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Assessment of Gender Inequality in Global Supply Chains

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MASTER THESIS

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Assessment of gender inequality in global supply chains

Vurdere ulikhet i kjønn i globale forsyningskjeder

Background and objective

International trade has contributed to create employment worldwide, and was a contributing factor for the increase of the average household income and the skill level in specific countries and industries. Given these positive impacts, some countries have implemented policies to support and encourage trade. Allied to the increasing foreign final demand, international trade has caused a fast growth in employment associated with exports. For example, in the European Union, 31.2 million jobs were generated by exports in 2011, this is an increase of 65% respect to 1995.

The fifth Sustainable Development Goal is dedicated to gender equality and encourage countries to strive for it through the implementation of policies and regulations. One relevant matter in employment is gender-balance. This has been studied in the past showing that there is a gap between genders regarding share in the workforce, level of skills and wages. This matter has been studied at a country level, with a territorial perspective; however, this balance has not yet been studied for the employment related with exports.

The main research question in this project is:
- Are the global supply chains gender equal regarding share of women and men in the workforce and their skill-level?

The following two are secondary research questions:
- Are there any global supply chains characterized by gender gaps? If yes, which ones?
- As countries increase their GDP do they also become more gender equal?

The following tasks are to be considered:
1. Summarize the literature on gender-balance in global supply chains
2. Develop gender balance footprints indicators in order to estimate the share in global supply chains and the differences in skill level.
3. Identify global supply chains with particular high and low gender balance.
4. Compare the gender balance footprints to economic variables (at least GDP) based on a regression. Discussion.

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Within 14 days of receiving the written text on the master thesis, the candidate shall submit a research plan for her project to the department.

When the thesis is evaluated, emphasis is put on processing of the results, and that they are presented in tabular and/or graphic form in a clear manner, and that they are analyzed carefully.

The thesis should be formulated as a research report with summary both in English and Norwegian, conclusion, literature references, table of contents etc. During the preparation of the text, the candidate should make an effort to produce a well-structured and easily readable report. In order to ease the evaluation of the thesis, it is important that the cross-references are correct. In the making of the report, strong emphasis should be placed on both a thorough discussion of the results and an orderly presentation.

The candidate is requested to initiate and keep close contact with his/her academic supervisor(s) throughout the working period. The candidate must follow the rules and regulations of NTNU as well as passive directions given by the Department of Energy and Process Engineering.

Risk assessment of the candidate's work shall be carried out according to the department's procedures. The risk assessment must be documented and included as part of the final report. Events related to the candidate's work adversely affecting the health, safety or security, must be documented and included as part of the final report. If the documentation on risk assessment represents a large number of pages, the full version is to be submitted electronically to the supervisor and an excerpt is included in the report.

Pursuant to "Regulations concerning the supplementary provisions to the technology study program/Master of Science" at NTNU §20, the Department reserves the permission to utilize all the results and data for teaching and research purposes as well as in future publications.

The final report is to be submitted digitally in DAIM. An executive summary of the thesis including title, student's name, supervisor's name, year, department name, and NTNU's logo and name, shall be submitted to the department as a separate pdf file. Based on an agreement with the supervisor, the final report and other material and documents may be given to the supervisor in digital format.

☐ Work to be done in lab (Water power lab, Fluids engineering lab, Thermal engineering lab)
☐ Field work

Department of Energy and Process Engineering, 15. January 2018

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Richard Wood
Academic Supervisor

Research Advisor: Moana Simas

Abstract

Gender inequality affects women all around the world in several aspects of the social and economic domain. Such as employment, education, participation in the governments, amongst others. The gender inequality in employment has been analyzed from a territorial perspective. However, there is no understanding of how global supply chains affect the genders participation in the labour force. This study focused on gender inequalities in employment. Exploring how gender equal were the total, export and import-supported employment in ten regions of the world in 1995 and 2011 using a Multi-Regional Input and Output analysis. The results show that in every region males had a higher participation in the labour force than females in 2011, and in four regions the female share did not increase from 1995 to 2011. Women's employment in the exports underperformed in eight of the regions their participation in the domestic-supported employment, this reflects the gender composition of the exporting sectors in these regions. Their participation in the imports suggests that trade well-mixes the gender inequality of the global supply chains. In most of the regions, females were integrated into the workforce in the low and medium-skill levels, while males are occupying most of the high-skilled jobs. The sectors that presented some of the highest participation of women were services and agriculture. These results reflected that female participation in employment is the outcome of the interaction of many aspects of the social and economic domain that shapes the behaviour of genders in each region. The regions presented different shades of gender inequality, thus there is no region that can call its labour force gender equal. The quantification of women's participation in the import, export and domestic supported-employment can shed light on the policy responses that each region needs to implement in order to empower women in their territory and beyond it.

Abstrakt

Kjønnsforskjell påvirker kvinner over hele verden i flere aspekter av det sosiale og økonomiske området. Slike som sysselsetting, utdanning, deltakelse i regjeringer, blant annet. Kjønnsforskjellen i sysselsetting er analysert fra et territorielt perspektiv. Det er imidlertid ingen forståelse for hvordan globale forsyningskjeder påvirker kjønnsdeltakelsen i arbeidskraften. Denne studien fokuserte på ulikheter i kjønn i arbeidslivet. Utforske hvordan kjønn var det totale, eksport- og importstøttede sysselsettingen i ti regioner i verden i 1995 og 2011 ved hjelp av en multiregional inngangs- og utgangsanalyse. Resultatene viser at i alle regioner hadde menn høyere deltakelse i arbeidskraft enn kvinner i 2011, og i fire regioner økte den kvinnelige andelen ikke fra 1995 til 2011. Kvinners sysselsetting i eksporten hadde underprestert i åtte av regionene deres deltakelse i Den innenlandsstøttede sysselsettingen gjenspeiler kjønnsammensetningen av eksportsektoren i disse regionene. Deres deltakelse i importen tyder på at handel brønner blander kjønnsforskjellene i de globale forsyningskjedene. I de fleste regioner ble kvinner integrert i arbeidsstyrken på lav og middels ferdighetsnivå, mens menn okkuperer de fleste av de dyktige jobbene. Sektorene som presenterte noen av kvinnens høyeste deltakelse, var tjenester og landbruk. Disse resultatene gjenspeiler at kvinnelig deltakelse i sysselsetting er resultatet av samspillet mellom mange aspekter av det sosiale og økonomiske domenet som former kjønnens oppførsel i hver region. Regionene presenterte ulike nyanser av kjønnsforskjell, og dermed er det ingen region som kan kalle sin arbeidskraft likestilling. Kvantifiseringen av kvinners deltakelse i import, eksport og innenlandsk støttet sysselsetting kan kaste lys over de politiske svarene som hver region trenger å gjennomføre for å styrke kvinnene på deres territorium og utover det.

Acknowledgements

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List of acronyms

CGE	Computable General Equilibrium
EU	European Union
FTE	Full-time Equivalent
ILO	International Labour Office
IO	Input and Output
MRIO	Multi-Regional Input and Output
OECD	Organisation for Economic Co-operation and Development
RoW	Rest of the World
SDGs	Sustainable Development Goals
TE	Total Employment

1. Introduction

Women are half of the world's population, and gender inequality affects them all around the globe in different manners. Worldwide women's participation in total employment was 27% lower than men's in 2017 worldwide (ILO, 2017), they still make sixty cents on every dollar a man makes (ILO, 2017), and child marriage affects annually 15 million girls under 18 years old (United Nations), reducing these women's education and participation in the workforce. These are some examples that show that discrimination based on gender persists in several aspects of society. Gender equality is considered central to achieving the Sustainable Development Goals (SDGs). Besides being a goal by itself, it is related, directly or indirectly, with many others such as poverty eradication, access to education or good health and well-being (UN Women, 2015). There have been significant improvements for global gender equality indicators in the past decades. The primary education gap has decreased and the participation of women in politics has increased. However, these improvements have been gradual and we are still far from full gender equality (UN Chronicle, 2007).

Gender inequality affects employment in several ways, with observed gaps in total participation in the working force, in wages and in skill level (ILO, 2017). Increasing the participation of women in the workforce has the potential to bring countries closer to fulfilling many SDGs. As it can increase household income, empower women to participate in the decision making processes in the community and increase the skill level of women in the workforce, amongst others (ILO, 2017; UN Chronicle, 2007). A comprehensive analysis linking gender inequalities in the workforce and global supply chains worldwide differentiating gaps in the import, export and domestic-supported employment has not been done yet. Thus countries have little understanding of how unequal their supply chains are. In this research project, it was investigated how global supply chains perform in terms of gender equality in employment at a regional and sector levels, paying special attention to sectors and skill-level gaps. A consumption and production-based approach was used to link employment in the upstream supply chain to final consumption. It was also analyzed how global value chains and international trade are linked to gender inequality in the workforce by looking at inequality embodied in exports and imports. Finally, the relationship between gender equality in the workforce with the gross domestic product (GDP) per capita was explored in different countries.

2. Literature review

In this section, some sociological and social theories of how gender is built and how inequalities are constructed are explored. The gender inequality in several aspects of the social domain was explained going in-depth into gender in employment. Some studies that have explored women in employment in global or regional supply chains were addressed.

2.1. Theories of gender and inequality

The early discussion about gender linked it absolutely and only to sex, where the division between men and women was attributed to biologically characteristics (Bieri et al., 1958; Horner, 1968; Maccoby et al., 1966). Other studies address gender as a role. In some cases, these studies were focusing on the changing role of women due to their increasing participation in labour, analyzing how this affected the household (Myrdal et al., 1968; Talcott et al., 1955). Other theories such as "doing gender" argue that gender is built on social interaction, by constantly creating gender (West et al., 1987). These theories can be divided into the ones that claim that gender is a biological construct and the ones that claim it is social. Whether it is biological or social, it is a distinction among people that has shaped society and has generated differences between men and women. Placing women in an inferior position with respect to men (de Beauvoir, 1949; Ridgeway, 2011).

How is gender built?

The theories that support gender as a social construct mentioned that what is expected from men and women has changed over time. Therefore, gender is a dynamic concept in time and in people's lives (Davis et al., 2009a). The "doing gender" theory proposes that gender is created by differentiating between women and men (West et al., 1987). These differences are based on a common cultural understanding of the systems of categorization between the individuals that are interacting, creating stereotypes (Carter, 2014; Davis et al., 2009b; Ridgeway, 2011). The understanding of gender is different and depends on several social and demographic characteristics of the individuals, such as religion, income level, country, among others (Davis et al., 2009a). In this process of creating gender differences, inequalities are built and these will have an impact on people lives (Ridgeway, 2011).

Gender and inequality

Gender is a social category such as ethnicity and social class. Inequality is rooted in the differences they generate (Ridgeway, 2011). The dimensions of inequality and its relation were explained by Max Weber (1946). These are access to valuable resources, power, and status. The access to resources and power generates dependence between individuals. Where the one that has access to the resources has a dominant or advantaged position over the one that has no access. This type of inequality is known as *position inequality*, where the difference does not lie in the individual itself but in the position it has in the society (Jackson, 1998). Depending on the situation, the valuable resources can be food, money, information, or it can also be rights. In the case of gender, there are several studies that have correlated the economic dependency of women to men with gender inequality (Baxter et al., 1995; Carter, 2014). The last dimension of inequality, status, is created due to social and cultural beliefs that benefit individuals, and is known as *status inequality* (Jackson, 1998). Since this is dependent on the culture, the status of men and women in not homogenous over the world and can vary within countries. These two types of inequality show that the differences between women and men are dependent on several factors and not all individuals experience inequality in the same way.

Gender inequality holds a relation with both types of inequality. Since gender inequality comes from cultural beliefs that men are superior to women, it is a *status inequality.* Due to stereotypes some individuals are placed in a more advantaged position than others, turning into a position inequality (Jackson, 1998). Some sociological theories sustain that in order to keep the *status inequality*, the *position inequality* also needs to exist, and if there is no *position inequality* then eventually the *status inequality* will disappear (Jackson, 1998; Tilly, 1998). The status and position of gender are present in the political and economic systems, and in the household. Therefore inequality is related with the difference in the positions of the genders and how deep is the gender inequality rooted in this position (Jackson, 1998). Changes in the political and economic systems have empowered women in some regions, leading them to participate more in the workforce and in politics. However, the process of the transformation of the inequalities in the household has been slower (Jackson, 1998). Gender inequality is present in several aspects of society and, in order to abolish it, three main domains need to become egalitarian: the legal and political domains and the opportunities for individuals. The legal equality would mean that women and men are recognized and treated as equal (Jackson, 1998). The political would imply that both genders have the same

access to political institutions and have the same rights to be involved in political process. The equality in the opportunities for individuals is that both genders have the same access to resources. When reaching equality in these three aspects, individuals would be seen as equal despite their gender, ethnicity or social class. The process of building gender on everyday basis is key in understanding how the meaning of being a woman or a man can be changed in order to build a more egalitarian society. The gender stereotypes reinforce gender inequality and affect women all around the world in different ways.

Gender inequality in the social domain

There are some aspects of the social domain that have been marked by inequality and identified as key in achieving equality. These are the recognition of women's rights, the division of the household tasks, education, and employment.

Laws, rights and regulations

The political and economic systems need to change in order to give equal opportunities for all individuals. Women have come a long way in order to be recognized as equal to men. They have acquired rights to vote, own proprieties, participate in any study program, among others. However, this is not the case for all women around the world. In 49 countries, there are still no laws against domestic violence, and 37 countries exempt rape perpetrators from prosecution if they are married to the victim or are willing to marry her (UN Women, 2017). In terms of land ownership, in some countries land can only be registered under a man's name which can have a negative impact in the economic security of women, especially for those living in rural areas (United Nations, 2018). This can be especially detrimental because women represented 43% of the total agricultural workforce worldwide in 2011 (Raney et al., 2011). Regarding laws that relate with the working opportunities and conditions for women, 104 countries have laws preventing women to be involved in a specific job, 59 have no sexual harassment laws, and in 18, husbands can prevent women from working (World Bank, 2018). The laws that forbid the participation of women in certain jobs are located all over the world. The reasons to restrict women participation being either because the jobs are morally inappropriate or because they represent a risk for women's health (World Bank, 2018). There are also gender gaps in the access to financial services. In some countries, only men can have access to bank accounts, or women can only access them with a written permit of the husband (World Bank, 2018). These are just some examples that show that women are still not equal to men

worldwide in terms of the laws, rights and regulations. Therefore, they lack the same opportunities and are not free to choose or act entirely. Since these laws, rights and regulations dictate how the system works, they generate limitations in the opportunities available for women and also shape other aspects, such as households.

The division of the household tasks

In the traditional family, mother and father fulfil different roles. While the mother takes care of the household and of the children, the father is the economic provider (Carter, 2014). This division responded to an exchange of the wife's unpaid labour for a part of the husband salary (Brines, 1994). However, the dynamics of the household have changed over time due to the female integration to the labour force (Ridgeway, 2011). It is a positive aspect that the share of women that participate in the workforce is increasing over time because these women will be more financially independent and, thus, more freedom to choose. Nonetheless, this has generated a new form of inequality in the household where women are expected to keep taking care of the household and of the children, increasing their time of unpaid work (OECD, 2018; Sayer, 2005). This unequal division of the housework responds to gender stereotypes where women have the main responsibility to take care of the household and of the well-being of the children, and men are the *breadwinner* or the provider (Ridgeway, 2011). Although there have been some changes in the dynamics of the family, and the household tasks are increasingly being shared between partners, there is still a long way to go, and this would require a change in gender stereotypes. Some countries have made changes in the division of the household work. For example in the United States men have increased the average time they spend in housework, although women continue to spend more time in these tasks (Hook, 2010). The change in the household has to be accompanied by changes in the political and economic systems. That must recognize women and man as equally responsible of the child care, for example by giving the same rights of paternal and maternal leave (Hook, 2010; Sayer, 2005). Another aspect of the social domain where women have come a long way in terms of gender equality is in the education system, where women have had to fight to be included in different fields that do not necessarily match with the traditional concept of women.

Education

Education has been identified as a cornerstone for gender equality, and over the last years there has been progress in this matter. Nonetheless, some of the gaps still persist. There are three aspects of education that need to be considered: access and the level an individual reaches in the education system, and the quality of this process that should guarantee equal opportunities for all (Subrahmanian, 2005). Regarding access to education, in 2013 there were 17 million girls that were never expected to enter primary school, and there were 65 million out-of-school. This number is also high for boys, with 56 million (UNESCO, 2013). This has a repercussion in the illiteracy rate of women, where two thirds out of 774 million of illiterate people in the world are women (UNESCO, 2017a). The level of education that females reach is lower than men. The fact that the school drop rate are higher for girls than for boys results in limited skills when entering the labour force (UNESCO, 2013). The quality of education can be seen in the different opportunities the genders have. This is a manifestation of gender roles, where the percentage of women in sciences or engineer programs is low compared to men (UNESCO, 2017b). However, women's participation in education depends on the region under analysis. In the case of the EU, women present higher participation than men in tertiary studies: in the EU-28, 54.1% of the people involved in tertiary education were women (Eurostat, 2017). Nonetheless in other regions, women have the lowest participation in school, as is the case for Nigeria where 6.3 millions of girls are out-of-school.The different gender inequalities in education will have a repercussion in the labour market because the skill level of the workforce can be defined through education.

These are key aspects of the social domain where gender inequality is present. However, there are many others representations of gender inequality is present and affects women, such as the participation of women in sports, movies or the music industry. Employment is a key aspect of the social domain and it has been recognized as a cornerstone in achieving gender equality. The rest of the project will be focused on the participation of women in employment.

2.2.The gender gap in employment

The International Labour Office (ILO) reported that, in 2017, the participation of men in the workforce was 76% worldwide, while the participation of women was only 49% - a gender participation gap of 27%. The participation is calculated as the fraction of the population that is in the working age and that is actively involved in it. This gap varies depending on the country. In emerging countries, this gap was of 30.6%, against 16.2% in developed countries and 12.3% in developing countries (ILO, 2017). When comparing the participation of women in the labour force with the GDP per capita, developing and developed countries show a higher participation of women in the workforce compared with emerging countries. Showing the so-called "feminization U" as it can be seen in Figure 1 (Goldin, 1995; ILO, 2017). The participation of women in developing countries is higher due to economic need. However, the increase of the GDP per capita does not guarantee a higher participation as is the case for emerging countries. This suggests that female participation is associated with factors that go beyond economic growth (ILO, 2017). This inequality is also present in others aspects of employment such as wages, type of employment, time of unpaid work, occupations, or sector of employment (ILO, 2017). The wage gap is measured comparing the average wage of women with the average wage of men with similar positions within the same country or at a general level in the economy. It ranges from 0.7% between individuals with a low wage and can reach up to 43% when the individuals have a high wage (ILO, 2016).
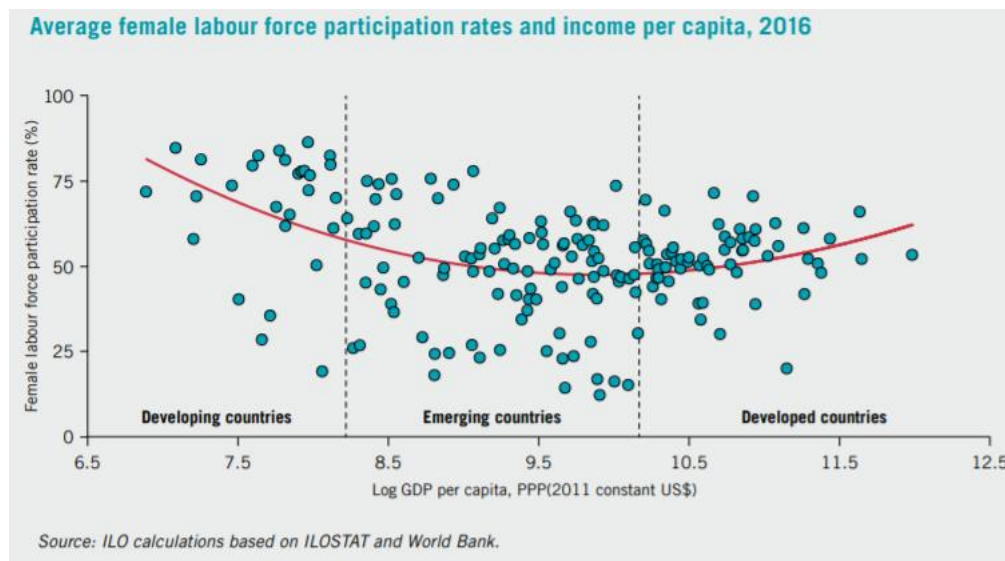
Figure 1- Average female labour force participation and GDP per capita, 2016 (ILO, 2017)

There are individual fundamental characteristics that drive gender inequality in the labour market, such as personal preferences, socioeconomic constraints and gender roles. The personal preferences is how an individual perceives herself and if she is free to choose and act. The socioeconomic restraints are circumstances that the country the individual lives in has regarding policy, macroeconomics, poverty and infrastructure. And the gender roles, which are social constructs that are established by the society and the community the women live in. At the same time, these individual drivers relate to the life circumstances that are the age, gender, ethnicity, citizenship, sexual orientation, possible disabilities, among others. These drivers are influenced and affected by the social norms of the society the individual lives in, the education and the already existing inequality in the labour market (ILO, 2017).

The implications that gender inequality has in employment are related to the well-being of individuals and the economic growth of counties. There is a potential to increase the global labour force by 6.2% if gender gaps are reduced (keeping unemployment and male employment constant), mostly in emerging countries whose economy is expected to grow (ILO, 2017). Benefits of empowering women through paid work will enable them to exercise free choice, improve the image they have of themselves and question cultural and social practices that root inequality. In Bangladesh, allowing women to have access to micro-credit has had a positive impact in their self-perception and they have become more active in the decision-making process of the household (Kabeer, 2001). Similar results have been observed in Latin American and African countries where the non-agricultural export industry has generated labour for women (Kabeer, 2005).

Worldwide, the share of exports in the global GDP was 28.5% in 2016 (World Bank, 2017), accounting for almost one-third of the global GDP. Therefore, international trade represents a source of employment for women and men around the globe. The World Bank forecasts global economic growth in 2018. Triggered due to an increase in the export of commodities from emerging markets and developing economies and a boost in investment in developed economies. As a consequence, export-supported employment is also expected to rise. Through international trade, not just goods or services are exchanged, but there is also a virtual transfer of employment, wages, capital and resources. One tool to explore the virtual exchange of employment is the Trade in Employment Database (OECD, 2016).

Employment in trade

The Trade in Employment Database was built to analyze how trade has contributed to the generation of employment in different countries. The database covers 61 countries and the period from 1995 to 2011. It uses a Multi-Regional Input-Output (MRIO) analysis to calculate employment generated in the supply chain of exported products. The MRIO methodology allows for exploring two approaches for allocating what drives employment. The producer approach investigates the generation of employment within the territorial boundaries of the country. The consumer approach, on the other hand, quantifies the employment generated in other countries embodied in imports for domestic consumption (Wilting et al., 2009). The Trade in Employment Database associates exports to the generation of approximately 30% to 40% of the total employment in European countries' in the production of the exports in 2011. The share varies on how export-oriented is the economy of the country; however, even the country with the smallest share employed 11 million people in 2011. All these figures demonstrate that international trade generates employment all around the world and therefore constitutes an important source of income for households. As trade has generated employment it has also contribute to the economic growth of regions and countries that have an open market.

Policies targeting gender equality in employment

In order to target gender equality in employment two things need to happen in the political system. One is the implementation of new laws and regulations to tackle emerging ways of gender inequality, and the change of policies that are currently generating inequality. Such as those that restrict the extra-time women can work or the ban in working night shifts (van der Meulen, 1999). The maternal leave is a policy that can be detrimental for women employment because this can be seen as a tax or as an additional cost of hiring women in a reproductive age (van der Meulen, 1999). In some countries, the maternal leave is shared by the parents by law or there is an economic benefit when doing so. For example, in Sweden, ninety days of the 480 days of paid parental leave are reserved for each parent and, in Norway, each parent has to have at least 70 days of the 343 days (World Bank, 2018).

There are several policy responses that can be implemented to narrow inequalities. They should be tailored to the legal framework and the social particularities of each country. The political responses to tackle gender gaps can lead to a change in the self-perception of women. Here, the

basis in which what is socially accepted and expected from women would be questioned and changed towards an understanding that allows women to be empowered. Other policy responses consist in addressing the socio-economic constraints, dealing with work-family balance or implementing new macroeconomic policies. Increasing the equality in the labour market conditions is another option, guaranteeing that men and women have equal payment for equal jobs and not allowing gender discrimination of any kind (ILO, 2017). With this, gender gaps can be dealt with and society can continue its shift towards equality. The European Union implemented a Strategic Engagement for Gender Equality 2016-2020 program in order to address the gender gaps, and target equal payment for equal job and females participation in the decision making processes, to mention some. The policy response of Iceland towards their gender gaps was to implement a law that enforced equal payment for equal job, becoming the only country where it is illegal to pay higher salaries to men. Other countries are now banning child marriage or are implementing education programs that aim to change this tradition, these shows that each country is standing in a different position in the race to reach gender equality. It is clear that policies can challenge the way females and males participate in the labour force. To build strong and relevant policies the relation between economic growth and the gender composition of the labour force has been explored.

Relation of gender equality in employment and economic growth, and its benefits

The relation between gender equality in employment and economic growth has been studied to see how they influence and affect each other. Gender equality can affect economic growth and low women participation in employment has a significant negative effect (Busse et al., 2006; Esteve-Volart, 2004; Klasen, 1999; Klasen et al., 2009; Seguino, 2000). The inclusion of women in the workforce increases the number of individuals available to work, making it more diverse, competitive and innovative (Kabeer et al., 2013; Ward et al., 2010).

Export-oriented industries tend to have a positive impact on women participation in employment (Bussman, 2009; Kapsos, 2005). For example, in developing countries women have a higher participation in the low-skilled labour in the exports industry (Bussman, 2009). In some developing regions such as the Middle East and North Africa, an increase in the export-oriented industries does not impact positively women employment, as in other regions, suggesting women have to

overcome social and cultural barriers in order to participate in the labour workforce (Klasen et al., 2009).

The wage gap is a pressing matter when talking about gender inequality in employment. Studies that intend to link it with economic growth are not conclusive. Some indicate that wage inequality is positive for economic growth. They argued that export-oriented countries with lower wages for women make investment more attractive due to the possibility of lower costs and therefore more profitability (Busse et al., 2006; Seguino, 2000). However, other studies have shown that the wage gap does not increase economic growth but actually is detrimental (Schober et al., 2011). The main difference between these studies lies in the dataset used to measure the gender wage gap. The studies that found that there is a positive relation used an aggregated dataset, while the others use international comparable datasets of wage gap (Schober et al., 2011). To explore the relation between economic growth and gender inequality these studies have used a cross-country data and panel growth regression extended to include employment variables over different periods. The studies that link economic growth and women participation in the workforce are built upon macroeconomic models. These models include several control variables related to growth measures and women participation in employment, such as women to men ratio in employment, women to men ratio in managerial positions, among others. In the case of the wage gap, they mainly use the earning difference between men and women. One of the uncertainties associated with this type of studies is that in some cases the correlation between the two variables might be strong and significant, but might not be causal. This can be due to the way the model was built and its system boundaries (Kabeer et al., 2013). Other limitation can be when there is causality between two variables, but it is not clear which one is causal and which one is consequential (Kabeer et al., 2013).

Methodologies to estimate social inequalities in the supply chains

Some methodologies explore the social inequalities in the supply chains. They were developed with different methodological frameworks and purposes. In this section, some of these are explained and examples that address gender inequality in employment are also mentioned.

Input and Output/Multi-Regional Input and Output

Several studies have modelled how, through trade, there is a virtual exchange of social impacts. Amongst these studies are the bad labour footprint (Simas et. al, 2014), the inequality footprint

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(Alsamawi et al., 2014b) and the employment footprint (Alsamawi et al.,2014a) . The results of the bad labour footprint showed that developed regions have a higher impact from the consumer perspective than from the producer perspective. In social aspects such as child labour, forced labour, vulnerable employment, among others (Simas et al., 2014). The inequality footprint results also indicate that developed regions present higher impacts from a consumer perspective. The indicator used to measure inequality from a producer perspective was the Gini index. This indicator compares the Lorenz curve –distribution of the income in the population – with a perfect distribution of the income (Alsamawi et al., 2014b). The employment footprint concluded that there is a flow of labour from developing countries to developed. However, wages flowed between developed regions. This points out to an unequal remuneration worldwide and to the concentration of labour intensive and low skill industries in developing regions (Alsamawi et al., 2014b). These studies provided a holistic understanding of the impacts a country is causing. The consumer perspective allows these regions, countries or people, to assume their share responsibility for impacts that are outside their territorial boundaries but still concern them because they are embodied in imported goods and services that they consumed (Xiao et al., 2017b).

The extent to which international trade is gender neutral has been explored in previous MRIO studies. Women's employment share in Europe was 46% in 2011. However, their participation in the exports industry to the rest of the world was only 38% (Rueda-Cantuche et al., 2017). The employment of women in exports in this region has increased at a slower pace than their participation in the total employment. The bad labour footprint also comprehendeds gender equality. The indicator that was used to refer to gender inequality was the share of women in the workforce as a share of total employment. Women employment is driven mainly by services, food and manufacturing products at a global level, while the construction sector is the one that presents the lowest female participation. The region that presents the poorest performance regarding women participation is in the Middle East (Simas et al., 2014). The fact that informal labour is not included in the database is one of the limitations of both studies. In other study that was focused in Germany, where women accounted for 24.3% of the total workforce in the exports industry in 2000. This can be due to sectoral gender segregation because men have a higher participation in producing capital goods and exports while women have a higher participation in services (Schaffer, 2008). In Turkey, women employment is mainly generated in the agriculture, wearing apparel and textile sector, the latter two account for a high share of the exports of the country. When simulating different policy

options, the inter-sectoral trade can affect the generation of women employment in the overall economy. A policy focusing on sectors where the female employment share is higher will have a positive impact on the generation of female employment in other sectors too (Gunluk-Senesen et al., 2011).

Xiao et al. (2017b) propose a novel approach linking territorial based indicators available in the Social Hotspot Database (SHDB) to an MRIO model to generate the producer social risk footprint. It measures the risk of virtually importing social impacts from certain countries. The value of this footprint ranges between zero and one - where zero corresponds to no social risk and one to the highest social risk. They associate indicators from the SHDB with the fifth SDG that refers to gender equality. The indicators that they use to measure gender equality refers to aspects such as acceptance of women as immigrants, representation in the workforce of different sectors or the results of the Gender Inequality Index. Therefore the results cover other aspects of gender equality besides employment. The results show that developing countries have a producer social risk footprint close to one while developed countries are close to zero. To be able to provide a single value for the fifth SDG they aggregate the different indicators and weighted them. This allows to provide a single result, but it can hinder urgent matters in the regions.

Social footprints face challenges linked with the social indicator and the economic databases used for their calculations. Some indicators might not be easily quantifiable because they measure intangible phenomena's such as corruption (Xiao et al., 2017). Others measure illegal activities, where the process of collecting the data is associated with high uncertainties and underreporting (Tukker et al., 2014). The level of aggregation in the MRIO databases can hinder hotspots in the supply chain, tracking a specific product, sector or country is not possible or has low levels of reliability. When working with MRIO dataset and social indicators, they can differ in the levels of aggregation or one might include the informal sector of the economy while the other does not, both situations add uncertainty to the results (Tukker et al., 2014).

Hybrid Models

The introduction of new products or technologies might affect gender equality in employment. To evaluate this some have used hybrid Social Life Cycle Assessments (S-LCA), where they combine S-LCA and IO to be able to study impacts through the whole supply chain. One of such studies evaluated how different biorefinery systems in Brazil would affect social conditions such as job

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creation, occupational accidents, and women participation. Three scenarios were evaluated, and the results showed a positive impact in women participation with the scenarios that implied the use of modern technology and less manual work, due to the increase of women participation in other sectors, such as trade or services (Souza et al., 2016). This study modelled possible future outcomes and combined two methodologies at a regional level. Thus a detailed regional inventory of social impacts is needed in order to model the changes in the economic system. Other that focused on the global social impacts of Finnish wood production used a hybrid S-LCA. It aimed to identify the social hot spots when shifting from a fossil fuel economy to a bioeconomy system. The aspects with the highest social risk, according to the model, were health impacts, work safety and gender equality (Mattila et al., 2018). These studies evaluate the impacts in the whole economy due to changes in one sector, and required detailed and specific inventories.

Computable General Equilibrium Models

The Computable General Equilibrium (CGE) Model simulates changes in one system when modifying another one. For example, the changes in the income distribution and poverty of a region due to modifications in the policies or in the economic system. It can also be used to evaluate impacts of these changes in determined social groups or in genders. It can consider the macroeconomic and political conditions of the region, including fiscal, monetary, trade and labour market policies. The interactions of the sectors and possible indirect and direct impacts that can modify the situation in the country are also included (Lofgren et al., 2002). This model was used to analyze the impacts of trade liberalization on employment and in the time distribution in the household in South Africa. Two characteristics of the system were modified, the import tariffs were eliminated and the indirect taxes were increased. As a result, there was a positive economic impact in the exporting sectors while protected sectors were influenced in a negative way. This decreased women's participation in the labour force because they were concentrated in protected sectors. While men participate mostly in the exporting sectors thus they were affected positivity. This altered the time distribution of men and women in the household, women would spend more time in household tasks, decreasing their leisure time (Fofana et al., 2005). Another study from Mozambique modelled the impacts trade liberalization could have in the wages of women and men. The results showed that women's employment is sensitive to changes in the agricultural sector, and that trade liberalization has little effects on wages of women and men that are skilled workers.

These results reflect the fact that in this country women are considerably less educated than men, and they represented a considerable share of unskilled workers in the agricultural sector. The political pathway for this region indicated to concentrate efforts in upgrading the skill level of women through educational programs (Arndt et al., 2004). The studies conducted using CGE are specific for a region and the results reflect its macroeconomic and socio-politic conditions. It is useful to identified how the system can react to the introduction of new law and regulations. However, it does not shows how do countries perform from a consumption perspective, it is focused on the territorial approach and provides suggestions about how to deal with gender inequality from this perspective.

These are some of the methods that have linked supply chains and social impacts. None of them has modelled the impacts on gender equality in the workforce from a producer and consumer perspective at a global level, in this gap the objectives of this project were based.

2.3. Objectives

Social and environmental impacts are embodied in the goods and services that are traded between regions. These virtual flows affect the performance of countries from a consumer and producer perspective. Gender inequality in the workforce is a social impact closely linked to trade. Understanding how trade affects the gender inequality in the workforce of a region can indicate appropriate policy responses to implement. Therefore, in this study the gender inequality of the workforce was modelled from both perspectives, paying special attention to trade flows.

I aim to answer three questions:

- Are the global supply chains gender equal regarding the share of women and men in the workforce and their skill-level?
- Are there any global supply chains characterized by gender gaps? If yes, which ones?
- As countries increase their GDP do they also become more gender equal?

The following project is divided into four more sections. In section 3 the method and data sources used to model gender equality in the labour force were explained. In section 4 the results are presented, followed by a discussion in section 5 and, finally, in section 6 the conclusions are draw.

3.   Method

In this project, a MRIO analysis was used to see how gender gaps in employment are embodied in the global network of trade. With this method the impacts caused from a producer and consumer perspective were identified. In this section, the Input-Output theory and then the extended MRIO methodology were outlined. The data sources that were employed are described, as the measurements used to identify gender inequality in global supply chains.

3.1. Theory

The MRIO is based on the Input and Output (IO) theory proposed by the economist Wassily Leontief in the late 1930s. He was born in Russia and emigrated to the United States where he formulated the theory with which he won the Novel Memorial Prize in Economic Sciences. He developed a method that modelled the economic flows in a region based on the Supply and Use tables (SUT). These tables are part of the System of National Accounts (Eurostat, 2008), upon them the IO tables and theory is constructed.

Input-Output theory

The IO theory classifies the economic activities of a region in sectors or industries. They can be for example, manufacturing, agriculture, or trade, or in a more detailed level, wheat or bread products. These tables contain the flows of products and services between sectors, in monetary units. Sectors can be providing other sectors (producer sector) or can be consuming from others (consumer sector). These tables are known as total flow matrices ($\mathbf{Z}$), they contain observed data from a specific region during an established period of time. $\mathbf{Z}$ is shown in Figure 2, the producer sectors are in the rows and the consumer in the columns. One element z_{ij} represents the total sales (monetary flow) from the producer sector i to the consumer sector j. For example, one element of $\mathbf{Z}$ could represent the total value of the sales of the chemical to the agriculture industry in a determined year. The dimensions of the matrix are NxN, where N stands for all the sectors that the economy has (Miller et al., 2009).

Figure 2-Total flow (**Z**) matrix.
Notes: The index i corresponds to the producer sectors and the index j to the consumer sectors.
The dimensions are NxN, N corresponds to the industries in the economy of the region.

In addition to the requirements sectors have from each other, there are other demands coming from the government, households, capital sectors and stocks. They are known as final demand and are aggregated in a vector(**y**) (Nx1- dimensions). These two elements constitute the total output (**x**) of an economy as follows (Miller et al., 2009):

$$\mathbf{x} = \mathbf{Zi} + \mathbf{y} \qquad (1)$$

Here the **i** vector is a summation vector composed by ones that allow the conversion of **Z** into a vector. After **Z** is multiplied with **i**, z_1 would represent the total value of the output of sector 1 in a determined region. **Z** and **x** are used to find the Leontief matrix that is later used in the MRIO models. For this the inter-industry matrix (NxN-dimensions) needs to be calculated as follows (Miller et al., 2009):

$$\mathbf{A} = \mathbf{Z}\hat{\mathbf{x}}^{-1} \qquad (2)$$

One element of **A** is, therefore:

$$a_{ij} = \frac{z_{ij}}{x_j} \qquad (3)$$

The elements of **A,** a_{ij} are coefficients that represents the required inputs the industry j has from the industry i per unit output. For example, if the value of the total output of the agriculture sector is 40.000 nok (x_2) and the monetary flow of the chemical industry to the agriculture corresponded to 10000 nok (z_{12}) then the coefficient a_{12} is 0.25. This can be interpreted as the coefficient input

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from the chemical industry required per nok output of the agriculture sector. The total output of an economy can be calculated using $\mathbf{A}$ as follows (Miller et al., 2009):

$$\mathbf{x} = \mathbf{Ax} + \mathbf{y} \qquad (4)$$

From equation 4, the following can be derived:

$$\mathbf{x} - \mathbf{Ax} = \mathbf{y} \rightarrow (\mathbf{I} - \mathbf{A})\mathbf{x} = \mathbf{y} \rightarrow \mathbf{x} = (\mathbf{I} - \mathbf{A})^{-1}\mathbf{y} \qquad (5)$$

In equation 5, $\mathbf{I}$ corresponds to the identity matrix with the same dimensions as $\mathbf{A}$ the expression. $(\mathbf{I} - \mathbf{A})^{-1}$ equals the Leontief matrix ($\mathbf{L}$) that contains the direct and indirect requirements per unit output of final demand of each of the sectors (NxN-dimensions), therefore (Miller et al., 2009):

$$\mathbf{x} = \mathbf{Ly} \qquad (6)$$

Figure 3 shows the $\mathbf{A}$ matrix of one region. It contains the domestic inter-industry requirements. Here the element a_{11} refers to the inputs that sector one requires from itself per unit output. This analysis can be extended to include the flows between several regions or countries, representing trade flows.

A

	Sector 1	Sector 2	Sector 3	...	Sn
Sector 1	a_{11}				a_{1n}
Sector 2					
Sector 3					
...					
Sn	a_{n1}				a_{nn}

NxN

Figure 3 – Inter-industry matrix (**A**).
Note: i corresponds to the producer sectors and j to the consumer sectors. An element of this matrix **A**, a_{ij} corresponds to the input from sector i to the sector j per unit output. The dimensions are NxN, N corresponds to the industries in the economy of the region.

Multi-Regional IO

The Multi-Regional IO is used to analyze how regions exchange goods and services from different sectors, it is the only method that studies global supply chains. The matrix structure is shown in Figure 4 where *r* regions are modelled. The **A** matrix of a MRIO model is the compilation of the **A** matrices of the different regions, including both the domestic and the inter-regional matrices. The new dimensions of the matrix will be named *P* that corresponds to the number of regions times the number of sectors. The matrices that are located in the diagonal correspond to the domestic matrices, while the others represent the inter-regional trade. The **Y** matrix will contain the domestic final demand of every region and the inter-regional final demand per sector, thus the dimensions are *Pxr*. In the **Y** matrix the diagonal corresponds to the final demand that each region produces for domestic consumption, and the rest corresponds to the inter-regional final demands. By implementing the equation 2 the total output of each region can be calculated (Miller et al., 2009). Trade flows can be identified from these calculations, however, to include embodied flows of labour to identify gender gaps, the model has to be extended to account for them.
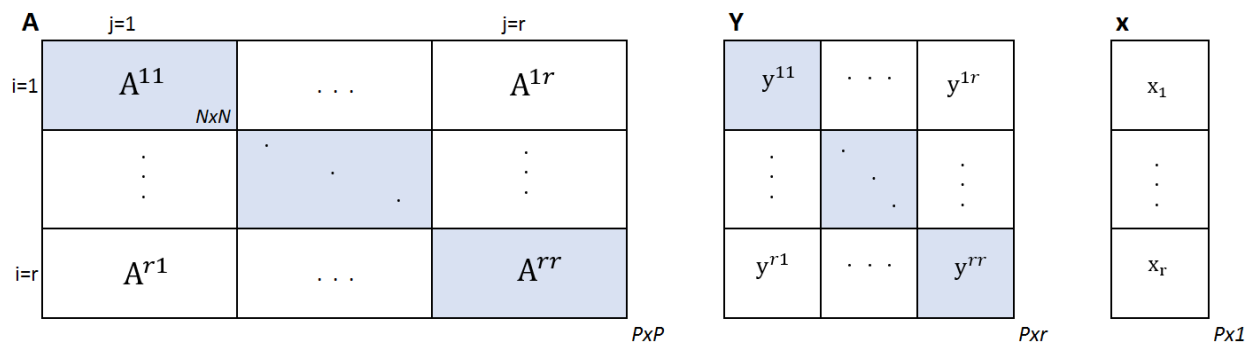
Figure 4- The inter-industry (**A**) matrix, the final demand matrix (**Y**) and the total output vector (**x**).

Note: Each of them is divided into regions (*r*-number of regions), and each region has sector detail. Thus, the new dimensions of **A** are *PxP*, of **Y** *Pxr* and of **x** *Px1*. P corresponds to the number of regions times the sectors in the economy. The **A** and **Y** matrices have the domestic flows in the diagonal and the inter-regional flows off-diagonal. The index *i* corresponds to the producer region and *j* to the consumer.

Extended MRIO

In order to include social or environmental impacts, satellite accounts have to be incorporated in the model. The satellite accounts are vectors that contain stressors caused at a territorial level, for example, employment per industry in each region. The vector **f** is the satellite account that contains

the direct stressors it has dimensions *1*x*P*. From **f**, the intensity vector is calculated (Alsamawi et al., 2017a):

$$\mathbf{s} = \mathbf{f\hat{x}} \qquad (7)$$

Since $\mathbf{\hat{x}}$ has *P*x*P* dimensions, **s** will have *1*x*P* dimensions. Then one element of this vector will account for the intensity coefficient per unit output of an industry in a determined region. When the satellite account is integrated into the MRIO, impacts from a producer and footprint perspective can be calculated. In the past MRIO analysis has been used to model environmental footprints such as carbon, water, land and materials (Tukker et al., 2014), or net primary production (Haberl et al., 2007). It has also been used to model social footprints as mentioned before such as bad labour (Simas et al., 2014), employment (Alsamawi et al., 2014a) or inequality(Alsamawi et al., 2014b) .

Producer and footprint approach

The producer approach accounts for emissions that are caused within the territory of the country, therefore it includes stressors caused by the production of goods and services that are exported and consumed domestically. The footprint approach includes the emissions that are generated to satisfy final demand in one region, thus it includes imports to the region and domestic production that is consumed within the territory. Both approaches allow a complementary understanding of the emissions and can shed light on policy responses to be implemented to control and decrease them. Emissions caused from a territorial perspective can be found in the vector **f**, and the consumer perspective (**q**) can be calculated as follows:

$$\mathbf{q} = \mathbf{s\,L\hat{y}} \qquad (8)$$

The footprint (**q**) in this case will have dimensions of *1xP,* however, the dimensions of **q** can vary allowing different levels of aggregation. In order to obtain a detailed set of data that allowed us to track the sectors and regions where emissions are produced and consumed these steps were followed. The **Y** matrix is re-organized as follows in Figure 5:

$$Y\_total = \begin{bmatrix} \hat{y}^{11} & \cdots & \hat{y}^{1r} \\ \vdots & \ddots & \vdots \\ \hat{y}^{r1} & \cdots & \hat{y}^{rr} \end{bmatrix}$$

PxP

Figure 5- Final demand (**Y**) matrix.

Note: The change in the matrix **Y** from Figure 4 consists in the diagonalization of each sub-element in the matrix. The dimensions are now *PxP*.

In the **Y_total** for example the $\hat{y}^{11}$ is the diagonalization of the final demand that region 1 has upon itself or $\hat{y}^{1r}$ is the diagonalization of the imports to final demand that the region r has from the region 1. Equation 5 can be applied with the new **Y_total**:

$$\mathbf{Q} = \hat{s}\, \mathbf{L}\, \mathbf{Y\_total} \qquad (9)$$

With this the total impacts matrix (**Q**) is calculated. The dimensions of **Q** are *PxP*. The **Q** matrix can be visualized as a sub-set of matrices as in Figure 6:

Figure 6- Total impacts matrix (**Q**)

Note: The index *i* corresponds to the producer region and *j* to the consumer. The impacts that are domestically produced and embodied in the domestic consumption are located in the diagonal. While the embodied impacts produced outside of the region where the goods and services are consumes are located off-diagonal.

In the total impacts matrix (**Q**) i accounts for the producer region (rows) and j for the consumer regions (columns). The sub-matrix Q^{11} will account for the emissions caused in the region 1 while producing good and services that were consumed domestically. While the sub-matrix Q^{1r} accounts for emissions caused in region 1 producing goods and services consumed in region r. The stressors from both perspectives were calculated with these equations (Miller et al., 2009):

$$Producer\ approach_i = \sum_{j=1}^{r} Q^{ij} \quad (10)$$

$$Consumer\ approach_j = \sum_{i=1}^{r} Q^{ij} \quad (11)$$

One graphic way of visualizing the consumer and producer approach of region 1 is:
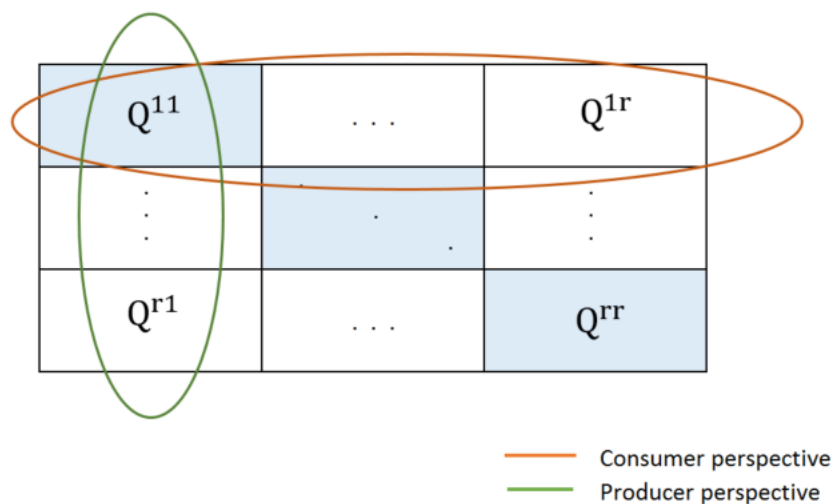
Figure 7- Consumer and producer perspective visualization in the total impacts matrix (**Q**). Note: The producer perspective includes the embodied impacts caused domestically during the production of goods and services that are consumed in the same region and that are exported. The consumer perspective include the embodied impacts caused in the region and outside during the production of goods and services that are consumed domestically.

With the total impacts matrix, the trade and domestic flows can be identified. This was used to model the gender gap in the labour force embodied in the goods and services that are traded globally.

3.2. Data sources

The trade flows between regions and the stressor vectors were obtained from EXIOBASEv3 (Stadler et al., 2018). It is a global database that is based on Supply and Use Tables that are later harmonized using other datasets. With this, the economic transactions between regions and countries can be clearly followed. It includes 44 countries and five Rest of the World (RoW) regions, it also allows to track the flows per industries (163) or products (200). This version of EXIOBASE has a time series that goes from 1995 to 2011. It has already incorporated some environmental and social stressor vectors as: energy, emissions, water, material, land, waste, and labour vectors. These can be used to track impacts in the supply chain.

For the purpose of this project, two base years were modelled in order to see the change in time of gender inequality in employment, 1995 and 2011. These two years were selected because they are the starting and ending periods available in the EXIOBASEv3. One of the purposes of this project was to explore the gender inequality in all sectors of the economy. For this it was used the industry resolution. The social indicators that model the share of women and men in employment are available in the same database. Six indicators were used: low-skilled men, low-skilled women, medium-skill men, medium-skill women, high-skill men and high-skill women. These stressor vectors are based on datasets from the International Labour Office, the Organisation for Economic Co-operation and Development and Eurostat (Stadler et al., 2018). The skill level is classified according to some characteristics of the job that define the complexity of the tasks to be performed. In some cases is classified according to the educational attainment required. Following a short description of the jobs or occupations classified in each level (ILO, 2012):

- Low-skill level: Occupations and jobs that involved manual and repetitive tasks, basic math or reading skills might be required.

- Medium skill-level: Occupations and jobs that required reading and math skills, also interpersonal communication skills might be required. Jobs that require the operation of machinery and electronic equipment are included here.

- High skill-level: Occupations and jobs that require advanced technical and practical skills. Advance math, numerical and communicational skills are a must and in some cases. The

attainment level in the educational system needs to be fulfilled in order to perform this occupation.

These were the indicators that were used to model the embodied gender participation in employment in the traded goods and services.

3.3. Gender inequality in employment

Total employment and genders in employment

After modelling employment (**E**) with an extended MRIO the results were displayed as in Figure 8 a). Each of the regions had a sector detailed that allowed allocating the impacts to the producer and consumer region and sectors (*k*-Skill level per gender). The results were calculated in million hours worked, and were converted to Full-Time Equivalent (FTE). One FTE makes reference to a person that is working full time, this is a simplified assumption that enables the reader to relate in a more comprehensive way to the results. However, this, in turn, might overestimate the results for some regions or sectors. The European average from 2007 was taken as the base to convert the million worked hours to FTE, it was 37.4 hours per week (eurostat, 2018).
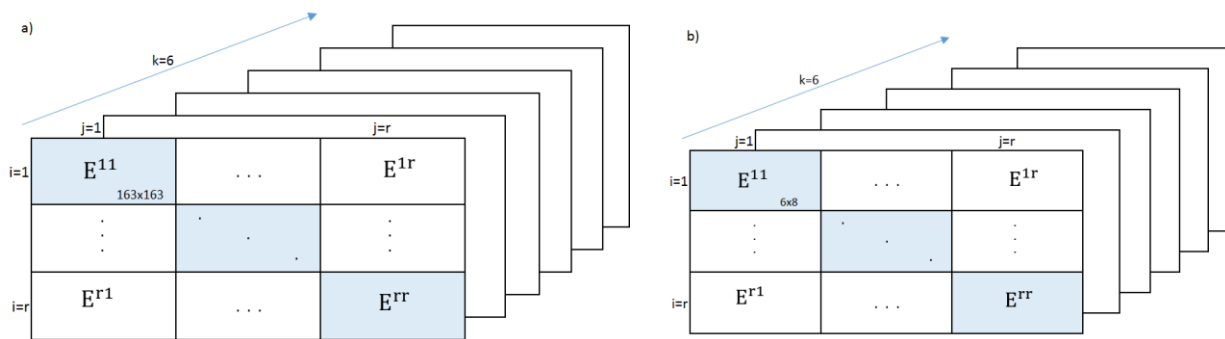
Figure 8 - Gender inequality in employment a) original matrix and b) grouped matrix.
Note: In both a) and b), the index *i* corresponds to the producer region, while *j* corresponds to the consumer, and k corresponds to the six stressors that were evaluated. E^{rr} in *k*=1, corresponds to male low-skilled employment embodied in the goods and services produced in region one to satisfy the demand in region one. From one matrix to the other the number of regions and sectors changes.

In order to continue with the analysis, the results were grouped into representative sectors and regions. With this association, the intra-regional trade was considered a domestic flow. For example, the imports from Spain to France were considered a domestic flow in Europe, the region

where both countries are grouped. The following are the different grouping processes that we applied:

- The regions and countries were grouped in 10 regions: North America, Latin America and the Caribbean, Europe, Africa and the Middle East, Australia, China, India, Indonesia, OECD Asia, and the Rest of Asia (Appendix XIII – has the composition of each region).

- The sectors were grouped in six producer sectors: Agriculture, mining, manufacturing, construction, *transport, electricity and utilities* (as one sector), and services. (Appendix XII – has the composition of each sector).

- The consumer sectors are composed by each of the original 163 producer sectors, they are associated with the final demand of goods and services. These are food, shelter, clothing, construction, manufactured products, services, mobility and trade. (Appendix XIV – has the composition of each consumer sector)

After grouping the results the dimensions were the same as in Figure 8 b). Continuing using the same indexes, where *i* corresponds to the producer region, *j* to the consumer, and *k* to the skill level per gender the following matrices were calculated:

- Total employment: $TE^{ij} = \sum_{k=1}^{6} E(i, j, k) \ \forall i, j$

- Women employment: $WE^{ij} = \sum E(i, j, k), k = 1,3,5$

- Men employment: $ME^{ij} = \sum E(i, j, k), k = 2,4,6$

The six originally modelled matrices contain the information about the participation of males and females in the different skill-levels, they were named as follows:

- Low-skilled men employment: $LSM^{ij} = E(i, j, 1)$

- Low-skilled women employment: $LSW^{ij} = E(i, j, 2)$

- Medium-skilled men employment: $MSM^{ij} = E(i, j, 3)$

- Medium-skilled women employment: $MSW^{ij} = E(i, j, 4)$

- High-skilled men employment: $HSM^{ij} = E(i, j, 5)$

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- High -skilled women employment: $\text{HSW}^{ij} = E(i, j, 6)$

All these matrices contain the employment that is driven to supply domestic and external demand from each region.

Embodied employment in trade

The main interest of the project is to explore the embodied gender gaps in the products and services that are traded between regions and sectors. For this purpose, the embodied employment in trade can be related to different stages of the supply chain: export, import and domestic-supported employment. The domestic-supported employment corresponds to the embodied employment in goods and services that are produced and consumed in the same region. Thus the intra-regional trade is considered as domestic. The imported-supported employment is the embodied employment in goods and services that are produced outside of the region that consumes them. While the export-supported employment corresponds to the embodied employment in goods and services that are consumed outside the region that produce them. These can be located in the impact matrices, Figure 9 shows where they are located for region 1.
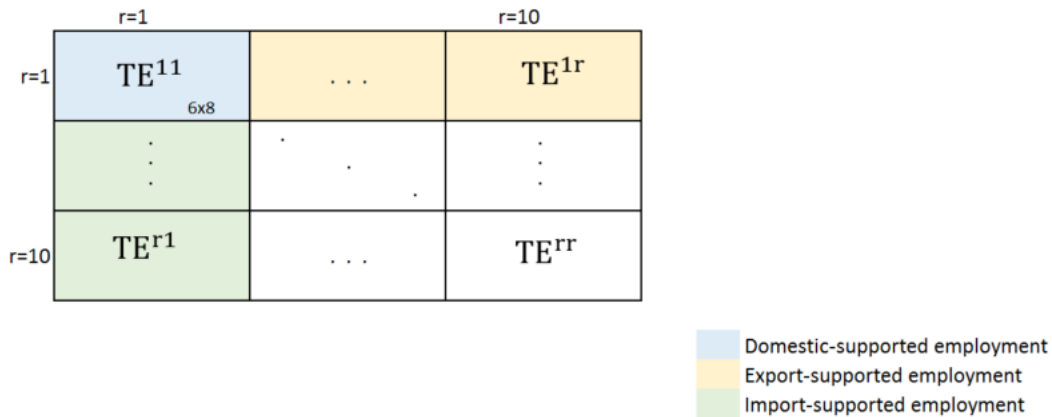
Figure 9 - Total employment matrix, where the labour related to the different stages of the supply chain are differentiated.

For example, to calculate the embodied employment for women the following equations were used:

- Export-supported employment for women in region i: $\sum_{j=1}^{10} \text{WE}_{\text{exp}}^{ij}, \forall\, j \neq i$

- Import-supported employment for women in region j: $\sum_{i=1}^{10} \text{WE}_{\text{imp}}^{ij}, \forall\, j \neq i$

- Domestic-supported employment for women in region i: $WE_{dom}^{ij}, \forall\, j = i$

These equations can be extended to any of the impacts that were analyzed in order to identify the domestic employment and the embodied employment in trade. From the identification of these, the producer and consumer perspective can be calculated.

Producer and consumer perspective

To calculate the producer and consumer perspective the embodied employment in trade and the domestic was used as follows:

$$Producer\ perspective = Domestic\ supported\ employment + export\ supported\ employment \quad (11)$$

$$Consumer\ perspective = Domestic\ supported\ employment + import\ supported\ employment \quad (12)$$

With these perspectives one can identify which regions are importing or exporting total, women and/or men embodied labour in the goods and services that they consume or produce. In the producer perspective impacts that are caused at a territorial level are identified, accounting for the domestic and export-supported employment. However, since regions consumption is not limited to what is produced within their territory the inclusion of imports allows tracking the impacts that are driven by the region. The perspectives are complementing each other and can generate different policy responses to deal with the impacts that are caused.

Measurements of gender inequality in employment

The participation per gender was calculated, in the domestic, export and import-supported employment. Each of the shares was calculated considering the FTE of the gender in the export, import or domestic employment as a fraction of the total employment. For example, to calculate women's share in the export-supported employment the following equation was applied:

$$WE\ in\ exports^i = \frac{\sum_{j=1}^{10} WE_{exp}^{ij}, \forall\, j \neq i}{TE_{exp}^{ij}} \ \forall\ i \qquad (13)$$

These shares show the changes in each of the base years, region and sector, uncovering gender gaps. Another way in which inequality is evident is through female to male ratios. If the gender parity of one region is being measured by ratios and it is equal to one, then this region is gender equal. For example, the female to male ratios in export-supported employment was calculated as follows:

$$Female\ to\ male\ ratio\ in\ exports^i = \frac{\sum_{j=1}^{10} WE_{exp}{}^{ij}, \forall\ j \neq i}{\sum_{j=1}^{10} ME_{exp}{}^{ij}, \forall\ j \neq i} \ \forall\ i \qquad (14)$$

These two metrics were used to exemplify where gender inequality is located at a sectoral and regional level. They were included from both perspectives. One of the objectives of the project was to evaluate if as the GDP per capita increases this would have an impact on women's participation in employment.

GDP per capita and women participation

In order to find the relation between economic growth and women participation, two variables were calculated: the Gross Domestic Product (GDP) per capita and the trade openness. These two were calculated for four periods: 1995, 2000, 2005 and 2011. The GDP and the population data were obtained from the World Bank, with this the GDP per capita was calculated for every region:

$$GDP\ per\ capita = \frac{GDP}{Population} \qquad (15)$$

Additionally, trade openness was modelled, this variable aims to measure how involved is a region or a country in international trade respect with their GDP (Madisson, 1995). The data to calculate it was obtained from EXIOBASEv3:

$$Trade\ opennes = \frac{Imports + Exports}{GDP} \qquad (16)$$

These variables were linked through a logarithmic regression to women's participation in total employment or to export and import-supported employment. To perform the logarithmic regression the independent variable (x) was either the GDP per capita or the trade openness, and the dependent variable (y) was the participation of women. This equation was employed to calculate the logarithmic regression (Weisstein, 2018):

$$y = a + b\ \ln x \qquad (17)$$

The coefficients a and b were found using the least square fittings where n is the number of regions:

$$b = \frac{n \sum_{r=1}^{n} (y_r \ln x_r) - \sum_{r=1}^{n} y_i \sum_{r=1}^{n} \ln x_i}{n \sum_{r=1}^{n} (\ln x_i)^2 - (\sum_{r=1}^{n} \ln x_i)^2} \qquad (18)$$

$$a = \frac{n \sum_{r=1}^{n} (y_r) - b \sum_{r=1}^{n} (\ln x_i)}{n} \qquad (19)$$

After performing the regression the coefficients of determination were calculated to test the significance of the relation between the variables. This coefficient intends to measure the share of the changes in the dependent variable that can be explained due to changes in the independent variable (Gujarati et al., 2009). As the coefficient is closer to 1 or -1 there is a strong and significant relation, however as it starts getting close to zero the changes in the dependent variable are not related with changes in the independent. The average of **y** needed to be calculated:

$$\bar{y} = \frac{1}{n}\sum_{r=1}^{n} \mathbf{y_i} \qquad (20)$$

After the sum of squares was found:

$$TSS = \sum_{r=1}^{n}(\mathbf{y_i} - \bar{y})^2 \qquad (21)$$

And the sum of residuals:

$$RSS = \sum_{r=1}^{n}(\mathbf{y_i} - \mathbf{f_i})^2 \qquad (22)$$

In equation (22), $\mathbf{f_i}$ were the values that the regression has in the different points of x. The coefficient of determination can be calculated as follows:

$$r^2 = 1 - \frac{\text{RSS}}{\text{TSS}} \qquad (23)$$

With this final equation, the coefficient of determination was found and the relation between the two variables was evaluated.

This is the method that was used to evaluate gender inequality in the labour force and the relation between the GDP per capita and women's participation. In the next sections, the results that were obtained using this method will be presented.

4.   Results

In this section, the results were presented. First, gender in the labour force from a producer perspective was analyzed showing performance by regions, skill-level and sectors. Then, the footprint perspective was explored. To finish, the hypothesis that as the GDP per capita increases the participation of women in the labour force will increase was tested. Every figure that was presented in this section has a table in the Appendix with the specific results.

4.1. Gender participation in the workforce from a producer perspective

Gender participation in the domestic and export-supported employment

The region that hosted most of the employment worldwide was China, followed by the Rest of Asia. Both accounted for almost 40% of the total labour worldwide in 2011. In this period, the Rest of Asia had the highest share of exports-supported employment with 40%. Exports represented an employment opportunity for men and women around the world. In 2011, 743 million full-time equivalent (FTE) people had exports-supported employment worldwide, accounting for 21% of the total labour (Table 1). This rose by 35% since 1995, due to an increase in the workforce and the share of export-supported employment in all the regions. Understanding how export-supported employment performs in terms of gender equality is a cornerstone in achieving parity in the labour force.

The female to male ratio in the export and domestic-supported employment reflected workforces that were composed in its majority by males in all the regions. The ratios ranged between 0.4 FTE and 0.7 FTE, with some exceptions. In India, one of the exception, women accounted for one-quarter of the export and domestic workforces. On the contrary, in North America and Australia, the domestic employment was close to gender equality with 0.9 FTE and 0.85 FTE respectively. The export-supported employment underperformed the domestic in most of the regions in 2011, China and Indonesia were the exceptions. In some cases, the difference between the ratios of domestic and export-supported employment was 0.23 FTE, as was the case for OECD Asia. From 1995 and 2011, North America, Latin America and the Caribbean, Africa and the Middle East, India and OECD Asia have decreased female participation in the export workforce, while the rest of the regions have increased it (Figure 10). The export-supported employment was different from the domestic regarding gender participation due to the composition of exporting sectors. It is

worthwhile to further explore how these differences are present in the sectors of the economy and in the skill-level that the workforce has.

	1995			2011		
	Total workforce (million FTE)	Export-supported employment (million FTE)	% of the workforce in exports	Total workforce (million FTE)	Export-supported employment (million FTE)	% of the workforce in exports
North America	131.32	11.53	8.78%	140.98	13.38	9.49%
Latin America and the Caribbean	223.21	27.81	12.46%	311.24	50.31	16.17%
Europe	355.10	40.03	11.27%	376.87	56.17	14.90%
Africa and the Middle East	330.11	66.87	20.26%	515.89	127.47	24.71%
Australia	7.88	1.24	15.74%	10.31	1.86	18.03%
China	684.70	101.12	14.77%	716.42	122.25	17.06%
India	420.82	30.38	7.22%	465.02	72.08	15.50%
Indonesia	82.15	17.32	21.08%	117.28	30.79	26.25%
OECD of Asia	108.34	11.90	10.99%	108.14	17.70	16.37%
Rest of Asia	356.48	130.54	36.62%	625.60	250.58	40.05%
World's total	2700.11	438.73	16.25%	3387.75	742.59	21.92%

Table 1-Total workforce in million full-time equivalent (FTE), and share of domestic and export-supported employment in 1995 and 2011.
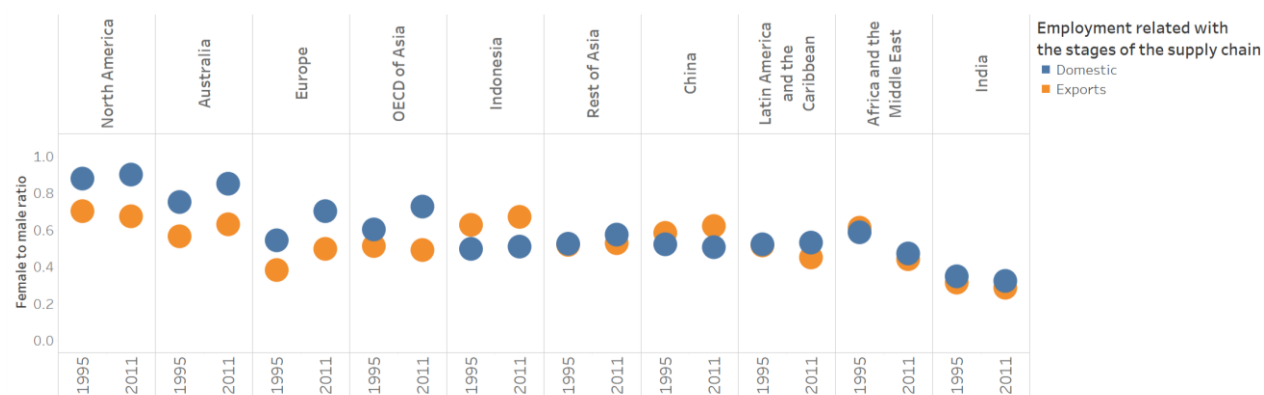
Figure 10-Ratio of women to men in the export-supported and domestic employment per region in 1995 and 2011

Skill-level of the export-supported workforce

One of the ways that the participation of women in the export-supported employment can be analysed is from the skill-level. Globally, in 2011 and 1995, most of the total employment was classified as medium skilled, followed by low and high skill (Table 2). The one that had the highest growth from one period to the other was the low-skill level, growing by 160%.

	1995 Export-supported employment (million- FTE)	2011 Export-supported employment (million- FTE)	Percentage change
Low-skill level	65.57	170.52	160%
Medium-skill level	334.18	503.56	50%
High-skill level	38.98	68.52	76%

Table 2-Export-supported employment in 1995 and 2011 per skill-level in the world (million full-time equivalent)

In the export-supported employment, the skill-level per gender varies in every region (Figure 11). To model this, the 10 regions were represented by the original countries and regions available in the database. Corresponding to 44 countries and five RoW regions. The participation of women and men in the low-skill level declined as the GDP per capita increases. In 2011, this skill level presented the lowest gender gap, as the average participation of men worldwide was close to the average of participation by women. Additionally, half of the countries present a higher female participation in the low-skill level. On the contrary, the middle-skill level presented the widest gender gap, with all countries reporting a higher share of male participation than female participation. The average participation of males being 16% higher than the average of females. The widest gender gap was observed for most of the countries that have a GDP per capita that was lower than 20.000 euros, in these countries the gender gap can be up to 40%; however, the gender gap was evident in all GDP per capita levels. The participation of both genders in the high-skill labour increases as GDP per capita rises. In this category, the world average of both genders was separated by 7%, with just two countries having higher female participation than male participation.

The skill-level of genders in the export-supported employment varied over time. Figure 12 shows that the only region where the female to male ratio in all skill-levels has increased from 1995 to

2011 was Europe. Other regions present different variations according to the skill level. In India, the Rest of Asia, China, North America, and Indonesia, women's participation increased in the lower-skill levels while it decreased in the higher-skill level. The skill level of the workforce is closely related with the types of exporting industries that the country has, some are characterized for requiring low-skill level while others require a more skilled workforce.

Figure 11-Gender participation in the export-supported employment in 2011 per region and skill level.

Note: In the figures the regions are represented by several countries and sub-regions, the colour indicated in the legend is associated with each of the 10 regions. The participation of each country or sub-region is divided by gender, here the triangles correspond to women's participation and the circle to men's.
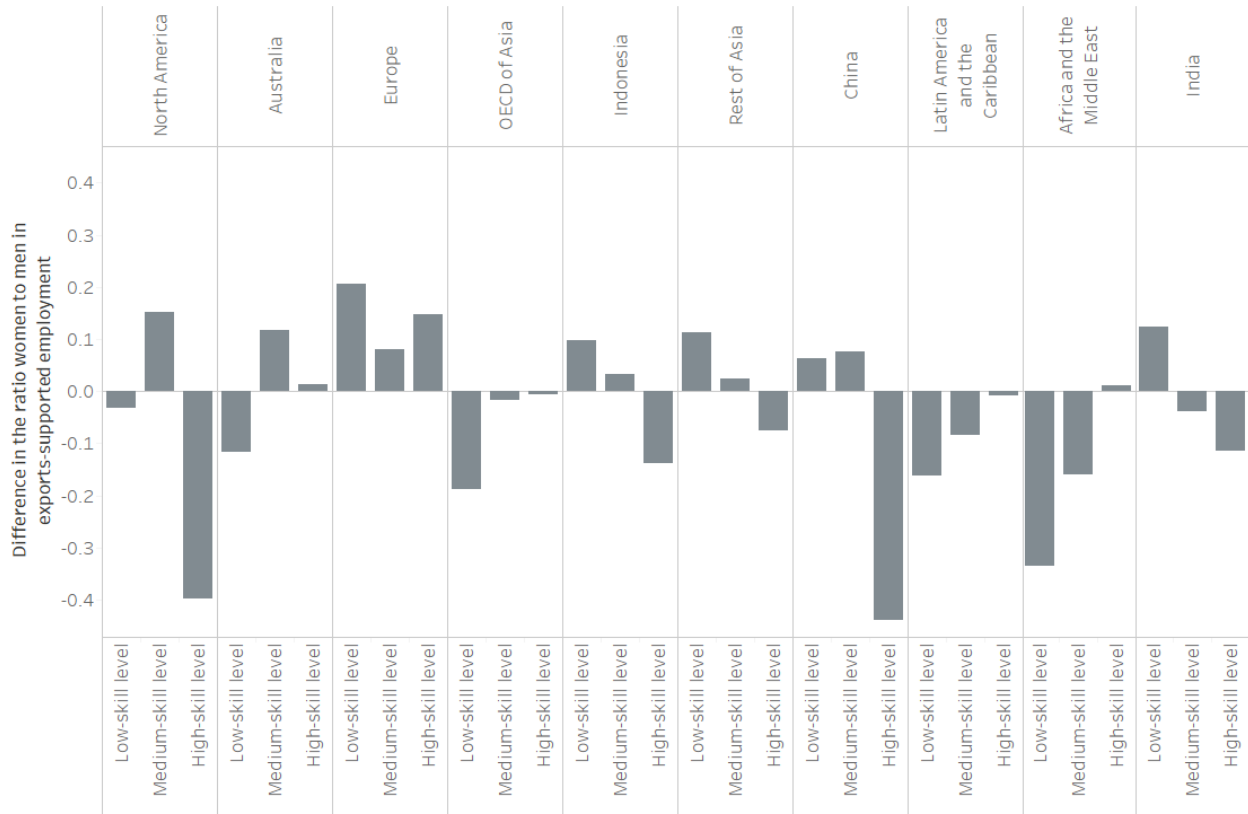
Figure 12-Difference in female to male ratio from 1995 to 2011 in export-supported employment per skill level and region

Gender equality in the exporting sectors

In 2011 in most of the regions, the export-supported employment for both genders was mostly hosted by agriculture, followed by services and manufacturing. These accounted for 38.9%, 23.7%, and 23.3% respectively of the export-supported employment worldwide. Men participation in most of the sectors was higher than women's. The exception was Latin America and the Caribbean where women have a higher participation in services in both 1995 and 2011. The difference between the participation of males and females in the same sector could go to 20%, indicating marked gender inequality in these supply chains. This was the case for agriculture in Latin America and the Caribbean, and in Africa and the Middle East, or for manufacturing in India and in the OECD Asia.

Employment in some of the regions was concentrated in certain industries. For example, in the cases of North America and Australia, most female and male employment was concentrated in services, while in India, Africa and the Middle East, and Latin America and the Caribbean, labour was concentrated in agriculture and manufacturing, which are labour intensive industries (Figure 13).
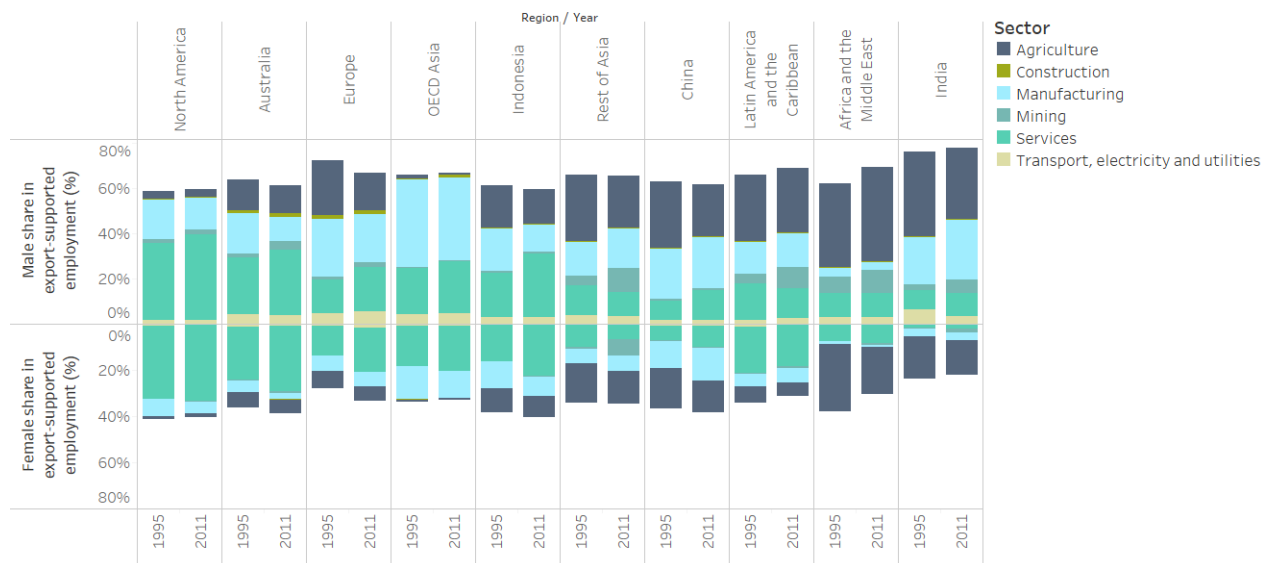
Figure 13-Gender participation per region and per sector in 1995 and 2011 (share in export-supported employment)

The results that were presented reflect the gender equality of the regions from a producer perspective. However, when analyzing gender equality in the workforce from a consumer perspective the results vary. By considering both perspectives one can understand how regions impact gender equality globally and allocate responsibility to both producers and consumers.

4.2. Gender equality footprint in the workforce

The producer perspective shows how gender equal the workforce was from a territorial angle. However, regions do not limit their consumption to what is produced domestically. The footprint shows the impacts driven by the consumption of the region, including the embodied labour in imports and in the goods and services that are produced and consumed domestically. The labour footprint shows that North America, Europe, Australia, and OECD Asia were regions that were virtually importing most of their labour, while other regions such as India have a low virtual import of labour of 7% (Table 3). Globally, imports grew from 1995 to 2011 reflecting that trade is

increasing over time; therefore, countries and regions are closely interconnected which then increase the virtual exchange of social and environmental impacts. The gender equality of regions and sectors was different from a footprint perspective than from a producer perspective due to the embodied exchange of gender equality through trade.

	1995			2011		
	Labour footprint (million FTE)	*Domestic labour footprint (million FTE)*	*Footprint embodied in imports (million FTE)*	*Labour footprint (million FTE)*	*Domestic labour footprint (million FTE)*	*Footprint embodied in imports (million FTE)*
North America	211.15	119.79	91.36	263.23	127.60	135.63
Latin America and the Caribbean	210.83	195.40	15.43	300.30	260.92	39.37
Europe	440.00	315.07	124.93	517.77	320.70	197.08
Africa and the Middle East	290.67	263.24	27.43	464.17	388.43	75.75
Australia	14.23	6.64	7.59	28.25	8.45	19.79
China	595.11	583.58	11.52	672.02	594.16	77.85
India	396.65	390.43	6.21	421.75	392.94	28.81
Indonesia	71.56	64.83	6.72	101.04	86.49	14.55
OECD Asia	163.27	96.44	66.83	168.44	90.44	78.01
Rest of Asia	306.65	225.94	80.70	450.78	375.02	75.76
World's total	2700.11	2261.38	438.73	3387.75	2645.16	742.59

Table 3 – Labour footprint per region in 2011, the share of domestic and embodied labour in imports

The ratios between female to male worsen in most of the regions from a footprint perspective, with the exception of Latin America and the Caribbean, Africa and the Middle East, and India. These regions improved their gender equality through imports in 2011 (Figure 14). Australia had the highest difference between the ratios of the two perspectives in 2011, it was 0.23, followed by North America where the difference was 0.19. Thus, the embodied gender inequality in the imports of these two regions was higher than the embodied impact in their exports. Looking at the changes that these ratios have experience from 1995 to 2011, there was no trend amongst the regions that indicates that they have improved the gender parity in the workforce. Europe and the Rest of Asia were the only regions that over time have increase gender equality in both perspectives. Indonesia, China, North America, and Latin America and the Caribbean, did not experience any significant change. Contrary Africa and the Middle East, and India worsen their performance from both

perspectives. What drives the change from one perspective to the other is the inclusion of imports and the exclusion of exports to calculate the footprint. Therefore, the analysis was focused on the imports-supported employment in the different consumptions categories of the economy and the skill-level of the embodied workforce in goods and services. When the female-to-male ratio was compared between the import, export and domestic-supported employment (Figure 15), the import-supported employment was the most equal in India, while in Indonesia and China was the export-supported employment, and in the rest of the regions was the domestic. Although the ratios of the import, export or domestic-supported employment were less unequal it does not mean that they were close to parity. The domestic and export-supported employment ratios vary across the regions, from 0.32 to 0.90 and 0.28 to 0.67 respectively. While the import-supported employment presented a narrower range from 0.45 to 0.56.
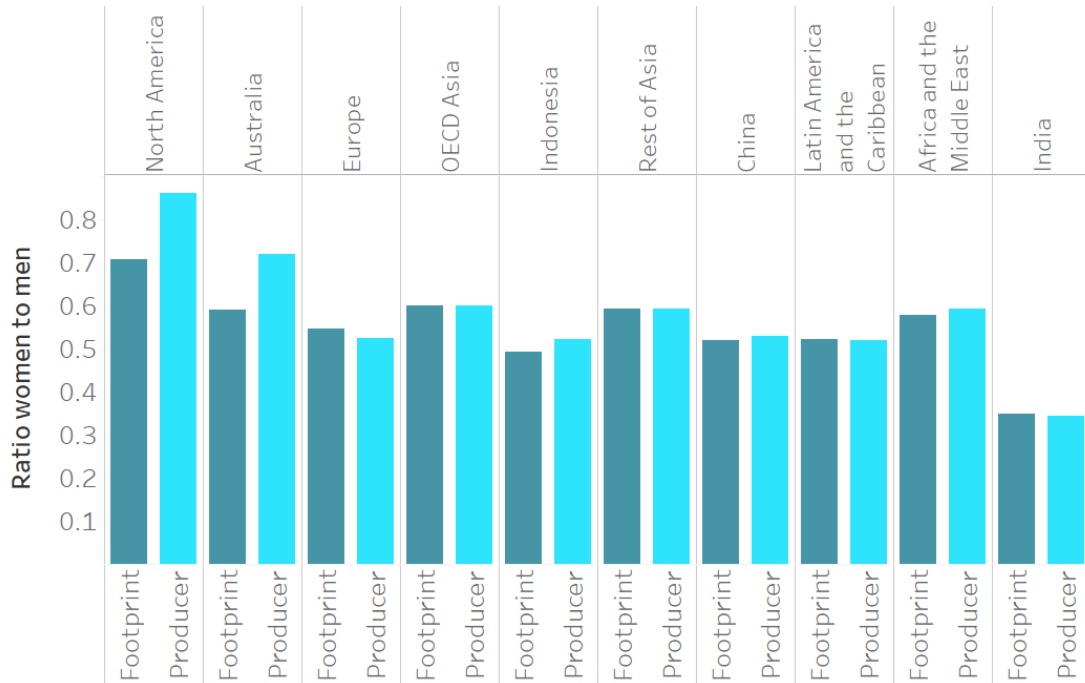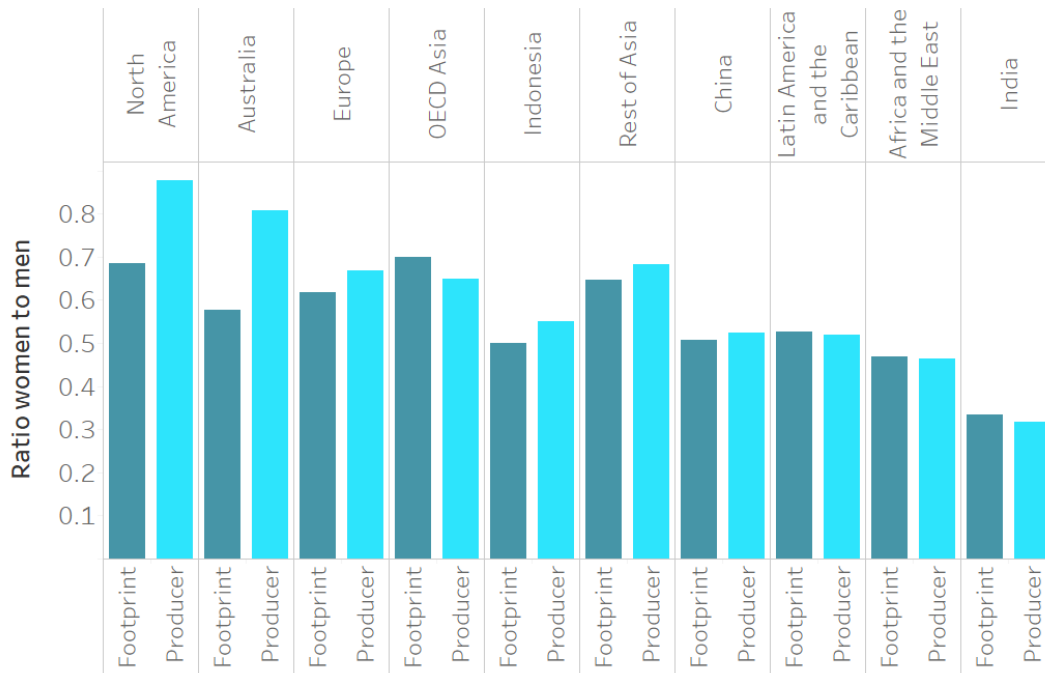
Figure 14-Gender ratio from a footprint and producer perspective in 1995 and 2011 per region
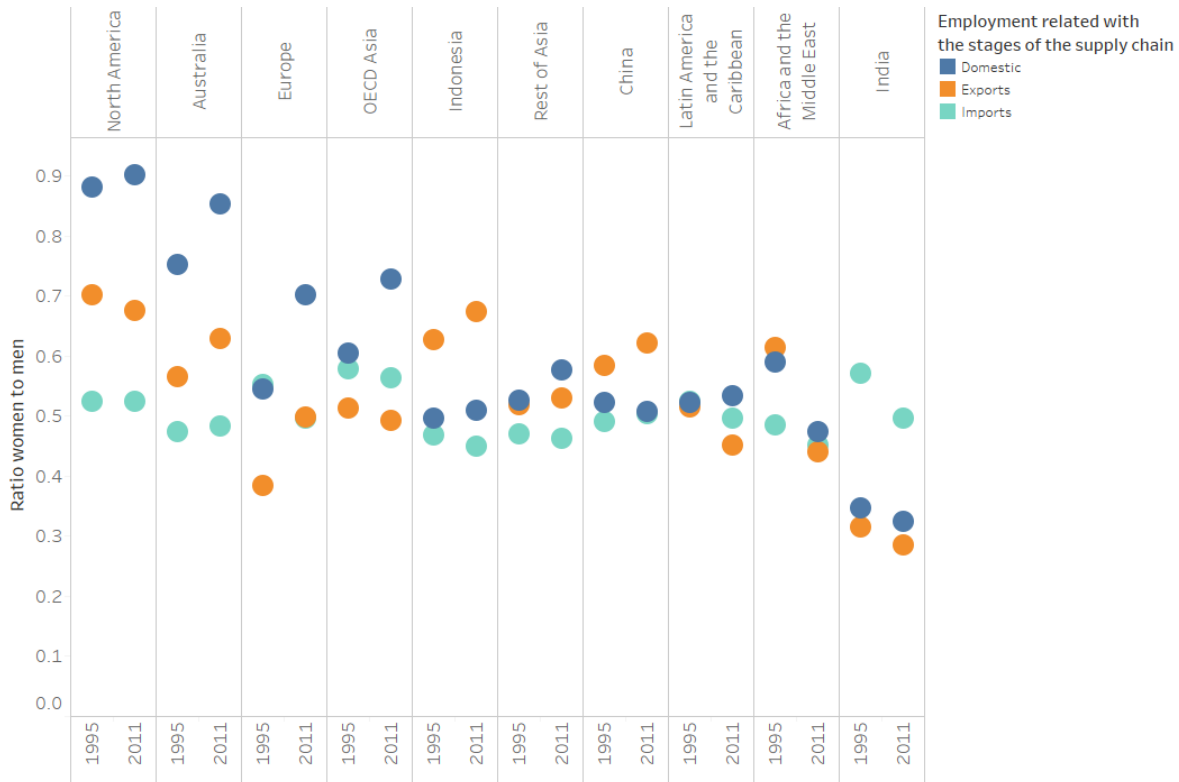
Figure 15-Female to male employment ratio embodied in imports and exports per region in 1995 and 2011

Consumption categories driving the gender equality in the import-supported employment

The import-supported employment in all the regions was mostly driven by services, manufactured products and food, although these present a considerable amount of women (FTE) in their workforce still males account for a higher participation. Mobility was the consumption category where the imports presented the lowest embodied participation of females in seven regions in 2011. The consumption categories that presented more female participation embodied in their imports varies across the regions. In North America and Europe females participation was higher in shelter, while in Latin America and the Caribbean, China, Indonesia and OECD Asia, was trade, and in Africa and the Middle East, Australia, India, and the Rest of Asia, females participate more in clothing. From 1995 to 2011, the participation of women in the consumption categories has varied differently in the regions. Clothing was one of the categories that has improved women participation in six regions. Mobility was one of the most unequal consumer categories of 2011, however since 1995 women have increase their participation (Figure 16).
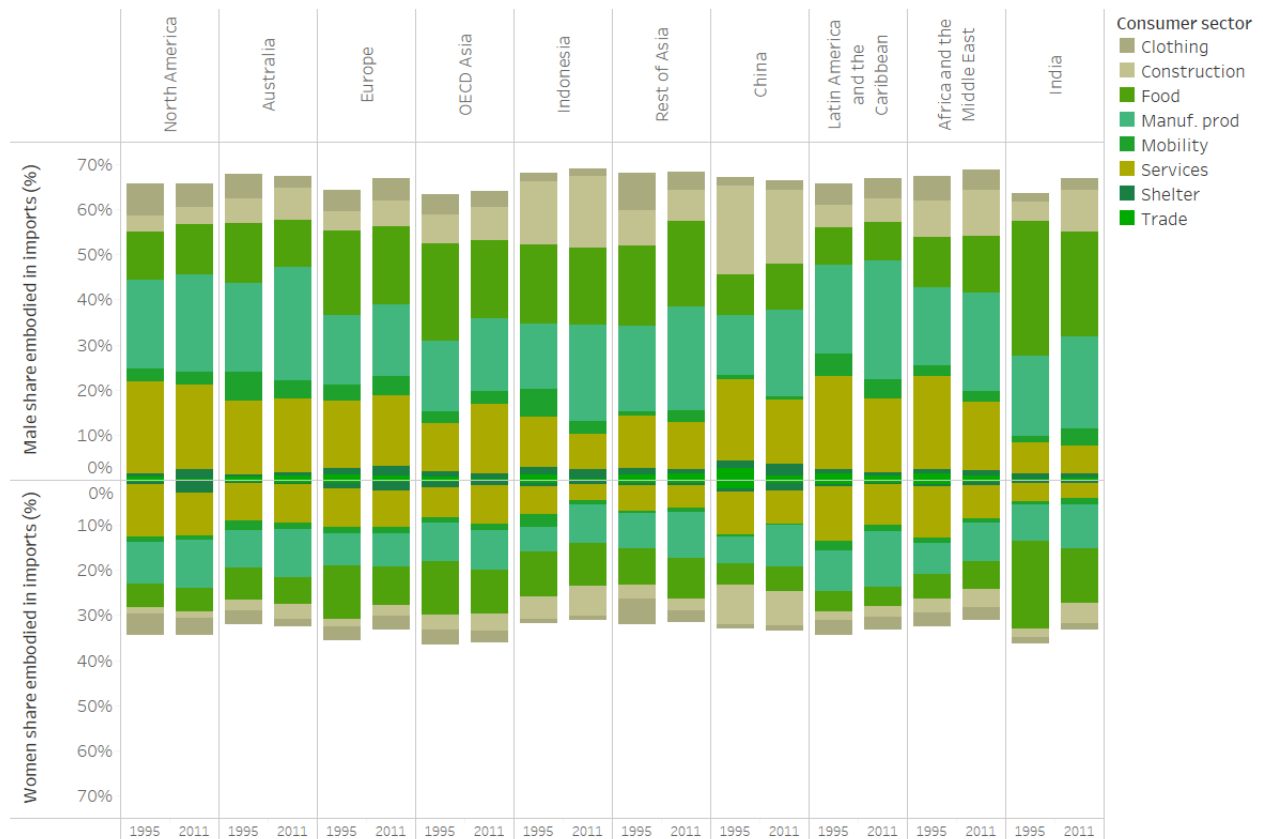
Figure 16-Embodied male and female labour in the imports per region and per sector in 1995 and 2011

Skill-level per gender in the import-supported employment

The skill level of the workforce embodied in the imports showed that no matter the GDP per capita there was no significant variation in the gender share in the imports (Figure 17). In the low-skill level, there was a gap of 7.21% between the global averages of both genders. The embodied participation of men ranges between 11.27% and 20.69%, while women's ranges between 4.51% and 12.47%. For the medium-skill level, the participation of males ranged between 11.27% and 20.69% and women between 4.51% and 12.47%. The participation of men and women was concentrated around the world's average that was separated by 22.63%. For the high-skill level, the participation of man ranges between 4.74% and 11.55%, and for women 1.54% and 5.90%. In the three levels, there was no country where the embodied participation of females in the imports was higher than males.
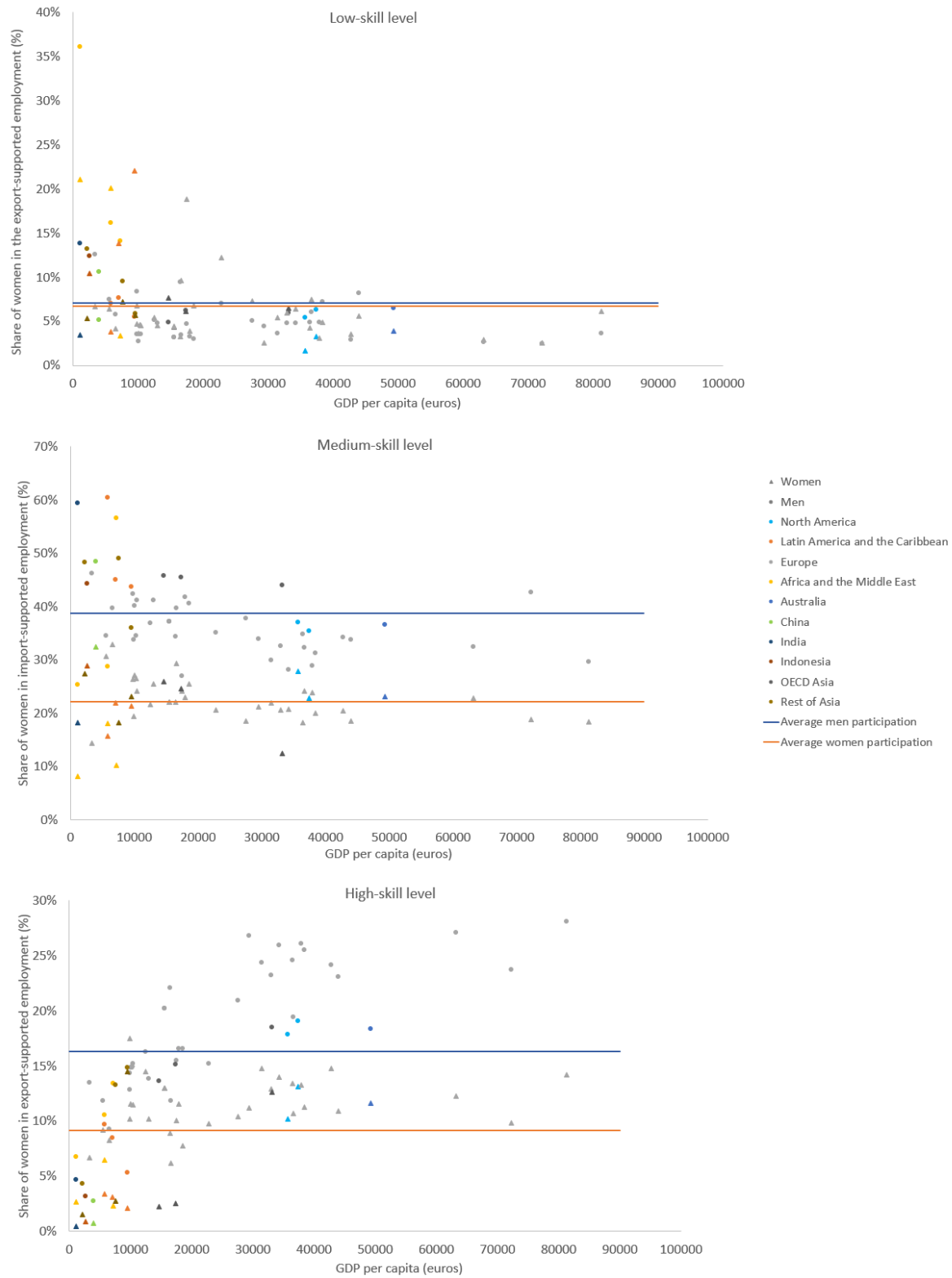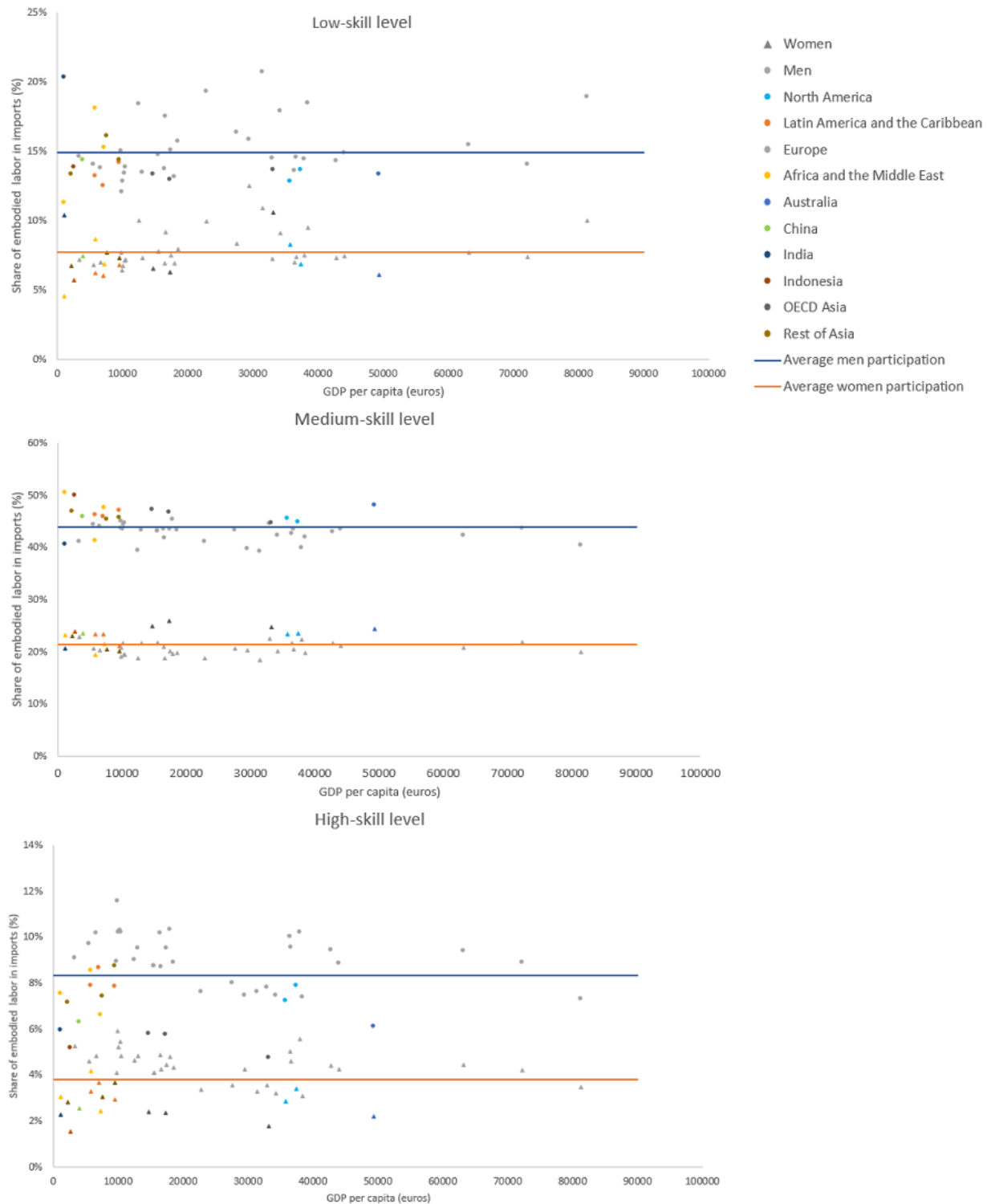
Figure 17 – Gender embody participation in the imports in 2011 per region and skill-level
Note: In these figures the regions are represented by several countries and sub-regions, the colour indicated in the legend is associated with each of the 10 regions. The participation of each country or sub-region is divided by gender, here the triangles correspond to women's participation and the circle to men's.

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All the regions around the world have different trading partners and demands, this leads them to have a unique embodied gender equality in the imports. Therefore trade shapes in different ways the gender equality embodied in the imports of each region, in some it has a negative impact and in others positive. The regions where the footprint increases the most compared with the producer perspective were Australia with 40% and North America with 28%.

Regional impacts of trade: Australia and North America

The way imports affect the gender equality of a country varies and depends on the products or services that are imported and its origin. Analyzing the results at a regional level allows the comprehension of the impacts that are driven by the consumption in the region but are produced in other territories. Australia and North America were the two regions with the largest difference in the gender inequality in the total employment from the producer to the consumer perspective. This difference comes from the embodied gender inequality in the imports-supported employment. Therefore, a detailed analysis of the origin of the imports including sector and exporting region will be presented in this section.

Australia

Australia accounted for 2.66% of the global trade in 2011. Their consumption rose to 70% on imports from 54% in 1995, allowing them to decrease their reliance on domestic production. Most of the imports came from the Rest of Asia in both years. The imports from this region increased by 10% from 1995 to 2011 when the ratio of female to male was 0.43 FTE. The female to male ratio in the domestic supported-employment in Australia was higher than in the rest of the regions, therefore it was sensitive to the low embodied ratios in the imports (Figure 18).

The producer sectors that had the highest gender inequality in the import-supported employment in 1995 were manufacturing and other producer sectors (mining, trade, transport, utilities and energy) with a participation of 26.89% and 13.9% respectively. Since manufacturing was one of the sectors that accounted for almost one-third of the embodied labour in the imports, it flows into the consumption categories have some of the highest embodied inequalities. This impacts the gender equality in the consumption categories. None of them has an embodied higher participation of women than 40%. In 2011, the producer sectors that increase the participation of women were services rising to 41.38% and agriculture rising to 36.03%. However, manufacturing and another

sector decrease the participation of women. Ultimately, these changes in the producer sectors will have an impact on the participation of women in the consumer categories (Figure 19-Figure 21).
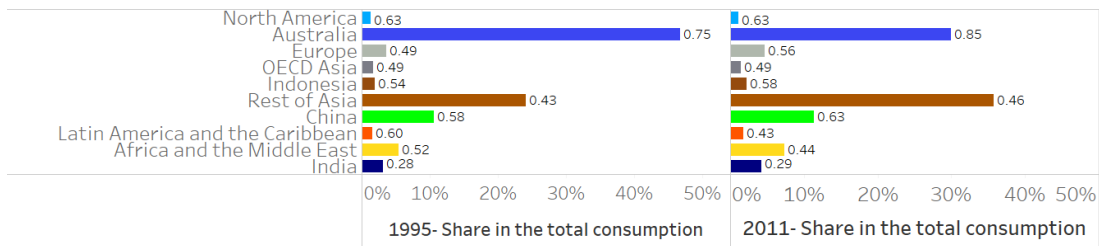
Figure 18- Share of imports and domestic embodied labour from a consumption perspective in Australia (bar graph) and the ratio of female to male embodied in the good and services (number) in 1995 and 2011
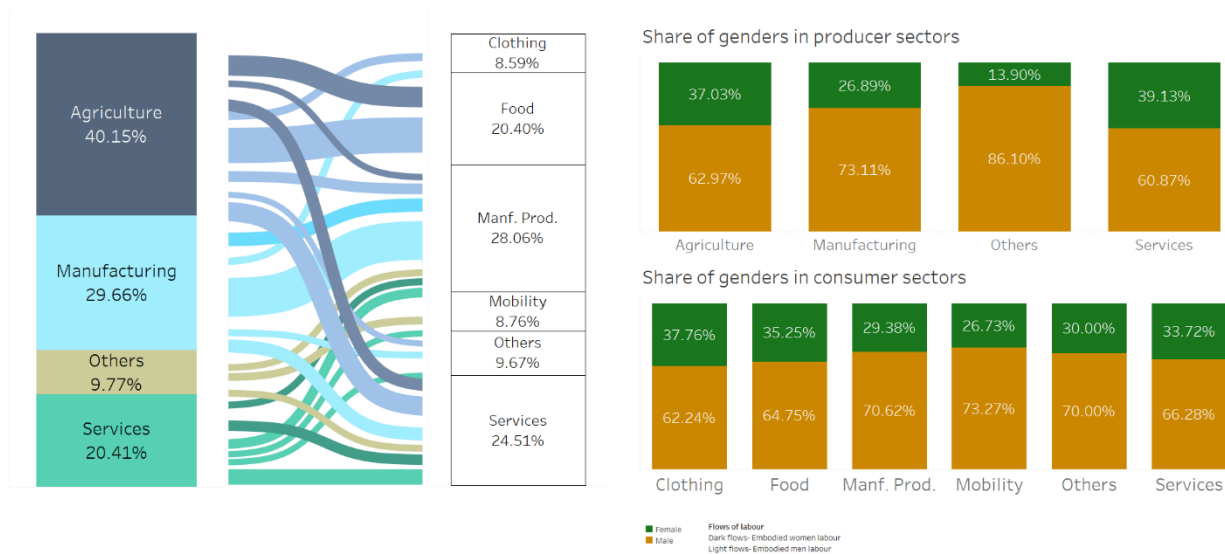
Figure 19-Significant import-supported employment flows of embodied female and male labour between producer sectors and consumption categories in Australia in 1995 (Sankey diagram). The share of genders in each of the producer sectors and consumer categories (bar chart).

Note: Other producer sectors: mining, trade, transport, utilities and energy.
Other consumer categories: shelter, construction and trade.
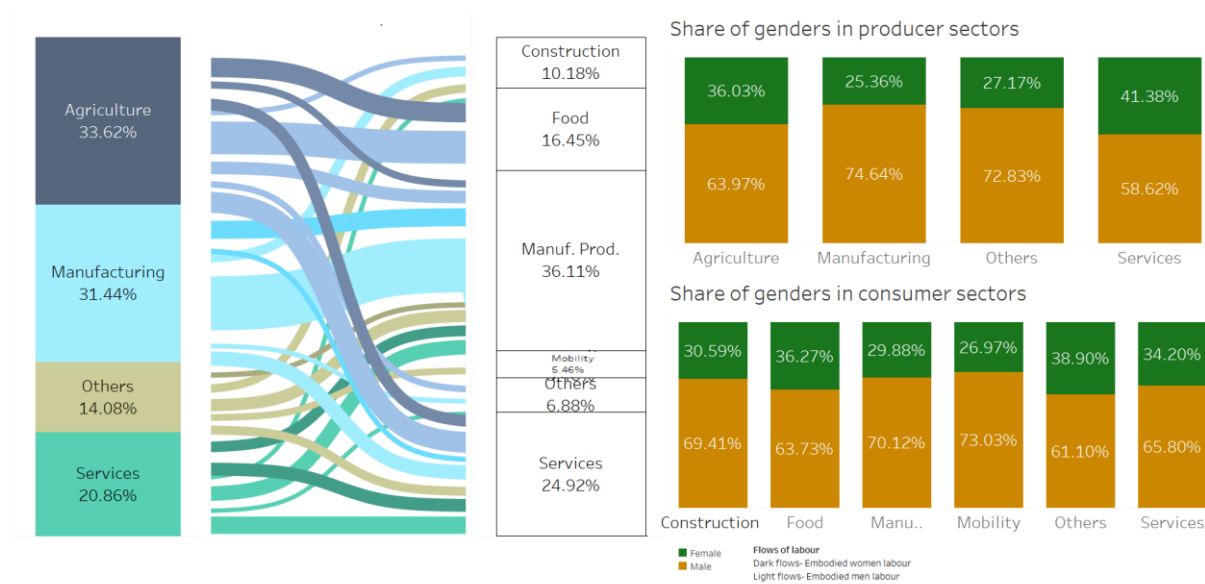
Figure 20 – Significant import-supported employment flows of embodied female and male labour between producer sectors and consumption categories in Australia in 2011 (Sankey diagram). The share of genders in each of the producer sectors and consumer categories (bar chart).
Note: Other producer sectors: mining, trade, transport, utilities and energy.
Other consumer categories: shelter, clothing and trade.

North America

North America relied on imports to satisfy 51% of its consumption in 2011, this accounted for 7.8% of the global imports. Most of the imports came from the Rest of Asia (14.3%), followed by China (10.95%) and Latin America and the Caribbean (7.51%) in 2011. The imports from the Rest of Asia and OECD Asia, decreased from one period to the other by less than 0.25%. The rest of the imports from developing regions experienced growth that ranged between 1.3% and 3% (Figure 21).

In 1995, manufacturing accounted for 27% of the import-supported employment, and of this percentage less than one third of female participation. The other sectors grouping mining, construction and transport, utilities and energy, accounted for 7.53% of the import-supported employment, and of this just 12% corresponded to female labour. The embodied participation of women in construction, food, manufactured products and other consumption categories (shelter, trade and mobility) ranged between 29% and 33%, while clothing and services drove a higher percentage of women participation, 40.27% and 36.19% respectively. From 1995 to 2011, the other

sectors, which includes trade, mining and transport, utilities and energy, presented the highest gender inequality with a participation of just 20% of women in the workforce. Female embodied participation in clothing remained constant, while in other sectors (trade, mobility and shelter) females participation grew considerably (Figure 22-Figure 23).
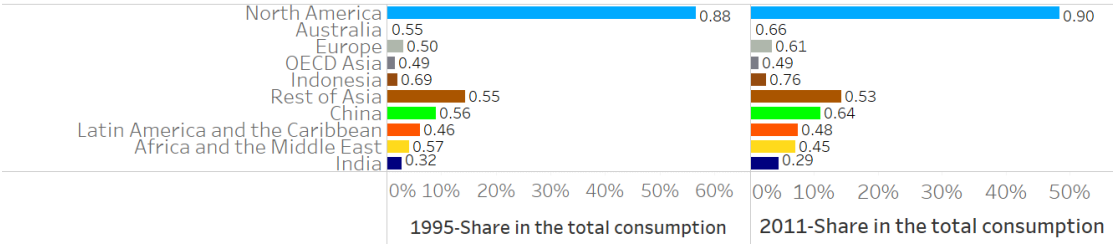
Figure 21- Share of imports and domestic embodied labour from a consumption perspective in North America (bar graph) and the ratio of male to female embodied in the good and services (number) 1995 and 2011
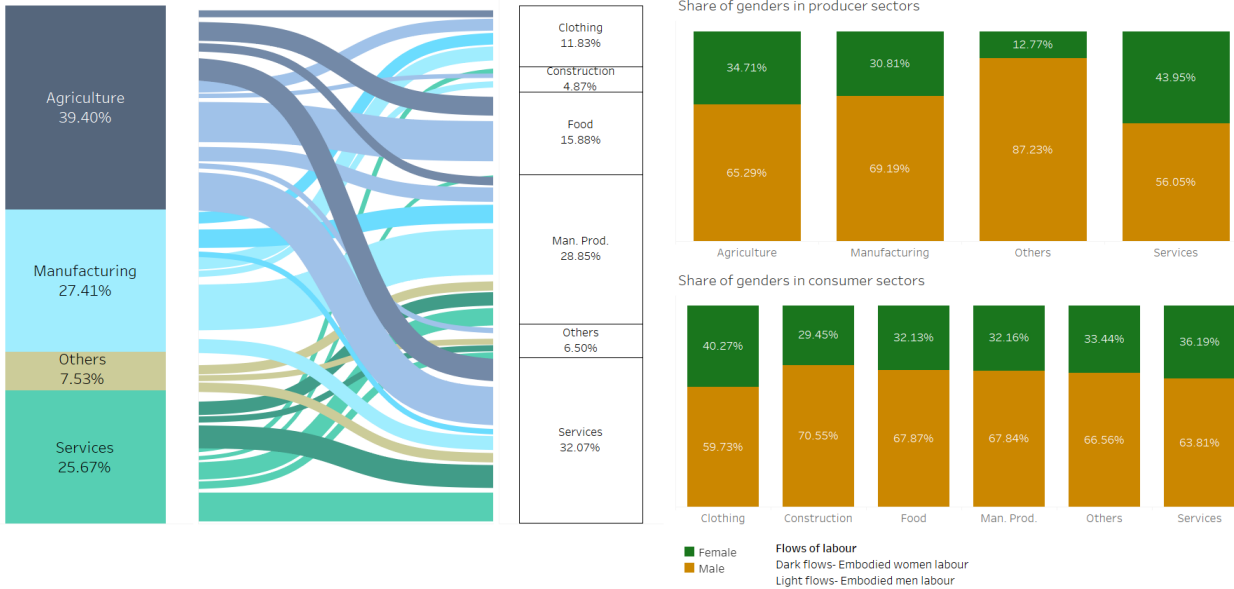
Figure 22 – Significant import-supported employment flows of embodied female and male labour between producer sectors and consumption categories in North America in 1995 (Sankey diagram). The share of genders in each of the producer sectors and consumer categories (bar chart).

Note: Other producer sectors: mining, construction and transport, utilities and energy.
Other consumer categories: shelter, trade and mobility.
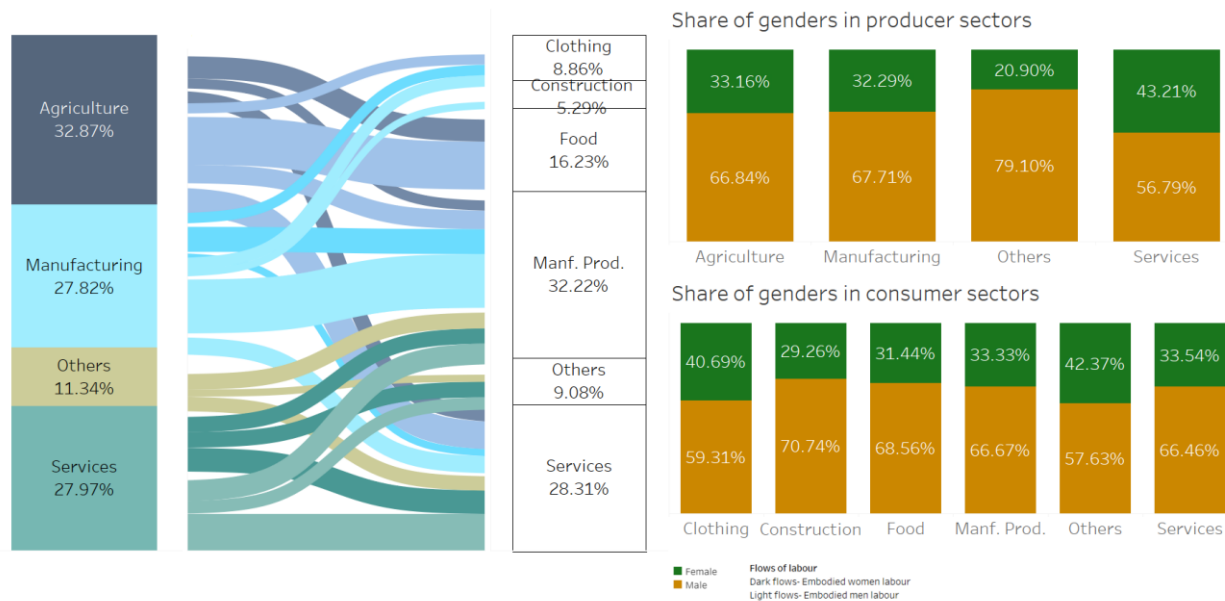
Figure 23- Significant import-supported employment flows of embodied female and male labour between producer sectors and consumption categories in North America in 2011 (Sankey diagram). The share of genders in each of the producer sectors and consumer categories (bar chart).

Note: Other producer sectors: trade, mining and transport, utilities and energy.
Other consumer sectors: trade, mobility and shelter.

4.2.1. Gender equality and economic growth

In this section, the regions were disaggregated into the 41 countries and 5 Rest of the World regions as in the original databases. The GDP per capita was used as an indicator of the economic growth of a country. This economic indicator has increased in all the regions since 1995 to 2011, while the participation of women in the total employment increased in 41 regions out of 49. This might indicate that as the GDP per capita increases the regions will become more inclusive. However, the two variables in 1995, 2000, 2005 and 2011 seem not to be significantly correlated, as the determination coefficient reaches a maximum value of 0.33 for 2011 regression (Figure 24). This weak correlation indicates that there were other factors that can influence female participation more than the increase in the GDP per capita alone. However, the coefficient of determination becomes significant as the years pass, suggesting that there was a positive correlation that was becoming stronger over time (Table 4). From a consumer perspective, the correlation between the two variables was weaker than from the producer perspective. This indicate that through the imports the share of women in the labour force in countries with a high GDP per capita was decreasing

which then affects the gender equality of the workforce. Although the correlation was weak, it was increasing over time as in the producer perspective.
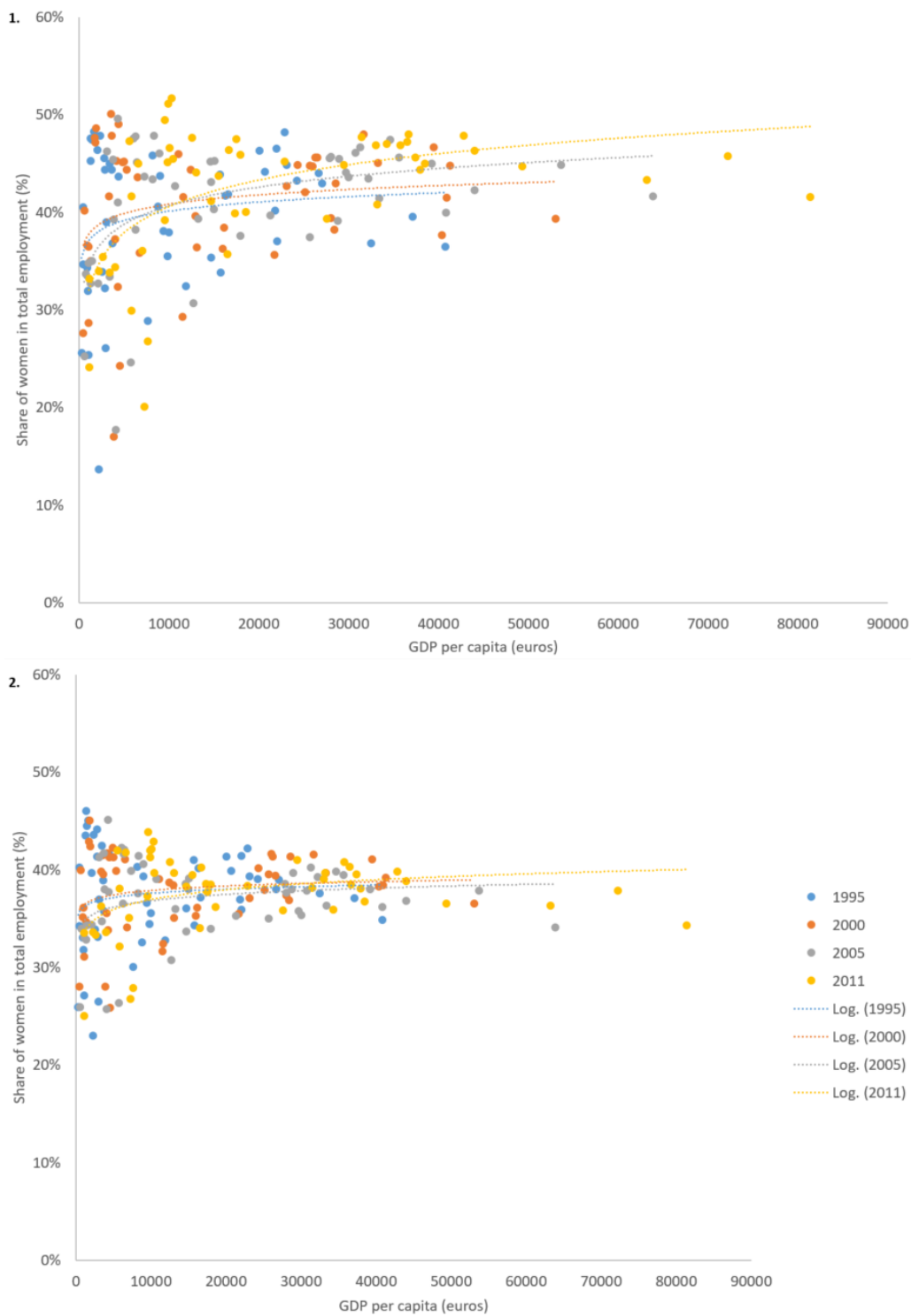
Figure 24-Logarithmic regression of GDP per capita and women's participation in the total labour force in four periods from a producer (left) and consumer perspective (right).

Note: In these figures, the regions are represented by several countries and sub-regions, the colour indicated in the legend is associated with each of the 19 regions. The participation of each country or sub-region is divided by gender, here the triangles correspond to women's participation and the circle to men's.

Year	Producer perspective	Consumer perspective
1995	0.0596	0.0245
2000	0.0649	0.0404
2005	0.2424	0.0756
2011	0.3323	0.1454

Table 4 - Coefficient of determination between the GDP per capita and share of females participation in the total employment.

All the countries have increased their exports and imports since 1995, therefore the labour associated with them has also risen. However, when analyzing the trade openness of countries and the share of women labour in exports and imports, the results shows that there was no correlation between the two variables (Figure 25). The share of embodied women labour in the imports ranged between 25% and 40% in all the different levels of trade openness in the periods. In general, countries present a higher trade openness since 1995, however, the embodied participation of women in imports has not increased but it has stabilized and concentrated in 2011 around 30% to 35% in all levels of trade openness. Regarding the share of women labour in exports, the results were more dispersed than the results for imports. Female participation in exports ranged widely for the same level of trade openness and there was no clear trend of stabilization through the periods.
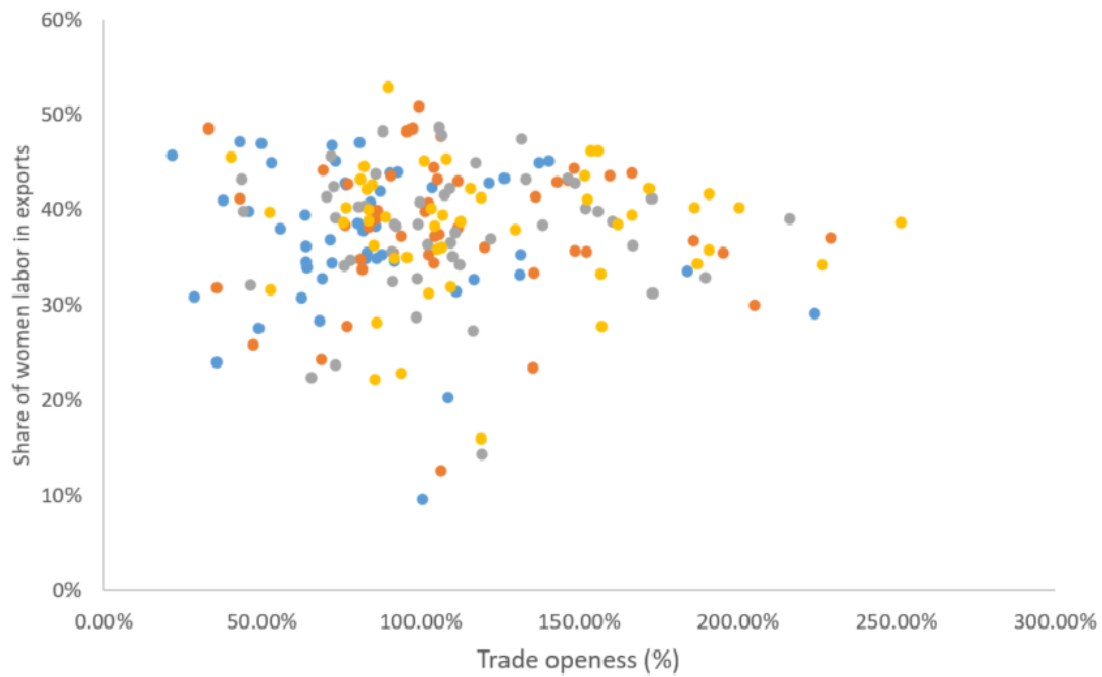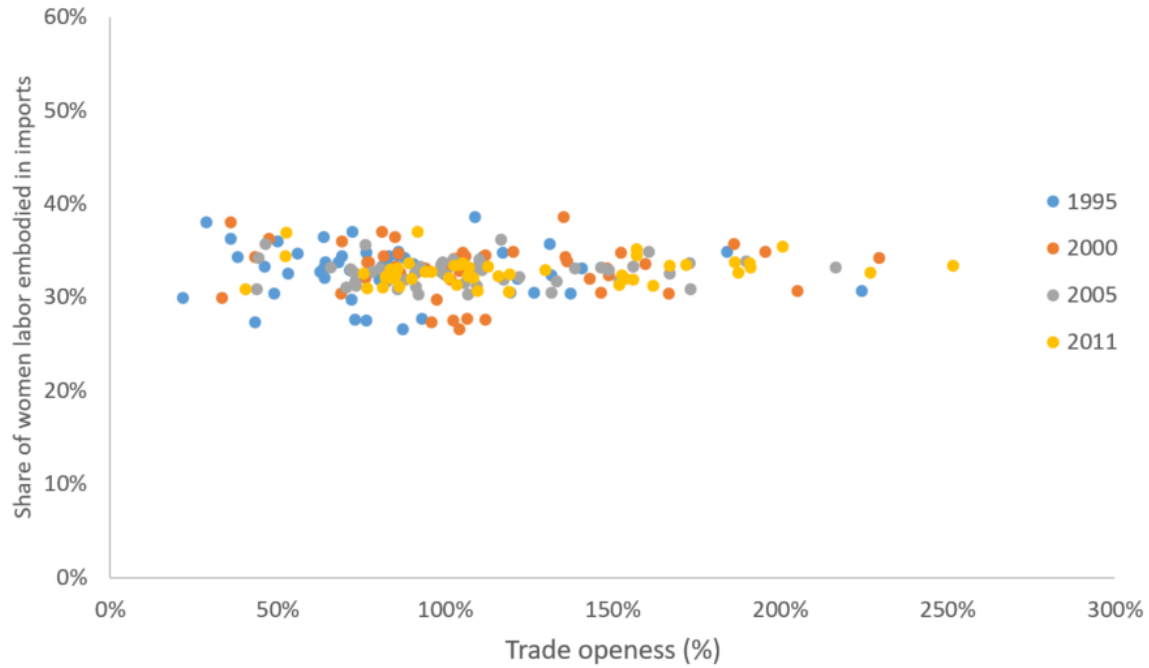
Figure 25-Share of women embodied labour in imports (left) and exports (right) and trade openness of the regions.

Note: In these figures, the regions are represented by several countries and sub-regions, the colour indicated in the legend is associated with each of the 19 regions. The participation of each country or sub-region is divided by gender, here the triangles correspond to women's participation and the circle to men's.

5. Discussion

In this section, the results were discussed in a broader context in which this project exists. First, the gender equality in employment with a special focus on trade flows and later the relation of GDP per capita with female participation. In the end, the uncertainties and limitations of the project are presented and discussed. Also some opportunities for future research.

5.1. Gender equality in employment

Gender equality in employment has been emphasized internationally as a key aspect in empowering women (United Nations, 2015). However, all the regions still present workforces that are far from gender parity. To start, a comprehensive overview of gender equality in the total employment will be discussed.

Total employment

Although some of the regions have increased the participation of women in the workforce from 1995 to 2011, this was not a homogenous trend and even in regions where this has happened the workforce was still dominated by males. In Africa and the Middle East, and in India, female participation has decreased. This can be associated with the increase of the income per capita due to the economic growth that these regions have experienced. As depicted in the "feminization U", as the GDP per capita increases women participation lessens in the labour force because there is no economic need that drives them to participate. This suggests that in economically growing or developed regions where the income per capita of one person is enough to provide for the household, women and men choose to follow traditional gender stereotypes. What this implies is that although gender stereotypes can change in time (Diekman et al., 2000; Eagly et al., 1984; Spence et al., 2000) they might not have done so yet. These results show that there is a long way to go before reaching a gender-equal workforce. The participation of women depends on several variables that can vary from region to region. Such variables include socio-economic conditions, and gender stereotypes, among others.

The regions where women present the lowest participation in the workforce are also the ones that present the weakest legislation in terms of gender equality (World Bank, 2018). In the study presented by the World Bank "*Women, Business and Law 2018*", the regions with the widest gaps in the legislation regarding the possibilities to get a job, the access to financial services, and

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protecting women against violence, among others, are also the ones with the lowest female participation in the workforce. This demonstrates that, in order to increase the participation of women, changes in the legal system need to take place. Education is another aspect of the social domain that is closely linked with the participation of women. Regions where the educational attainment of women is low and/or where the drop-off rate is high are regions where women are part of the low-skill segment or are regions where their participation is lower (UNESCO, 2013). Nonetheless, some of the regions with the strongest legislation that support and protect women in several aspects still present gender gaps in employment as found in this study and in the "feminization U". This might reflect that gender stereotypes prevail. Where the main responsibilities of women is to take care of the house and of the children, while the responsibility of men is to be the provider (Saltzman, 2006). It is clear that not only the legislation and the education system needs to change but also the social construct of gender that shapes how society works (Goldin, 1995; ILO, 2017; World Bank, 2014). The process of changing stereotypes requires that the common understanding of gender is challenged (Ridgeway, 2011), this supposes a social transformation that has a great potential to suppress the *position* and *status inequalities* that today are limiting the life of many women around the world. Therefore, female participation in the labour force is one variable that interacts with many others affecting and shaping the system at the same time.

The "feminization U" of the labour force and this study agree on the fact that female participation is related to several variables from the socio-economic domain. However, the results from both studies disagree in the way the participation of women is calculated. In the "feminization U", participation is considered as the active population amongst the total population that is in a working age. In this study, it is considered as the females share in total employment. This leads to differences between the results of both studies. In this study, developed regions are the ones that present the highest female participation, while in the "feminization U" women from the developed regions account for the highest participation. Other difference between both studies is the sample of countries used. In this study, due to data availability, few developing countries are included while in the "feminization U" the sample of developing countries is bigger, leading to the different results.

Domestic and export-supported employment

The total participation is composed of the domestic and export-supported employment when accounting from a producer perspective. In most of the regions, the female to male ratio in the exports is underperforming the domestic, with the exception of China and Indonesia. In the regions where the export-supported employemtn is underperforming the domestic, the exporting sectors are the most gender-unequal of the economy (Rueda-Cantuche et al., 2017). This result agrees with the German study case, where the participation of women in the exports is low because the exports come from capital-intensive sectors where women are the minority of the workforce (Schaffer, 2007). The highest participation of females in most of the regions is in services and agriculture, which includes jobs that have been traditionally performed by women. These are gender stereotypes that need to be challenged in order to increase gender equality. Although these two sectors are considered female intensive sectors they are still far from gender equality since the majority of the workers are men. The regions where female participation is low in the export industries are regions where manufacturing accounts for a considerable share or regions where female intensive sectors have contracted over time. However, the gender composition of the exports is not just bound to the sector but also to the region. This can be seen in Africa and the Middle East, and in India, where most of the employment is hosted by agriculture and services but the female ratios to male are amongst the lowest.

Another characteristic of the export-supported employment is the skill-level that the workforce has. The transition of countries towards a higher skill level as the GDP per capita increases is clearly depicted in Figure 11. The participation of both genders in regions with low GDP per capita is high in the low and medium skill. While in regions with high GDP per capita is higher in the upper skill level. Females participation in the low-skill level is higher than males in half of the countries. This suggests that export-supported employment has a positive impact in the employment of unskilled women (Bussman, 2009; Kapsos, 2005). Although the participation of women increases due to exports narrowing gender gaps, in some cases they are recognized as cheap labour and undergo unfair conditions (Ridgeway, 2011; Schober et al., 2011; Xiao et al., 2017b). Therefore, the transition towards the inclusion of women in the workforce has to happen with decent labour standards and by not taking advantage of their vulnerable position in some regions. This is in line with the results presented in the producer social risk footprint. These not only include the share of women participating in the labour force but also includes other indicators such as the United

Nations Development Program's Gender Inequality Index or the Global Gender Index Gap. Taking into account these indicators allows the footprint to reflect aspects of the quality of the jobs offered. When including these, supply chains that are known to be female intensive score low in terms of gender equality due to the conditions they offer to the workers. This is the case of the textile industry in Asian and African countries (Xiao et al.,2017).

The changes in the skill level shows that women are being incorporated into the labour force at the low and medium-skill level. While men are shifting towards higher-skill labour in the export-supported employment. Although it is a positive sign that women participation is increasing over time, a key to consider is that in order to empower women and change stereotypes they should also migrate towards the higher-skill level in the labour force. Being in a higher-skill level might allow the individual to have access to more resources and be more influential when making decisions. This challenges the *position inequalities* that shape society and can help in the construction of new gender stereotypes. To change the skill level that females have in the workforce, their education attainment needs to be equal to men. In some countries, this shift is already happening, but there are regions that are lagging behind. Once more, it is clear that the labour participation of women does not stand alone but is interconnected with other aspects of the social, economic and cultural domain that also present gender inequality. Here, the gender inequality from a territorial perspective was analyzed. Nonetheless, the footprint perspective allow us seeing how a region can drive inequality in the workforce of other regions through consumption.

Impacts of trade

The producer perspective shows that developed regions have improved their gender equality over time and perform better than developing regions. However, when using the consumer perspective their rates of gender equality decrease, showing that there is a transfer of embodied inequality through imports. These regions are still performing better than most of the developing regions because their domestic workforce has some of the highest ratios of female to male. However, when just the import-supported employment rates are taken into account the regions have a similar performance, therefore trade well-mixes inequality in the world. This transfer of social impacts through trade should not be ignored. Exports are forecast to increase, making countries to increasingly rely on one another to get goods and services. This makes countries more vulnerable to environmental and social impacts occurring outside their territories. Therefore, the responsibility

of building socially and environmentally sustainable supply chains does not only falls on the producer but also on the consumer. The affluent regions are driving labour around the world. They are the ones that have some of the highest shares of the total consumption allocated to imports, therefore is in their best interest that developing regions grow within a sustainable framework.

In each of the regions, the consumption categories account for a different percentage of the total embodied labour in the imports. These categories stimulate in different ways female employment depending on the region. There is no case where females represent a majority of the embodied labour force in the imports. However, the consumption categories that have the highest participation of embodied female labour are shelter, clothing and trade. Clothing is recognized worldwide for having some of the highest females embodied labour, most of the embodied labour coming into this category comes from the manufacturing of textiles and wearing apparel. This industry has been linked with unfair working conditions, where the companies in order to increase their profit paying low wages and having unsafe working conditions (Alsamawi et al., 2017b; Skorpen et al., 2015). Although these categories present some of the highest women shares does not mean that they are gender equal, since none of them have the same share of men and women. This is reflecting that the vast majority of the workers in the producer sectors are men.

The skill level of the workforce changes drastically when analyzing the export or import-supported employment. Patterns can be observed in the export-supported employment. As previously stated, regions with low GDP per capita tend to have higher share of low-skill labour and regions with higher GDP per capita tend to have a higher share of high-skilled labour. However, in the import-supported employment, there are patterns pointing out to a homogenous participation in all GDP per capita levels. This shows that the imports from most of the regions have a similar mix of skill level. The gaps between genders become wider in the import-supported employment in respect to the export-supported employment in the low-skill and medium-skill level. Here the global averages are further apart indicating that the share of embodied male labour will be always higher than the females.

Imports affect the gender equality of the region in different ways depending on where they come from and to which sector they belong to. North America and Australia are the two regions that have the highest change in the gender equality in the total employment from the consumer perspective to the producer. Considering the imports into the total calculation of gender equality allows regions

to get into perspective where and which products are driving the impacts. With this information, countries can develop new strategies to guarantee the embodied gender equality in their imports. The social and environmental embodied impacts have to be considered when evaluating possible trading patterns. The strategies that are implemented to improve the gender inequality footprint in the workforce or any other have to be cautious. By reducing or cutting off regions with low gender equality adverse social impacts can be generated. With a footprint perspective, regions can locate hotspots in their imports. This can be used to develop tailored trade policies to help the trading patterns improve their performance. Some of the key aspects to shape and drive the way women participate in the labour force were identified. In order to challenge the inequalities that have been found, there are a number of modifications and improvement that can be implemented in the social and economic domain.

5.2.Possible pathways to change

Several actions can be implemented in order to reach a labour force that is gender equal. These efforts need to be tailored to the specific characteristics of the region and consider the whole system in order to be effective. Legislation can enhance the participation of women and can help them to move forward closing gender gaps (ILO, 2017). Thus, policies responses need to aim at gender equality in employment at a domestic level and embodied in trade. The policy response related with domestic inequalities should aim at the modification of existing laws and regulations that affect women in the labour force negatively. In addition, the policies should aim to implement new laws and regulation that empower women. These regulations are not limited to policies directly linked with employment but also regulations that are related to other aspects of the economic and social domain that might affect women's employment. One example of a policy directly linked with employment is the law that made it illegal in Iceland to pay males more than their female counterpart for the same work. And one that is indirectly linked is the law that forbids women to have a national ID without their male guardian permission in Saudi Arabia. Now, from a footprint perspective, a way to tackle embody inequality in trade is through the implementation of policies that aim to help the trading partner to improve its performance. This can be done through political counselling or giving tax benefits to imports when they are manufactured in more gender equal conditions. Gender gaps in trade can be identified using a MRIO approach. With this method, each region or country can have a holistic grasp of the gender inequality in their workforce. MRIO

models allows a separate analysis of import, export and domestic supported employment. The interpretation of these results and the actions to improve gender inequality from a producer or footprint perspective needs to be cautious in acknowledging that in some cases, although the employment is marked by inequality, it constitutes the only income for many households. Depriving them of this can exacerbate the poverty conditions of the region.

Other policy responses are not directly linked with employment but are related to other aspects of the social and economicdomain that affect it. Understanding that the inequality in the labour force is a result of many interacting factors allows governments to avoid "gender-blind" policies that can impact in a negative way the gender equality. The educational system is closely linked with the outcomes in employment. Thus, several international programs aim to increase the participation of women in the educational system and obtainment of higher education level. At the end, this will increase the opportunities women have access to in the labour market. Additionally, through educational projects stereotypes and the self-perception of women can be challenged in order to build a new social construct of gender. This would suppose changes in the way a family interacts and in the roles men and women have today. As it was mentioned, gender is not the only form of inequality among individuals, race and social class generate differences, therefore policies that aim to eliminate race and social class also need to be implemented. As the legal and economic system are intertwined and affect the outcomes of the labour market, the relation between the participation of women in the workforce and the GDP per capita was analyzed. Nonetheless, the results of the regression show that there is no significant correlation.

5.3.The relation between the GDP per capita and gender equality

The relation between the GDP per capita and gender equality these results proved to be positively correlated but not significantly, from both consumer and producer perspective. The significance of the correlation between the two variables is increasing over time, especially after 2000. However, it is not significant enough to prove that there is a robust relation between these two variables from any perspective. Other studies have found a positive and significant correlation between economic growth and female participation in the labour force (Klasen, 1999; Klasen et al., 2009). Nonetheless, they include other variables to evaluate the economic growth of a region, as income per capita, the growth rate of the population and trade openness. These different considerations and other differences in the method might lead to the discrepancy regarding the significance of the

correlation in the studies. Thereby, there is a possibility to expand this question and not limit it to GDP per capita, but enlarge it to include other variables that reflect, in a more holistic way, the economic growth of a country.

Regarding the trade openness and the exports-supported employment, there is no pattern that indicates that the more open a country is to trade the female participation will increase. However, when the embodied share of women participation in the imports is included in the analysis the results show that trade well-mixes women participation in the import-supported employment. This demonstrates that the linkage between countries is stronger due to the exchange of goods and services. Converting the world in a system that exchanges embodied social and environmental impacts. The relation between women's participation, and trade openness and the GDP per capita can be explored using other methods that include more variables in the evaluation of the relation. More limitations are described in the following section, where the uncertainties and limitation will be exposed.

5.4. Uncertainties and limitations

There are some uncertainties associated with the economic data and the social indicator that were used to model gender equality in the workforce. The economic data is aggregated, therefore tracking specific products, industries or some countries is not possible, hindering hotspots. This economic dataset does not include the informal sector and employment here has a special connotation due to the conditions that are offered to the workers. For example, they lack a social protection scheme and formal association. Furthermore, the economic database does not include the subsistence agriculture. For gender equality studies, incorporating it in the analysis gives a complete picture of employment allowing us to follow the trends in integration of women to the workforce. The social indicators that were used to build the satellite account also present some uncertainties. First, the employment in the informal sector and informal employment are not taken into account, as in the economic dataset. Integrating these two would allow having a better understanding of the dynamics of employment and gender, as it was already mentioned. Female participation in informal employment is higher than males in some regions, while their participation in the informal sector is lower (ILO, 2013). This hints that there are some patterns worthy of analysis from a consumer and producer perspective to enhance the understanding of gender inequality in the labour force. However, this data is not available or the quality is low due to the

nature of employment (ILO, 2013). One source of uncertainty of the result is the quality of the social indicators that were used. The data collection system in some regions is not standardized, therefore to reduce the error in the data from these countries data were grouped in the Rest of the World regions.

The limitations of this study are linked to the availability of the social indicators. As previously mentioned, the understanding of gender equality in the workforce is restricted to the formal sector. It neglects the informal sector, which is part of the economy and also shape gender participation in the workforce. Two aspects of employment were not included in this study, wages and unemployment. Understanding how the wages are flowing between the regions and genders is a powerful input to build policies to address this gap, as it has been referred by others as a matter that needs urgent attention (ILO, 2016; Oostendorp, 2009). The inclusion of the wages in social footprint studies has proven to uncover inequality when comparing the labour and wage flows globally, as in the Employment Footprint. By including unemployment, the participation of women is understood considering the total population (active and inactive). These limitations are an opportunity for future research where people can either work on data collection or can model other aspects of gender inequality in the workforce that were not modelled here.

6. Conclusion

The results in this project showed that despite international and regional efforts the workforces of every region were still dominated by men in 2011. Some regions came a long way and were closer to reaching gender equality in terms of participation; however, China, Latin America and the Caribbean, Africa and the Middle East, and India have not made any advances in this matter. The latter two regions even decreased women's shares in employment from 1995 to 2011. The domestic, export and import-supported employment presented different female to male participation ratios in the regions. Showing that the gender inequality in the employment of the regions changes from the producer to the consumer perspective. In 2011, North America, Australia, Europe, OECD Asia, Latin America and the Caribbean, and Africa and the Middle East, presented a higher female to male ratio in the domestic-supported employment than in the export and import-supported employment. In the import-supported employment of every region, the ratios of female to male showed that trade well-mixed the inequality of the global supply chains. It ranged between 0.45 and 0.58, while the export ratios ranged from 0.25 to 0.7. In some regions the exporting sectors have a higher share of men in the labour force, thus the embodied gender equality in the exports is lower than in the domestic-supported employment. The sectors that present a higher participation of women in their exports-supported employment are agriculture and services. These results suggest that the gender inequality in the workforce was influenced by trade. The embodied gender inequality in the labour force are significantly affected by the social and economic conditions that each region has. Thus, policy responses have to be generated from the territorial and footprint perspective to deal with the impacts caused in a holistic manner.

The gender inequalities are not limited to women's share in employment. There is also inequality in the skill level of the jobs that women are involved in. Women tend to participate more than men in the low-skill level in half of the regions. On the contrary, in the medium and high-skill level men are the majority in most of the regions. Women's integration in the workforce shows that they are increasingly participating in the low and medium-skill level, while men are shifting towards high-skill levels, in India, the Rest of Asia, China, North America, and Indonesia. Although it is positive to increase women's participation, consideration to be made to the quality of the jobs they are participating in. The low-skill jobs are related to poor working condition thus this might affect the empowerment of women. One of the causes behind this is the educational attainment of women in these regions. This demonstrates that gender equality in employment is an outcome of the social

and economic domain. Thus, gender equality in employment is immersed in a system, and changes in other variables might directly or indirectly affect it. Therefore, policies not just targeting employment can have an influence on the matter. Is key to consider which policies are inhibiting women's employment today and how future policies might affect it. The relation between the GDP per capita and women's participation was not found significant, however in time the relation is becoming stronger. This result shows the need for further research to explore this question.

The imports share in the total consumption has grown over time and is expected to keep growing. Because of this, regions are increasingly relying on one another to obtain the goods and services they need. Therefore, environmental and social impacts caused in one region do not only jeopardize its own stability but other regions too. Working in achieving gender equality in the labour force from a producer and footprint perspective enables countries to identify hotspots in their supply chains. This can bring them to deal in a holistic manner with the impacts they cause. In this study, we explore the gender inequalities in employment-related with the share of women in the workforce and the skill-level they are involved in, these for different regions of the world and sectors. However, gender inequality has other representations that also need to be dealt with. Here we provided regions with a complementary understanding of the gender inequality in their workforce, it can be used to address both territorial impacts and impacts caused through consumption.

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Appendix I:

The ratio of women to men in the export-supported and domestic employment per region in 1995 and 2011 (Figure 10)

	Ratio female to male 1995		Ratio female to male 2011	
	Domestic	Export	Domestic	Export
North America	0.88	0.70	0.90	0.67
Latin America and the Caribbean	0.52	0.52	0.53	0.45
Europe	0.54	0.38	0.70	0.50
Africa and the Middle East	0.59	0.61	0.47	0.44
Australia	0.75	0.57	0.85	0.63
China	0.52	0.58	0.51	0.62
India	0.35	0.31	0.32	0.28
Indonesia	0.50	0.63	0.51	0.67
OECD Asia	0.60	0.51	0.73	0.49
Rest of Asia	0.53	0.52	0.58	0.53

Appendix II:

Gender participation in the export-supported employment in 2011 per region and skill-level: low-skill, medium-skill and high-skill (Figure 11)

Country	Low-skilled male	Low-skilled female	Medium-skilled male	Medium-skilled female	High-skilled male	High-skilled female	GDP per capita (euros per person)
Austria	6.01%	7.49%	32.27%	24.06%	19.46%	10.70%	36665
Belgium	4.79%	6.38%	28.17%	20.72%	25.96%	13.97%	34269
Bulgaria	7.49%	6.40%	34.50%	30.62%	11.81%	9.18%	5568
Cyprus	4.69%	18.79%	26.93%	24.08%	15.49%	10.02%	17484
Czech Republic	3.19%	4.43%	37.15%	22.03%	20.24%	12.96%	15558
Germany	4.76%	5.91%	32.59%	20.59%	23.25%	12.90%	33002
Denmark	8.20%	5.60%	33.73%	18.50%	23.10%	10.88%	44040
Estonia	5.13%	5.46%	36.91%	21.67%	16.31%	14.52%	12539
Spain	7.03%	12.17%	35.15%	20.62%	15.22%	9.80%	22869
Finland	4.84%	4.24%	34.76%	18.15%	24.57%	13.44%	36488
France	3.64%	5.44%	29.85%	21.96%	24.33%	14.77%	31472
Greece	2.98%	6.80%	40.50%	25.40%	16.55%	7.78%	18587
Croatia	3.57%	4.52%	41.15%	24.06%	15.22%	11.48%	10445

Hungary	2.73%	3.59%	40.18%	27.13%	14.83%	11.53%	10081
Ireland	4.85%	3.10%	28.82%	23.83%	26.11%	13.28%	37954
Italy	5.07%	7.33%	37.79%	18.48%	20.91%	10.42%	27563
Lithuania	4.48%	4.66%	34.44%	26.43%	14.87%	15.13%	10322
Luxembo urg	3.63%	6.14%	29.62%	18.38%	28.06%	14.17%	81355
Latvia	8.35%	6.77%	33.69%	19.33%	14.37%	17.48%	9900
Malta	9.45%	3.27%	34.33%	21.99%	22.05%	8.91%	16536
Netherlan ds	7.18%	4.85%	31.26%	19.95%	25.51%	11.26%	38463
Poland	3.52%	4.71%	42.35%	26.38%	12.85%	10.20%	9857
Portugal	3.42%	9.64%	39.62%	29.34%	11.80%	6.17%	16664
Romania	5.75%	4.16%	39.63%	32.92%	9.29%	8.25%	6609
Sweden	2.89%	3.55%	34.23%	20.46%	24.12%	14.75%	42811
Slovenia	3.29%	3.91%	41.72%	22.98%	16.53%	11.57%	17949
Slovakia	4.77%	4.52%	41.21%	25.45%	13.84%	10.21%	13032
United Kingdom	4.47%	2.53%	33.91%	21.12%	26.76%	11.21%	29467
United States	5.46%	1.65%	37.01%	27.87%	17.84%	10.18%	35778
Japan	5.94%	6.50%	43.96%	12.45%	18.51%	12.63%	33211
China	10.60 %	5.13%	48.36%	32.37%	2.76%	0.78%	3977
Canada	6.33%	3.25%	35.37%	22.84%	19.10%	13.11%	37417
South Korea	6.26%	6.14%	45.38%	24.51%	15.15%	2.55%	17353
Brazil	5.51%	22.00%	43.65%	21.37%	5.36%	2.11%	9540
India	13.80 %	3.46%	59.34%	18.19%	4.71%	0.49%	1113
Mexico	7.67%	13.81%	44.98%	21.93%	8.48%	3.12%	7038
Russia	5.91%	5.70%	36.03%	23.04%	14.83%	14.49%	9572
Australia	6.47%	3.89%	36.59%	23.08%	18.32%	11.65%	49358
Switzerla nd	2.62%	2.88%	32.45%	22.71%	27.06%	12.28%	63217
Turkey	9.50%	7.21%	49.08%	18.13%	13.31%	2.77%	7618
Taiwan	4.88%	7.67%	45.79%	25.84%	13.61%	2.22%	14710
Norway	2.48%	2.56%	42.60%	18.80%	23.72%	9.83%	72252
Indonesia	12.37 %	10.40%	44.27%	28.91%	3.15%	0.90%	2631
South Africa	16.17 %	20.04%	28.68%	18.07%	10.58%	6.45%	5802
RoW Asia and Pacific	13.22 %	5.31%	48.24%	27.42%	4.29%	1.52%	2226

RoW America	7.06%	3.81%	60.46%	15.62%	9.68%	3.38%	5807
RoW Europe	12.58%	6.71%	46.16%	14.33%	13.51%	6.71%	3385
RoW Africa	36.05%	21.02%	25.33%	8.16%	6.75%	2.70%	1123
RoW Middle East	14.10%	3.36%	56.59%	10.20%	13.44%	2.31%	7264

Appendix III:

Female to male ratio from 1995 to 2011 in export-supported employment per skill-level and region (Figure 12)

Region	Skill level	Year	Ratio male to female
North America	Low	1995	0.36
	Low	2011	0.33
	Medium	1995	0.61
	Medium	2011	0.76
	High	1995	1.00
	High	2011	0.60
Latin America and the Caribbean	Low	1995	1.69
	Low	2011	1.53
	Medium	1995	0.41
	Medium	2011	0.33
	High	1995	0.37
	High	2011	0.36
Europe	Low	1995	0.52
	Low	2011	0.73
	Medium	1995	0.35
	Medium	2011	0.43
	High	1995	0.38
	High	2011	0.53
Africa and the Middle East	Low	1995	0.92
	Low	2011	0.58
	Medium	1995	0.47
	Medium	2011	0.31
	High	1995	0.35
	High	2011	0.36
Australia	Low	1995	0.72
	Low	2011	0.60
	Medium	1995	0.51

	Medium	2011	0.63
	High	1995	0.62
	High	2011	0.64
China	Low	1995	0.42
	Low	2011	0.48
	Medium	1995	0.59
	Medium	2011	0.67
	High	1995	0.72
	High	2011	0.28
India	Low	1995	0.13
	Low	2011	0.25
	Medium	1995	0.35
	Medium	2011	0.31
	High	1995	0.22
	High	2011	0.10
Indonesia	Low	1995	0.74
	Low	2011	0.84
	Medium	1995	0.62
	Medium	2011	0.65
	High	1995	0.42
	High	2011	0.29
OECD Asia	Low	1995	1.31
	Low	2011	1.12
	Medium	1995	0.46
	Medium	2011	0.44
	High	1995	0.41
	High	2011	0.41
Rest of Asia	Low	1995	0.30
	Low	2011	0.41
	Medium	1995	0.55
	Medium	2011	0.57
	High	1995	0.51
	High	2011	0.44

Appendix IV:

Gender participation per region and per sector in 1995 and 2011 (share in export-supported employment) (Figure 13)

Region	Sector	1995		2011	
		Share Men	**Share Women**	**Share Men**	**Share Women**
North America	**Agriculture**	3%	1%	4%	1%
	Mining	1%	0%	2%	0%
	Manufacturing	18%	7%	14%	5%
	Construction	0%	0%	0%	0%
	Transport, electricity and utilities	2%	1%	2%	1%
	Services	34%	32%	38%	33%
Latin America and the Caribbean	**Agriculture**	29%	7%	28%	6%
	Mining	4%	1%	9%	1%
	Manufacturing	14%	5%	15%	6%
	Construction	1%	0%	0%	0%
	Transport, electricity and utilities	2%	1%	3%	0%
	Services	16%	20%	13%	18%
Europe	**Agriculture**	24%	7%	16%	6%
	Mining	1%	0%	2%	0%
	Manufacturing	26%	7%	21%	6%
	Construction	2%	0%	2%	0%
	Transport, electricity and utilities	4%	1%	5%	1%
	Services	15%	13%	20%	19%
Africa and the Middle East	**Agriculture**	37%	29%	42%	21%
	Mining	7%	0%	11%	1%
	Manufacturing	4%	1%	3%	1%
	Construction	0%	0%	0%	0%
	Transport, electricity and utilities	3%	0%	3%	1%
	Services	11%	7%	10%	8%
Australia	**Agriculture**	14%	6%	13%	6%
	Mining	2%	0%	4%	1%
	Manufacturing	18%	5%	11%	3%
	Construction	1%	0%	1%	0%
	Transport, electricity and utilities	4%	1%	4%	1%
	Services	25%	23%	29%	28%
China	**Agriculture**	29%	18%	23%	14%
	Mining	1%	0%	1%	1%

	Manufacturing	22%	12%	23%	14%
	Construction	0%	0%	0%	0%
	Transport, electricity and utilities	2%	1%	2%	1%
	Services	8%	6%	13%	9%
India	Agriculture	37%	19%	32%	15%
	Mining	3%	0%	6%	1%
	Manufacturing	21%	3%	27%	3%
	Construction	0%	0%	0%	0%
	Transport, electricity and utilities	6%	0%	3%	0%
	Services	8%	2%	10%	2%
Indonesia	Agriculture	19%	10%	15%	9%
	Mining	1%	0%	1%	0%
	Manufacturing	19%	12%	12%	8%
	Construction	0%	0%	0%	0%
	Transport, electricity and utilities	3%	0%	3%	0%
	Services	19%	16%	28%	22%
OECD Asia	Agriculture	2%	1%	1%	1%
	Mining	0%	0%	0%	0%
	Manufacturing	39%	15%	36%	12%
	Construction	1%	0%	1%	0%
	Transport, electricity and utilities	4%	1%	5%	1%
	Services	21%	18%	23%	20%
Rest of Asia	Agriculture	29%	17%	23%	14%
	Mining	4%	1%	11%	7%
	Manufacturing	15%	7%	17%	7%
	Construction	0%	0%	0%	0%
	Transport, electricity and utilities	4%	0%	3%	0%
	Services	13%	10%	11%	6%

Appendix V:

Female to male ratio from a consumer and producer perspective in 1995 and 2011 per region (Figure 14)

Region	Year	Producer perspective	Footprint perspective
North America	2011	0.88	0.69
Latin America and the Caribbean	2011	0.52	0.53
Europe	2011	0.67	0.62
Africa and the Middle East	2011	0.46	0.47
Australia	2011	0.81	0.58
China	2011	0.52	0.51
India	2011	0.32	0.33
Indonesia	2011	0.55	0.50
OECD Asia	2011	0.68	0.65
North America	1995	0.86	0.71
Latin America and the Caribbean	1995	0.52	0.52
Europe	1995	0.52	0.55
Africa and the Middle East	1995	0.59	0.58
Australia	1995	0.72	0.59
China	1995	0.53	0.52
India	1995	0.34	0.35
Indonesia	1995	0.52	0.49
OECD Asia	1995	0.59	0.59

Appendix VI:

Female to male ratio from a consumer and producer perspective in 1995 and 2011 per region (Figure 15)

Region	Year	Type	Ratio
North America	2011	Exports	0.67
Latin America and the Caribbean	2011	Exports	0.45
Europe	2011	Exports	0.50
Africa and the Middle East	2011	Exports	0.44
Australia	2011	Exports	0.63
China	2011	Exports	0.62
India	2011	Exports	0.28
Indonesia	2011	Exports	0.67
OECD Asia	2011	Exports	0.49
Rest of Asia	2011	Exports	0.53
North America	2011	Imports	0.52

Latin America and the Caribbean	2011	Imports	0.50
Europe	2011	Imports	0.50
Africa and the Middle East	2011	Imports	0.45
Australia	2011	Imports	0.48
China	2011	Imports	0.50
India	2011	Imports	0.50
Indonesia	2011	Imports	0.45
OECD Asia	2011	Imports	0.56
Rest of Asia	2011	Imports	0.46
North America	1995	Exports	0.70
Latin America and the Caribbean	1995	Exports	0.52
Europe	1995	Exports	0.38
Africa and the Middle East	1995	Exports	0.61
Australia	1995	Exports	0.57
China	1995	Exports	0.58
India	1995	Exports	0.31
Indonesia	1995	Exports	0.63
OECD Asia	1995	Exports	0.51
Rest of Asia	1995	Exports	0.52
North America	1995	Imports	0.52
Latin America and the Caribbean	1995	Imports	0.52
Europe	1995	Imports	0.55
Africa and the Middle East	1995	Imports	0.48
Australia	1995	Imports	0.47
China	1995	Imports	0.49
India	1995	Imports	0.57
Indonesia	1995	Imports	0.47
OECD Asia	1995	Imports	0.58
Rest of Asia	1995	Imports	0.47
North America	2011	Domestic	0.90
Latin America and the Caribbean	2011	Domestic	0.53
Europe	2011	Domestic	0.70
Africa and the Middle East	2011	Domestic	0.47
Australia	2011	Domestic	0.85
China	2011	Domestic	0.51
India	2011	Domestic	0.32
Indonesia	2011	Domestic	0.51
OECD Asia	2011	Domestic	0.73
Rest of Asia	2011	Domestic	0.58
North America	1995	Domestic	0.88
Latin America and the Caribbean	1995	Domestic	0.52
Europe	1995	Domestic	0.54
Africa and the Middle East	1995	Domestic	0.59

Australia		1995	Domestic				0.75
China		1995	Domestic				0.52
India		1995	Domestic				0.35
Indonesia		1995	Domestic				0.50
OECD Asia		1995	Domestic				0.60
Rest of Asia		1995	Domestic				0.53

Appendix VI:

Embodied male and female labour in the imports per region and per sector in 1995 and 2011 (Figure 16)

Region	Consumer sector	Year	Gender	Total male (million FTE)	Total women (million FTE)	Share Male	Share women
North America	Food	1995	Male	9.84	4.66	0.11	0.05
	Clothing	1995	Male	6.46	4.35	0.07	0.05
	Shelter	1995	Male	0.66	0.55	0.01	0.01
	Construction	1995	Male	3.14	1.31	0.03	0.01
	Manuf. prod	1995	Male	17.88	8.48	0.20	0.09
	Services	1995	Male	18.70	10.61	0.20	0.12
	Mobility	1995	Male	2.71	1.04	0.03	0.01
	Trade	1995	Male	0.59	0.39	0.01	0.00
Latin America and the Caribbean	Food	1995	Male	1.29	0.71	0.08	0.05
	Clothing	1995	Male	0.72	0.48	0.05	0.03
	Shelter	1995	Male	0.14	0.07	0.01	0.00
	Construction	1995	Male	0.78	0.31	0.05	0.02
	Manuf. prod	1995	Male	3.02	1.39	0.20	0.09
	Services	1995	Male	3.18	1.86	0.21	0.12
	Mobility	1995	Male	0.78	0.32	0.05	0.02
	Trade	1995	Male	0.23	0.15	0.01	0.01
Europe	Food	1995	Male	23.61	14.88	0.19	0.12
	Clothing	1995	Male	6.16	3.77	0.05	0.03
	Shelter	1995	Male	1.87	1.64	0.01	0.01
	Construction	1995	Male	5.20	2.12	0.04	0.02
	Manuf. prod	1995	Male	19.17	8.96	0.15	0.07
	Services	1995	Male	18.68	10.62	0.15	0.09
	Mobility	1995	Male	4.45	1.59	0.04	0.01
	Trade	1995	Male	1.37	0.85	0.01	0.01
Africa and the Middle East	Food	1995	Male	3.10	1.49	0.11	0.05
	Clothing	1995	Male	1.51	0.86	0.05	0.03
	Shelter	1995	Male	0.26	0.13	0.01	0.00
	Construction	1995	Male	2.17	0.86	0.08	0.03

	Manuf. prod	1995	Male	4.76	1.92	0.17	0.07
	Services	1995	Male	5.64	3.13	0.21	0.11
	Mobility	1995	Male	0.62	0.27	0.02	0.01
	Trade	1995	Male	0.42	0.28	0.02	0.01
Australia	Food	1995	Male	1.00	0.55	0.13	0.07
	Clothing	1995	Male	0.41	0.25	0.05	0.03
	Shelter	1995	Male	0.05	0.02	0.01	0.00
	Construction	1995	Male	0.42	0.17	0.06	0.02
	Manuf. prod	1995	Male	1.50	0.63	0.20	0.08
	Services	1995	Male	1.23	0.63	0.16	0.08
	Mobility	1995	Male	0.49	0.18	0.06	0.02
	Trade	1995	Male	0.05	0.03	0.01	0.00
China	Food	1995	Male	1.03	0.54	0.09	0.05
	Clothing	1995	Male	0.20	0.11	0.02	0.01
	Shelter	1995	Male	0.19	0.09	0.02	0.01
	Construction	1995	Male	2.28	1.00	0.20	0.09
	Manuf. prod	1995	Male	1.54	0.70	0.13	0.06
	Services	1995	Male	2.07	1.10	0.18	0.10
	Mobility	1995	Male	0.12	0.05	0.01	0.00
	Trade	1995	Male	0.30	0.21	0.03	0.02
India	Food	1995	Male	1.87	1.21	0.30	0.19
	Clothing	1995	Male	0.13	0.08	0.02	0.01
	Shelter	1995	Male	0.07	0.03	0.01	0.01
	Construction	1995	Male	0.26	0.13	0.04	0.02
	Manuf. prod	1995	Male	1.10	0.50	0.18	0.08
	Services	1995	Male	0.43	0.26	0.07	0.04
	Mobility	1995	Male	0.09	0.04	0.01	0.01
	Trade	1995	Male	0.01	0.01	0.00	0.00
Indonesia	Food	1995	Male	1.19	0.67	0.18	0.10
	Clothing	1995	Male	0.12	0.07	0.02	0.01
	Shelter	1995	Male	0.12	0.05	0.02	0.01
	Construction	1995	Male	0.94	0.34	0.14	0.05
	Manuf. prod	1995	Male	0.98	0.38	0.15	0.06
	Services	1995	Male	0.75	0.41	0.11	0.06
	Mobility	1995	Male	0.41	0.19	0.06	0.03
	Trade	1995	Male	0.08	0.04	0.01	0.01
OECD Asia	Food	1995	Male	14.40	8.06	0.22	0.12
	Clothing	1995	Male	3.05	2.21	0.05	0.03
	Shelter	1995	Male	0.83	0.72	0.01	0.01
	Construction	1995	Male	4.32	2.22	0.06	0.03
	Manuf. prod	1995	Male	10.45	5.58	0.16	0.08
	Services	1995	Male	7.09	4.50	0.11	0.07
	Mobility	1995	Male	1.78	0.86	0.03	0.01

	Trade	1995	Male	0.44	0.32	0.01	0.00
Rest of Asia	Food	1995	Male	14.24	6.45	0.18	0.08
	Clothing	1995	Male	6.58	4.52	0.08	0.06
	Shelter	1995	Male	1.14	0.46	0.01	0.01
	Construction	1995	Male	6.48	2.55	0.08	0.03
	Manuf. prod	1995	Male	15.31	6.32	0.19	0.08
	Services	1995	Male	9.36	4.55	0.12	0.06
	Mobility	1995	Male	0.88	0.36	0.01	0.00
	Trade	1995	Male	0.95	0.56	0.01	0.01
North America	Food	2011	Male	15.10	6.92	0.11	0.05
	Clothing	2011	Male	7.13	4.89	0.05	0.04
	Shelter	2011	Male	2.84	3.61	0.02	0.03
	Construction	2011	Male	5.07	2.10	0.04	0.02
	Manuf. prod	2011	Male	29.14	14.56	0.21	0.11
	Services	2011	Male	25.52	12.88	0.19	0.09
	Mobility	2011	Male	3.90	1.36	0.03	0.01
	Trade	2011	Male	0.36	0.25	0.00	0.00
Latin America and the Caribbean	Food	2011	Male	3.35	1.73	0.09	0.04
	Clothing	2011	Male	1.75	1.11	0.04	0.03
	Shelter	2011	Male	0.25	0.11	0.01	0.00
	Construction	2011	Male	2.07	0.88	0.05	0.02
	Manuf. prod	2011	Male	10.40	4.81	0.26	0.12
	Services	2011	Male	6.50	3.52	0.17	0.09
	Mobility	2011	Male	1.62	0.61	0.04	0.02
	Trade	2011	Male	0.39	0.27	0.01	0.01
Europe	Food	2011	Male	34.50	17.01	0.18	0.09
	Clothing	2011	Male	9.53	5.83	0.05	0.03
	Shelter	2011	Male	4.38	3.55	0.02	0.02
	Construction	2011	Male	11.14	4.67	0.06	0.02
	Manuf. prod	2011	Male	31.07	14.50	0.16	0.07
	Services	2011	Male	30.93	15.78	0.16	0.08
	Mobility	2011	Male	8.41	2.97	0.04	0.02
	Trade	2011	Male	1.78	1.02	0.01	0.01
Africa and the Middle East	Food	2011	Male	9.62	4.78	0.13	0.06
	Clothing	2011	Male	3.58	2.10	0.05	0.03
	Shelter	2011	Male	0.93	0.40	0.01	0.01
	Construction	2011	Male	7.63	3.02	0.10	0.04
	Manuf. prod	2011	Male	16.43	6.42	0.22	0.08
	Services	2011	Male	11.47	5.69	0.15	0.08
	Mobility	2011	Male	1.89	0.69	0.02	0.01
	Trade	2011	Male	0.67	0.44	0.01	0.01
Australia	Food	2011	Male	2.07	1.18	0.10	0.06
	Clothing	2011	Male	0.52	0.35	0.03	0.02

	Shelter	2011	Male	0.12	0.06	0.01	0.00
	Construction	2011	Male	1.40	0.62	0.07	0.03
	Manuf. prod	2011	Male	5.01	2.14	0.25	0.11
	Services	2011	Male	3.24	1.69	0.16	0.09
	Mobility	2011	Male	0.79	0.29	0.04	0.01
	Trade	2011	Male	0.20	0.12	0.01	0.01
China	Food	2011	Male	8.04	4.28	0.10	0.05
	Clothing	2011	Male	1.66	0.88	0.02	0.01
	Shelter	2011	Male	2.12	1.40	0.03	0.02
	Construction	2011	Male	12.80	6.01	0.16	0.08
	Manuf. prod	2011	Male	14.83	7.05	0.19	0.09
	Services	2011	Male	11.08	5.66	0.14	0.07
	Mobility	2011	Male	0.61	0.25	0.01	0.00
	Trade	2011	Male	0.65	0.53	0.01	0.01
India	Food	2011	Male	6.66	3.50	0.23	0.12
	Clothing	2011	Male	0.70	0.40	0.02	0.01
	Shelter	2011	Male	0.29	0.14	0.01	0.00
	Construction	2011	Male	2.73	1.26	0.09	0.04
	Manuf. prod	2011	Male	5.92	2.80	0.21	0.10
	Services	2011	Male	1.76	0.96	0.06	0.03
	Mobility	2011	Male	1.08	0.42	0.04	0.01
	Trade	2011	Male	0.13	0.07	0.00	0.00
Indonesia	Food	2011	Male	2.49	1.39	0.17	0.10
	Clothing	2011	Male	0.22	0.12	0.02	0.01
	Shelter	2011	Male	0.32	0.13	0.02	0.01
	Construction	2011	Male	2.31	0.95	0.16	0.07
	Manuf. prod	2011	Male	3.12	1.25	0.21	0.09
	Services	2011	Male	1.13	0.51	0.08	0.04
	Mobility	2011	Male	0.42	0.14	0.03	0.01
	Trade	2011	Male	0.03	0.02	0.00	0.00
OECD Asia	Food	2011	Male	13.55	7.49	0.17	0.10
	Clothing	2011	Male	2.72	1.99	0.03	0.03
	Shelter	2011	Male	0.94	0.76	0.01	0.01
	Construction	2011	Male	5.79	3.01	0.07	0.04
	Manuf. prod	2011	Male	12.53	6.92	0.16	0.09
	Services	2011	Male	12.05	6.75	0.15	0.09
	Mobility	2011	Male	2.21	1.07	0.03	0.01
	Trade	2011	Male	0.14	0.10	0.00	0.00
Rest of Asia	Food	2011	Male	14.28	6.70	0.19	0.09
	Clothing	2011	Male	3.10	2.02	0.04	0.03
	Shelter	2011	Male	0.67	0.28	0.01	0.00
	Construction	2011	Male	5.27	2.00	0.07	0.03
	Manuf. prod	2011	Male	17.48	7.84	0.23	0.10

Services	2011	Male	8.01	3.84	0.11	0.05
Mobility	2011	Male	1.94	0.66	0.03	0.01
Trade	2011	Male	1.08	0.60	0.01	0.01

Appendix VII:

Gender embody participation in the imports in 2011 per region and skill-level (Figure 17)

Country	Low-skilled male	Low-skilled female	Medium-skilled male	Medium-skilled female	High-skilled male	High-skilled female	GDP per capita (euros per person)
Austria	14.57%	7.35%	43.54%	20.39%	9.55%	4.60%	36665
Belgium	17.87%	9.09%	42.28%	20.08%	7.47%	3.22%	34269
Bulgaria	14.05%	6.80%	44.28%	20.55%	9.72%	4.60%	5568
Cyprus	15.06%	7.49%	43.41%	20.11%	9.50%	4.44%	17484
Czech Republic	14.74%	7.74%	43.08%	21.62%	8.74%	4.08%	15558
Germany	14.45%	7.25%	44.47%	22.44%	7.83%	3.55%	33002
Denmark	14.84%	7.40%	43.53%	21.14%	8.86%	4.24%	44040
Estonia	18.38%	9.96%	39.35%	18.67%	9.02%	4.62%	12539
Spain	19.30%	9.93%	41.07%	18.70%	7.62%	3.37%	22869
Finland	13.59%	6.99%	42.66%	21.70%	10.02%	5.04%	36488
France	20.69%	10.86%	39.17%	18.38%	7.63%	3.28%	31472
Greece	15.67%	7.96%	43.34%	19.81%	8.90%	4.32%	18587
Croatia	13.82%	7.17%	44.60%	19.36%	10.22%	4.82%	10445
Hungary	12.82%	6.69%	43.49%	21.58%	10.20%	5.22%	10081
Ireland	14.40%	7.46%	39.96%	22.37%	10.23%	5.58%	37954
Italy	16.32%	8.30%	43.24%	20.59%	7.99%	3.57%	27563
Lithuania	13.39%	7.13%	44.27%	19.46%	10.30%	5.45%	10322
Luxembourg	18.91%	9.99%	40.33%	19.99%	7.31%	3.47%	81355
Latvia	12.06%	6.42%	45.02%	19.05%	11.55%	5.90%	9900
Malta	13.71%	6.91%	43.40%	20.91%	10.18%	4.88%	16536
Netherlands	18.48%	9.45%	41.87%	19.73%	7.38%	3.10%	38463
Poland	14.98%	7.65%	43.61%	20.75%	8.92%	4.08%	9857
Portugal	17.50%	9.16%	41.72%	18.66%	8.70%	4.26%	16664
Romania	13.75%	6.99%	43.94%	20.34%	10.17%	4.81%	6609
Sweden	14.29%	7.30%	42.97%	21.61%	9.43%	4.40%	42811
Slovenia	13.12%	6.91%	45.28%	19.56%	10.34%	4.79%	17949
Slovakia	13.42%	7.32%	43.23%	21.68%	9.53%	4.83%	13032
United Kingdom	15.84%	12.47%	39.71%	20.28%	7.45%	4.25%	29467
United States	12.82%	8.23%	45.48%	23.39%	7.22%	2.85%	35778

Japan	13.67%	10.53%	44.63%	24.64%	4.74%	1.78%	33211
China	14.34%	7.41%	45.88%	23.51%	6.30%	2.56%	3977
Canada	13.64%	6.82%	44.81%	23.43%	7.90%	3.40%	37417
South Korea	12.94%	6.25%	46.76%	25.93%	5.77%	2.35%	17353
Brazil	14.14%	6.81%	47.13%	21.11%	7.87%	2.95%	9540
India	20.35%	10.36%	40.53%	20.54%	5.97%	2.26%	1113
Mexico	12.46%	6.03%	45.87%	23.33%	8.66%	3.66%	7038
Russia	14.37%	7.27%	45.75%	20.18%	8.75%	3.67%	9572
Australia	13.29%	6.05%	48.04%	24.30%	6.13%	2.19%	49358
Switzerland	15.44%	7.68%	42.24%	20.81%	9.38%	4.45%	63217
Turkey	16.06%	7.71%	45.30%	20.44%	7.43%	3.06%	7618
Taiwan	13.33%	6.52%	47.14%	24.82%	5.80%	2.39%	14710
Norway	14.03%	7.36%	43.66%	21.81%	8.92%	4.22%	72252
Indonesia	13.87%	5.71%	49.95%	23.76%	5.17%	1.54%	2631
South Africa	18.09%	8.67%	41.17%	19.36%	8.53%	4.18%	5802
RoW Asia and Pacific	13.32%	6.74%	46.91%	23.07%	7.15%	2.82%	2226
RoW America	13.16%	6.18%	46.15%	23.31%	7.90%	3.30%	5807
RoW Europe	14.61%	7.14%	41.14%	22.76%	9.09%	5.26%	3385
RoW Africa	11.27%	4.51%	50.46%	23.16%	7.56%	3.04%	1123
RoW Middle East	15.22%	6.82%	47.51%	21.40%	6.62%	2.43%	7264

Appendix VIII:

The share of imports to Australia per region and year (Figure 18)

	2011				1995			
	Male	Female	Ratio	% of flow	Male	Female	Ratio	% of flow
North America	0.20	0.13	1.59	0.01	0.12	0.07	1.59	0.01
Latin America and the Caribbean	0.36	0.16	2.31	0.02	0.14	0.09	1.66	0.02
Europe	0.84	0.47	1.78	0.05	0.34	0.17	2.03	0.04
Africa and the Middle East	1.45	0.64	2.28	0.07	0.50	0.26	1.93	0.05
Australia	4.56	3.89	1.17	0.30	3.79	2.85	1.33	0.47
China	1.97	1.24	1.59	0.11	0.95	0.55	1.72	0.11
India	0.93	0.27	3.41	0.04	0.35	0.10	3.63	0.03
Indonesia	0.40	0.23	1.73	0.02	0.18	0.10	1.86	0.02
OECD Asia	0.28	0.14	2.05	0.01	0.16	0.08	2.04	0.02
Rest of Asia	6.92	3.17	2.18	0.36	2.41	1.03	2.34	0.24
Total	17.92	10.33			8.94	5.29		

Sankey diagram Australia 1995 (Figure 19)

Producer sector	Consumer sector	Total labour (million FTE)	Male labour (million FTE)	Female labour (million FTE)
Agriculture	Food	0.82	0.82	0.00
Others	Food	0.04	0.04	0.00
Manufacturing	Food	0.07	0.07	0.00
Services	Food	0.07	0.07	0.00
Agriculture	Clothing	0.17	0.17	0.00
Others	Clothing	0.03	0.03	0.00
Manufacturing	Clothing	0.16	0.16	0.00
Services	Clothing	0.05	0.05	0.00
Agriculture	Others	0.13	0.13	0.00
Manufacturing	Others	0.15	0.15	0.00
Others	Others	0.10	0.10	0.00
Services	Others	0.13	0.13	0.00
Agriculture	Manufactured products	0.24	0.24	0.00
Others	Manufactured products	0.15	0.15	0.00
Manufacturing	Manufactured products	0.90	0.90	0.00
Services	Manufactured products	0.21	0.21	0.00
Agriculture	Services	0.44	0.44	0.00
Others	Services	0.15	0.15	0.00
Manufacturing	Services	0.29	0.29	0.00
Services	Services	0.35	0.35	0.00
Agriculture	Mobility	0.11	0.11	0.00
Others	Mobility	0.17	0.17	0.00
Manufacturing	Mobility	0.07	0.07	0.00
Services	Mobility	0.13	0.13	0.00
Agriculture	Food	0.47	0.00	0.47
Others	Food	0.01	0.00	0.01
Manufacturing	Food	0.02	0.00	0.02
Services	Food	0.04	0.00	0.04
Agriculture	Clothing	0.10	0.00	0.10
Others	Clothing	0.00	0.00	0.00

Manufacturing	Clothing	0.11	0.00	0.11
Services	Clothing	0.03	0.00	0.03
Agriculture	Others	0.08	0.00	0.08
Others	Others	0.02	0.00	0.02
Manufacturing	Others	0.04	0.00	0.04
Services	Others	0.08	0.00	0.08
Agriculture	Manufactured products	0.14	0.00	0.14
Others	Manufactured products	0.03	0.00	0.03
Manufacturing	Manufactured products	0.30	0.00	0.30
Services	Manufactured products	0.15	0.00	0.15
Agriculture	Services	0.27	0.00	0.27
Others	Services	0.02	0.00	0.02
Manufacturing	Services	0.10	0.00	0.10
Services	Services	0.23	0.00	0.23
Agriculture	Mobility	0.07	0.00	0.07
Others	Mobility	0.03	0.00	0.03
Manufacturing	Mobility	0.02	0.00	0.02
Services	Mobility	0.06	0.00	0.06

Sankey Australia diagram 2011 (Figure 20)

Producer sector	Consumer sector	Total labour (million FTE)	Male labour (million FTE)	Female labour (million FTE)
Agriculture	Food	1.77	1.77	0.00
Agriculture	Others	0.32	0.32	0.00
Agriculture	Construction	0.26	0.26	0.00
Agriculture	Manufactured products	0.66	0.66	0.00
Agriculture	Mobility	0.13	0.13	0.00
Agriculture	Services	1.11	1.11	0.00
Manufacturing	Food	0.10	0.10	0.00
Manufacturing	Construction	0.50	0.50	0.00

Manufacturing	Manufactured products	2.94	2.94	0.00
Manufacturing	Others	0.23	0.23	0.00
Manufacturing	Mobility	0.12	0.12	0.00
Manufacturing	Services	0.75	0.75	0.00
Others	Food	0.09	0.09	0.00
Others	Construction	0.43	0.43	0.00
Others	Manufactured products	0.64	0.64	0.00
Others	Others	0.08	0.06	0.00
Others	Mobility	0.34	0.34	0.00
Others	Services	0.46	0.46	0.00
Services	Food	0.12	0.12	0.00
Services	Construction	0.22	0.22	0.00
Services	Manufactured products	0.77	0.77	0.00
Services	Others	0.20	0.20	0.00
Services	Mobility	0.20	0.20	0.00
Services	Services	0.92	0.92	0.00
Agriculture	Food	1.03	0.00	1.03
Agriculture	Others	0.18	0.00	0.18
Agriculture	Construction	0.15	0.00	0.15
Agriculture	Manufactured products	0.36	0.00	0.36
Agriculture	Mobility	0.07	0.00	0.07
Agriculture	Services	0.61	0.00	0.61
Manufacturing	Food	0.04	0.00	0.04
Manufacturing	Construction	0.13	0.00	0.13
Manufacturing	Manufactured products	0.96	0.00	0.96
Manufacturing	Others	0.18	0.00	0.18
Manufacturing	Mobility	0.02	0.00	0.02
Manufacturing	Services	0.25	0.00	0.25
Others	Food	0.03	0.00	0.03
Others	Construction	0.20	0.00	0.20
Others	Manufactured products	0.26	0.00	0.26

Others	Others	0.03	0.00	0.03
Others	Mobility	0.09	0.00	0.09
Others	Services	0.15	0.00	0.15
Services	Food	0.08	0.00	0.08
Services	Construction	0.15	0.00	0.15
Services	Manufactured products	0.56	0.00	0.56
Services	Others	0.14	0.00	0.14
Services	Mobility	0.10	0.00	0.10
Services	Services	0.67	0.00	0.67

Appendix IX:

The share of imports and domestic embodied labour from a consumption perspective in North America (bar graph) and the ratio of male to female embodied in the good and services (number) 1995 and 2011 (Figure 21)

Regions	2011-Male to female ratio	2011-% of share in total imports	1995-Male to female ratio	1995-% of share in total imports
North America	0.90	48%	0.88	57%
Latin America and the Caribbean	0.48	8%	0.46	6%
Europe	0.61	3%	0.50	3%
Africa and the Middle East	0.45	7%	0.57	4%
Australia	0.66	0%	0.55	0%
China	0.64	11%	0.56	9%
India	0.29	4%	0.32	3%
Indonesia	0.76	2%	0.69	2%
OECD Asia	0.49	1%	0.49	2%
Rest of Asia	0.53	14%	0.55	14%

Significant export flows of embodied female and male labour between producer and consumer sectors in North America in 1995 and share of genders in each of the sectors (Figure 22)

Producer sector	Consumer sector	Labour Total	Labour male	Labour female
Agriculture	Food	8.42	8.42	0.00
Manufacturing	Food	0.41	0.41	0.00
Others	Food	0.31	0.31	0.00
Services	Food	0.71	0.71	0.00
Agriculture	Clothing	2.39	2.39	0.00
Manufacturing	Clothing	2.85	2.85	0.00
Others	Clothing	0.35	0.35	0.00
Services	Clothing	0.87	0.87	0.00
Agriculture	Others	0.97	0.97	0.00
Manufacturing	Others	0.45	0.45	0.00
Others	Others	1.09	1.09	0.00
Services	Others	1.44	1.44	0.00
Agriculture	Construction	0.80	0.80	0.00
Manufacturing	Construction	1.18	1.18	0.00
Others	Construction	0.59	0.20	0.00
Services	Construction	0.57	0.57	0.00
Agriculture	Man. Prod.	2.91	2.91	0.00
Manufacturing	Man. Prod.	9.61	9.61	0.00
Others	Man. Prod.	1.80	0.82	0.00
Services	Man. Prod.	3.56	3.56	0.00
Agriculture	Services	8.01	8.01	0.00
Manufacturing	Services	2.83	2.83	0.00
Others	Services	1.86	1.86	0.00
Services	Services	6.00	6.00	0.00
Agriculture	Food	3.87	0.00	3.87
Manufacturing	Food	0.14	0.00	0.14
Others	Food	0.05	0.00	0.05
Services	Food	0.61	0.00	0.61
Agriculture	Clothing	1.32	0.00	1.32
Manufacturing	Clothing	2.32	0.00	2.32
Others	Clothing	0.07	0.00	0.07
Services	Clothing	0.64	0.00	0.64
Agriculture	Others	0.58		0.58
Manufacturing	Others	0.12	0.00	0.12
Others	Others	0.12	0.00	0.12
Services	Others	1.16	0.00	1.16
Agriculture	Construction	0.44	0.00	0.44
Manufacturing	Construction	0.34	0.00	0.34

Others	Construction	0.08	0.00	0.08
Services	Construction	0.44	0.00	0.44
Agriculture	Man. Prod.	1.66	0.00	1.66
Manufacturing	Man. Prod.	3.78	0.00	3.78
Others	Man. Prod.	0.33	0.00	0.33
Services	Man. Prod.	2.71	0.00	2.71
Agriculture	Services	4.62	0.00	4.62
Manufacturing	Services	1.01	0.00	1.01
Others	Services	0.23	0.00	0.23
Services	Services	4.74	0.00	4.74

Significant export flows of embodied female and male labour between producer and consumer sectors in North America in 2011 and share of genders in each of the sectors (Figure 23)

Producer sector	Consumer sector	Labour Total	Labour male	Labour female
Agriculture	Food	12.91	0.82	0.00
Others	Food	0.56	0.02	0.00
Manufacturing	Food	0.71	0.07	0.00
Services	Food	0.91	0.07	0.00
Agriculture	Clothing	2.58	0.17	0.00
Others	Clothing	0.44	0.01	0.00
Manufacturing	Clothing	3.05	0.16	0.00
Services	Clothing	1.05	0.05	0.00
Agriculture	Others	1.12	0.01	0.00
Others	Others	1.78	0.00	0.00
Manufacturing	Others	0.94	0.01	0.00
Services	Others	3.27	0.01	0.00
Agriculture	Construction	0.91	0.10	0.00
Others	Construction	1.50	0.06	0.00
Manufacturing	Construction	1.82	0.14	0.00
Services	Construction	0.84	0.09	0.00
Agriculture	Manf. Prod.	4.89	0.24	0.00
Others	Manf. Prod.	4.14	0.09	0.00
Manufacturing	Manf. Prod.	14.55	0.90	0.00
Services	Manf. Prod.	5.56	0.21	0.00
Agriculture	Services	7.38	0.44	0.00
Others	Services	3.75	0.05	0.00
Manufacturing	Services	4.49	0.29	0.00
Services	Services	9.90	0.35	0.00
Agriculture	Food	5.85	0.00	0.47
Others	Food	0.14	0.00	0.00
Manufacturing	Food	0.26	0.00	0.02

Services	Food	0.68	0.00	0.04
Agriculture	Clothing	1.38	0.00	0.10
Others	Clothing	0.11	0.00	0.00
Manufacturing	Clothing	2.67	0.00	0.11
Services	Clothing	0.72	0.00	0.03
Agriculture	Others	0.58	0.00	0.01
Others	Others	0.30	0.00	0.00
Manufacturing	Others	0.23	0.00	0.00
Services	Others	4.11	0.00	0.01
Agriculture	Construction	0.47	0.00	0.06
Others	Construction	0.46	0.00	0.01
Manufacturing	Construction	0.58	0.00	0.04
Services	Construction	0.59	0.00	0.05
Agriculture	Manf. Prod.	2.58	0.00	0.14
Others	Manf. Prod.	1.31	0.00	0.02
Manufacturing	Manf. Prod.	6.65	0.00	0.30
Services	Manf. Prod.	4.03	0.00	0.15
Agriculture	Services	3.92	0.00	0.27
Others	Services	0.89	0.00	0.01
Manufacturing	Services	1.80	0.00	0.10
Services	Services	6.27	0.00	0.23

Appendix X:

GDP per capita and share of women in employment from a producer and consumer perspective in four different periods (Figure 24) (First table 1995-2000, second table 2005-2011)

	1995			2000		
Country	GDP per capita	Producer Perspective - share of women in employment	Consumer Perspective -- share of women participation in total employment	GDP per capita	Producer Perspective - share of women participation in total employment	Consumer Perspective - share of women participation in total employment
Austria	23130.6	44.82%	39.34%	26545.31	45.65%	39.38%
Belgium	21839.69	40.17%	37.00%	25127.1	42.06%	37.92%
Bulgaria	1312.745	47.58%	46.01%	1742.42	47.64%	42.88%
Cyprus	8771.309	40.58%	32.56%	11602.94	41.59%	32.44%

Czech Republic	4407.419	43.66%	41.56%	6489.904	43.58%	41.07%
Germany	24256.56	43.22%	39.03%	25680.74	44.80%	39.53%
Denmark	27027.21	42.94%	39.02%	33286.48	45.07%	39.69%
Estonia	2353.618	47.82%	43.57%	4409.982	49.06%	41.30%
Spain	11897.6	32.46%	32.78%	16010.98	36.29%	35.33%
Finland	20086.18	46.29%	41.36%	26259.45	45.63%	41.34%
France	20670.38	44.14%	39.90%	24324.55	44.83%	40.18%
Greece	9841.004	35.52%	34.45%	13099.26	36.41%	35.05%
Croatia	3665.885	44.34%	38.92%	5326.6	44.39%	39.91%
Hungary	3420.503	44.99%	42.49%	5001.656	45.16%	41.30%
Ireland	14664.01	35.37%	36.08%	28406.62	38.20%	36.92%
Italy	15752.7	33.85%	34.29%	21718.49	35.64%	35.51%
Lithuania	1411.951	47.39%	44.47%	3570.173	50.08%	41.49%
Luxembourg	40793.98	36.48%	34.87%	53044.9	39.34%	36.54%
Latvia	1662.445	48.23%	45.02%	3628.821	47.82%	39.52%
Malta	7630.8	28.87%	30.05%	11507.76	29.26%	31.66%
Netherlands	22082.4	37.07%	35.93%	28065.3	39.43%	37.42%
Poland	2815.609	45.53%	44.14%	4864.393	45.12%	42.28%
Portugal	9007.91	43.75%	39.35%	12453.86	44.33%	38.69%
Romania	1269.149	45.24%	43.55%	1806.176	47.12%	45.02%
Sweden	22870.39	48.16%	42.20%	31705.14	48.00%	41.56%
Slovenia	8173.807	45.79%	40.33%	11074.64	45.94%	39.07%
Slovakia	2845.817	44.34%	41.35%	4155.152	45.26%	41.74%

United Kingdom	16308.37	41.73%	40.21%	28583.18	42.99%	41.33%
United States	22004.72	46.55%	41.45%	39464.98	46.63%	41.08%
Japan	32509.23	36.82%	37.62%	40376.47	37.68%	38.32%
China	465.9749	34.65%	34.24%	1036.646	36.50%	36.15%
Canada	15679.2	43.90%	40.99%	26019.69	44.73%	41.65%
South Korea	9428.843	38.09%	36.62%	12935.91	39.63%	38.41%
Brazil	3674.338	36.80%	35.76%	4047.584	37.25%	35.55%
India	289.5213	25.63%	25.93%	476.3614	27.61%	28.03%
Mexico	2561.044	33.91%	33.91%	6760.104	35.86%	34.13%
Russia	2061.595	46.37%	39.69%	1918.197	48.59%	42.37%
Australia	16590.78	41.83%	37.17%	23114.91	42.69%	37.11%
Switzerland	37111.5	39.56%	37.07%	40940.11	41.53%	38.40%
Turkey	2973.418	26.11%	26.51%	4568.449	24.26%	25.89%
Taiwan	9995.327	37.93%	35.60%	16109.66	38.46%	36.15%
Norway	26663.18	44.03%	37.99%	41302.01	44.75%	39.21%
Indonesia	931.2988	34.30%	33.06%	910.4885	36.65%	35.12%
South Africa	3038.188	39.01%	36.98%	3355.479	41.61%	39.82%
RoW Asia and Pacific	996.6649	31.92%	31.82%	1311.587	34.98%	34.65%
RoW America	2864.661	32.26%	33.15%	4297.39	32.39%	33.82%
RoW Europe	1063.298	25.41%	27.14%	1089.897	28.68%	31.12%
RoW Africa	418.2194	40.55%	40.21%	618.522	40.15%	40.00%
RoW Middle East	2222.748	13.68%	23.04%	3857.366	17.04%	28.03%

	2005			2011		
Country	GDP per capita	Producer Perspective - share of women in employment	Consumer Perspective -- share of women participation in total employment	GDP per capita	Producer Perspective - share of women participation in total employment	Consumer Perspective - share of women participation in total employment
Austria	30737.96	46.12%	37.88%	36665.43	48.00%	38.49%
Belgium	29713.34	0.440518	35.78%	34269.23	47.02%	35.93%
Bulgaria	3096.934	0.462646	41.28%	5567.722	47.30%	42.00%
Cyprus	14673.19	0.431327	33.71%	17483.8	47.47%	37.74%
Czech Republic	10704.7	0.426639	39.06%	15558.13	43.73%	39.49%
Germany	27888.24	0.455135	38.57%	33002.11	46.84%	39.03%
Denmark	39238.61	0.449922	38.04%	44040.18	46.29%	38.82%
Estonia	8308.318	0.478277	41.43%	12539.4	47.64%	40.83%
Spain	21308.62	0.397125	35.27%	22869.41	45.21%	38.38%
Finland	31322.4	0.466276	40.25%	36487.59	47.23%	40.31%
France	28036.79	0.456701	37.70%	31472.45	47.73%	38.17%
Greece	17953.94	0.37616	33.96%	18587.37	40.06%	36.17%
Croatia	8218.187	0.433689	37.61%	10444.88	45.49%	39.66%
Hungary	8967.094	0.460102	40.56%	10081.02	46.59%	42.10%
Ireland	40844.29	0.399303	36.19%	37953.81	44.39%	38.09%
Italy	25699.81	0.37464	35.02%	27562.74	39.33%	35.87%

Country						
Lithuania	6324.192	0.477945	41.62%	10321.61	51.70%	42.88%
Luxembourg	63895.37	0.416101	34.08%	81355.32	41.59%	34.30%
Latvia	6068.612	0.475938	42.26%	9900.422	51.11%	42.01%
Malta	12724.9	0.307221	30.74%	16536.36	35.74%	34.05%
Netherlands	33418.64	0.414397	36.35%	38463.08	45.00%	36.76%
Poland	6411.147	0.450947	42.06%	9857.159	45.13%	41.26%
Portugal	15098.85	0.452329	39.13%	16663.93	46.35%	40.23%
Romania	3758.854	0.454204	41.73%	6609.377	45.01%	41.75%
Sweden	34631.8	0.474489	39.79%	42811.27	47.85%	39.85%
Slovenia	14603.45	0.451656	38.60%	17949.17	45.92%	38.53%
Slovakia	7301.452	0.436713	39.87%	13031.51	44.07%	39.70%
United Kingdom	32190.36	0.434712	39.26%	29466.73	44.85%	41.03%
United States	35614.42	0.456282	39.51%	35778.44	46.85%	40.80%
Japan	28760.68	0.391255	38.00%	33211.18	40.81%	39.69%
China	1412.757	0.349803	34.34%	3977.48	34.41%	33.60%
Canada	28960.15	0.454652	39.70%	37417.33	45.61%	39.54%
South Korea	14996.8	0.403187	38.00%	17353.33	39.92%	38.57%
Brazil	3852.266	0.392846	38.04%	9539.834	39.18%	37.33%
India	585.4611	0.252846	25.97%	1113.287	24.12%	25.07%
Mexico	6277.588	0.382134	36.52%	7037.941	36.08%	35.08%
Russia	4291.068	0.495641	45.11%	9572.037	49.43%	43.86%
Australia	30036.22	0.435561	35.34%	49357.98	44.67%	36.57%

Switzerland	44046.76	0.422607	36.82%	63217.27	43.31%	36.33%
Turkey	5730.789	0.246256	26.34%	7618.42	26.77%	27.87%
Taiwan	13267.2	0.393695	35.97%	14710.49	41.15%	38.30%
Norway	53673.66	0.448338	37.86%	72252.15	45.72%	37.89%
Indonesia	1089.858	0.34812	33.08%	2631.241	35.45%	33.36%
South Africa	4349.226	0.410427	37.74%	5802.255	41.67%	38.07%
RoW Asia and Pacific	1322.591	0.327401	32.86%	2225.663	33.99%	33.60%
RoW America	3399.155	0.334069	34.71%	5807.435	29.94%	32.16%
RoW Europe	2111.996	0.326893	34.38%	3385.356	33.86%	36.25%
RoW Africa	742.4239	0.336794	33.97%	1122.606	33.20%	33.52%
RoW Middle East	4104.239	0.177354	25.71%	7264.266	20.09%	26.77%

Appendix XI:

The share of women embodied labour in imports and trade openness in the country (Figure 25)

	1995		2000		2005		2011	
Country	Trade openness	Participation imports	Trade openness	Participation imports	Trade openness	Participation imports	Trade openness	Participation imports
Austria	76.5%	34.86%	105.36%	34.86%	107.71%	32.72%	115.93%	32.34%
Belgium	117.1%	34.78%	152.55%	34.78%	138.67%	33.10%	152.80%	32.38%
Bulgaria	93.1%	27.70%	106.51%	27.70%	131.75%	30.51%	156.05%	31.95%
Cyprus	137.6%	30.40%	166.81%	30.40%	106.91%	30.30%	90.04%	32.03%
Czech Republic	103.6%	33.91%	136.31%	33.91%	156.22%	33.29%	166.89%	33.44%

Germany	56.0%	34.70%	86.09%	34.70%	92.46%	33.32%	107.18%	33.24%
Denmark	63.9%	33.18%	94.14%	33.18%	91.06%	32.61%	95.85%	32.78%
Estonia	140.7%	33.10%	148.36%	33.10%	146.61%	33.26%	191.12%	33.25%
Spain	62.7%	32.72%	91.68%	32.72%	82.62%	31.75%	84.84%	32.00%
Finland	82.7%	34.15%	102.58%	34.15%	102.30%	34.09%	105.26%	33.73%
France	63.6%	36.46%	85.09%	36.46%	80.66%	33.14%	83.23%	32.51%
Greece	46.1%	33.37%	85.22%	33.37%	70.58%	31.12%	83.76%	32.09%
Croatia	76.6%	27.59%	102.52%	27.59%	109.32%	31.28%	103.37%	31.36%
Hungary	90.6%	33.64%	159.66%	33.64%	148.77%	32.97%	172.05%	33.48%
Ireland	131.2%	35.72%	186.15%	35.72%	160.73%	34.91%	200.67%	35.42%
Italy	69.2%	34.47%	81.72%	34.47%	78.15%	32.73%	85.26%	32.45%
Lithuania	43.3%	27.39%	95.92%	27.39%	117.42%	31.89%	153.76%	32.03%
Luxembourg	87.9%	34.23%	229.62%	34.23%	216.55%	33.23%	251.54%	33.44%
Latvia	73.2%	27.67%	111.98%	27.67%	133.40%	31.72%	151.96%	31.37%
Malta	224.3%	30.71%	205.25%	30.71%	173.23%	30.91%	226.85%	32.70%
Netherlands	111.3%	34.36%	135.95%	34.36%	112.38%	33.29%	106.75%	32.27%
Poland	53.1%	32.58%	90.86%	32.58%	99.76%	32.46%	119.16%	32.49%
Portugal	81.0%	33.36%	99.51%	33.36%	88.20%	31.88%	101.11%	32.08%
Romania	72.1%	29.82%	97.47%	29.82%	105.88%	31.51%	108.33%	32.13%
Sweden	85.9%	34.51%	111.99%	34.51%	110.92%	32.91%	112.78%	33.31%
Slovenia	121.7%	32.00%	143.23%	32.00%	152.02%	31.85%	162.19%	31.26%
Slovakia	126.6%	30.57%	146.56%	30.57%	172.98%	33.65%	186.39%	33.82%
United Kingdom	72.2%	37.00%	81.11%	37.00%	76.19%	35.65%	91.79%	37.00%

United States	37.9%	34.34%	43.14%	34.34%	44.36%	34.21%	52.34%	34.47%
Japan	28.7%	38.07%	35.95%	38.07%	46.39%	35.79%	52.63%	36.96%
China	71.5%	32.91%	83.61%	32.91%	122.21%	32.21%	104.54%	33.48%
Canada	83.2%	34.48%	106.04%	34.48%	99.32%	33.76%	89.14%	33.65%
South Korea	81.9%	34.34%	104.56%	34.34%	110.14%	34.09%	157.07%	34.53%
Brazil	21.7%	29.96%	33.43%	29.96%	43.84%	30.94%	40.34%	30.86%
India	35.9%	36.30%	47.49%	36.30%	65.73%	33.25%	85.79%	33.16%
Mexico	64.2%	33.79%	77.13%	33.79%	72.79%	32.70%	83.62%	33.02%
Russia	87.3%	26.60%	104.25%	26.60%	85.89%	30.92%	81.26%	31.12%
Australia	63.9%	32.15%	76.28%	32.15%	73.25%	31.23%	75.73%	32.54%
Switzerland	86.1%	34.88%	120.35%	34.88%	109.75%	33.31%	129.84%	32.94%
Turkey	48.9%	30.42%	68.90%	30.42%	73.17%	31.61%	86.31%	31.21%
Taiwan	131.7%	32.42%	148.83%	32.42%	167.02%	32.55%	191.01%	33.73%
Norway	91.8%	32.86%	104.27%	32.86%	98.86%	33.49%	102.56%	33.39%
Indonesia	80.2%	31.91%	101.52%	31.91%	92.01%	30.34%	76.77%	31.01%
South Africa	49.9%	36.03%	69.26%	36.03%	71.87%	33.06%	82.28%	32.21%
RoW Asia and Pacific	184.3%	34.93%	195.43%	34.93%	189.87%	33.91%	187.42%	32.63%
RoW America	68.3%	33.79%	76.82%	33.79%	98.69%	32.78%	94.03%	32.79%
RoW Europe	108.8%	38.61%	135.42%	38.61%	116.80%	36.18%	157.19%	35.16%
RoW Africa	84.3%	32.71%	86.57%	32.71%	91.29%	31.18%	109.73%	30.71%
RoW Middle East	100.6%	33.12%	106.64%	33.12%	119.48%	30.57%	119.09%	30.65%

The share of women embodied labour in exports and trade openness in the country

Country	1995		2000		2005		2011	
	Trade openness	Participation imports	Trade openness	Participation imports	Trade openness	Participation imports	Trade openness	Participation imports
Austria	76.51%	42.77%	105.36%	43.19%	107.71%	41.57%	115.93%	42.26%
Belgium	117.08%	32.69%	152.55%	35.53%	138.67%	38.32%	152.80%	41.07%
Bulgaria	93.13%	43.99%	106.51%	47.76%	131.75%	47.48%	156.05%	46.20%
Cyprus	137.57%	44.90%	166.81%	43.88%	106.91%	47.81%	90.04%	52.89%
Czech Republic	103.63%	42.34%	136.31%	41.34%	156.22%	39.81%	166.89%	39.43%
Germany	55.95%	37.96%	86.09%	39.03%	92.46%	38.27%	107.18%	39.40%
Denmark	63.86%	34.53%	94.14%	37.24%	91.06%	35.54%	95.85%	34.98%
Estonia	140.69%	45.14%	148.36%	44.31%	146.61%	43.26%	191.12%	41.65%
Spain	62.71%	30.72%	91.68%	35.45%	82.62%	40.36%	84.84%	42.60%
Finland	82.74%	34.87%	102.58%	35.26%	102.30%	36.29%	105.26%	35.83%
France	63.65%	39.45%	85.09%	39.54%	80.66%	40.29%	83.23%	42.18%
Greece	46.10%	39.81%	85.22%	39.81%	70.58%	41.36%	83.76%	39.98%
Croatia	76.58%	42.61%	102.52%	40.70%	109.32%	42.23%	103.37%	40.06%
Hungary	90.57%	43.86%	159.66%	43.60%	148.77%	42.83%	172.05%	42.26%
Ireland	131.24%	33.16%	186.15%	36.67%	160.73%	38.75%	200.67%	40.22%
Italy	69.18%	32.76%	81.72%	33.72%	78.15%	34.71%	85.26%	36.23%
Lithuania	43.29%	47.13%	95.92%	48.21%	117.42%	44.97%	153.76%	46.21%
Luxembourg	87.90%	35.25%	229.62%	36.99%	216.55%	39.01%	251.54%	38.69%

Latvia	73.18%	45.15%	111.98%	43.01%	133.40%	43.21%	151.96%	43.58%
Malta	224.29%	29.11%	205.25%	29.96%	173.23%	31.20%	226.85%	34.17%
Netherlands	111.32%	31.35%	135.95%	33.28%	112.38%	34.16%	106.75%	36.05%
Poland	53.13%	44.98%	90.86%	43.54%	99.76%	40.79%	119.16%	41.28%
Portugal	81.03%	47.06%	99.51%	50.85%	88.20%	48.23%	101.11%	45.15%
Romania	72.13%	46.79%	97.47%	48.52%	105.88%	48.61%	108.33%	45.33%
Sweden	85.89%	38.27%	111.99%	38.06%	110.92%	37.63%	112.78%	38.76%
Slovenia	121.66%	42.83%	143.23%	42.89%	152.02%	40.07%	162.19%	38.46%
Slovakia	126.64%	43.27%	146.56%	43.07%	172.98%	41.17%	186.39%	40.17%
United Kingdom	72.20%	34.38%	81.11%	34.74%	76.19%	34.08%	91.79%	34.86%
United States	37.93%	40.93%	43.14%	41.19%	44.36%	39.83%	52.34%	39.70%
Japan	28.66%	30.82%	35.95%	31.79%	46.39%	32.10%	52.63%	31.58%
China	71.47%	36.84%	83.61%	38.21%	122.21%	36.95%	104.54%	38.27%
Canada	83.15%	35.49%	106.04%	37.34%	99.32%	38.45%	89.14%	39.20%
South Korea	81.92%	37.81%	104.56%	37.23%	110.14%	35.05%	157.07%	33.20%
Brazil	21.68%	45.66%	33.43%	48.47%	43.84%	43.19%	40.34%	45.48%
India	35.93%	23.94%	47.49%	25.80%	65.73%	22.34%	85.79%	22.14%
Mexico	64.17%	33.87%	77.13%	42.69%	72.79%	42.44%	83.62%	38.87%
Russia	87.34%	41.90%	104.25%	44.40%	85.89%	43.72%	81.26%	43.23%
Australia	63.95%	36.11%	76.28%	38.35%	73.25%	39.14%	75.73%	38.62%
Switzerland	86.13%	34.84%	120.35%	36.00%	109.75%	36.54%	129.84%	37.87%
Turkey	48.94%	27.52%	68.90%	24.26%	73.17%	23.67%	86.31%	28.12%
Taiwan	131.68%	35.27%	148.83%	35.69%	167.02%	36.19%	191.01%	35.73%

Norway	91.83%	34.62%	104.27%	34.38%	98.86%	32.77%	102.56%	31.19%
Indonesia	80.23%	38.51%	101.52%	39.79%	92.01%	38.42%	76.77%	40.21%
South Africa	49.91%	46.99%	69.26%	44.18%	71.87%	45.66%	82.28%	44.56%
RoW Asia and Pacific	184.26%	33.49%	195.43%	35.45%	189.87%	32.82%	187.42%	34.25%
RoW America	68.27%	28.25%	76.82%	27.74%	98.69%	28.68%	94.03%	22.81%
RoW Europe	108.81%	20.24%	135.42%	23.40%	116.80%	27.25%	157.19%	27.75%
RoW Africa	84.32%	40.78%	86.57%	39.89%	91.29%	32.43%	109.73%	31.87%
RoW Middle East	100.55%	9.54%	106.64%	12.54%	119.48%	14.31%	119.09%	15.86%

Appendix XII:

Aggregation of EXIOBASE industries into sectors

Aggregated Sector	Sector in EXIOBASE
Agriculture	Cultivation of paddy rice
	Cultivation of wheat
	Cultivation of cereal grains nec
	Cultivation of vegetables, fruit, nuts
	Cultivation of oil seeds
	Cultivation of sugar cane, sugar beet
	Cultivation of plant-based fibers
	Cultivation of crops nec
	Cattle farming
	Pigs farming
	Poultry farming
	Meat animals nec
	Animal products nec
	Raw milk
	Wool, silk-worm cocoons
	Manure treatment (conventional) and land application
	Manure treatment (biogas) and land application
	Forestry, logging and related service activities (02)
	Fishing, operating of fish hatcheries and fish farms; service activities incidental to fishing (05)
	Processing of meat cattle

	Processing of meat pigs
	Processing of meat poultry
	Production of meat products nec
	Processing vegetable oils and fats
	Processing of dairy products
	Processed rice
	Sugar refining
	Processing of Food products nec
	Manufacture of beverages
	Manufacture of fish products
Mining	Mining of coal and lignite; extraction of peat (10)
	Extraction of crude petroleum and services related to crude oil extraction, excluding surveying
	Extraction of natural gas and services related to natural gas extraction, excluding surveying
	Extraction, liquefaction, and regasification of other petroleum and gaseous materials
	Mining of uranium and thorium ores (12)
	Mining of iron ores
	Mining of copper ores and concentrates
	Mining of nickel ores and concentrates
	Mining of aluminium ores and concentrates
	Mining of precious metal ores and concentrates
	Mining of lead, zinc and tin ores and concentrates
	Mining of other non-ferrous metal ores and concentrates
	Quarrying of stone
	Quarrying of sand and clay
	Mining of chemical and fertilizer minerals, production of salt, other mining and quarrying n.e.c.
Manufacturing	Manufacture of tobacco products (16)
	Manufacture of textiles (17)
	Manufacture of wearing apparel; dressing and dyeing of fur (18)
	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear (19)
	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (20)
	Woodwaste
	Pulp
	Recycling of waste paper
	Paper
	Publishing, printing and reproduction of recorded media (22)
	Manufacture of coke oven products
	Petroleum Refinery

	Processing of nuclear fuel
	Plastics, basic
	Recycling of plastics waste
	N-fertilizer
	P- and other fertilizer
	Chemicals nec
	Manufacture of rubber and plastic products (25)
	Manufacture of glass and glass products
	Recycling of glass waste
	Manufacture of ceramic goods
	Manufacture of bricks, tiles and construction products, in baked clay
	Manufacture of cement, lime and plaster
	Recycling of ash
	Manufacture of other non-metallic mineral products n.e.c.
	Manufacture of basic iron and steel and of ferro-alloys and first products thereof
	Recycling of steel scrap
	Precious metals production
	Recycling of precious metals waste
	Aluminum production
	Recycling of aluminum waste
	Lead, zinc and tin production
	Recycling of lead, zinc and tin waste
	Copper production
	Recycling of copper waste
	Other non-ferrous metal production
	Recycling of other non-ferrous metals waste
	Casting of metals
	Manufacture of fabricated metal products, except machinery and equipment (28)
	Manufacture of machinery and equipment n.e.c. (29)
	Manufacture of office machinery and computers (30)
	Manufacture of electrical machinery and apparatus n.e.c. (31)
	Manufacture of radio, television and communication equipment and apparatus (32)
	Manufacture of medical, precision and optical instruments, watches and clocks (33)
	Manufacture of motor vehicles, trailers and semi-trailers (34)
	Manufacture of other transport equipment (35)
	Manufacture of furniture; manufacturing n.e.c. (36)
	Recycling of waste and scrap
	Glass bottles directly reused
Construction	Construction (45)

	Recycling of construction waste
Transport, electricity and utilities	Production of electricity by coal
	Production of electricity by gas
	Production of electricity by nuclear
	Production of electricity by hydro
	Production of electricity by wind
	Production of electricity by petroleum and other oil derivatives
	Production of electricity by biomass and waste
	Production of electricity by solar photovoltaic
	Production of electricity by solar thermal
	Production of electricity by tide, wave, ocean
	Production of electricity by Geothermal
	Production of electricity nec
	Transmission of electricity
	Distribution and trade of electricity
	Manufacture of gas; distribution of gaseous fuels through mains
	Steam and hot water supply
	Collection, purification and distribution of water (41)
	Transport via railways
	Other land transport
	Transport via pipelines
	Sea and coastal water transport
	Inland water transport
	Air transport (62)
Services	Sale, maintenance, repair of motor vehicles, motor vehicles parts, motorcycles, motor cycles parts and accessories
	Retail sale of automotive fuel
	Wholesale trade and commission trade, except of motor vehicles and motorcycles (51)
	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods (52)
	Hotels and restaurants (55)
	Supporting and auxiliary transport activities; activities of travel agencies (63)
	Post and telecommunications (64)
	Financial intermediation, except insurance and pension funding (65)
	Insurance and pension funding, except compulsory social security (66)
	Activities auxiliary to financial intermediation (67)
	Real estate activities (70)
	Renting of machinery and equipment without operator and of personal and household goods (71)
	Computer and related activities (72)
	Research and development (73)

Other business activities (74)
Public administration and defence; compulsory social security (75)
Education (80)
Health and social work (85)
Incineration of waste: Food
Incineration of waste: Paper
Incineration of waste: Plastic
Incineration of waste: Metals and Inert materials
Incineration of waste: Textiles
Incineration of waste: Wood
Incineration of waste: Oil/Hazardous waste
Biogasification of food waste
Biogasification of paper
Biogasification of sewage slugde
Composting of food waste
Composting of paper and wood
Waste water treatment, food
Waste water treatment, other
Landfill of waste: Food
Landfill of waste: Paper
Landfill of waste: Plastic
Landfill of waste: Inert/metal/hazardous
Landfill of waste: Textiles
Landfill of waste: Wood
Activities of membership organisation n.e.c. (91)
Recreational, cultural and sporting activities (92)
Other service activities (93)
Private households with employed persons (95)
Extra-territorial organizations and bodies

Appendix XIII:

Aggregation of EXIOBASE regions and countries

Aggregated region	Region or country in EXIOBASE
North America	United States
	Canada
Latin America and the Caribbean	Brazil
	Mexico
	RoW America
Europe	Austria
	Belgium
	Bulgaria

	Cyprus
	Czech Republic
	Germany
	Denmark
	Estonia
	Spain
	Finland
	France
	Greece
	Croatia
	Hungary
	Ireland
	Italy
	Lithuania
	Luxembourg
	Latvia
	Malta
	Netherlands
	Poland
	Portugal
	Romania
	Sweden
	Slovenia
	Slovakia
	United Kingdom
	Switzerland
	Norway
	RoW Europe
Africa and the Middle East	South Africa
	RoW Africa
	RoW Middle East
Australia	Australia
China	China
India	India
Indonesia	Indonesia
OECD Asia	Japan
	Korea
	Taiwan
Rest of Asia	Russia
	RoW Asia and Pacific

Appendix XIV:

Aggregation of the industries in EXIOBASE in consumption categories

Aggregated consumption categories	EXIOBASE industries classification
Food	Cultivation of paddy rice
	Cultivation of wheat
	Cultivation of cereal grains nec
	Cultivation of vegetables, fruit, nuts
	Cultivation of oil seeds
	Cultivation of sugar cane, sugar beet
	Cultivation of plant-based fibers
	Cultivation of crops nec
	Cattle farming
	Pigs farming
	Poultry farming
	Meat animals nec
	Animal products nec
	Raw milk
	Manure treatment (conventional), storage and land application
	Manure treatment (biogas), storage and land application
	Fishing, operating of fish hatcheries and fish farms; service activities incidental to fishing (05)
	Mining of chemical and fertilizer minerals, production of salt, other mining and quarrying n.e.c.
	Processing of meat cattle
	Processing of meat pigs
	Processing of meat poultry
	Production of meat products nec
	Processing vegetable oils and fats
	Processing of dairy products
	Processed rice
	Sugar refining
	Processing of Food products nec
	Manufacture of beverages
	Manufacture of fish products
	Manufacture of tobacco products (16)
	N-fertiliser
	P- and other fertiliser

'Clothing'	Wool, silk-worm cocoons
	Manufacture of textiles (17)
	Manufacture of wearing apparel; dressing and dyeing of fur (18)
	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery, harness and footwear (19)
Shelter	Forestry, logging and related service activities (02)
	Mining of coal and lignite; extraction of peat (10)
	Extraction of crude petroleum and services related to crude oil extraction, excluding surveying
	Extraction of natural gas and services related to natural gas extraction, excluding surveying
	Extraction, liquefaction, and regasification of other petroleum and gaseous materials
	Mining of uranium and thorium ores (12)
	Mining of iron ores
	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials (20)
	Re-processing of secondary wood material into new wood material
	Manufacture of coke oven products
	Processing of nuclear fuel
	Production of electricity by coal
	Production of electricity by gas
	Production of electricity by nuclear
	Production of electricity by hydro
	Production of electricity by wind
	Production of electricity by petroleum and other oil derivatives
	Production of electricity by biomass and waste
	Production of electricity by solar photovoltaic
	Production of electricity by solar thermal
	Production of electricity by tide, wave, ocean
	Production of electricity by Geothermal
	Production of electricity nec
	Transmission of electricity
	Distribution and trade of electricity
	Manufacture of gas; distribution of gaseous fuels through mains
	Steam and hot water supply
	Collection, purification and distribution of water (41)
	Incineration of waste: Food
	Incineration of waste: Paper
	Incineration of waste: Plastic
	Incineration of waste: Metals and Inert materials
	Incineration of waste: Textiles
	Incineration of waste: Wood

	Incineration of waste: Oil/Hazardous waste
	Biogasification of food waste, incl. land application
	Biogasification of paper, incl. land application
	Biogasification of sewage slugde, incl. land application
	Composting of food waste, incl. land application
	Composting of paper and wood, incl. land application
	Waste water treatment, food
	Waste water treatment, other
	Landfill of waste: Food
	Landfill of waste: Paper
	Landfill of waste: Plastic
	Landfill of waste: Inert/metal/hazardous
	Landfill of waste: Textiles
	Landfill of waste: Wood
	Private households with employed persons (95)
Construction	Mining of copper ores and concentrates
	Mining of nickel ores and concentrates
	Mining of aluminium ores and concentrates
	Mining of precious metal ores and concentrates
	Mining of lead, zinc and tin ores and concentrates
	Mining of other non-ferrous metal ores and concentrates
	Quarrying of stone
	Quarrying of sand and clay
	Manufacture of glass and glass products
	Re-processing of secondary glass into new glass
	Manufacture of ceramic goods
	Manufacture of bricks, tiles and construction products, in baked clay
	Manufacture of cement, lime and plaster
	Re-processing of ash into clinker
	Manufacture of other non-metallic mineral products n.e.c.
	Construction (45)
	Re-processing of secondary construction material into aggregates
Manufacturing	Pulp
	Re-processing of secondary paper into new pulp
	Paper
	Plastics, basic
	Re-processing of secondary plastic into new plastic
	Chemicals nec
	Manufacture of rubber and plastic products (25)
	Manufacture of basic iron and steel and of ferro-alloys and first products thereof
	Re-processing of secondary steel into new steel
	Precious metals production

	Re-processing of secondary preciuos metals into new preciuos metals
	Aluminium production
	Re-processing of secondary aluminium into new aluminium
	Lead, zinc and tin production
	Re-processing of secondary lead into new lead, zinc and tin
	Copper production
	Re-processing of secondary copper into new copper
	Other non-ferrous metal production
	Re-processing of secondary other non-ferrous metals into new other non-ferrous metals
	Casting of metals
	Manufacture of fabricated metal products, except machinery and equipment (28)
	Manufacture of machinery and equipment n.e.c. (29)
	Manufacture of office machinery and computers (30)
	Manufacture of electrical machinery and apparatus n.e.c. (31)
	Manufacture of radio, television and communication equipment and apparatus (32)
	Manufacture of medical, precision and optical instruments, watches and clocks (33)
	Manufacture of motor vehicles, trailers and semi-trailers (34)
	Manufacture of other transport equipment (35)
	Manufacture of furniture; manufacturing n.e.c. (36)
	Recycling of waste and scrap
	Recycling of bottles by direct reuse
Services	Publishing, printing and reproduction of recorded media (22)
	Hotels and restaurants (55)
	Financial intermediation, except insurance and pension funding (65)
	Insurance and pension funding, except compulsory social security (66)
	Activities auxiliary to financial intermediation (67)
	Real estate activities (70)
	Renting of machinery and equipment without operator and of personal and household goods (71)
	Computer and related activities (72)
	Research and development (73)
	Other business activities (74)
	Public administration and defence; compulsory social security (75)
	Education (80)
	Health and social work (85)
	Activities of membership organisation n.e.c. (91)
	Recreational, cultural and sporting activities (92)
	Other service activities (93)
	Extra-territorial organizations and bodies

Mobility	Petroleum Refinery
	Transport via railways
	Other land transport
	Transport via pipelines
	Sea and coastal water transport
	Inland water transport
	Air transport (62)
	Supporting and auxiliary transport activities; activities of travel agencies (63)
	Post and telecommunications (64)
Trade	Sale, maintenance, repair of motor vehicles, motor vehicles parts, motorcycles, motor cycles parts and accessoiries
	Retail sale of automotive fuel
	Wholesale trade and commission trade, except of motor vehicles and motorcycles (51)
	Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods (52)