	5.6	5.6	5.8	
	Female	5.3	4.9	5.3	5.7	5.6	
Associate Professor	Male	3.1	3.1	3.3	3.2	3.3	
	Female	2.9	2.7	3.1	2.9	2.8	
Lecturer	Male	2.6	3	2.9	2.6	2.5	
	Female	1.9	2.2	2.3	2.2	2.4	
Assistant	Male	2	1.9	2	3.2	3	
	Female	2	1.9	2	1.9	2.4	
Lead Researcher	Male		7.1	6.1	7.2	5.9	
	Female		2.4	4	9.4	6.9	
Senior Researcher	Male	3.2	3.6	3.6	3.9	3.6	
	Female	3	3.2	3.3	3.4	3.5	
Researcher	Male	2.5	2.6	2.7	2.8	2.5	
	Female	2.2	2.5	2.4	2.4	2.4	
Junior Researcher	Male	2.6	2.3	2.2	2.4	2.4	
	Female	2.4	2.6	2.2	2.3	2.3	
Assistant, teacher	Male	1.8	1.4	1.5	1.9	2	
	Female	1.7	1.7	1.6	1.9	2.2	

Note: Green indicates a change greater than +10%, red indicates a change greater than -10%, yellow indicates a change between -10% and +10%.

Table 25. Share of women among those seconded, and the share of men and women who have been on secondment at least once a year by institution in 2015–2019

Institution	**Gender**	**2015**	**2016**	**2017**	**2018**	**2019**	**Change**
EKA	Male	93.8	71.4	78.3	80.0	87.5	
	Female	52.2	66.7	68.8	60.6	81.8	

	Share of women among those seconded	44.4	54.5	55.0	50.0	56.3	
EMÜ	Male	45.5	52.7	54.8	60.3	60.9	
	Female	38.6	42.2	44.3	49.1	47.7	
	Share of women among those seconded	43.9	42.9	44.1	44.3	42.5	
TLU	Male	44.1	50.0	49.2	55.3	53.0	
	Female	42.8	50.2	57.0	58.9	57.9	
	Share of women among those seconded	59.4	58.7	63.6	61.4	62.0	
UT	Male	57.0	54.5	56.1	57.1	55.5	
	Female	54.7	54.7	54.1	53.2	51.2	
	Share of women among those seconded	49.5	50.0	50.3	49.1	49.0	
TalTech	Male	45.4	51.3	50.6	54.5	54.4	
	Female	36.7	40.5	46.5	49.6	51.5	
	Share of women among those seconded	32.8	32.3	36.1	35.7	36.2	

Note: Green indicates a change greater than ten percentage points (increase), yellow indicates a change less than ten percentage points.

Table 26. Share of women among those seconded, and the share of men and women who have been on secondment at least once a year (%) by position in 2015–2019

Position	Gender	2015	2016	2017	2018	2019	Change
Professor	Male	73.5	77.3	77.5	77.0	75.6	
	Female	79.0	84.4	88.6	86.4	86.5	
	Share of women among those seconded	24.0	26.1	25.2	24.9	24.1	
Associate Professor	Male	52.7	57.4	58.1	59.9	58.1	
	Female	64.2	63.7	66.0	70.2	71.4	
	Share of women among those seconded	47.3	48.6	48.0	49.8	51.1	
Lecturer	Male	32.5	32.1	29.6	37.1	36.7	

	Female	35.8	38.6	43.3	42.1	44.6	
	Share of women among those seconded	57.9	56.9	57.0	55.7	55.5	
Assistant	Male	20.0	36.7	21.7	29.4	23.1	
	Female	28.9	28.9	15.4	32.0	33.3	
	Share of women among those seconded	52.1	55.9	53.1	59.5	67.5	
Lead Researcher	Male	***	80.6	79.4	80.6	90.3	
	Female	***	100.0	100.0	83.3	87.5	
	Share of women among those seconded	***	12.2	15.0	14.3	20.5	
Senior Researcher	Male	58.3	60.9	63.0	62.4	61.3	
	Female	62.7	67.7	73.8	70.0	68.7	
	Share of women among those seconded	38.5	37.9	39.2	39.0	38.1	
Researcher	Male	50.3	50.6	53.5	55.4	53.2	
	Female	50.0	48.4	49.2	51.8	50.6	
	Share of women among those seconded	53.6	52.5	53.6	51.9	51.5	
Junior Researcher	Male	58.7	53.4	52.2	58.1	58.4	
	Female	48.4	54.5	48.5	55.1	48.5	
	Share of women among those seconded	50.2	47.1	51.0	52.9	52.4	
Assistant, teacher	Male	22.8	25.3	34.8	36.1	28.6	
	Female	30.5	30.5	37.6	34.7	33.3	
	Share of women among those seconded	66.1	66.8	66.9	69.3	70.5	

Note: Green indicates a change greater than ten percentage points (increase), yellow indicates a change less than ten percentage points, red indicates a change greater than ten percentage points (decrease).

Annex 7. Employment by age group and workload

Analysis of employment by gender and age shows that there are approximately the same amount of men and women among those under 40 years of age and those between 40 and 64 years of age. In the over-65 age group, there are less women than men, however, the share of women among older employees has increased over the years (figure 32).

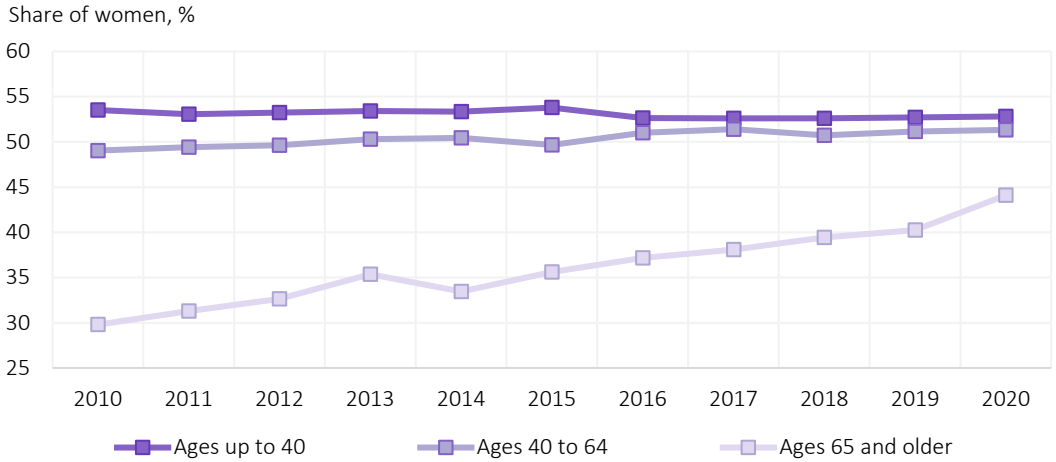

Figure 32. Share of women among academic staff by age group in 2010–2020, %

Analysis by institution shows that in Tallinn University there are significantly more women than men among those under 40 years of age and those between 40 and 64 years of age. There are also more women under 40 years of age in the University of Tartu, but this figure has remained more or less the same over the years. The smallest number of women among the older staff members is seen in TalTech, however, it is important to note that TalTech also has the lowest proportion of women in all academic staff (table 27).

Table 27. Share of women in different age groups by institution in 2010–2020, %

Institution	Age group	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Share of women in 2020
Estonian University of Life Sciences	under 40	49.7	49.7	54.8	58.1	59.9	58.6	57.1	58.6	59.4	58.9	58.0*	61.3
	40–64	43.5	42.0	40.8	40.5	41.3	42.3	42.6	44.9	45.7	45.9	47.1*	
	over 65	23.9	27.5	31.0	32.2	36.5	35.6	41.5	43.5	44.2	47.3	47.4*	
Tallinn University of Technology	under 40	43.4	42.1	41.6	40.3	40.7	42.2	38.2	38.6	38.8*	38.9*	37.9*	37.4
	40–64	40.4	41.8	42.0	42.7	40.9	39.2	40.9	39.7	38.4*	38.6*	38.1*	
	over 65	24.0	24.6	25.9	29.2	24.6	26.1	26.7	27.7	28.8*	29.2*	32.5*	
Tallinn University	under 40	66.8	66.5	66.5	65.8	62.7	61.7*	64.3*	65.2	66.1	66.5	66.7*	62.7
	40–64	62.2	62.7	64.7	63.9	63.3	62.5*	61.9*	61.7	62.2	63.4	63.0*	

	over 65	42.5	42.9	41.1	46.9	47.7	48.1*	52.9*	48.8	50.5	50.5	55.7*	
University of Tartu	under 40	53.7	53.0	53.1	54.2	55.4	55.3	54.8	54.8	54.2	54.4	55.4	52
	40–64	49.4	49.4	49.1	49.9	50.3	49.4	51.3	52.4	51.0	51.5	51.7	
	over 65	31.5	33.5	34.5	37.1	34.6	36.6	36.5	36.8	40.9	36.9	40.2	

Notes: R&D institutions, EKA and EAMT are not included in the table because in these institutions the differences between groups were not significantly different statistically in all years. An asterisk (*) indicates that the differences between groups were not significantly different statistically in the respective year.

We also analysed the academic staff by workload. Results showed that in the case of low workload (up to 0.5) and slightly higher workload (over 0.8), there were no significant differences between men and women. A difference is apparent, however, in the case of 0.5–0.8 workload, where women accounted for 57.4% by 2020 (figure 33).

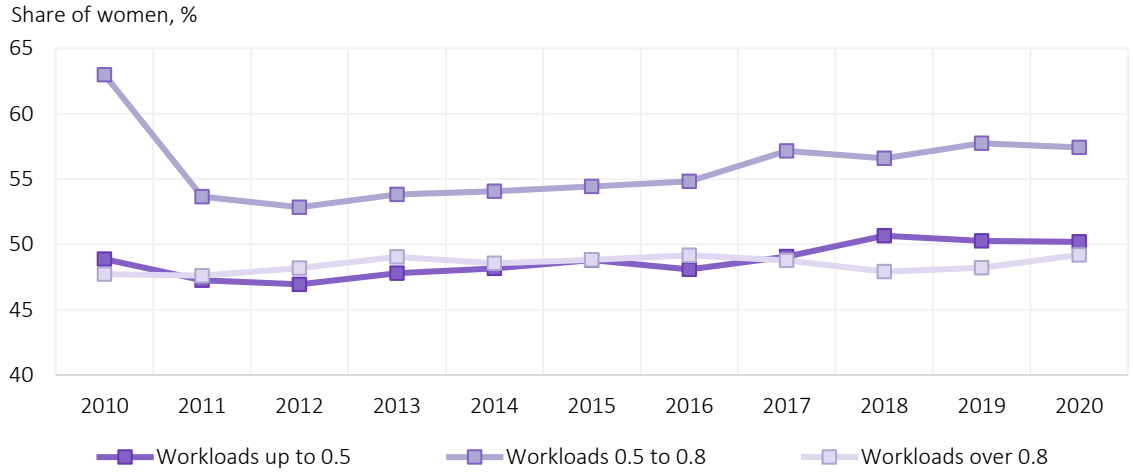

Figure 33. Share of women by workload in 2010–2020, %

Annex 8. Research awards and honours

Data on research awards and honours were obtained from the CVs of academic staff in ETIS. With regard to awards and honours, people have the freedom to fill in these sections at their own discretion, as a result of which the data are very irregular – if someone has not indicated the receipt of any awards or honours, it does not mean that their research work has not been recognised. Instead it may mean that the person has not considered it important to fill in this section

in their CV. Therefore, in this analysis, we can only take into account the people who have indicated the receipt of some research awards and honours in their CV. Additionally, there is great variation in what people include under awards and honours: in some cases, only the highest national awards have been listed, in other cases, awards for student papers have been included.

There have been more women among those who have listed their awards and honours in ETIS over the last few years. It is important to note that the data for 2020 were extracted from ETIS in the middle of the year, therefore, more awards and honours may have been received in the second half of the year.

Table 28. Research awards and honours by gender in 2010–2020, %

Year	Male	Female
2010	51.7	48.3
2011	51.4	48.6
2012	46.6	53.4
2013	49.5	50.5
2014	50.2	49.8
2015	49.7	50.3
2016	50.3	49.7
2017	46.0	54.0
2018	43.5	56.5
2019	48.8	51.2
2020	36.6	63.4

Analysis by position shows that among men, professors and researchers have received awards and honours in all years. Among women, the distribution of awards is not as clear-cut. However, in almost all years female researchers have indicated the receipt of research awards most often.

Table 29. Research awards and honours by gender and position in 2010–2020, %

Year / Position	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019*		2020*	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Professor	26.2	11.8	29.3	12.6	27.5	6.8	26.5	9.0	19.6	10.6	29.9	7.4	26.5	15.3	24.1	11.5	26.2	10.6	24.6	16.0	28.6	17.0
Associate Professor	9.9	13.0	10.2	13.2	11.1	18.2	12.3	12.7	13.5	14.3	11.2	12.6	11.0	15.8	10.9	13.9	11.6	15.3	10.2	13.8	***	14.8
Lecturer	5.8	17.4	6.6	17.6	4.6	19.3	4.5	20.5	12.9	23.0	8.6	21.1	12.7	19.1	10.3	16.8	9.8	19.0	11.4	15.5	***	5.7
Assistant	4.1	6.2	4.2	5.0	7.2	4.0	6.5	4.8	***	5.6	2.7	7.4	***	4.4	***	5.3	***	2.3	***	***	***	***

Lead Researcher	4.7	2.5	2.4	3.1	2.6	2.3	1.9	1.2	3.7	1.9	3.7	1.6	3.9	***	5.2	1.0	3.0	1.4	4.8	2.8	***	***
Senior Researcher	25.6	16.1	26.3	17.6	28.1	15.3	22.6	21.7	19.6	14.3	16.6	16.8	13.3	18.0	12.6	14.4	18.3	15.3	15.0	14.9	16.3	28.4
Researcher	23.8	31.7	20.4	29.6	17.0	29.0	18.1	21.1	17.8	21.7	14.4	21.1	15.5	15.8	20.1	19.7	13.4	19.0	18.6	17.1	24.5	18.2
Junior Researcher			***	***	***	4.0	7.7	9.0	11.7	8.7	12.3	11.1	15.5	11.5	14.4	16.3	15.2	15.3	13.8	17.1	16.3	10.2

Note: *** indicates that data were available for less than five people. * indicates that there were no statistically significant differences between groups in that year.

In terms of institutions, women in TLU received the most awards and honours. However, it is important to note that compared to other public universities, TLU also has the highest share of women. The female staff members of TalTech have listed the lowest amount of research awards, but again, the share of women in total academic staff is also the lowest at TalTech.

Table 30. Research awards and honours by institution, share of women in 2010–2020

Institution/year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
R&D institutions	68.4	***	***	***	53.3	***	50.0	70.4	84.4	***	***
EMÜ	31.3	37.5	57.1	54.2	58.3	51.6	59.3	37.0	56.0	52.9	50.0
TalTech	32.1	30.0	43.6	33.7	34.7	34.1	36.0	36.4	43.0	28.4	48.6
TLU	66.7	62.7	79.3	69.5	56.6	55.7	78.0	83.9	70.5	67.8	82.4
UT	49.3	51.6	46.6	50.9	54.8	49.7	46.9	54.1	55.9	54.8	58.8

Note: *** indicates that data were available for less than five people.

Annex 9. Administrative work and activities in research organisations

Similarly to research awards and honours, people also have the option to choose whether and what they want to share in this section of their CV, as a result of which the data are very irregular – if a person has not indicated any administrative work or activities, it does not mean that they have not participated in any research organisations, it can just mean that they have not filled in that section of their CV. Therefore, in this analysis, we can only take into account the people who have listed administrative work and activities in research organisations in their CV.

An equal proportion of men and women have recorded administrative work and activities in research organisations in their CVs (a total of 1,952 people in 2020). In 2020, women accounted for 52.5% and men 47.5% of the total. In the intermediate years, there were also periods in which the proportion of men was slightly higher than that of women.

Table 31. Administrative work and activities in research organisations by gender in 2010–2020, %

Year	Male	Female
2010	51.9	48.1
2011	51.0	49.0
2012	50.7	49.3
2013	49.7	50.3
2014	50.4	49.6
2015	50.2	49.8
2016	49.1	50.9
2017	49.1	50.9
2018	48.8	51.2
2019	48.2	51.8
2020	47.5	52.5

Analysis by position shows that in the case of men, professors and senior researchers were the ones participating in administrative work and activities in research organisations. Among women, researchers and lecturers were the ones who participated the most in administrative work and activities in research organisations.

Table 32. Administrative work and activities in research organisations by gender and position in 2010–2020, %

Year / Position	2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Professor	25.9	8.1	25.1	8.2	24.9	8.2	24.7	8.7	24.5	8.9	23.8	9.2	23.3	9.2	23.4	8.5	23.9	8.2	25.3	8.6	26.7	8.8
Associate Professor	15.9	14.7	15.8	14.5	16.2	14.2	16.2	13.8	15.4	14.8	16.5	15.4	16.3	15.5	15.5	16.8	15.2	16.3	14.4	15.9	13.4	16.6
Lecturer	10.9	19.7	11.9	21.2	11.8	20.6	11.7	21.1	13.0	21.7	13.2	22.4	13.7	22.6	14.1	21.4	12.4	21.7	12.3	20.9	12.5	20.8
Assistant	3.5	8.5	3.2	7.9	3.2	7.0	2.8	6.4	2.7	5.9	2.6	5.2	2.4	5.2	2.2	5.5	2.1	5.5	2.3	5.4	1.7	5.3
Teacher	***	0.8	***	0.6	***	0.7	***	0.8	***	0.7	***	0.8	***	0.6	***	0.9	0.5	1.0	***	0.8	***	0.8
Lead Researcher	1.7	1.1	1.8	0.8	1.9	0.9	2.5	0.6	2.8	0.7	2.6	0.6	2.7	***	3.0	0.8	2.9	1.0	2.8	1.2	2.9	1.4
Senior Researcher	25.7	18.3	25.8	18.2	25.2	18.9	25.3	18.7	23.9	17.2	25.0	17.3	23.7	17.8	22.4	17.5	23.8	17.9	23.8	17.6	24.7	18.4
Researcher	16.2	28.7	16.0	28.3	15.8	28.7	14.4	28.0	14.3	26.9	12.3	25.3	13.0	23.9	13.7	22.5	13.1	21.3	12.6	21.6	13.0	20.7
Junior Researcher	***	***	***	***	0.9	0.7	2.2	2.0	3.3	3.2	3.7	3.8	4.4	4.9	5.3	6.3	6.1	7.2	6.3	7.9	5.0	7.3

Note: *** indicates that data were available for less than five people.

Across institutions, the share of women engaged in administrative work and activities in research organisations was the highest in R&D institutions combined, in EKA and EAMT, however, the share of women in these institutions is also higher. The female staff members of TalTech engaged in the least amount of administrative work and activities in research organisations, but again, the share of women in total academic staff is also the lowest at TalTech.

Table 33. Administrative work and activities in research organisations, share of women in 2010–2020, %

Institution	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
R&D institutions	67.3	70.6	70.5	69.2	68.8	69.9	71.3	71.7	69.5	69.6	72.7
EKA	63.3	61.1	67.7	65.7	64.1	61.1	64.9	65.8	64.9	70.0	68.4
EMÜ	43.1	43.8	44.8	46.4	45.7	44.8	45.5	46.2	47.2	47.4	47.9
EAMT	***	***	72.2	73.7	72.7	71.4	73.9	70.8	72.0	73.9	70.8
TalTech	33.8	35.8	35.3	37.1	35.0	35.4	35.3	36.9	37.8	38.4	38.2
TLU	63.0	63.6	64.6	65.4	63.9	61.1	63.0	60.9	61.7	61.3	62.2
UT	49.2	49.1	49.4	49.5	50.2	50.8	52.3	52.2	51.3	51.6	52.7

Note: *** indicates that data were available for less than five people.

Annex 10. Creative work

ETIS provides an opportunity to describe creative work. Unfortunately, this entails a number of problems: people can fill in the creative work section at their own discretion. At the time of the analysis, there was only a description box for creative work in ETIS: as a result, some people had completed all boxes (including type of creative work and years), while others had only provided the description, thus it was not possible to determine the time and type of creative work. In addition, people have classified very different types of work as creative work: in some cases, it was clear that the work was not so much creative work, but rather participation in a project or publication. Therefore, the results of the analysis of creative work must be taken with a pinch of salt – this is also the reason why the results have been provided in the annexes, not the main part of the report. Similarly to administrative work and activities in research organisations and research awards and honours, it is not clear whether no information about creative work means that the person has not done any creative work or has just not included it in their CV. In the analysis of creative work, we looked at whether the person had reported any creative work in their CV or not. The following outputs are considered creative work:

- artistic research presentations (activities related to artistic research, e.g. creative projects, applications, prototypes, product development, etc.);
- participation in creative performances (exhibitions, festivals, fairs, biennials, etc.);
- creative performances (solo exhibitions, performances, stage designs, architectural projects, etc.);

- exhibition curation;
- participation in competitions;
- public presentations;
- other creative activities.

In all years, women have recorded their creative work in ETIS more than men. It is important to note that the data for 2020 were extracted from ETIS in the middle of the year, therefore, more creative work may have been added to CVs in the second half of the year. It is, however, important to point out that, compared to all academic staff, only a small minority have recorded creative work in their CVs.

Table 34. Creative work by gender in 2010–2020, %

Year	Male	Female	F (total)
2010	46.3	53.7	67
2011	42.2	57.8	83
2012	39.0	61.0	82
2013	42.2	57.8	90
2014	43.5	56.5	115
2015	42.9	57.1	105
2016	37.3	62.7	102
2017	36.7	63.3	90
2018	41.5	58.5	123
2019	39.2	60.8	130
2020	39.6	60.4	53

Analysis by position shows that among men, professors and lecturers have recorded their creative work the most. Among women, lecturers and associate professors have listed their creative work more often than others. Nevertheless, it is important to note that in most years the results between groups were not statistically significantly different.

Table 35. Creative work by gender and position in 2010–2020, %

Year / Position	2010*		2011*		2012*		2013*		2014*		2015*		2016*		2017		2018		2019		2020*	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Professor	35.5	13.9	31.4	12.2	30.3	***	23.7	15.4	24.0	13.8	21.7	11.7	23.7	12.5	24.2	***	22.6	***	19.2	***	***	***

Associate Professor	***	30.6	20.0	30.6	21.2	25.5	26.3	21.2	16.0	21.5	21.7	21.7	15.8	18.8	***	21.1	11.3	15.1	19.2	16.5	***	***
Lecturer	19.4	30.6	17.1	26.5	21.2	33.3	23.7	32.7	24.0	29.2	23.9	31.7	26.3	35.9	27.3	29.8	20.8	30.1	17.3	29.1	***	25.0
Assistant	***	***	***	***	***	***	***	***	***	***	***	8.3	***	***	***	8.8	***	6.8	***	***	***	***
Senior Researcher	19.4	***	14.3	12.2	***	11.8	13.2	11.5	12.0	10.8	15.2	10.0	18.4	14.1	15.2	14.0	13.2	17.8	15.4	15.2	***	28.1
Researcher	6.5	***	14.3	12.2	***	***	7.9	13.5	14.0	15.4	13.0	11.7	13.2	7.8	18.2	8.8	15.1	17.8	15.4	13.9	14.3	9.4
Junior Researcher						***	***	***	***	***	***	***	***	***	***	***	9.4	***	***	12.7	***	***

Note: *** indicates that data were available for less than five people. * indicates that there were no statistically significant differences between groups in that year.

In terms of institutions, women in EKA engaged the most in creative work, however, it is important to note that compared to other public universities, EKA also has a higher share of female staff. Compared to other universities, EKA has a relatively higher share of staff who have indicated creative work in their CVs, which is to be expected as creative work is an important output for the academic staff of EKA.

Table 36. Creative work by institution, share of women in 2010–2020

Year / Institution	2010*	2011*	2012*	2013*	2014*	2015	2016*	2017	2018*	2019	2020	F total (2019)
R&D institutions	***	***	***	***	***	***	***	***	62.5	***	***	***
EKA	50.0	59.1	61.9	56.0	66.7	67.9	65.2	71.4	71.4	77.3	***	22
EMÜ	***	***	***	***	***	***	***	***	***	***	***	***
EAMT	***	***	***	***	***	***	***	***	***	***	***	***
TalTech	44.4	***	41.2	45.5	41.4	30.4	42.3	41.4	40.9	44.7	35.3	47
TLU	70.6	72	69.6	66.7	63.0	62.1	76.0	***	66.7	***	66.7	19
UT	43.8	50	64.3	61.5	50.0	50.0	61.1	***	66.7	63.3	57.1	30

Note: *** indicates that data were available for less than five people. * indicates that there were no statistically significant differences between groups in that year. The total number of 2019 is more relevant, as the data for 2020 are incomplete.

Annex 11. Academic Career Management

Table 37. Academic career management: professors

Institution	Position	Teaching[50]	RDC activity[51]	Administrative work[52]	Social and public activities[53]	International activities	Publication
Estonian Academy of Arts	Professor	24–38%	50%	12–26%	Participation in professional bodies as an expert; popularisation of the specialisation.	**Duties:** Professional development to enhance RDC skills through international or cross-sectoral mobility is recommended.	**Candidate requirements:** At least five publications in publication categories 1.1, 1.2, 2.1, 3.1, 3.2 in five years. In creative fields, publication equivalents include an internationally curated exhibition or performance, nomination at an international competition, participation in an international exhibition, or other creative work created as part of an international artistic project which has attracted positive international attention, international industrial property and/or involvement in the development of other innovative international solutions and services, participation in applied research and/or at least three internationally peer-reviewed and published artistic research papers and/or applied research reports.
Estonian University of Life Sciences	Professor	≤ 40%	≥ 40%	≥ 20%		**Candidate requirements:** At least five years of work experience as a leader of a working group and success in applying for and managing both international and national research and implementation projects.	
	Associate professor	≤ 40%	≥ 40%				

[50] Including activities related to the administration and development of teaching, % of working time.
[51] Research, development and creative activities, % of working time.
[52] Participation in university governance and institutional development, % of working time.
[53] % of working time.

Institution	Position	Teaching[50]	RDC activity[51]	Administrative work[52]	Social and public activities[53]	International activities	Publication
	Junior professor	≤ 40%	≥ 40%			**Candidate requirements:** Preference is given to the candidate who has acquired research experience after obtaining their doctoral degree or equivalent qualification, preferably not in the same country where the doctoral degree was obtained.	
Estonian Academy of Music and Theatre	Professor	450–900 h, depending on the size of the study group and volume of research				**Candidate requirements:** International recognition. In creative fields, active creative work at professional and high level, including at least three presentations, public concerts, performances or other creative work that attracted positive international attraction or took place abroad or in the framework of an international project within the last five years. In justified cases, if the person has at least 25 years of professional creative work experience and at least 15 years of teaching experience in a university and has accomplished other professional achievements on the basis of the criteria set out in clauses 8–11 of these job requirements (i.e. professional achievements of supervised students, management and development activities, international academic mobility, preparation of teaching materials), this requirement may be excluded. International mobility is taken into account in the evaluation.	**Candidate requirements:** In research subjects, the applicant for the position must have published at least three (1.1) or five publications (1.1, 1.2, 2.1, 3.1, 3.2) in the past five years or a total volume of publications corresponding to the volume of at least one doctoral thesis. In the case of creative fields, concerts, presentations and other creative work are considered outputs of professional activity.
Tallinn University of Technology	Full professor						**Academic evaluation matrix:** h-index > 16. Being one of the top researchers in the field.
	Associate professor						**Academic evaluation matrix:** h-index > 10.

Institution	Position	Teaching[50]	RDC activity[51]	Administrative work[52]	Social and public activities[53]	International activities	Publication
	Assistant professor						**Academic evaluation matrix:** at least three scientific publications in the volume of at least one doctoral thesis; h-index > 4.
Tallinn University	Full professor	15–50%	30–75%	10–40%		**Candidate requirements:** International professional experience, including graduate studies abroad, completion of postdoctoral studies abroad or completion of refresher training abroad in the last five years (preferably for at least three months) or performance of professional academic work abroad for a at least one year or for a recommended total period of at least three months within the last five years.	**Expected work experience and work efficiency:** continued outstanding-level research activity resulting in numerous high-level influential internationally recognised publications reflecting the results of research efforts in the volume of at least three doctoral theses in addition to the defended doctoral thesis.
	Professor	20–40%	40–65%	10–30%			
	Associate professor	20–30%	55–75%	5–15%			**Expected work experience and work efficiency:** publication of high-level influential publications reflecting the results of research efforts in the volume of at least one doctoral thesis in addition to the defended doctoral thesis.
	Distinguished professor	15–50%	30–75%	10–40%			**Expected work experience and work efficiency:** continued outstanding-level research activity resulting in numerous high-level influential internationally recognised publications reflecting the results of research efforts in the volume of at least three doctoral theses in addition to the defended doctoral thesis.
	Lead researcher	10–20%	70–90%	0–20%			

Institution	Position	Teaching[50]	RDC activity[51]	Administrative work[52]	Social and public activities[53]	International activities	Publication
University of Tartu	Professor	≥ 25%	≥ 40%	≥ 10%	≥ 5%	**Candidate requirements:** performance and continuation of international-level research in the specialisation. Participation in the work of the international community of the specialisation, incl. participation in the work of professional societies or in international RDC projects, work in the editorial boards of research publications or as a reviewer, work as an expert in foreign institutions.	**Candidate requirements**: international-level research in the specialisation, the volume of which so far is equivalent to at least three doctoral theses.
	Associate professor	≥ 20%	≥ 30%	≥ 5%	≥ 5%	**Candidate requirements:** performance and continuation of international-level research in the specialisation. Participation in the work of the international community of the specialisation, incl. participation in the work of professional societies or in international RDC projects, work in the editorial boards of research publications or as a reviewer, work as an expert in foreign institutions.	**Candidate requirements**: international-level research in the specialisation, the volume of which is equivalent to at least two doctoral theses.

Table 38. Academic career management: teaching staff (lecturers and associate professors)

Institution	Position	Teaching[54]	RDC activity[55]	Administrative work[56]	Social activities[57]	International activities	Publication
Estonian Academy of Arts	Associate Professor	36–49%	38%	13–26%		**Duties:** Professional development to enhance RDC skills through international or cross-sectoral mobility is recommended.	**Candidate requirements:** At least four publications (1.1, 1.2, 2.1, 3.1, 3.2) in the last five years. In creative fields, publication equivalents include an international exhibition or performance, nomination at competition, participation in an international exhibition, or other creative work created as part of an artistic project which has attracted positive attention, industrial property and/or involvement in the development of other innovative solutions and services and/or at least one internationally peer-reviewed paper and/or applied research report.
	Lecturer	51–65%	25%	10–24%	Participation in professional bodies as	**Duties:** Active participation in the fields of art, design and architecture, as well as the fields of art history, cultural heritage and conservation, and art education in both Estonia and abroad.	**Candidate requirements:** At least one international publication (1.1, 1.2, 2.1, 3.1, 3.2) within the last five years. In creative fields, creative work is considered the equivalent of publication.
Estonian University of	Senior Lecturer	≤ 70%	≥ 20%				

[54] Including activities related to the administration and development of teaching, % of working time.
[55] Research, development and creative activities, % of working time.
[56] Participation in university governance and institutional development, % of working time.
[57] % of working time.

Institution	Position	Teaching[54]	RDC activity[55]	Administrative work[56]	Social activities[57]	International activities	Publication
	Lecturer	≤ 70%	≥ 20%				
Estonian Academy of Music and Theatre	Senior Lecturer					**Candidate requirements:** In the case of senior researchers and senior lecturers, international mobility is taken into account in the evaluation.	**Candidate requirements:** In research subjects, the applicant for the position must have published at least two (1.1) or three publications (1.1, 1.2, 2.1, 3.1, 3.2) in the past five years or a total volume of publications corresponding to the volume of two-thirds of a doctoral thesis. In creative subjects, the candidate must demonstrate a high level of creative activity in the field, including, within the past five years, at least three performances of works.
	Lecturer	550–1,000 h, depending on the size of the study group and volume of					.
	Junior Lecturer						

Institution	Position	Teaching[54]	RDC activity[55]	Administrative work[56] Social activities[57]	International activities	Publication
Tallinn University of Technology	Senior Lecturer					**Academic evaluation matrix:** has published research papers (1.1, 2.3, 3.1) which have been referenced.
	Lecturer					**Academic evaluation matrix:** has published research papers.
	Junior Lecturer					
Tallinn University	Associate	40–80%	10–40%	10–30%	**Candidate requirements:** international professional experience, including graduate studies abroad, completion of postdoctoral studies abroad or completion of refresher training abroad in the last five years or performance of professional academic work abroad (incl. doctoral thesis) for a at least one year or for a recommended period of at least three months within the last five years.	**Expected work experience and work efficiency:** a proven capacity to publish at a high level. Continued research activity the results of which have been published at least to a level required for a TLU doctoral thesis requirements.
	Lecturer	40–60%	30–40%	10–20%		
	Junior Lecturer	40–55%[58]	35–45%[59]	5–10%	**Candidate requirements:** preferably international professional experience, including graduate studies abroad, completion of postdoctoral studies abroad or completion of refresher training abroad in the last five years or performance of professional academic work abroad (incl. doctoral thesis) for at least one year or for a recommended period of at least three months within the last five years.	**Expected work experience and work efficiency:** preferably some publishing experience. At evaluation, the doctoral studies' publication requirements are applied.

[58] 0.5 workload: 90–95%.

[59] 0.5 workload: 0%.

Institution	Position	Teaching[54]	RDC activity[55]	Administrative work[56] Social activities[57]	International activities	Publication
	Distinguished lecturer	40–80%	10–40%	10–30%	**Candidate requirements:** International professional experience, including graduate studies abroad or completion of refresher training abroad in the last five years or performance of professional academic work abroad for at least one year or for a recommended total period of at least three months within the last five years.	**Expected work experience and work efficiency:** a proven capacity to publish at a high level. Continued research activity the results of which have been published at least to a level required for a TLU doctoral thesis requirements.
University of Tartu	Lecturer	≥ 40%	≥ 20%	≥ 15%		**Candidate requirements**: international-level research in the specialisation, the volume of which is equivalent to at least one doctoral thesis.
	Junior Lecturer	≥ 70%	≥ 10%	up to 5%		

Table 39. Academic career management: researchers

Institution	Position	Teaching[60]	RDC activity[61]	Administrative work[62] Social activities[63]	International activities	Publication
Estonian Academy of Arts	Senior Researcher	5–10%	75–85%	10–15%	**Duties:** Professional development to enhance RDC skills through international or cross-sectoral mobility is recommended.	**Requirements**: active R&D experience at international level, resulting in at least five high-level publications (1.1, 1.2, 2.1, 3.1, 3.2) in the last five years. In creative fields, a senior researcher must be active in international activities, as a result of which they have completed three artistic research projects in five years: exhibitions and other creative projects, product and product developments, services, architectural projects, applied research, documentation, etc., all of which are internationally peer-reviewed and published and/or applied.
	Researcher	5–10%	80–85%	5–10%	**Duties:** Professional development to enhance RDC skills through international or cross-sectoral mobility is recommended.	**Requirements:** R&D activities, resulting in at least three publications (1.1, 1.2, 2.1, 3.1, 3.2) in the last five years. A senior researcher must have completed two artistic research projects in five years: exhibitions and other creative projects, product and product developments, services, architectural projects, applied research, documentation, etc., all of which

[60] Including activities related to the administration and development of teaching, % of working time.
[61] Research, development and creative activities, % of working time.
[62] Participation in university governance and institutional development, % of working time.
[63] % of working time.

Institution	Position	Teaching[60]	RDC activity[61]	Administrative work[62]	Social activities[63]	International activities	Publication
							are internationally peer-reviewed and published and/or applied.
	Junior Researcher	5–10%	90–95%	5%		**Duties:** Professional development to enhance RDC skills through international or cross-sectoral mobility is recommended.	
Estonian University of Life Sciences	Senior Researcher	≤ 20%	≥ 60%				
	Researcher	≤ 20%	≥ 70%				
	Junior Researcher	≤ 10%	≥ 85%			**Expectations:** Preferably international professional experience, including studying abroad as an exchange student.	
Estonian Academy of Music and	Senior Researcher					**Candidate requirements:** International mobility is taken into account in the evaluation.	**Candidate requirements:** In research subjects, the applicant for the position must have published at least two (1.1) or three publications (1.1, 1.2, 2.1, 3.1, 3.2) in the past five years or a total volume of publications corresponding to the volume of two-thirds of a doctoral thesis.

Institution	Position	Teaching[60]	RDC activity[61]	Administrative work[62]	Social activities[63]	International activities	Publication
	Researcher						**Candidate requirements:** Research publications of the last five years are taken into consideration. If they have worked as a researcher for at least five years and wish to advance to the next level, they must have published at least three publications (1.1, 1.2, 2.1, 3.1, 3.2), the number of publications may be smaller if their total volume corresponds to the volume of at least two-thirds of a doctoral thesis.
	Junior Researcher						
Tallinn University of Technology	Senior Researcher						**Academic evaluation matrix:** has published more than three research papers (3 1.1, 1.2, 3.1) which have been referenced.
	Researcher						**Academic evaluation matrix:** has published more than three research papers (3 1.1, 1.2, 3.1) which have been referenced.
	Doctoral student-Junior Researcher						**Academic evaluation matrix:** has published research papers.
Tallinn University	Senior Researcher	5–45%	45–90%	5–30%		**Candidate requirements:** international professional experience, including graduate studies abroad, completion of postdoctoral studies abroad or completion of refresher training abroad in the last five years or performance of	**Expected work experience and work efficiency:** continued successful research activity the results of which have been published as multiple high-level influential publications with a volume equal to at

Institution	Position	Teaching[60]	RDC activity[61]	Administrative work[62] Social activities[63]	International activities	Publication
					professional academic work abroad (incl. doctoral thesis) for at least one year or for a total period of at least three months within the last five years.	least one doctoral thesis in addition to the defended doctoral thesis.
	Researcher	5–40%	60–90%	0–20%		**Expected work experience and work efficiency:** a proven capacity to publish at a high level. Continued research activity the results of which have been published at least to a level required for a TLU doctoral thesis requirements.
	Junior Researcher	10–20%	70–85%	5–10%	**Candidate requirements:** preferably international professional experience, including graduate studies abroad, completion of postdoctoral studies abroad or completion of refresher training abroad in the last five years or performance of professional academic work abroad (incl. doctoral thesis) for at least one year or for a total period of at least three months within the last five years.	**Expected work experience and work efficiency**: Preferably some publishing experience (including joint publications). At evaluation, the doctoral studies' publication requirements are applied.
University of	Researcher	≤ 20%	≥ 70%	≥ 10%		
	Junior Researcher	≤ 15%	≥ 80%			

Table 40. Academic career management: teachers and assistants

Institution	Position	Teaching[64]	RDC activity[65]	Administrative work[66]	Social activities[67]	International activities	Publication
Estonian Academy of Arts	Teacher	85–90%		10–15%			
Estonian University of Life Sciences	Teacher	≤ 90%					
Estonian Academy of Music and Theatre	Teacher	600–1,100 h, depending on the size of the study group and volume of research work.					
Tallinn University	Teacher	75–90%	0–20%	10–15%		**Candidate requirements:** Preferably international professional experience.	
University of Tartu	Teacher	≥ 85%		≥ 5%			

[64] Including activities related to the administration and development of teaching, % of working time.
[65] Research, development and creative activities, % of working time.
[66] Participation in university governance and institutional development, % of working time.
[67] % of working time.

Table 41. Conditions for recruitment of academic staff at R&D institutions

Institution	Position	Teaching	RDC activity[68]	Administrative work[69]	Social and public activities	International activities	Publication	Other requirements
National Institute for Health Development	Lead Researcher	Preferably previous teaching experience in university, incl. effective supervision of master's and doctoral students.	High-level research activities, success in applying for research grants and performing R&D contracts.	Experience is required.			At least 15 publications in five years.	Must have worked as a senior researcher (or at a position with equivalent qualification) for at least ten years.
	Senior Researcher	Preferably previous teaching experience in university, incl. effective supervision of master's and doctoral students.	High-level research activities, success in applying for research grants and performing R&D contracts.	Preferably experience in administrative work and activities in research organisations.			At least 10 publications in five years.	
	Researcher	Experience in teaching and supervising students is recommended.				Preferably international experience, i.e. participation in the substantive work of international R&D projects in the last five years.	At least five publications in five years.	
	Junior Researcher							

[68] Research, development and creative activities.

[69] Participation in governance and institutional development.

Institution	Position	Teaching	RDC activity[68]	Administrative work[69]	Social and public activities	International activities	Publication	Other requirements
Estonian Crop Research Institute	Lead Researcher			Experience in directing research activities or projects, or taking responsibility for the performance of important work duties.		Experience in directing international research activities or projects, or taking responsibility for the performance of important work duties.	Seven research articles published in the Thomson Reuters Web of Science or Scopus database in the last five years. On the basis of their research results, has published ten articles or chapters in a relevant publication in Estonian with the aim of disseminating knowledge and popularising research and science.	
	Senior Researcher			Experience in directing research activities or projects, or taking responsibility for the performance of important work duties.			Three research articles published in the Thomson Reuters Web of Science or Scopus databases in the last five years. On the basis of their research results, has published ten articles or chapters in a relevant publication in Estonian with the aim of disseminating knowledge and popularising research and science.	

Institution	Position	Teaching	RDC activity[68]	Administrative work[69]	Social and public activities	International activities	Publication	Other requirements
	Researcher						One research article published in the Thomson Reuters Web of Science or Scopus database in the last five years. On the basis of their research results, has published five articles or chapters in a relevant publication in Estonian with the aim of disseminating knowledge and popularising research and science.	
	Junior Researcher							
National Institute of Chemical Physics and Biophysics	Lead Researcher	Management of research in the specialisation, supervision of doctoral students. At least one doctoral dissertation has been defended under their supervision or they have supervised a paper that has resulted in a patent.	Managerial experience in research and development. Cooperation with other R&D institutions.	Organisational and/or managerial experience in research.	Active participation in public discussion on key topics within their competence.	Experience in international-level research.	At least ten publications resulting in publication or patent in five years.	At least ten years of experience as an associate professor, senior researcher or professor.
	Senior Researcher	.				Experience in international-level research.	At least five publications resulting in publication or patent in five years.	

Institution	Position	Teaching	RDC activity[68]	Administrative work[69]	Social and public activities	International activities	Publication	Other requirements
	Researcher						At least two publications resulting in publication or patent in three years.	Substantive participation in a research topic over the last three years.
	Junior Researcher							Direct link with the research topic.
Estonian Literary Museum								At evaluation, the following are taken into account: the candidate's previous research work and competence, any publications, overview articles and citability of their work, where such data are available, awarded research grants and financial support, previous activities in research organisations.[70]
ETK UTK[71]	Lead Researcher		Directs RDC activities.			Internationally recognised.		Doctoral degree or equivalent qualification.
	Senior Researcher		Directs or participates in RDC activities.					Doctoral degree or equivalent qualification.

[70] Procedure for the election of academic staff of Estonian Literary Museum. Available at: Procedure for the election of academic staff | Estonian Literary Museum (kirmus.ee)

[71] Job requirements and duties of academic staff of Under and Tuglas Literature Centre of the Estonian Academy of Sciences. *Annex to Director's Directive* (internal document).

Institution	Position	Teaching	RDC activity[68]	Administrative work[69]	Social and public activities	International activities	Publication	Other requirements
	Other academic staff[72]		Participation.					Master's degree or someone pursuing a doctorate.
Estonian National								
Institute of the Estonian Language	Lead Researcher	**Duties**: supervision of doctoral students **Candidate requirements:** eligible candidates include persons under whose supervision at least one doctoral dissertation has been defended or who have supervised a research paper that has resulted in patented products or processes.			**Duties**: popularisation of the specialisation.	**Duties**: participation in Estonian and international cooperation projects.		A doctoral degree in Estonian or an equivalent qualification is required. Persons who have a total of at least 10 years of professional experience as an associate professor, lead researcher, or professor may apply for the position of a lead researcher.
	Senior Researcher				**Duties**: popularisation of the specialisation.	**Duties**: participation in Estonian and international cooperation projects.		A doctoral degree in Estonian or an equivalent qualification is required.
	Researcher				**Duties**: popularisation of the specialisation.			A degree in Estonian or an equivalent qualification is required.

[72] Research secretary, head of department, researcher, chief treasurer, head of digitisation.

[73] As of 20 January 2020, no relevant documents have been submitted to the investigation team.

Institution	Position	Teaching	RDC activity[68]	Administrative work[69]	Social and public activities	International activities	Publication	Other requirements
	Junior Researcher				**Duties**: popularisation of the specialisation.			A master's degree in Estonian or an equivalent qualification is required. Participates in doctoral studies.

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