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October 2022

Abstract

This paper examines whether master's in development studies are adhering to the 'leaving no one behind' pledge of the SDGs. A full cycle approach was applied to three international advanced master's at the University of Antwerp to investigate whether there are difficulties for students from less privileged backgrounds to *access* international higher education. Biases in *learning gains* (knowledge, skills, attitudes, and networks) and graduates' *contribution to development* were also investigated drawing upon alumni and employer surveys as well as impact stories. Results suggest that bias in *access* is most prominent in female students from low educational backgrounds. Nevertheless, learning gains were consistently high regardless of gender while *contributions to development* were documented across all categories of graduates irrespective of gender and educational background. Overall, our findings support the idea that facilitating equal *access* to international study experiences appears to be a very effective way to leave no one behind.

Keywords: Leaving no one behind; international higher education; alumni; development studies

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1. Introduction

Leaving no one behind (LNOB) is the central pledge of the United Nations' 2030 Agenda for Sustainable Development (UN, 2015). It sets the target for all nations, peoples and all segments of society. Specifically, SDG 10 (reduce inequality within and among countries) calls for the "social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion, or economic or other status". However, in practice, identifying who are left behind becomes a matter of context, depending on the type of program or project, specific service, market, or area being addressed.

This paper applies the LNOB principle to higher education programs. Over the past decades, higher education participation rates have risen considerably and the role of higher education in supporting and enhancing economic and social development processes is increasingly recognised (e.g., World Bank Task Force on Higher Education and Society, 2000; World Bank, 2016). After a long-standing focus on primary education through the Education for All (EFA) movement and the Millennium Development Goals, the 2030 Agenda included a target on higher education for the first time. Along with it, Target 4.3 puts forward an explicit gender focus in higher education by calling for equal access for all women and men to affordable and quality technical, vocational, and tertiary education, including university. Other inclusion considerations include social class (represented by the education level of parents) and ethnicity as observed in national education programs.

Richardson et al. (2020) found significant and persistent inequalities in higher education participation rates on all these considerations as well as their intersections. For instance, the likelihood of being enrolled at university in high-income countries are two times greater for individuals with a university-educated parent compared to those without (OECD, 2012). So far, there is a strong focus on access which is often based on the neoliberal principle of developing human capital for economic and labour market participation, whereas conditions needed to translate access to attainment (e.g., Kaye, 2021; Mishra, 2020) as well as the social justice and empowerment aspects of social inclusion tend to be ignored (Abamosa & Hilt, 2020; Mergner, Leisyte, & Bosse, 2019; Convertino, Brown, & Wilson, 2017; Molla, 2014).

On a global scale, education financing is determined by country-level income and international scholarships have been a major aid strategy to support students from low-income countries to pursue higher education in high-income (donor) countries. International scholarships do not come without challenges. There are concerns linked to tied aid with international students generating substantial revenue for host universities (Bhandari, 2017), and that such scholarships seem to neglect the much-needed (re)building and strengthening of higher education institutional capacity of many low- and middle-income countries (Heleta & Bagus, 2020). Since the 2030 Agenda only addresses the expansion of scholarship opportunities for international study (target 4.b) there is not much support in terms of attainment and social inclusion.

Another challenge lies in determining who is left behind in terms of opportunities for international study, whether through scholarship or self-funded, as only country-level information exists and no aggregated data on the socio-economic characteristics of applicants nor graduates is available (Bhandari, 2017; Dassin, Marsh, & Mawer, 2018). This paper attempts to fill the gap by looking at three international advanced master's in development studies offered at the University of Antwerp (Belgium) to examine biases not only in access to international study but also to gauge attainment (learning gains) and contribution to development after graduation.

The following section introduces the three master's programs, discusses the theoretical background and empirical evidence from related studies while research methodology and instruments are explained in section three. Section four presents the results in terms of access to the programs, attainment (learning gains) and impact (contribution to development) with respect to gender, social class, and their intersectionality. The last section summarises the findings and highlights key contributions to existing literature.

2. Conceptual Framework

This study is part of a larger 5-year collaborative research (2017-2022) in which an international team of 17 alumni co-researchers and staff investigated the impact of three master's programs in development studies offered at the University of Antwerp. The three one-year advanced master's programs (mainly) target (future) development professionals which have a high potential of becoming 'agents of change'. Over a period of 18 years

(2000-2018) about 1,348 master students from over 100 nationalities have graduated, about half of whom received scholarships.

A theory-based evaluation approach was adopted and a theory of change (ToC)(Holvoet et al., forthcoming)(see Figure 1) was co-created drawing upon Kirkpatrick's training evaluation approach (Kirkpatrick, 1994). Kirkpatrick's initial focus on the 'knowledge' and 'skills' learning dimensions was broadened towards 'attitudes' and 'networks'. Based upon the alumni co-researchers' experiences during their training as well post-gradation, the ToC posits that participation in the master's programs (=activities & outputs) leads to short-term individual benefits (initial outcomes) which may translate into longer-term effects at the individual level (intermediate and final outcomes). Next, a transformatory process may be triggered when individual gains in the four learning dimensions (knowledge, skills, attitudes, networks) lead to changes at the organisational level, eventually culminating in societal level impact, which to some extent counters the critique by Heleta and Bagus (2020).

Figure 1: Theory of Change of a student's international study experience: Three (levels) -four (learning gains)-five (pathways)- model (Holvoet et al., forthcoming)
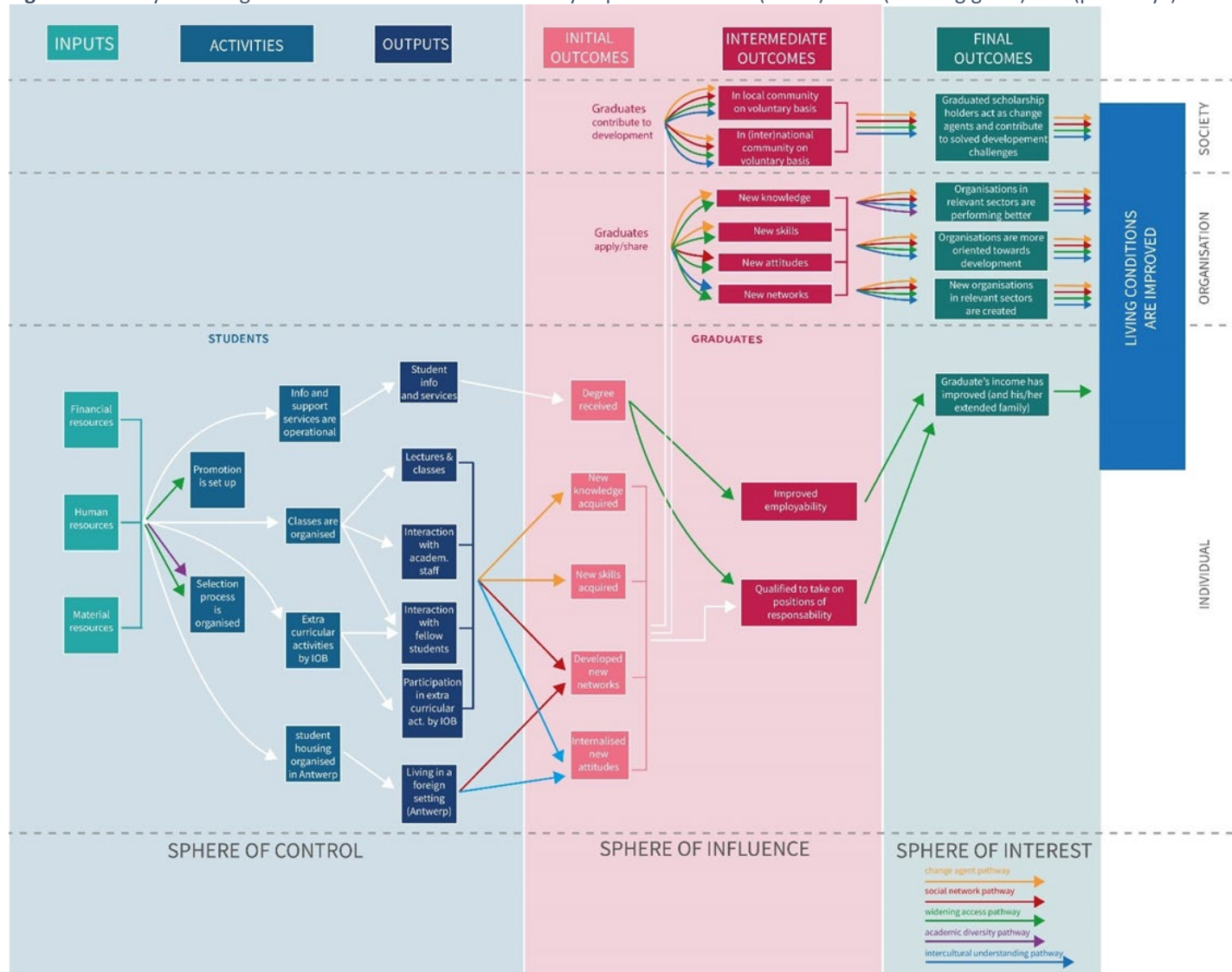
In line with Dassin et al. (2018), the ToC identifies five pathways through which this process may materialize. The "change agent pathway" is usually predominant and focuses on the graduate's personal action such as obtaining positions of higher responsibility and autonomy in their working environments to promote and support development objectives. This study specifically focuses on the "widening access" pathway which considers access to education for marginalised groups as leverage for social mobility and change. Moreover, this pathway foresees possible multiplier effects with some graduates contributing to policies or practices which could benefit future students from disadvantaged backgrounds directly addressing the leaving no one behind challenge. However, so far, surprisingly little research exists to support this pathway of change.

Existing empirical studies investigating effects on the different learning dimensions generally show extensive gains in knowledge and skills (analytical, technical and management) and greater confidence to introduce innovations in the workplace (see e.g. Mawer, 2014). Other studies seek employer confirmation which has proven difficult to obtain; although where available, their perspectives tend to reinforce the evidence (e.g. Nuffic, 2009). With regards to attitudes, Mawer (2014) found positive attitudes toward host countries and intercultural gains, although it cannot easily be distinguished whether these changes can be attributed to the study experience itself or to inherent characteristics of international students. As for contribution to development, few studies have so far succeeded to reliably and completely track post-graduation trajectories to look at career development on the individual level. On the organisational level, absorptive capacity and situational factors which facilitate or hamper a graduate to transfer knowledge or skills at this level may have some influence on outcomes (Mawer, 2014) and needs further research. On the societal level, some benefits in terms of economic growth in low- and middle income countries have been found through a rigorous research review by Oketch et al. (2014), although given the uneven evidence, results need to be interpreted with caution.

Given the limited existing empirical evidence, this study makes an important contribution to tracking effects of development studies programs. Further, it applies an inclusion, "widening access" lens supporting the leaving no one behind principle through the investigation of (intersecting) gender and social class biases in access, learning gains and contributions graduates (claim to) make to development.

3. Methods

To validate the ToC and study the effect of an international study experience on the graduate's learning gains and contribution to development an innovative multi-method toolkit was co-created with our team of 17 alumni co-researchers from different countries and professional backgrounds. Working with a diverse team provided crucial input to assure research instruments were fit to use in different contexts and sufficiently rich to capture the lived experience of such an intercultural study exposure (Tysmans et al., forthcoming).

First, an alumni online survey was developed asking (closed) questions about the graduate's current profile, what (s)he had learned during the study experience, how (s)he has been able to use it in the organisation where (s)he works and whether (s)he has been able to make a contribution to development, among others. The survey was sent to all 1373 alumni in 2019 of which a total of 291 responded[1]. Note that some selection bias may have occurred as alumni with a more positive experience were more likely to respond (Cooper & Ramey, 2014).

Second, an employer survey was designed to solicit perspectives from organisations where the graduates are employed and was sent out to the employers of the graduates of academic year 2018. For this cohort, 30 scholarship students returned to the same organisation after graduation and almost half of their employers (47 per cent) responded to the survey. The questions focused on the graduates' contribution to the organisations upon their return to office and measures were taken (e.g. explaining clearly that responses will not affect future scholarship allocation) to avoid socially desirable answering, nevertheless, it cannot be fully ruled out.

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[1]The relatively low response rate is considered acceptable for an online survey and might be explained by the fact that the survey went back almost twenty years in time, and therefore was confronted with having difficulties reaching all alumni (some 20 % of emails bounced).

Third, the study collected alumni impact stories in six case study countries, i.e. Ethiopia, Tanzania, Uganda, Vietnam, Philippines, and Nicaragua to get a richer, more holistic perspective of what graduates learned during their study experience and how this contributes to development impact. 131 stories were collected and analysed using text analysis tools (NVivo 12).

4. Results

This section maps the findings related to *access* to higher education, the *learning gains* as well the graduate's *impact* on development following a full cycle approach in evaluating the 'leaving no one behind' principle. The analysis tackles potential inequalities in accessing higher education (pre-masters), and goes further by examining whether there are differences in learning gains and in contributions graduates (claim to) make to development in the broader society (post-masters).

4.1. Accessibility

Social disadvantage could refer to a wide range of factors such as gender, age, ethnic groups, place of residence, religion, educational background. This paper specifically focuses on gender and social stratification based on educational background of the students' parents (see e.g. Nguyen, 2016), eventually combining those two to frame intersectionality.
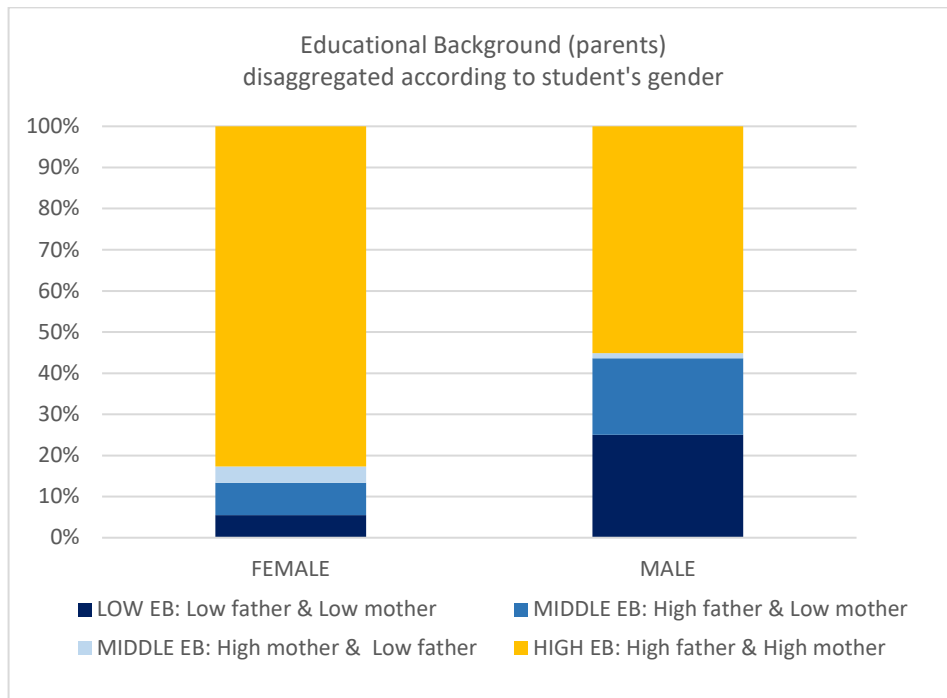
4.1.1. Bias in accessibility?

The host academic institution's[2] selection policy is geared towards the admission of outstanding, well performing development professionals who have a high probability to make a contribution to development ("change agent pathway"). The institute does not apply specific gender quota, nor any other quota for disadvantaged individuals to be admitted into the program. However, the scholarship agency which provides around 30 scholarships every year, does prescribe gender balance guidelines which need to be adhered to, leading to a relative gender balance in access to the master (on average 49,3 per cent of the students were female over the last 5 years). However, given the predominance of male applicants in the total number of applications, there is a clear bias in terms of accepting female students especially in terms of scholarship allocation. Of the total alumni survey respondents, 45,5 per cent are female. As regards students' parental educational background, our survey differentiates between students whom none of the parents (=low educational background), one (=middle educational background) or both of the parents (=high educational background) have reached more than primary educational level. Among our respondents, 30 per cent and 18.7 per cent have a mother or father with a maximum of primary education, while 16.3 per cent and 35 per cent come from a low and high educational background respectively.

4.1.2. Intersecting gender and educational background

Studies on inequalities and exclusion mechanisms often highlight the importance of intersectionality perspectives. Our findings show gendered differences based on parental educational background with males having a varied level of parental educational background and females mostly coming from a higher level of parental educational background. Figure 2 highlights that only 55 per cent of all male graduates come from a high educational background while 83 per cent of all female graduates have both a mother and father with a relatively high educational background. Female students whom report low or medium parental education level backgrounds are a minority. These results suggest that, it seems harder for women to participate in international master's if they come from a low educational background, increasing the likelihood of being left behind.

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[2]The application requirements are having, a Master (or equivalent) degree in a relevant discipline, English proficiency and a proven interest in development. The admission criteria are study results in the previous master's degree, matching to the program's objectives, motivation and relevant professional experience. The latter is only applicable for scholarship recipients. The criteria of motivation, matching and professional experience are geared towards the selection of applicants deemed to be able to contribute to development in the broad sense.

Figure 2: Parental educational background distribution by student's gender

Educational Background (parents)
disaggregated according to student's gender

Legend:
- LOW EB: Low father & Low mother
- MIDDLE EB: High father & Low mother
- MIDDLE EB: High mother & Low father
- HIGH EB: High father & High mother

For the remainder of the article, when investigating educational biases in individual, organisational and societal gains, the categories 'middle' and 'high' educational background are grouped together and labelled 'high' as to clearly distinguish between students of whom at least one of their parents has reached more than primary education and those for whom this was not the case for neither of their parents (=low).

4.2. Learning gains

The theory of change in Figure 1 specified four learning dimensions (initial outcomes) in the students' international study experience. Figure 3 shows that most of the graduates report to have learned much or very much during their studies. The analysis by learning dimensions suggests similar gains in knowledge and ideas. Whereas the prominence of knowledge gained was expected based on earlier research (e.g. Mawer et al., 2016) the importance of gaining new ideas and attitudes being almost as high as knowledge is remarkable.

The median of reported gains in skills and networks are similar, and lower than those identified in knowledge and ideas which does not entirely come as a surprise given the academic focus of master programs. Gains in networks are perceived to be lowest, but still too substantial to be overlooked as has been done in most of the theoretical and empirical work so far (Holvoet & Dewachter, 2022).

Figure 3: Reported gains in learning dimensions through study experience

Source: Alumni Survey 2018. The black triangle indicates the median score and the lower and upper boundaries indicate the 25th and 75th percentiles, respectively. Outliers scores more than 1.5 box lengths from the lower edge of the box are designated with a circle.

4.2.1. *Bias in learning gains?*

While it is clear that there are very high gains in the four learning dimensions overall, they are not necessarily equally distributed among different groups of students. While high learning gains are reported for both male and female students, the females reported slightly lower gains in every dimension, except for attitudes[3]. Moreover, graduates from low educational backgrounds reported slightly higher learning gains[4] compared to their graduates from a high educational background. To test the hypothesis that female and male graduates have statistically significant differences in reported learning gains, a Nonparametric Tests Wilcoxon rank-sum[5] (Mann-Whitney) test was performed (Conroy, 2012; Feltovich, 2002).

Table 1 and Table 2 show that the Nonparametric Tests of Differences in Medians cannot reject the null hypothesis of equal learning gains, neither by gender or educational background which implies the absence of *gender* bias across all dimensions. Similarly, there is no significant difference in the learning experienced by graduates from *different educational backgrounds*.

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[3]For male students (*N=159*) the reported gains in learning dimensions using a five-point scale are as follows: *knowledge*=4.54 (SD=0.537), *skills*=4.34 (SD=0.648), *attitudes*=4.52 (SD=0.666) and *networking*=3.92 (SD=0.927). In comparison, the females (N=132) reported lower gains in every dimension, except for attitudes, i.e. *knowledge*=4.45 (SD=0.704), *skills*=4.14 (SD=0.875), *attitudes*=4.53 (SD=0.663) and *networking*=3.81 (SD=1.00).

[4]Graduates with a low educational background (N=46) had high learning gains: knowledge=4.65 (SD=0.482), skills=4.41 (SD=0.541), attitudes=4.59 (SD=0.541) and networking=3.93 (SD=0.8). In contrast, high educational background graduates (N=241) were associated with slightly lower reported gains in every learning dimension: knowledge=4.48 (SD=0.628), skills=4.23 (SD=0.796), attitudes=4.53 (SD=0.660) and networking=3.87 (SD=0.973).

[5]For testing the hypothesis that low educational background students and high educational background students were associated with statistically significant different reported gains in learning dimensions, the same test was applied. For the attitudes and network learning dimensions, the Brunner-Munzel version of the Wilcoxon rank sum was performed as the assumption of equal variances was not satisfied (Fagerland & Sandvik, 2009).

Table 1: Result of Wilcoxon rank-sum (Mann-Whitney) test for the skills and knowledge learning domains, comparing Gender and Educational Background

	Gender				
	Female	*Male*			
	(n=131)	*(n=157)*			
Variable	*Mean rank*	*Mean rank*	*Z-value*	*Sig.*	*A'*
Knowledge	18566	23050	-0.59	0.555	0.482
Skills	17871	23745	-1.637	0.101	0.449

	Educational Background				
	Low educational background	*High educational background*			
	(n=46)	*(n=238)*			
Variable	*Mean rank*	*Mean rank*	*Z-value*	*Sig.*	*A'*
Knowledge	7239	33231	1.537	0.124	0.562
Skills	7044.5	33425.5	1.046	0.295	0.545

¥ When the Wilcoxon rank-sum (Mann-Whitney) ' test is significant, the hypothesis of statistical differences cannot be rejected (P<0.05) two-tailed

Note. Dominance statistic A' for effect size

Table 2: Result of the Brunner-Menzel test for the networks and attitudes learning domains, comparing Gender and Educational Background

	Gender			
Variable	**U**	**Df**	**Sig.**	**A'**
Attitudes	-0.112	280	0.91	0.496
Networks	-0.819	263	0.41	0.473
	Educational Background			
Variable	**U**	**Df**	**Sig.**	**A'**
Attitudes	0.079	253	0.943	0.502
Networks	-0.245	68	0.807	0.489

¥ When the Brunner-Menzel' test is significant, the hypothesis of statistical differences cannot be rejected (P<0.05) two-tailed

Note. Dominance statistic A' for effect size

4.3. Contribution to development

The last step in the full cycle approach focuses on the graduates' self-reported contribution to development, differentiating between individual, organisational, and societal levels.

4.3.1. Individual level

The theory of change (Figure 1) specifies that through the gains in learning dimensions (knowledge, attitudes, skills and networks), several changes are triggered at individual level. It is proposed that what the graduate has learned, can contribute to strengthening the graduate's employability and could result in a promotion to positions with greater responsibilities (intermediate outcomes). Both factors could in turn contribute to the graduate securing more stable employment and/or obtaining higher financial renumeration, which could improve the livelihood of the graduate and his/her (extended) family.

Overall, 98,9 per cent of graduates stated that the study experience had a (partially) positive effect on their career (11,7 per cent partially, 87,2 per cent yes). These positive career gains were derived from being given more responsibilities or having financial gains or both. The alumni impact stories analysis confirm individual level effects such as improved employability, more responsibility at work after study and increased financial resources/ wages.

> *When I joined the study program I was working as a junior M&E officer, right after I came back I was promoted to senior M&E specialist and then M&E Director and now I am Director General for Monitoring and Evaluation. All these positions came after the study program; it is a very good opportunity." (graduate from Ethiopia)*

Bias in impact on professional development? Differentiating between female and male students shows that the male graduates perceived a higher career effect.[6] Moreover, all graduates from low educational backgrounds also noted slightly higher contributions to their professional development than their high educational background counterparts, though the difference between the two groups was not statistically significant[7].

> *As a result of the program, I believe that I obtained a good balance of both technical and interpersonal skills which increased my employability and allowed me to perform at positions of higher responsibility when I returned to my home country. (graduate from the Philippines)*

4.3.2. Organisational level

The next level in the theory of change (Figure 1) assumes that the different learning dimensions (knowledge, skills, ideas and networks) are later on applied in the graduate's professional life (i.e. in the organisations where (s)he works) and that they are able to strengthen those organisations.

Figure 4 presents whether graduates feel they have been able to apply what they have learned in the organisation where they work. Considering all learning dimensions, results show the majority of graduates feel they were able to apply what they have learned. However while almost 90 per cent have been able to apply new ideas, and 84 per cent and 72 per cent have (very much) used new professional and research skills and knowledge respectively, only 60 per cent indicated to have used the networks gained.

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[6]Female graduates (N=126) had a *reported career effect* of 1.20 (SD=.439), while the males (N=155) scored 1.09 (SD=.309), using a three point scale (1= yes, 2 partially; 3= no). The Wilcoxon rank-sum (Mann-Whitney) test indicates that male-reported effects were statistically significantly higher than female-reported effects (Z=2.45, p<0.05). The effect size was found to be moderate (A'=0.549).
[7]The Wilcoxon rank-sum (Mann-Whitney) test could not reject the null hypothesis of equal reported career effects (Z=-1.85, p>0.05).

Figure 4: Application of learning gains in the organisation
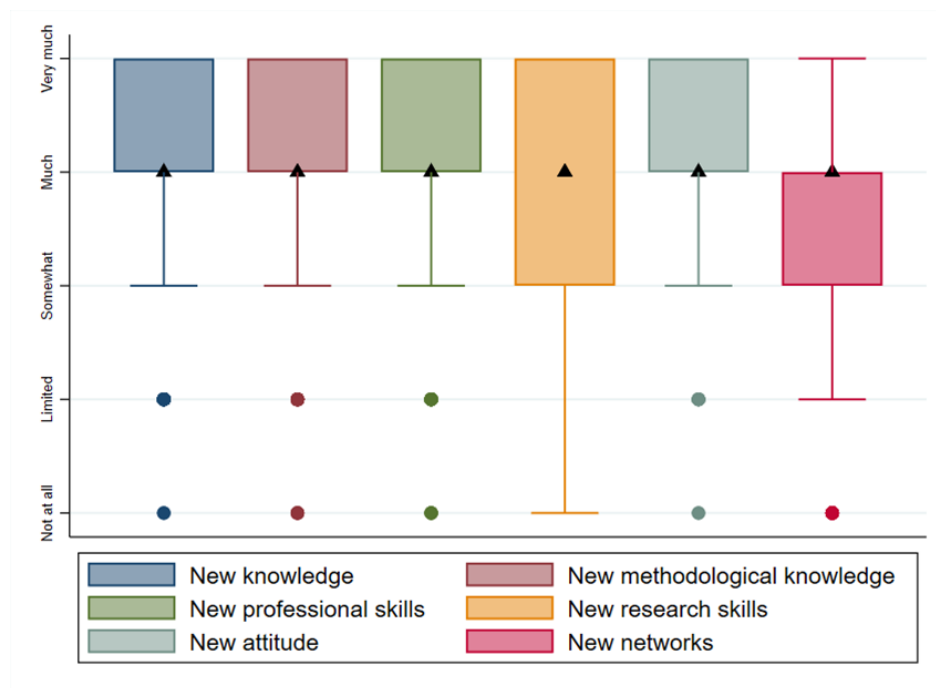
Source: Alumni Survey 2018. The black triangle indicates the median score and the lower and upper boundaries indicate the 25th and 75th percentiles, respectively. Outliers scores more than 1.5 box-lengths from the lower edge of the box are designated with a circle.

A similar pattern is found on strengthening organisations where graduate's self-reported impact has been most substantial in introducing new ideas and practices (88 per cent), improving the performance (87 per cent) and increasing the level of expertise/ knowledge within the organisation (86 per cent), yet only 68 per cent have been able to strengthen their organisations by extending its (inter) national networks.

To crosscheck the validity of the contributions mentioned by the graduates in the surveys, a separate survey was sent out to employers of recent graduates to get the perspective of the organisations. Findings show that the employers' perspective even surmounted the graduates' view on how they have been able to apply what they have learned from the masters and how they had been able to strengthen the organisation (Holvoet et al., forthcoming).

Building on the alumni stories, graduates seem to situate their contribution most in improving the organisational performance (49 codes in 48 stories on organisational strengthening refer to improving performance). Alumni claimed to use their knowledge gained to improve performance and share knowledge with other colleagues.

> *I work as an expat in Afghanistan and Kenya in different humanitarian and development organizations. Again, in these organizations I applied the knowledge and skills that I gained from the study program, i.e. I led and managed different midterm and final program/project evaluations using standard evaluation criteria and techniques. (graduate from Ethiopia)*

Bias in impact at organisational level? In terms of the perceived graduate contribution in the workplace, our findings highlight some differences in terms of gender and educational background. Males reported a slightly higher degree of application and strengthening of the organisations compared to females overall. Likewise, low educational background students indicated for certain dimensions of application and organisational strenghtening a higher performance in comparison with their counterparts from high educational backgrounds.

Testing whether the gender differences are significant shows that indeed there are some significant gender effects in terms of the perceived application in the workplace. This pattern is even more clear for organisational

strengthening impacts. More specifically, the reported degree of application of *thematic knowledge*, *methodological knowledge*, *research skills* and adding *new networks* were significantly higher for male than for female graduates[8]. Moreover, self-reported impacts on organisational strengthening through the introduction of *new ideas*, *extending the (inter)national network*, being an advisory/*knowledge resource* person and increasing the *orientation* of the organisation's work *towards development* were again significantly higher for male than for female graduates.

Although several gender effects were identified, the effect size was found to be small (Tomczak & Tomczak, 2014). Overall, the degree of application and strengthening of the organisations where graduates work is considered high, including for female graduates. Moreover, while the employer surveys confirmed the overall very high degree of graduates applying their newly gained knowledge, ideas and skills and strengthening their organisation, they did not put higher value on male graduates' contribution, rather the contrary. The sample is however not large enough to check for statistically significant differences, but does highlight the need to nuance some of the reported perceived higher contributions by male graduates.

The differences based on the educational background are less consistent and prominent[9]. Results shows that degree of application of *thematic knowledge* and *research skills* were significantly higher for low than high educational background students (although with small effect sizes), while the other organisational impacts were found to have no significant differences.

4.3.3. Societal impact

At the societal level, contribution, let alone attribution, of competencies gained through the study experience becomes more difficult to trace. To assesss graduates' impact on development, contributions to specific Sustainable Development Goals (SDGs) were categorised based on self-reports (Figure 5).

96 per cent of graduates reported to have at least somewhat contributed to the SDGs (71 per cent yes, 25 per cent somewhat contributed). The top five SDGs which the graduates contributed to are SDG5 (gender equality), SDG1 (no poverty), SDG4 (quality education), SDG10 (reduced inequality), and SDG8 (decent work and economic growth) – topics clearly linked to the content of the master's.

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[8]To test the hypothesis that female and male graduates were associated with a statistically significant different degree of application and strengthening of the organisations, Nonparametric Tests Wilcoxon rank-sum (Mann-Whitney) test and Brunner-Munzel extension were performed. The respective tests indicate that male-reported effects were statistically significantly higher than female-reported effects for applying thematic knowledge (U=3.325, p<0.05), methodological knowledge (U=2,856, p<0.05), research skills (Z=-2.226, p<0.05) and adding new networks (Z=-2,778, p<0.05) in their organisations. In terms of strengthening the organisations, male graduates reported significantly higher contributions for introducing new ideas (Z=-3,719, p<0.001), extending the (inter)national networks (Z=-2,778, p<0.001), acting as knowledge resource person (Z=-3,418, p<0.001) and increasing the orientation towards development (Z=-2,073 p<0.05).

[9]The results of the same tests (Mann-Whitney and Brunner-Munzel tests) showed that students from a low educational background had reported a significantly higher degree of applying thematic knowledge (U=-2,559, p<0.05) and research skills (U=-2,009 p<0.05) than their counterparts from high educational backgrounds.

Figure 5: Graduates' self-reported contribution to a) the sustainable development goals, disaggregated into the 17 SDGs and b) several impact arenas

| 5a alumni contribution to SDGs | 5b alumni contribution to impact arenas |
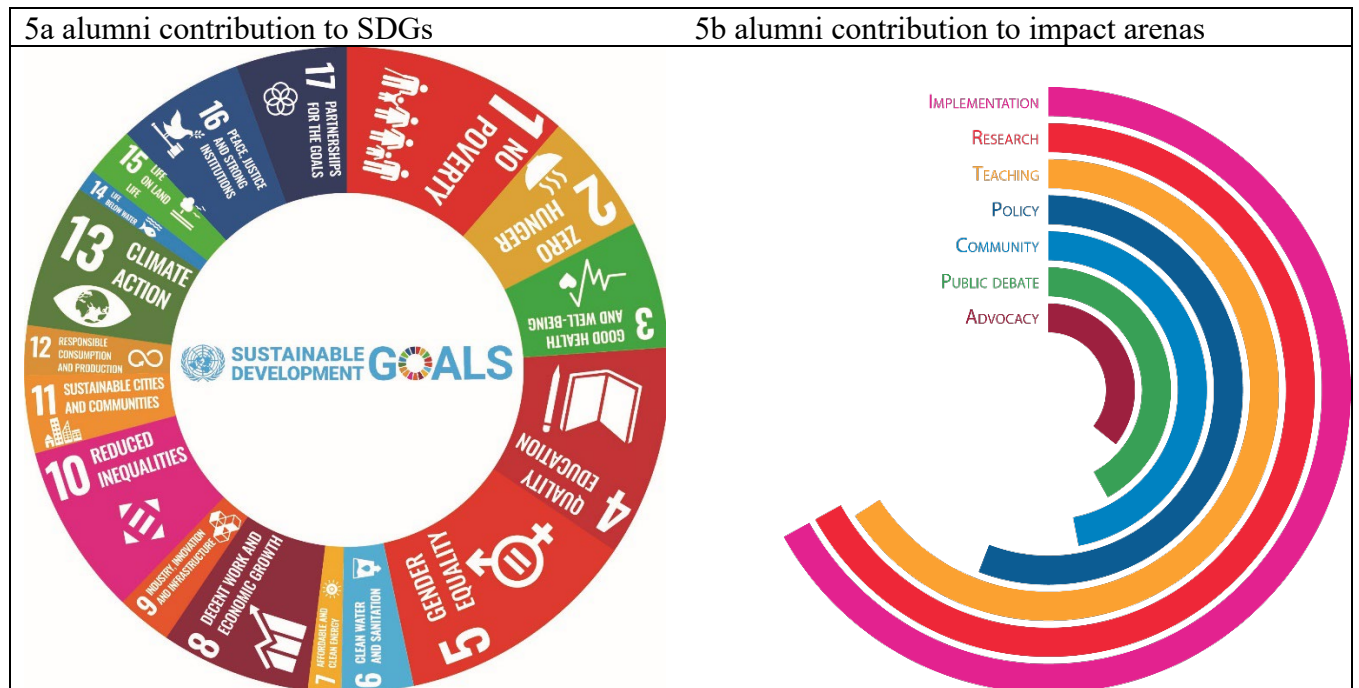
Source: Alumni Survey 2018. 5a) The size of the SDG in the pie chart is the percentage of graduates who have indicated to work on this SDG. Respondents were allowed to indicate multiple SDGs. 5b) The size of the bar indicates the percentage of graduates who are active in this impact arena. Respondents were allowed to indicate multiple arenas.

In addition, alumni were asked to indicate the type of activities they are contributing to, by identifying the *impact arena* in which they are active (Figure 5b). These arenas are very broad spheres of public life where one could have a development impact ranging from teaching, research, public debates, policy, advocacy, implementation, and community.   Figure 5b presents the self-reported contributions made by the alumni in the various arenas, with the length of the circle bar representing the share of alumni who have indicated to have made a contribution to this particular arena. Results show that graduates report to contribute to several impact arenas quite intensely, most prominently in implementation of development projects, research, teaching and policy making, while contributing to advocacy and the public debate is less outspoken. Interestingly, the perceived contribution to the community where graduates live, a contribution mostly outside the realm of the professional activities, was more prominent than expected. Moreover, the results showed that graduates are multi-arena actors, making contributions to almost 4 arenas on average.

Triangulating the survey data with the alumni impact stories confirms the main societal contributions realised in the impact arenas. The NVivo analysis highlighted work on policy issues (25 codes in 21 stories), teaching and research (21 codes in 14 stories) as well as implementation (19 codes in 16 stories).

> *As a lecturer (…), I work with several students. I tried to teach them some the knowledge that I gained. I try to develop critical thinking competences which will improve their research skills. For me, this is important beyond the academia sphere. If they are able to develop this kind of competences…, they will implement research in a daily manner at their workplace. They will be able to change beyond the academia perspective in the public and private sphere. (graduate from Nicaragua)*

> *We facilitated the provision of water supply in the resettlement sites in Tacloban City in the aftermath of the Typhoon Yolanda (…) Water may seem trivial to those who have not experienced lack of water supply; but for the victims of Yolanda who lost everything they own and were relocated to the resettlement sites where even the basic needs such as water is lacking, water is really crucial. This is why I feel proud that we were able to help them have water, even if the process*

was tiring as we had to conduct countless meetings with the implementing agencies to facilitate the resolution of the issue. (graduate from the Philippines)

Contributions made beyond professional realms, such as volunteering (21 codes in 20 stories) and role models/ mentors (9 codes in 9 stories) demonstrated a significant path towards making a development contribution.

Outside my work, I am currently involved in a local church in training youths in the slum areas of Tondo, one of the poorest districts of Manila, to be financially-literate on the proper use and appreciation of money, while involving them in sports activities and music ministries." (graduate from the Philippines)

Bias in impact at societal level? In terms of gender differences, the results seem to suggest that there are little differences in the type of perceived contribution female and male graduates have made. Both females and males reported the same top three SDG contributions, SDG1 (poverty), SDG5 (gender equality), and SDG4 (education), with gender equality ranking first for females and second for males.

In terms of the contribution to the diverse arenas of impact, results show a few and relatively small differences among female and male graduates. Overall, both seem to engage in all impact arenas and equally have multi-arena profiles with women having higher reported contributions to volunteering in community projects and in acting as role models in the community as well as in contributing to public debate through art, theatre and books. Whereas only 16 per cent of all male graduates volunteer in community projects, 29 per cent of the females take on this role. However, the gender bias in volunteering is not fully validated by the impact stories, where out of the 20 stories demonstrating volunteer contribution, half were female graduates, further confirming the overall trend of not identifying outspoken differences in societal contributions between female and male graduates.

In terms of personal aspect, since 2007 up to now, I have been being the core leader of a Charity program …, providing support in terms of scholarship to the most vulnerable students … in the most disadvantage areas in Vietnam. The annual budget raised is approximately Euro 30,000, provided support to almost 1000 students each year. This is an individual based charity program and all the fund raised directly benefits the students. (female graduate from Vietnam)

Similarly, there are few significant differences for graduates coming from a low educational background in terms of societal contribution when comparing to graduates from a high educational background. For both roughly the same top five SDG contributions (SDG5, 1, 4, 10, 8/13) emerged while they similarly consider themselves multiple arena actors making contributions to all arenas.

5. Conclusion

This article studied the full cycle of a development studies graduate beginning from their *access* to higher education to their *learning gains* and *contribution* to society through a 'leaving no one behind' lens. For each of the stages of the cycle, possible biases in terms of gender and educational background were mapped to get a holistic view of the hurdles and disadvantages students might face.

In terms of *access* enrolment data showed gender balance while graduates from low educational backgrounds (mother and father with a maximum of primary education) are a minority (16 per cent). Interestingly, applying an intersectionality perspective illustrates that this bias is even exacerbated for female students from low educational background (only 2 per cent) compared to their male counterparts (14 per cent). As such, particularly female students originating from low educational background families seem to have difficulties accessing international higher education and are in danger of being left behind.

Our research shows that graduates overall report very high *learning gains* in knowledge and attitudes, while skills and particularly networks were less prominent. No consistent gender nor educational background bias was found in any of the four learning dimensions.

The final step in the full cycle analysis of impact of development studies looks at the graduate's *contribution to development*, differentiated between the individual, organizational and societal level. At the *individual level*,

graduates almost unanimously report that the study experience has had a (at least partial) positive effect on their career. Even though overall reporting of professional development effects of the study experience was very high, there is a limited gender bias, with males reporting higher effects on their professional development. All students from a low educational background reported to have experienced a positive effect on their professional development.

At *organisational level*, having triangulated both the graduates and employers' perpectives, results indicate that graduates have been able to apply learning gains and to strengthen the organisation. Female graduates rate their contribution to strengthening the organisation slightly lower than their male counterparts, though still quite high overall. The lower perceived contribution by females, was nuanced by the employers, who valued their contribution equally or even more than those of male graduates. Students from a low educational background perceive their contribution as slightly higher compared to other students.

Finally, the study provides interesting insights into how graduates are able to translate what they have learned during their studies into *societal impact*, admittedly the most difficult dimension to capture. Graduates perceive to contribute most frequently to issues of gender equality (SDG5), poverty (SDG1), education (SDG4), inequality (SDG10), and decent work and economic growth (SDG8). These topics were relatively consistent irrespective of the graduate's gender or educational background. Study results highlight the multitude and diversity of impact arenas in which graduates reported to be active (implementation of projects and programs, research, teaching and policy making) and finds that development contributions outside the professional realm, such as volunteering or being a role model, are too important to be overlooked.

This multi-method analysis of the contribution of development studies' graduates adopting a leaving no one behind perspective provides us with a few new insights. First, the article shows the importance of a full cycle perspective on 'leaving no one behind', studying not only biases in access to higher education, but also learning gains and the contribution made to development.

Moreover, our research attempts to tackle the difficulty of studying impact on the societal level by triangulating alumni and employer survey data with impact stories to determine the graduates' contribution, and by experimenting with interesting tools to map alumni impact on different SDGs and impact arenas, as well as outside of professional spheres.
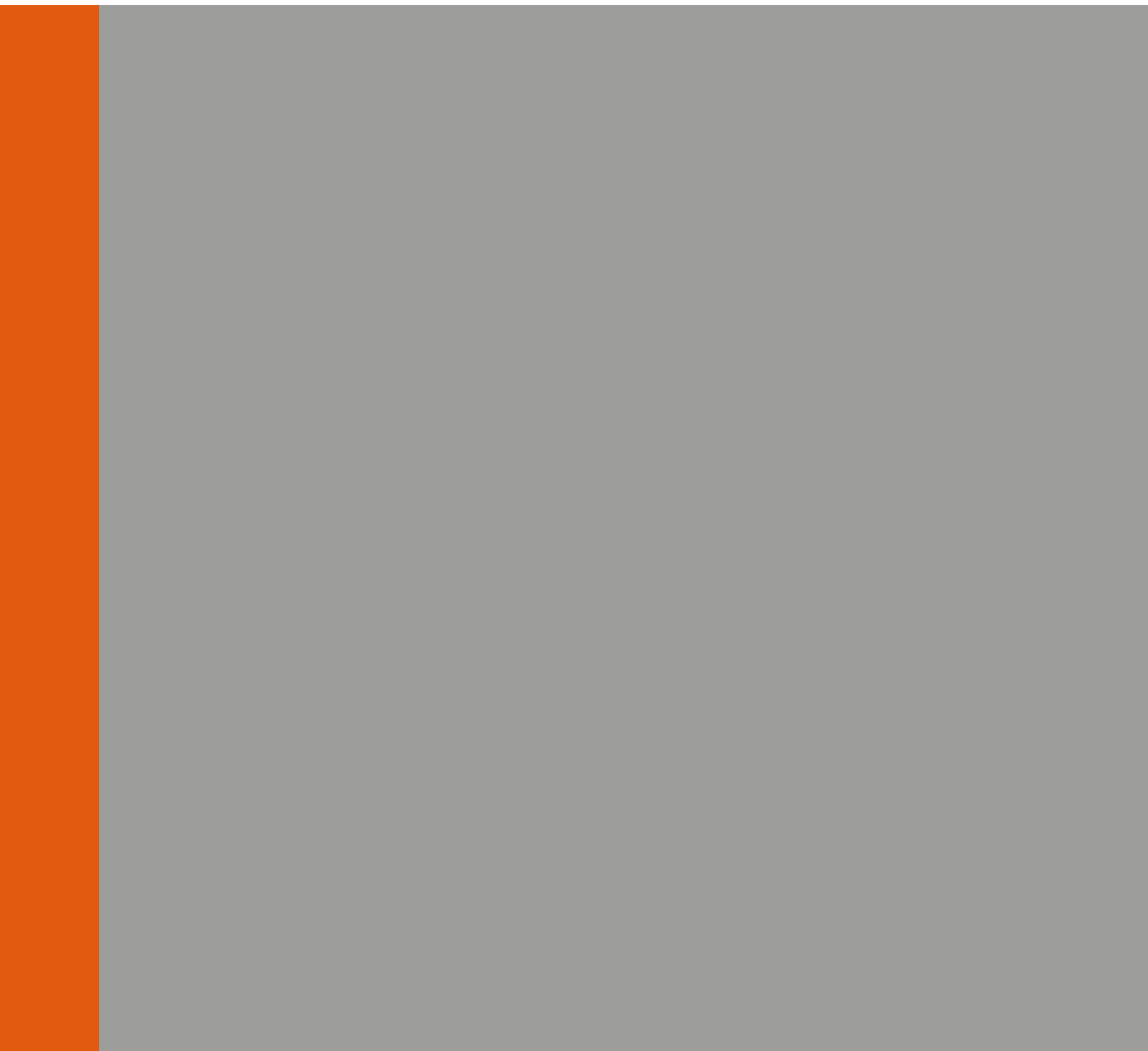
The results confirmed the 5-4-3 model, i.e. five pathways, four learning gains (knowledge, skills, attitudes and networks) and three levels (individual, organisational, societal effects) put forward in the theory of change. While the importance of knowledge and skills as learning gains was already established, the results consistently show the crucial contribution of gaining new attitudes, ideas and perspectives as key learning gains and building blocks for professional impact afterwards. Additionally, even though networks produced modest learning gains, this dimension is too sizeable to be overlooked.

While a socioeconomic bias in *access* was detected, especially for female students from low educational backgrounds, there was no consistent overall bias in learning gains. Also, in terms of their perceived contribution to development on different levels, the overall trend seems to confirm that there are no consistent differences, particularly in the contributions of female graduates nor students from lower educational backgrounds. In contrast, there were some indications that they gained and contributed more in terms of commitment to development and community contributions. This could provide support for the widening access pathway, in which students from disadvantaged backgrounds through societal and professional contributions as in their personal lives (through volunteer work and being a role model), could lower the hurdles they themselves have encountered, thereby striving to leave no one behind.

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