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GENDER EQUALITY IN ENGINEERING THROUGH COMMUNICATION AND COMMITMENT (GEECCO)

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Final Evaluation Report for Politechnika Krakowska (PK)

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1 THE AIM AND CONTEXT OF THE FINAL EVALUATION REPORT

This Final Evaluation Report marks the end point of the independent, external monitoring and evaluation of the design and implementation of an institutional gender equality plan (GEP) at Politechnika Krakowska (PK) by the GESIS evaluation team. The report is based on quantitative indicators for the summative evaluation of gender equality achievements and impacts. Thus, the present evaluation is a meaningful complement to the formative evaluation, which was based on the analysis of qualitative data. At the same time, it concludes the evaluation process in the context of the project “Gender Equality in Engineering through Communication and Commitment” (GEECCO).

As the summative evaluation focuses less on providing direct developmental support for the implementation of the GEP than on assessing its outcomes and impacts, the present Final Evaluation Report should be considered as an overall assessment of verifiable changes based on tangible evidence that is informed by monitoring and survey data collected during the evaluation tasks carried out within the framework of GEECCO’s Work Package 10. Chapter 3 presents further details on the methods and data used for the assessment. Each of the evaluated research performing organizations (RPOs) represents an evaluation case study. The different starting conditions on the ground, taking into account different legal frameworks and understandings of the relevance and objectives of gender equality policies in RPOs, greatly influenced the overall capacity building processes for institutional changes at each RPO over the four years, including the design and development of gender equality objectives and measures. As gender and evaluation experts, we have accompanied these processes to the best of our ability, and have made appropriate suggestions to enable the local partners to quantitatively self-assess their accomplishments in the future, based, for example, on comparisons of time series (pre–post comparison) and benchmarking with national cross-sectional data, and also by using validated survey instruments and data. Therefore, when reading this report, attention should be paid not only to the documented results and recommendations but also to the indicators and methods described.

Chapter 3 provides a detailed insight into the methods and data that underpin the assessment, including specific methods for assessing mechanisms of action. *Chapter 4* presents and discusses the results of the data collections and comparisons. It explains what changes can be demonstrated in the respective thematic areas, and where few or no intended changes are tangible. The assessment and resulting recommendations in *Chapter 5* are based on the objectives specified by the university, which were either already formulated in the GEECCO project application or within the framework of the GEP. The recommendations presented in Chapter 5 take into account the objectives from the three to four specific thematic areas to advance gender equality, and also point to important preconditions that would bring the realization of specific objectives for the university within the realm of achievability in the medium term after the financial support from the European project GEECCO ends.

2 ABOUT THE GEECCO PROJECT

The project “**Gender Equality in Engineering through Communication and Commitment**” (GEECCO) aims to establish tailor-made gender equality plans (GEPs) at four European universities (research performing organizations, RPOs) and to integrate the gender dimension into the funding schemes, programs, and review processes of two research funding organizations (RFOs). All partner universities are located in the STEM (science, technology, engineering, and mathematics) fields, where gender equality is still a serious problem and whose innovations are increasingly important in knowledge-based economies. The achievement of gender equity within STEM institutions, including their policy- and decision-making bodies, is thus a question of excellence, competitiveness, and justice. Concerning the gender dimension in research programs, research funding organizations are the key to substantial changes, and are thus a crucial part of the aspired transformation.¹

Objective 1: The first objective is the development and implementation of GEPs by the four implementing RPOs. However, these GEPs have to be more than mere policy statements. To this end, they shall be tailor-designed in order to enfold maximum efficiency and impact, especially in terms of the following three specific requirements:

- Increase awareness and knowledge on gender equality issues and stipulate an intense communication process within and beyond implementing institutions (all stakeholder levels, e.g., top and middle management, researchers, students, administrative staff).
- Enhance gender equality in human resource management (e.g., career development, staff retention and training) and decision-making processes (specific to the situation of each RPO).
- Support gender equality in teaching and research activities, introduce sex and gender analysis in research (i.e., content of research and lectures, research management, and day-to-day research and teaching activities in the classrooms and research facilities).

Objective 2: The second objective is to provide the participating RFOs (two partners and five members in the observer group) with knowledge and tools for enhancing the gender dimension in their programs and services.

Objective 3: The third objective is to set up an open and self-reflective learning environment in and between all participating RPOs and RFOs.

Objective 4: The fourth objective is to monitor and externally assess the process, efficiency, and impacts of implementing GEPs in each implementing RPO and implementing gender equality in programs and services in the participating RFOs, and to develop tailor-made trainings and evaluation tutorials to boost assessment competencies at the implementing partner institutions in order to advance their self-steering capacities during and after the project.²

¹ Please see <http://www.gecco-project.eu/home/>.

² Extract from the description of the action (DoA, Part B) pp. 4–5

3 METHODS AND DATA

With regard to the evaluation tasks, the GESIS evaluation team used a mixed-methods approach that included (a) the analysis of qualitative data from interviews with individuals and from group discussions, (b) the analysis of reports submitted by RPO partners as project deliverables, and (c) the analysis of quantitative data from the data monitoring task and the GEECCO Evaluation Survey Waves I and II. Within the framework of the present summative final evaluation, the focus is on the assessment of quantitative data.

This chapter describes the data collection procedure and analyses, the field phases, and the thematic focus areas of the data monitoring task and the GEECCO Evaluation Survey. A detailed explanation of research ethics was presented in the reports D10.1, D10.3, D2.3, and D1.1 & 1.2. The evaluative value of the quantitative data lies in the comparative analysis of the monitoring data and survey data collected at the beginning and the end of the implementation of the GEP.

The data assessed for this report originated from two rounds of monitoring data collection that took place in July 2018 and July 2020 and from two online surveys implemented at PK in November 2018 and October 2020.

3.1 BRIEF DESCRIPTION OF INSTRUMENT AND COLLECTION – MONITORING DATA

The monitoring data provide systematic evidence on the implementation progress and the outcomes of the GEP (Poister, 2010; Stockmann & Meyer, 2014; Wroblewski, 2016). For the data monitoring task, a data monitoring template was tailor-made and co-produced by PK and GESIS (for more details on the data monitoring template, see Deliverable D10.2). The key objective of the data monitoring task was to provide a consistent database containing sex-disaggregated data on the three thematic areas of gender equality actions at PK – namely, decision-making processes and bodies; recruitment and career development of female researchers and female staff members; and the gender dimension in research and teaching.

Within the framework of the GEECCO project, the monitoring data were collected for the first time between May and July 2018 and for the second time between May and July 2020. By collecting the monitoring data during two time periods, the GESIS evaluation team was able to assess a set of indicators from the beginning of the implementation of the GEECCO GEP at PK and to compare them with indicators showing the state of play after two years of implementation. In addition to this pre-post analysis of the outcomes and effects of PK's gender equality measures, counterfactuals were formed for selected indicators on the basis of national data from relevant fields of science (following the Frascati Manual; OECD, 2015). The purpose of forming counterfactuals in impact evaluations is to gain a better understanding of the relation between causes and effects – that is, how the effects relate to the intervention activities and to the inputs used to develop these activities (Donaldson et al., 2009; Legewie, 2012; Morgan & Winship, 2015).

The focus of the summative final evaluation is on whether impacts of the project can be identified. Because the GEECCO project started in May 2017, the GESIS evaluation team compared the data from 2016 (situation without project-funded gender equality measures) with those from 2020 (after/at the end of the implementation of project-funded measures). In many cases, no major differences in

quantitative indicators were likely to be observed within this short project period. However, it is interesting to see whether general trends, in one direction or the other, can be observed.

Regarding methodology, it should be noted that most indicators in the monitoring data only count heads and do not indicate what processes led to the changes in the proportion of women in the various positions. In addition, due to the small numbers in some subgroups in the monitoring data, the relative range of decreases and increases in the shares of women and men appears disproportionately wide for some indicators. For this reason, these specific cases are referred to throughout the report in order to properly classify the results on the progress of the indicators in question.

In addition to a consistent database containing sex-disaggregated data on the three thematic areas of gender equality actions, Monitoring Data I and II also provide indicators on the GEP implementation process. Performance on these indicators is also taken into consideration in the outcome analysis of each thematic area presented in Chapter 4.

3.2 BRIEF DESCRIPTION OF INSTRUMENT AND DATA COLLECTION – SURVEY

The GEECCO Evaluation Survey was conducted among PK staff and students in 2018 and in 2020. The aim of the online survey was to produce evidence of changes in the PK members' attitudes toward gender stereotypes and perceptions of sexual harassment that were induced by the implementation of the GEP in the course of the GEECCO project.

As part of the GEECCO project, the GESIS evaluation team collected survey data from PK staff and students at two points in time: GEECCO Evaluation Survey Wave I (ESW I) took place at PK between November 13 and November 27, 2018; GEECCO Evaluation Survey Wave II (ESW II) was conducted from October 13 to October 27, 2020. The GEECCO Evaluation Survey was made available to respondents in Polish and English. To facilitate the comparative analysis of the data from the two waves, the ESW I and ESW II questionnaires were identical. Thus, the results of ESW I represent the baseline scenario of PK respondents' attitudes toward gender stereotypes and sexual harassment. Potential changes in attitudes and perceptions over the GEECCO project period are assessed by comparing the baseline survey data from 2018 with the survey data from 2020. In combination with the monitoring data, the results of ESW I and ESW II are used for the assessment of PK's gender equality actions aimed at improving gender awareness and knowledge on gender and/or preventing sexual harassment in the three thematic areas.

To allow for this comparison between the two survey waves, and to reduce nonresponse bias, the samples of ESW I and ESW II were weighted based on the known marginal distributions of key variables in the organizational administrative data (adjustment weighting) that the GESIS evaluation team gathered during the second round of monitoring data collection (July 2020). The adjustment weighting was conducted using a raking procedure – namely, the iterative proportional fitting algorithm suggested by Deming and Stephan (1940) – that adjusted the marginal distribution of gender and faculty membership within the survey and wave to the distribution at PK. By weighting the samples, nonresponse bias in the samples can be reduced and more reliable, generalizable conclusions can be drawn about the attitudes toward and perceptions of sexual harassment and gender stereotypes at PK.

The target population of the GEECCO Evaluation Survey comprised all PK staff (academic and non-academic) as well as enrolled students at the time of the data collection in November 2018. In 2018, a

total of 2,055 people were employed at PK, of whom 1,166 were classified as academic staff (GEECCO Monitoring Data I, PK, July 2018). The total number of enrolled students was 14,535 in 2016³ (GEP 1.0, D3.4).

To recruit survey respondents, the GESIS evaluation team provided a link to the GEECCO Evaluation Survey Waves I and II, which was distributed via different channels by the PK Core GEP team. After the first week of the two-week survey field period, email reminders were sent by the PK Core GEP team. Ultimately, target persons decided themselves whether to participate in the online survey. Due to this self-selection, there are limitations to the representativeness of the sample for all PK staff and students. These limitations were reduced by the above-mentioned weighting procedure.

A total of 318 respondents participated in ESW I, of whom 169 self-identified as women and 146 as men; three respondents self-identified as other. Sixty-eight percent of ESW I respondents were students; 32% were employees. A total of 374 respondents participated in ESW II, of whom 194 self-identified as women, 177 as men, and three as other. Eighty-three percent of the ESW II respondents were students; 17% were employees.

In ESW I and ESW II, the *Ambivalence toward Men Inventory* (AMI; Glick & Fiske, 1999) was applied to measure hostile and benevolent prejudices and stereotypes about men. The individual items are measured on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). A “don’t know” option was also provided. The concept of ambivalent sexism recognizes sexism as being marked by a deep ambivalence and consisting of two forms of sexist attitudes: hostile sexism and benevolent sexism. The Hostility toward Men subscale of the AMI measures the respondents’ hostility toward male dominance and gender stereotypes that display men as being superior to women. The Benevolence toward Men subscale measures positive attitudes toward men that are rooted in admiration for their role as providers and protectors (Glick & Fiske, 1999). A short version of the AMI (Rollero et al., 2014) was administered in ESW I and II. It comprised six items for hostile sexism and six items for benevolent sexism. The short version of the AMI was applied to reduce the required response time.

To measure the gender bias experienced by female students, a scale developed by Robnett (2016) to assess girls’ and women’s experiences with different forms of academic gender bias was used in ESW I and ESW II. Gender bias occurs when people treat women unfairly due to their gender. Respondents were asked to rate how frequently male peers, female peers, male supervisors, and female supervisors behaved in the eight gender-biased ways. Frequency was measured on a 4-point scale ranging from 1 (*never*) to 4 (*many times*). In addition to demonstrating the prevalence of gender bias and the extent to which the aforementioned persons displayed gender bias in their behavior, this measure also identifies the explicit forms of gender bias experienced by women aspiring to careers in STEM.

To measure the perception of male sexual harassment of women among staff members at PK, the *Illinois Sexual Harassment Myth Acceptance* (ISHMA) Scale (Lonsway et al., 2008) was applied in ESW I and II. The ISHMA scale measures the acceptance of sexual harassment mythology. It consists of a set of 20 critical items, distributed over four subscales (Fabrication/Exaggeration, Ulterior Motives, Natural Heterosexuality, and Woman’s Responsibility). The respondents were asked to rate each item

³ Monitoring Data I and II include only the total number of Bachelor and Master graduates, not enrolled students. The most recent data available on enrolled students are from 2016.

on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A “don’t know” option was also provided.

3.3 BRIEF DESCRIPTION OF INSTRUMENT AND DATA COLLECTION – LOGIC MODELS

Logic model analysis was conducted at PK within the framework of the baseline evaluation (October 2018). The logic models were developed by the GESIS evaluation team based on quantitative and qualitative data collected within the framework of Monitoring Data I (May–July 2018; see Section 3.1 above) and on a document analysis.

Logic models help identify inconsistencies in the areas in which the GEP is supposed to create effects. They can be used to retrospectively assess whether the GEP has worked as intended, and offer a simplified visualization of linear cause–effect relationships of the GEP. Logic models visualize which measures are expected to bring about which results. Thus, they can be used to gain a better understanding of cause–effect relationships between implemented gender equality measures and their impacts.

In contrast to inputs, activities, and outputs, which demonstrate the planned approach to bringing about the changes to be achieved by the GEP, outcomes and impacts describe these changes.

Outcomes are the short-term changes in the behavior, knowledge, or skills of target group members. In the present context, impacts are long-term and fundamental changes in institutions, communities, or systems that are triggered by the gender equality activities (Besharov & Call, 2016). For example, the outcome of gender bias training at RPOs could be increased gender bias awareness on the part of training participants, and the impact could be a reduction of gender bias in the institutional recruitment processes and the career development of female researchers.

Whereas the aim of the Baseline Evaluation Report was to establish an *ex ante* understanding of the relationships between the intended results and the implemented activities, the aim of the Final Evaluation Report is to demonstrate the achieved outcomes and impacts resulting from the implemented activities. Therefore, for the final evaluation, the possible outcomes and impacts of PK’s gender equality measures outlined in the logic model analysis conducted within the framework of the baseline evaluation are contrasted with the quantitative indicators and reported outcomes in Monitoring Data II.

4 WHAT WORKED AND WHAT DID NOT WORK AT POLITECHNIKA KRAKOWSKA (PK)

The present chapter analyzes the gender equality activities implemented within the framework of the GEECCO GEP at PK in each thematic area and the outcomes of these activities – to the extent that indicators measuring these outcomes were available. The aim is to show with regard to the implementation of the GEECCO GEP at PK what worked and what did not work.

As outlined in Chapter 3, the analysis of the outcomes of the GEP activities is based on quantitative indicators from Monitoring Data I and II and the GEECCO Evaluation Survey Waves I and II. In addition, the present Final Evaluation Report refers to the logic model analysis conducted within the framework of the baseline evaluation. Following a brief overview of the gender equality activities and focus areas of PK's GEP, this chapter presents the outcome analysis for each thematic area. In so doing, reference is made to the aforementioned logic model analysis and quantitative indicators.

4.1 PORTFOLIO OF GENDER EQUALITY ACTIVITIES

The PK Core GEP team added several new activities to the gender equality plan in 2020 across all thematic areas, though there is still a strong focus on the thematic area "decision-making processes and bodies" and awareness-raising activities. Figure 1 shows this vast increase in the number of planned gender equality activities across all three thematic areas of PK's gender equality plan in course of the GEECCO project period. In Monitoring Data II (2020), the PK Core GEP team added in total 25 new activities in comparison to the listed activities in Monitoring Data I (July 2018). Although, the quantity of GEP actions should not be directly interpreted as an indicator for the level of impact, as the GEP activities differ in size and reach, it demonstrates the efforts to achieve the set objectives.

Figure 1. Portfolio of Planned Gender Equality Activities, PK, 2018 and 2020



Note. MD I = Monitoring Data I; MD II = Monitoring Data II. Source: Monitoring Data I (July 2018) and Monitoring Data II (July 2020), Politechnika Krakowska (PK).

Overall, most objectives of the GEP activities in Monitoring Data II continue to be formulated in a general manner and lack operational objectives. Formulating more specific and measurable objectives would help to implement actions with more tangible effects beyond the project lifetime. However, in comparison to Monitoring Data I, and given the outlined objectives and future gender equality activities in GEP 3.0, a learning curve in terms of specification level, strategic approach, activities, and objective can be observed at PK over the project lifetime.

4.2 DECISION-MAKING PROCESSES AND BODIES

Regarding the thematic area “decision-making processes and bodies”, the PK Core GEP team aimed at achieving more transparent decision-making processes, increasing the share of women in decision-making bodies, and raising knowledge and awareness on gender equality among decision-makers at PK. The planned activities (Monitoring Data II, 2020) for achieving these objectives included inter alia (a) the identification of current decision-making processes, (b) internal communication of EU and international good practices regarding gender equality, (c) participation in the review process of the new PK Statute and information provision to decision-makers about the current status of gender equality at PK, (d) trainings on gender issues in academia, and (e) building up alliances with other PK units.

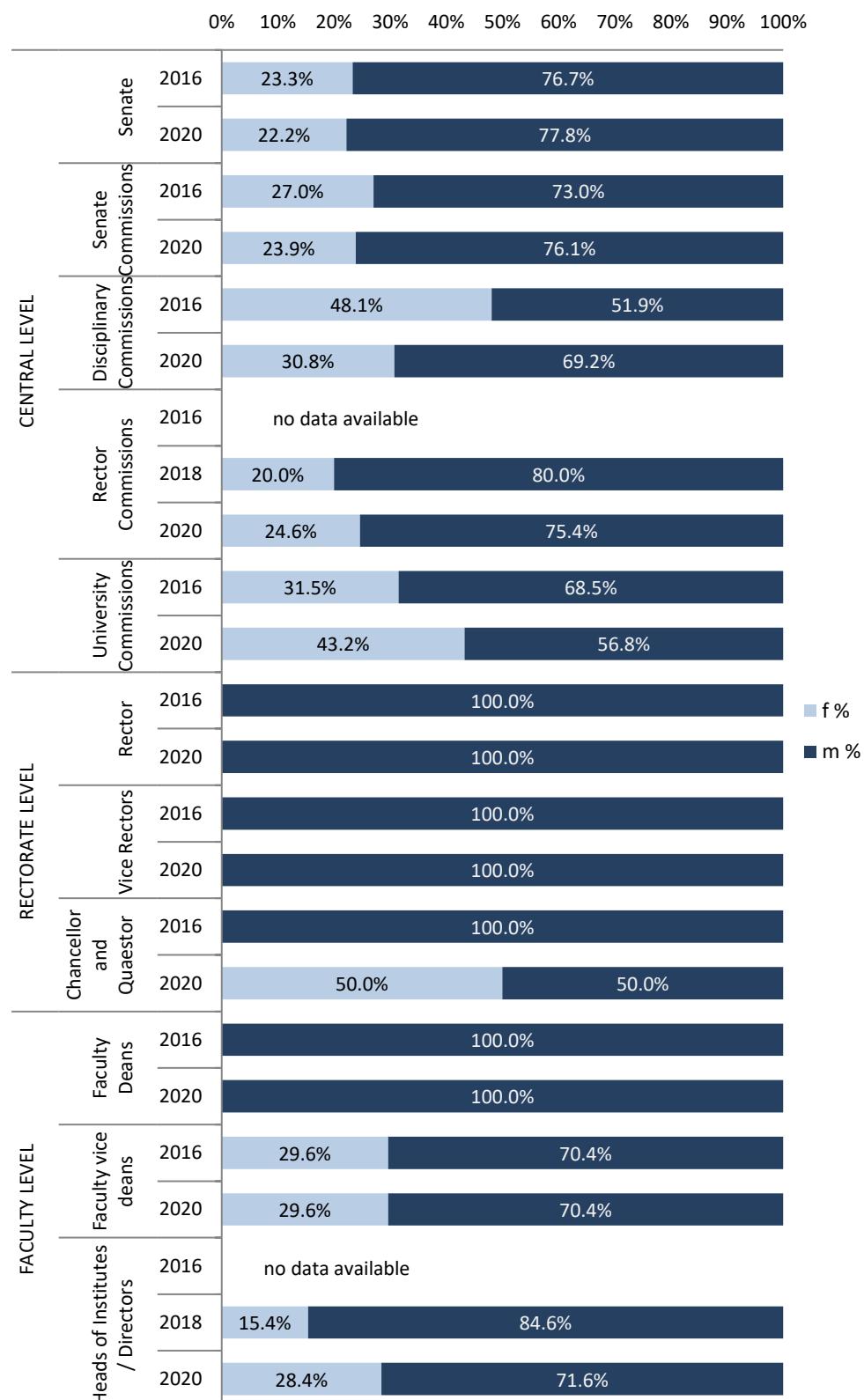
As demonstrated in Figure 2, the overall share of women in decision-making positions at faculty level increased substantially from 19.2% in 2018 to 27.0% in 2020. This change is based on a significant increase in the number of women among the heads of institutes / directors. In 2018, six out of 39 heads of institutes / directors were women. By 2020, the total number of heads of institutes / directors at PK rose from 39 to 102, and the number of women among heads of institutes / directors to 29. This is an increase in the proportion of women of 13 percentage points between 2018 and 2020.

By contrast, no significant changes in the gender balance among decision-making bodies at central level of PK can be observed. For example, the senate, disciplinary commissions, and university commissions, did not change fundamentally between 2016 and 2020. The proportion of women on disciplinary commissions even fell significantly from 48.1% in 2016 to 30.8% in 2020. Only the proportion of women on university commissions increased significantly from 31.5% to 43.2%.

The gender balance in decision-making bodies at rectorate level had hardly changed over the four-year period. In 2016, there was not a single woman represented at rectorate level. By 2020, one position was held by a woman, so that the total proportion of women had risen to 14.3% due to the low number of total numbers ($N = 7$) in this area.

Overall, the share of women in decision-making bodies and positions at PK had not significantly improved since 2016 – except at faculty level.

Figure 2. Proportion of Women and Men in Decision-Making Bodies and Positions Over Time, PK, 2016 – 2020



Note. Members of decision-making bodies in total, 2016: N = 364 (103 women, 261 men); 2018: N = 403 (109 women, 294 men); 2020: N = 495 (139 women, 356 men). For two decision-making bodies (rector commissions and heads of institutes / directors) data was available only from the year 2018 onward. Source: Monitoring Data I (July 2018) and Monitoring Data II (July 2020), Politechnika Krakowska (PK).

No quantitative indicators were available to evaluate whether there had been progress toward the other two objectives in the thematic area “decision-making processes and bodies” – namely, to make decision-making processes more transparent, and to raise knowledge and awareness on gender equality among decision-makers. In the context of the evaluation, it was not feasible to collect data on the processes of decision-making and potential gender biases therein. However, the Core GEP team reported several outcomes in Monitoring Data II which indicate some progress toward increased gender awareness among decision-makers, for example, the inclusion of references to anti-discrimination into the revised university statutes.

The logic model of the baseline evaluation also entails the increased gender awareness and gender competence of decision-making bodies as additional possible outcomes in the thematic area “decision-making bodies and processes”. The continuing gender imbalances in decision-making bodies at PK suggest that low commitment of decision-makers and strong hierarchical structuring remain hindering factors at PK – as described in the Interim Evaluation Report in more detail.

For this reason, it is of utmost necessity that members of decision-making bodies at PK increase their gender awareness significantly and recognize the importance of achieving more gender equality at PK. Otherwise, institutional barriers and prevailing traditional gender stereotypes will limit the effect of future gender equality measures. This would lead to a continued lack of transparency in decision-making processes, and ultimately, to the persistence of pronounced gender imbalances in decision-making bodies at PK.

The GESIS evaluation team considers the establishment of institutional decision-making structures on gender equality issues, and the building of alliances between the PK Core GEP team and other units at PK to be a promising step toward an increased gender awareness and a reduction of discrimination.

4.3 RECRUITMENT, CAREER DEVELOPMENT OF FEMALE RESEARCHERS AND FEMALE STAFF

The main objectives concerning the thematic area ‘recruitment, career development of female researchers and female staff members’ were to raise knowledge and awareness on gender equality, to increase the share of women at different career levels, to increase the visibility of existing female role-models, and to change prevailing stereotypes at PK. To achieve these objectives the implemented actions included (a) trainings for researchers at different career levels, (b) publications, and information campaigns to make female role models more visible, and (c) the set-up of a specific monitoring scheme for collecting gender-sensitive data. Above all, the activities in this thematic area focused on awareness-raising measures aimed at reducing gender bias in recruitment and increasing the share of women at different career levels.

To evaluate the outcome of the implemented awareness-raising measures, the GESIS evaluation team drew on the results of the GEECCO Evaluation Survey Wave I and II. The survey data provide information on changes in attitudes toward gender stereotypes and perceptions of sexual harassment at PK.

4.3.1 INDICATORS ON GENDER AWARENESS AND SEXISM

To measure the attitudes toward gender stereotypes among staff and students at PK, the *Ambivalence toward Men Inventory* (AMI; Glick & Fiske, 1999) was applied to measure hostile and benevolent prejudices and stereotypes about men. As outlined in Section 3.2, the concept of ambivalent sexism recognizes sexism as being marked by a deep ambivalence and consisting of two forms of sexist attitudes: hostile sexism and benevolent sexism. The individual items were measured on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). The comparative analysis of the GEECCO Evaluation Survey Wave I (ESW I) and Wave II (ESW II) points to a continuing presence of strong gender stereotypes and existence of ambivalent sexism among PK members. In ESW I, the results show that female respondents ($M = 3.4$, $SD = .15$) disagree significantly more strongly with statements promoting male dominance and gender stereotypes that display men as being superior to women than male respondents ($M = 2.5$, $SD = .25$).⁴

This observation regarding the Hostile Sexism subscale of AMI is in line with previous studies from the U.S. and Europe (Glick & Fiske, 1999; Rollero et al., 2014). In ESW I (2018), male respondents ($M = 3.1$, $SD = .20$) also agreed significantly more strongly with gender stereotypes describing men in their role as providers and protectors than female respondents ($M = 2.4$, $SD = .10$).⁵ In other studies no significant gender differences were reported in this regard (Glick & Fiske, 1999; Rollero et al., 2014). The significant gender difference on the Hostile Sexism subscale of AMI (i.e. statements promoting male dominance) can also be observed in ESW II (Men: $M = 2.2$, $SD = .22$; Women: $M = 3.4$, $SD = .20$).⁶ These results suggest that men at PK agree more strongly to patriarchal values than women.

Overall, the results of the *Ambivalence toward Men Inventory* (AMI) indicate a working environment at PK that is characterized by ambivalent sexism between women and men, leading to simplistic generalizations about gender attributes of women and men, that is, prevailing gender stereotypes. Gender stereotypes create certain gender role expectations which influence people's behavior and determine how people are treated in professional or private situations due to their gender. The comparative analysis of ESW I and ESW II does not suggest any notable changes in attitudes toward gender stereotypes at PK between 2018 and 2020. The implemented awareness-raising measures that focused on making female role models visible had therefore not initiated a cultural change at PK over the GEECCO project period.

When people evaluate objective information based on existing gender stereotypes, gender bias occurs. To measure the gender bias experienced by female students at PK, a scale developed by Robnett (2016) to assess girls' and women's experiences with different forms of academic gender bias was used in ESW I and ESW II (see Section 3.2). Gender bias occurs when people treat women unfairly due to their gender. With regard to the experiences of female students with gender bias at PK⁷, the findings of ESW I (2018) show that the main source of gender bias are male supervisors, followed by male peers. The five forms of academic bias that were experienced most regularly (i.e. several or many times) over the past year, by female students at PK are listed in Table 1.

⁴ ESW I, 2018: Hostile Sexism subscale, $t(69) = 10.19$, $p < .05$.

⁵ ESW I, 2018: Benevolent Sexism subscale, $t(75) = 9.57$, $p < .05$.

⁶ ESW II, 2020: Hostile Sexism subscale, $t(46) = 17.17$, $p < .001$.

⁷ The item battery on experiences with gender bias addresses only experiences of female students. In ESW I (2018), 102 female students reported their experiences with gender bias at PK; in ESW II (2020), 151 female students reported their experiences in this regard.

Comparing the findings of ESW I and ESW II with regard to female students' experiences with gender bias, the main source of gender bias continued to be male supervisors. "Made negative comments about women's science abilities" was still the form of gender bias that female students experienced most at PK. Twenty-eight percent of female students reported that they had experienced this form of gender bias from male supervisors several or many times over the past year (2019–2020). Fourteen percent of them also regularly experienced this form of gender bias from male peers.

Overall, there were only slight differences in the reported gender bias experiences of female students between ESW I and ESW II. However, as shown in Table 1, a decrease in experienced gender bias can be observed in two forms of gender bias by male supervisors: "Made negative comments about women's science abilities" and "Made negative comments about your ability in STEM of your gender." Because the ESW I and ESW II samples were not identical, this decrease in reported experiences should be interpreted with caution. However, it indicates a promising trend at PK. The measurement on experienced gender bias at PK also indicates that the awareness-raising measures focusing on making female role models more visible are not enough to initiate a cultural change at PK.

Table 1. Experiences With Gender Bias: Relative Frequency of the Five Forms of Gender Bias Most Regularly Experienced by Female Students, From Male Supervisors and Male Peers, PK, 2018 and 2020

Form of Gender Bias	ESW I (2018)		ESW II (2020)	
	Male Supervisors	Male Peers	Male Supervisors	Male Peers
Made negative comments about women's science abilities.	34.3%	12.8%	28.5%	13.9%
Made negative comments about your ability in STEM because of your gender.	25.5%	4.9%	17.9%	6.6%
Made you feel like your gender will make it difficult for you to succeed in STEM.	21.6%	6.9%	22.5%	9.2%
Expected less of you academically or professionally because of your gender.	18.6%	8.8%	18.5%	6.6%
Made you feel like you had to work harder than male students to be taken seriously.	16.7%	3.9%	21.85%	8.0%

Note. Female students, ESW I (2018): N = 102; ESW II (2020): N = 151. Source: GEECCO ESW I (2018) and GEECCO ESW II (2020), Politechnika Krakowska (PK).

To evaluate the perception of sexual harassment, the GESIS evaluation team drew on data collected within the framework of the GEECCO Evaluation Survey. To measure the attitudes toward and the perception of male sexual harassment of women among PK members, the *Illinois Sexual Harassment Myth Acceptance (ISHMA) Scale* (Lonsway et al., 2008) was administered in Evaluation Survey Wave (ESW) I and II. As outlined in Section 3.2 above, the ISHMA scale measures the acceptance of sexual harassment mythology. Respondents were asked to rate each item on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The ESW I (2018) survey results of the ISHMA

scale show a relatively low level of overall acceptance of sexual harassment among staff members at PK, but clear gender differences between respondents. Male employees ($M = 3.5$, $SD = .25$) at PK demonstrate a significantly higher acceptance of sexual harassment than female employees ($M = 2.4$, $SD = .24$)⁸ in ESW I (2018). By contrast, the survey results of ESW II (2020) do not show any significant gender differences in the mean scores on the ISHMA scale. This suggests that the perception of sexual harassment among male employees had changed, and that they rejected myths on sexual harassment more strongly in 2020 than in 2018. This finding may be indicative of the fact that the gender equality work conducted during the GEECCO project period has led to increased gender awareness among PK male employees.

Nonetheless, as the results of ESW II show, in 2020, male employees ($M = 2.9$, $SD = .31$) at PK continued to have a higher threshold in the acceptance of sexual harassment than female employees ($M = 2.6$, $SD = .13$). These gender differences in the perception and acceptance of sexual harassment should be tackled by further gender equality actions.

Taking a closer look at the different dimensions of the ISHMA Scale, a clear pattern emerges that provides useful insights for developing future activities (see Table 2). In 2018 and 2020, the items with the highest acceptance belonged to two of the four dimensions of ISHMA: ulterior motives and woman's responsibility. The ISHMA dimension "ulterior motives" includes items suggesting that women have ulterior motives for filing sexual harassment claims, such as extorting money from their employer. Items of the "woman's responsibility" dimension include beliefs suggesting that the responsibility for preventing sexual harassment rests with the women being victimized, and that it is their own fault for not discouraging men's advances (Lonsway et al., 2008). This means that the existing acceptance of sexual harassment at PK continues to be rooted in the beliefs that women have concealed motives for claiming sexual harassment had taken place, and that it is the women's own responsibility to protect themselves from being sexually harassed.

⁸ ESW I, 2018: ISHMA scale, $t(31) = 3,30$, $p < .05$.

Table 2. Illinois Sexual Harassment Myth Acceptance Scale, Mean Scores of the Five Items With the Strongest Agreement, by Total Employees (total), Male Employees (m), and Female Employees (f), PK, 2018 and 2020

ISHMA Dimension	Item	ESW I (2018)			ESW II (2020)		
		Mean (total)	Mean (m)	Mean (f)	Mean (total)	Mean (m)	Mean (f)
Woman's Responsibility	Women can usually stop unwanted sexual attention from a co-worker by telling their supervisor about it.	4.2	4.8	3.8	3.8	4.2	3.4
Woman's Responsibility	Women can usually stop unwanted sexual attention by simply telling the man that his behavior is not appreciated.	4.2	5.0	3.6	4.4	4.6	4.2
Ulterior Motives	A woman can easily ruin her supervisor's career by claiming that he "came on" to her.	4.4	5.6	3.5	4.1	5.1	3.2
Ulterior Motives	Women who are caught having an affair with their supervisor sometimes claim that it was sexual harassment.	3.8	4.6	3.3	3.5	3.8	3.3
Ulterior Motives	Sometimes women make up allegations of sexual harassment to extort money from their employer.	3.4	4.3	2.8	-	-	-
	Sometimes a woman has a "fantasy" relationship with her boss and then claims that he sexually harassed her.*	-	-	-	3.6	4.3	2.8

Note. ESW I (2018): N = 99 (67 female employees, 32 male employees); ESW II (2020): N = 62 (43 female employees, 19 male employees). ISHMA: 7-point Likert Scale ranging from 1 (strongly disagree) to 7 (strongly agree). *In ESW I and ESW II, two different statements about the "ulterior motive" dimension were among the five statements with the strongest agreement. Source: GEECCO Evaluation Survey Wave I (2018) and GEECCO Evaluation Survey Wave II (2020), Politechnika Krakowska (PK).

To sum up, the results of GEECCO Evaluation Survey Waves I and II indicate sexist attitudes and prevailing gender bias among PK staff members and students. However, the results of ESW II (2020) suggest an increased awareness and less acceptance of sexual harassment of women among male employees. Moreover, in 2020, fewer female students reported experiences with gender bias than in 2018. It is likely that awareness-raising measures of the GEECCO GEP contributed to these positive developments, but also that contextual factors, such as the protests by the women's movement in 2020 against increased restrictions on access to legal abortion, had an impact on the changes. The survey data show a positive trend toward more gender awareness and less acceptance of sexual harassment of women. These results are in line with the expected possible outcomes and impacts outlined in the logic model analysis conducted within the framework of the baseline evaluation.

More detailed information on the GEECCO Evaluation Survey Waves I and II, as well as on the scales used to measure the attitudes toward gender stereotypes and the perceptions of sexual harassment can be found in Section 3.2.

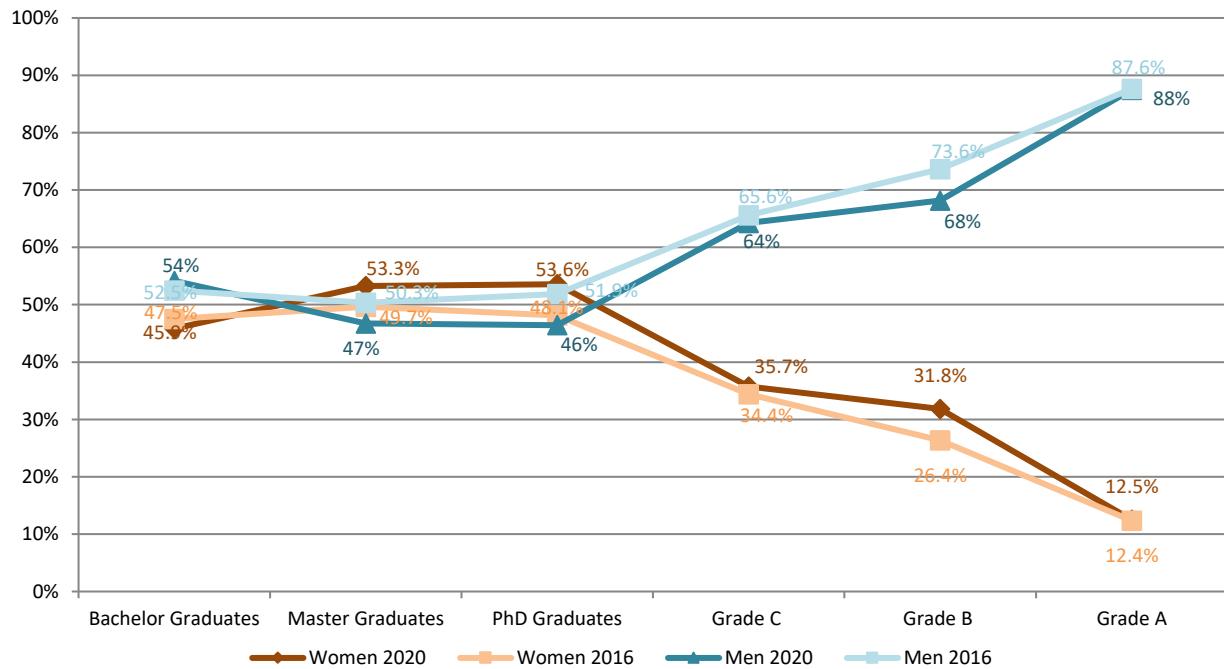
4.3.2 INDICATORS ON GENDER REPRESENTATION AT DIFFERENT CAREER LEVELS

The monitoring data were used to evaluate whether there has been progress toward a more gender-equal representation of women in different undergraduate, graduate, and career levels at PK over the four years from 2016 to 2020. Following a comprehensive overview of the gender representation along the academic study and career path at PK, this section takes a closer look at the gender balance among staff members, Bachelor and Master graduates, and PhD graduates. Finally, the gender representation in different forms of employment will be analyzed.

In the She Figures produced by the European Commission, the levels of seniority of academic staff are denoted, in descending order, by the grades A, B, C, and D. In Poland, grade A comprises full professors, grade B comprises researchers with habilitation, grade C comprises PhD graduates. Grade D, the lowest seniority level, comprises master's graduates (European Commission, 2019, p.190).

Figure 3 illustrates the significant gender differences in the opportunities of career development at PK. Although about half of the Bachelor, Master, and PhD graduates were women in 2016 and 2020, women's academic career path in the post-doctoral level is characterized by a significant decline in the share of women among full professors. In 2020, women represented 35.7% of grade C staff and 12.5% of grade A staff. This strong vertical segregation in a typical academic career of women and men at PK remained completely stable over the four years from 2016 to 2020.

Figure 3. Proportion of Women and Men at Different Undergraduate, Graduate, and Career Levels, PK, 2016 and 2020



Note. Bachelor Graduates, 2016: N = 2,194 (1,042 women, 1,152 men); 2020: N = 1,633 (749 women, 884 men). Master Graduates, 2016: N = 1,476 (733 women, 743 men); 2020: N = 1,231 (656 women, 575 men). PhD Graduates, 2016: N = 27 (13 women, 14 men); 2020: N = 28 (15 women, 13 men). Grade C, 2016: N = 608 (209 women, 399 men); 2020: N = 546 (195 women, 351 men). Grade B, 2016: N = 182 (48 women, 134 men); 2020: N = 220 (70 women, 150 men). Grade A, 2016: N = 89 (11 women, 78 men), 2020: N = 72 (9 women, 63 men). Source: GEECCO Monitoring Data I (July 2018) and GEECCO Monitoring Data II (July 2020), Politechnika Krakowska (PK).

GENDER BALANCE AMONG STAFF MEMBERS

In 2020, 1,958 staff members (1,101 academic and 857 non-academic) worked at PK. Over the four years of the project implementation, the total number of staff slightly decreased from 2,110 in 2016 to 1,958 staff members in 2020.

The proportion of women among the total (i.e., academic and non-academic) staff at PK changed only minimally between 2016 and 2020. In both years, the ratio of women to men was balanced, with women accounting for 49.3% in 2016 and 50.5% in 2020. Among the eight faculties at PK, it is noticeable that the ratio of women to men at the Faculties of Architecture, Chemical Engineering and Technology, Environmental Engineering, and Materials Engineering and Physics was the most balanced, with women accounting for between 44.3% and 54.3% of staff in 2020. Between 2016 and 2020 the gender balance among total staff at these faculties was stable – except for the Faculty of Environmental Engineering, where the share of women rose from 47.3% in 2016 to 51.1% in 2020.

At the Faculty of Civil Engineering, the proportion of women decreased from 40.5% to 38.9% between 2016 and 2020. A similar development can be observed at the Faculty of Physics, Mathematics and Computer Science. Whereas the fall in the share of women in total staff at the Faculty of Civil Engineering indicates that fewer women than men have been newly hired, as the number of men in total staff stayed the same over the four years, the decrease in the share of women at the Faculty of Physics, Mathematics and Computer Science is related rather to the overall decrease in total staff between 2016 and 2020. The faculty with the largest gender imbalance in total staff is the Faculty of

Electrical and Computer Engineering. In 2016, the proportion of women was 23.7%, by 2020 it had risen only to 25.3%.

The ratio of women to men among total (i.e., academic and non-academic) staff at PK overall is very balanced. However, the apparent gender balance among total staff is due mainly to the high proportion of women in non-academic staff. As can be seen from the next indicator, the ratio of women to men is more imbalanced when only academic staff are considered.

Staff by Seniority Level, Institutional and National Level

A look at the proportion of women in the various academic seniority grades at the individual faculties at PK reveals a pronounced imbalanced ratio of women to men on the highest rung of the academic career ladder, grade A, at PK. The ratios of women to men in grade D, grade C, and grade D differ among the individual faculties but the barriers that women encounter before reaching a grade A position seem to be particularly high at all faculties.

At the Faculty of Chemical Engineering and Technology there was not a single woman represented at the highest seniority level, grade A, in 2016. The proportion of women in grade B was 19%, and in grade C 61.1%. In the lowest seniority grade, grade D, women were even in the majority with a share of 77.8% in 2016. This pattern had changed only minimally by 2020. Although the proportion of women in grade B increased to 32.0%, there was still not a single woman represented in grade A positions by 2020. The higher the seniority level, the lower the proportion of women at the Faculty of Chemical Engineering and Technology. This points to a clear pattern of preferential treatment of men in the promotion to full professor.

The relation between gender and academic seniority level is also apparent at the Faculties of Mechanical Engineering, Environmental Engineering, and Civil Engineering: In the lower seniority grades, C and D, the ratio of women to men is relatively balanced, and in some cases female researchers are even in the majority. But then, in the higher seniority grades, grade A and grade B, hardly any women are represented. Monitoring Data I and II on the Faculty of Electrical and Computer Engineering were also striking, with only four women out of 60 academic staff (two of whom were in seniority grades C and D) in 2016. Between 2016 and 2020, there were hardly any changes in the ratio of women to men among academic staff at this faculty.

In contrast, the Faculty of Architecture stands out positively, with a very balanced ratio of women to men across all academic seniority levels. In 2020, the proportion of women among grade A staff amounted to 42.9%, among grade B staff it was 56.5%, and among grade C staff 41.8%. As the gender-equal representation at all seniority levels at the Faculty of Architecture can be also observed in 2016, it is not the result of gender equality work conducted during the GEECCO project period. In 2016, 36.8% of grade A positions were filled by women. It remains unclear whether this development toward a more gender-equal representation of women in the highest career grade was triggered by the GEECCO GEP or by other institutional factors.

Looking at the rates of growth in the share of women in grade A positions, the monitoring data indicate that the negative growth rate of –11.4% across all faculties at PK before the start of the project (2014–2016) slowed down to –5.1% during the GEECCO project implementation (2018–2020). In contrast to this positive development across all faculties, the proportion of women in grade A positions at the Faculty of Environmental Engineering fell by 18.4% between 2014 and 2016. During the period of the

project implementation, the proportion of women in grade A positions dropped further, resulting in a growth rate of -29.3% in. This proportional decrease is significant even when considering the low numbers in grade A positions in total academic staff – 7% of the total academic staff of PK hold a grade A position. With regard to the other faculties at PK, the monitoring data indicate a stable but very low proportion of women in grade A positions – before the start of the project (2014–2016) and during the project term (2018–2020).

The indicator on the ratio of women to men by seniority level and by faculty provides a better understanding of the extent of structural barriers to women's career progression. In case of PK, the monitoring data show a pronounced gender imbalance in higher seniority levels at most faculties. These results indicate preferential treatment of men and the existence of structural discrimination at PK.

Glass Ceiling Index, Institutional and National Level

The Glass Ceiling Index (GCI) compares the proportion of women in all academic positions (grades A, B and C) with the proportion of women in the highest academic positions (grade A). The GCI can range from 0 to infinity. A value of 1 indicates that there is no difference in the career opportunities of men and women in academia. If the value is greater than 1 a glass ceiling effect exists. This means that women are less represented at the top career level (grade A) than among academic staff generally (grades A, B and C). In other words, the higher the value of the GCI, the stronger the glass ceiling effect, and the more difficult it is for women to move into a higher position (European Commission, 2019, p.125).

The GCI at PK in 2016 was 2.47 and had increased further, to 2.62, by 2020. Thus, a strong glass ceiling effect can be observed at PK. By comparison, the national GCI of all STEM universities in Poland was 2.15 in 2016 and had fallen to 2.10 by 2019. This indicates a positive trend toward a more gender-equal representation of women in the highest academic positions at STEM universities in Poland over the three years from 2016 to 2019, and a significantly higher glass ceiling effect at PK compared with STEM universities in Poland generally.

The GCI illustrates the existence of invisible barriers to women reaching the highest career level (grade A). However, what specific processes and mechanisms underlie the restriction of access to the highest scientific positions for women remains an open question.

GENDER BALANCE AMONG BACHELOR AND MASTER GRADUATES

Overall, the monitoring data show a slight decrease in the proportion of female Bachelor graduates from 47.5% in 2016 to 45.9% in 2020 and an increase in the proportion of female Master graduates from 49.7% in 2016 to 53.3% in 2020.

The faculty at PK with the highest proportion of female Bachelor and Master graduates was the Faculty of Chemical Engineering and Technology. 83% of Bachelor graduates and 82.5% of Master graduates were female in 2020. Compared with 2016, there was an increase of 2.2 percentage points in the share of female Bachelor graduates and an increase of 1.4 percentage points in the share of female Master graduates. The share of female Bachelor and Master graduates was also high at the Faculty of Civil Engineering and the Faculty of Environmental Engineering in 2016 and 2020. Women accounted for 43.8% and 47.6% of the Bachelor's and Master's degrees at the Faculty of Civil Engineering in 2020,

respectively. At the Faculty of Environmental Engineering, 56.5% of Bachelor graduates and 64.9% of Master graduates were female in 2020.

The faculty at PK with the lowest proportion of female graduates was the Faculty of Electrical and Computer Engineering, with a proportion of 8.7% women among Bachelor graduates and 9.5% among Master graduates in 2020.

In national comparison, the ratio of women to men among Bachelor graduates was slightly more balanced at PK (47.5% women) than at STEM universities in Poland (45.8% women) in 2016. By 2020, the proportion of women among Bachelor graduates in the STEM fields in Poland had fallen minimally to 44.4%; however, the proportion of women at PK had also fallen, to 45.9%. Looking at the proportion of women among Master graduates, the monitoring data show that the share of female Master graduates was lower at PK (49.7%) than at national level (51.75) in 2016. By 2020, however, the proportion of women Master graduates at PK had increased to 53.3%. In Poland, the proportion of female master graduates at STEM universities remained stable at 51.1% in 2020.

GENDER BALANCE AMONG PHD STUDENTS AND PHD GRADUATES

Overall, the proportion of women among PhD students at PK remained stable at 51.0% in 2016 and 52.5% in 2020. The faculty at PK with the highest proportion of female PhD students was the Faculty of Chemical Engineering and Technology, with 61.3% women in 2016 and 67.3% women in 2020. A positive development in the gender balance among PhD students at PK took also place at the Faculty of Civil Engineering. In 2016, 40.0% of PhD students were women and by 2020, the share of female PhD students rose to 59.3%.

The proportion of women among PhD graduates at PK overall amounted 48.1% in 2016 and rose to 53.6% by 2020. The development of the gender balance among PhD graduates at the individual faculties is difficult to interpret, as the number of cases is very small (maximum 11 graduates per faculty).

ACADEMIC STAFF BY FORM OF EMPLOYMENT

Overall, 72.8% of academic staff at PK were employed in tenured positions and 27.2% in fixed-term positions in 2016. By 2020, a trend toward more tenured positions (86.5%) and fewer fixed-term positions (13.5%) could be observed. The ratio of women to men among tenured positions was balanced in 2016 and 2020 (51.6% and 50.0% female academic staff, respectively). The monitoring data do not indicate that men are more likely to hold a tenured position than women, but rather that the extent of the gender (im)balance at the different career levels does not relate to the form of employment.

To sum up, the monitoring data show no significant progress toward a more gender-equal representation of women at different career levels at PK over the four years from 2016 to 2020. Hence, the second possible impact described in the logic model analysis conducted within the framework of the baseline evaluation could not be met within the GEECCO project period. To achieve this long-term impact, further activities in this thematic area are needed and should address the barriers that women face at PK once they decide to pursue an academic career.

4.4 GENDER DIMENSION IN RESEARCH AND TEACHING

In the thematic area “gender dimension in research and teaching”, a development can be observed in the number and the extent of the implemented gender equality activities from the beginning to the end of the project period. The main aim was to increase the gender dimension in research and teaching. Activities in Monitoring Data I included reviewing of curricula at faculties, workshops for academic staff, and an information campaign for researchers. According to Monitoring Data II, these activities were expanded in 2020 by sharing teaching material on introducing gender issues with teachers at PK, developing tutorials for all PK courses, and organizing an exhibition on how to include the gender dimension in research. The teaching and exhibition materials were developed by GEECCO partner institutions. However, most activities were in their initial phase at the time of collection of Monitoring Data II. For this reason, the outcome analysis on this thematic area was limited to one quantitative indicator in Monitoring Data I and II.

To measure the increase of the gender dimension in research at PK, the GESIS evaluation team decided to analyze the share of publications in the PK literature database containing words from a pre-defined list of gender-related vocabulary items. The indicator therefore measures the extent to which the gender dimension is considered in the PK literature database and in the research of PK staff. Based on this indicator, it is possible to measure the inclusion of the gender dimension in research, but not whether the awareness of the importance of including the gender dimension in research increased at PK over the two years from 2018 to 2020.

The share of titles in the PK literature database that included a gender dimension increased from 1.8% in 2018 to 4% in 2020. The proportion of staff-authored titles in the PK literature database that contained words from the fixed list of vocabulary items was 6.6% in 2018 and 6% in 2020.

The proportion of staff-authored publications with a gender dimension was highest at the Faculty of Architecture. However, between 2018 and 2020, the proportion almost halved, from 21.5% to 12.9%. The proportion of publications with a gender dimension also decreased at the other faculties over the two years from 2018 to 2020. In 2020, the share of staff-authored titles from the various faculties in the PK literature database that contained words from the vocabulary list ranged between 1.0% and 6.5%.

These results suggest the need for taking further actions to integrate the gender dimension in research and teaching. The possible outcomes outlined in the logic model analysis within the framework of the baseline evaluation, such as the inclusion of a gender perspective in research, were not met. It also remains unclear whether the awareness on this topic has increased at PK over GEECCO project period.

Providing information on how to include the gender dimension in teaching and research is a good first step. However, concrete next steps need to be taken to ensure the sustainable uptake of the provided information, ultimately bringing about an increased inclusion of the gender dimension in research and teaching beyond the GEECCO project lifetime. The planned future activities outlined in GEP 3.0 have a high potential to address these necessary next steps to promote the integration of gender in research and teaching at PK.

5 KEY FINDINGS AND RECOMMENDATIONS

5.1 DECISION-MAKING PROCESSES AND BODIES

It can be acknowledged that a number of important recommendations made by the GESIS evaluation team in the Interim Evaluation Report in 2019 have been successfully followed up by PK management and local GEP coordinators alike. For example, new institutional structures for decision-making on gender equality issues have been established, and the PK Core GEP team has liaised with other units at PK to join forces in working groups aimed at combatting discrimination and advancing women at the university. A number of structures have been established on the initiative of the rector of PK. How and to what extent the structures and collaborations support the promising changes initiated by the GEECCO-funded GEP team, and which units at the university will be mandated to implement actual actions that have been developed and proposed for the period between 2021 and 2024, remains unclear and cannot be assessed at this point.

These new institutional structures and working groups would clearly not have come about without the project initiatives implemented by the local GEECCO partners at PK and the constant invitations to decision-makers and other staff members to become involved in strategic initiatives in the areas of decision-making and communication activities.

However, in order to proactively manage resistance against gender equality, we recommend that the problem of the multiple resistances to this topic specified in the Interim Evaluation Report be actively addressed in future GEP activities.

Compared with 2016, visible and significant changes in the thematic area of decision-making took place at PK over the course of the GEP implementation period. At faculty level, the share of women among heads of institutes and directors increased significantly in only two years to 27.0% in 2020. In contrast, no significant changes were observed in the representation of women in the highest central decision-making positions at the university.

In the context of the evaluation, the collection of data on decision-making processes and on potential gender biases in decision-making processes was not feasible.

We recommend that this work on structures and processes be continued, as it serves not least to ensure the sustainable institutionalization of gender equality structures at PK. In the future, it will be necessary to pay more attention to detail so that this work can contribute to bringing about effective cultural change and advancing gender equality in decision-making.

5.2 RECRUITMENT, CAREER DEVELOPMENT OF FEMALE RESEARCHERS AND FEMALE STAFF

Impacts of the set of activities in the area of the career development of female researchers can only tentatively be established in this evaluation report on the basis of the monitoring data provided by PK. GEP measures – for example, trainings, an information campaign, and a monitoring scheme – lacked specific objectives and compliance with potential needs of the target groups, which severely limited their potential to bring about intended and gender-supportive impacts.

The results of the online Evaluation Survey of PK staff and students conducted by the GESIS evaluation team indicate significant sexist attitudes among students and employees. The results of the second wave (ESW II) indicate increased gender awareness among male employees. This was a positive

development over the two years from 2018 to 2020. Whether and to what extent the extensive and numerous communication measures carried out by the GEP team at PK and beyond contributed to this development remains unclear. However, these measures are likely to have played a role. In addition, the societal context in Poland – for example, recent protests against essentializing the role of women and reducing it to motherhood – may also have played a role in the positive changes in gender awareness observed in the data from the second wave of the online survey. Another positive development relates to the results of the scale measuring attitudes toward sexual harassment that was administered to employees who participated in ESW I and II: The data indicate a change in the perception of sexual harassment among male employees and show that they rejected myths about sexual harassment more strongly in 2020 than in 2018.

The survey results also point to areas that still need attention. Persisting gender stereotypes continue to inform gender role expectations. The communication and training measures implemented at PK over the three years from 2017 to 2020 did not show effects in the larger university community. However, the indicator on experiences of gender bias – the differential and non-supportive behavior that women students experience at PK – decreased slightly. Women students who participated in the survey reported fewer negative comments about women in science in 2020 than in 2018.

All in all, the survey results show intended changes that the GEP team at PK addressed intentionally, whereas specific trainings and career support measures seem to have had little impact.

We recommend that the work to combat the essentializing of the role of women in academic and professional life be continued, and that efforts be made in the future to connect this work with objectives relating to the integration of the gender dimension in research and teaching content.

5.3 GENDER DIMENSION IN RESEARCH AND TEACHING

At the beginning of the project, only a few activities were implemented that were directly aimed at achieving changes in teaching or research conduct at PK. Hence, no significant changes or improvements in the integration of the gender dimension in research and teaching at the university have been identified yet. The activities of the PK Core GEP team in that area – for example, the development of training and information materials – have satisfied the requirements of the project collaboration. However, these activities did not spur significant interest among academic staff outside the GEECCO working group at PK.

The GESIS evaluation results show promising growth toward the objectives relating to the integration of the gender dimension in research and teaching in GEP 3.0, which includes additional activities in this thematic area and has come about through the GEECCO project cooperation. A fundamental prerequisite for creating interest, activity, and impacts in this field of action is the acknowledgement that gender differs from biological sex, for example, by taking gendered social interactions into account when developing technology. Without further massive incentives, for example, EU project collaborations or requirements for publishing in international journals, this is unlikely to happen at PK in the near future. Application scenarios for gender knowledge in STEM research and teaching should be developed, and further incentives should be created. The new institutional structures and working groups mentioned in Section 5.1 above should assist in developing possible incentives and advise the rector accordingly.

6 REFERENCES

- Besharov, D. J., & Call, D. M. (2016). *Using logic models to strengthen performance measurement*. University of Maryland, School of Public Policy.
- Deming, W. E., & Stephan, F. F. (1940). On a least squares adjustment of a sampled frequency table when the expected marginal totals are known. *The Annals of Mathematical Statistics*, 11(4), 427–444.
<http://www.jstor.org/stable/2235722>
- Donaldson, S. I., Christie, C. A., & Mark, M. M. (Eds.). (2009). *What counts as credible evidence in applied research and evaluation practice?* Sage.
- European Commission. (2019). *She figures 2018: Gender in research and innovation*. Publications Office of the European Union. <https://publications.europa.eu/en/publication-detail/-/publication/9540ffa1-4478-11e9-a8ed-01aa75ed71a1/language-en> <https://doi.org/10.2777/936>
- Glick, P., & Fiske, S. T. (1999). The Ambivalence toward Men Inventory: Differentiating hostile and benevolent beliefs about men. *Psychology of Women Quarterly*, 23, 519–536. <https://doi.org/10.1111/j.1471-6402.1999.tb00379.x>
- Legewie, J. (2012). Die Schätzung von kausalen Effekten: Überlegungen zu Methoden der Kausalanalyse anhand von Kontexteffekten in der Schule. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 64(1), 123–153. <https://doi.org/10.1007/s11577-012-0158-5>
- Lonsway, K. A., Cortina, L. M., & Magley, V. J. (2008). Sexual harassment mythology: Definition, conceptualization, and measurement. *Sex Roles*, 58(9-10), 599–615. <https://doi.org/10.1007/s11199-007-9367-1>
- Morgan, S. L., & Winship, C. (2015). *Counterfactuals and causal inference: Methods and principles for social research* (2nd ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9781107587991>
- OECD. (2015). *Frascati manual 2015. Guidelines for collecting and reporting data on research and experimental development*. OECD Publishing. <https://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm>
- Poister, T. H. (2010). Performance measurement: Monitoring program outcomes. In J. S. Wholey, H. P. Hatry, & K. E. Newcomer (Eds.), *Handbook of practical program evaluation* (pp. 98–125). Jossey-Bass.
- Robnett, R. D. (2016). Gender bias in STEM fields: Variation in prevalence and links to STEM self-concept. *Psychology of Women Quarterly*, 40(1), 65–79. <https://doi.org/10.1177/0361684315596162>
- Rollero, C., Glick, P., & Tartaglia, S. (2014). Psychometric properties of short versions of the Ambivalent Sexism Inventory and Ambivalence toward Men Inventory. *TPM*, 21(2), 1–11.
- Stockmann, R., & Meyer, W. (2014). *Evaluation: Eine Einführung* (2nd ed.). Verlag Barbara Budrich.
<http://www.utb-studi-e-book.de/9783838585536>
- Wroblewski, A. (2016). Gender-Indikatoren in der Wissensbilanz – Grundlage für ein Gleichstellungsmonitoring oder Datenfriedhof? In A. Wroblewski, U. Kelle, & F. Reith (Eds.), *Gleichstellung messbar machen: Grundlagen und Anwendungen von Gender- und Gleichstellungsindikatoren* (pp. 171–189). Springer VS.

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