Smart societies, gender and the 2030 spotlight - are we prepared?[*]

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Abstract

Smart societies cannot develop without adequate human and social capital nourished by the accumulation of knowledge. Today this process is driven by the new information and communications technologies. While digitisation is permeating all areas of life, it has become clear that technological revolution is not just a purely technical (or economic) process, but also a social one and it is not gender-neutral. Technology can help women and girls access new opportunities, means of expression and channels for participation. However, technological boom can also cause imbalances in the convergent environment. People will need a variety of skills to be able to contribute on an equal footing to the digital transformations but these skills are not equally distributed across all social groups. Debates nowadays extend even further to encompass artificial intelligence and experts have repeatedly underlined that advanced automation technologies can bring about not only great opportunities for humanity but also risks. Challenges can stem from the accelerated use of artificial intelligence without respecting such categories like gender, ethnic and socioeconomic diversity. International bodies raise the admonition that "transparency and accountability for the data behind AI is critical to reducing bias, but very difficult to govern or enforce." The 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) [1] embody a human rights' based roadmap for progress that is sustainable and leaves no one behind. Achieving gender equality and women's empowerment is a crucial goal among others in this important set of priorities for humanity. Only by ensuring the rights of women and girls across all the goals will we get thriving economies, a sustaining environment now and for future generations and genuine social inclusion for a smart society.

The article will present a new elaborated version of the summary of the research on gender issues in the converged environment done in the period 2018 – 2020 within the EC COMPACT project.

Keywords: equality between women and men, sustainable development, inclusion, AI, smart society.

1. Introduction

A smart city should protect and promote human rights standards in order to serve the people best and issues like human rights, equality and access to services are fundamental for its smooth operation. A smart city means more than advanced technology, and it can only flourish on the basis of policies that are truly human focused and equality driven. Such conclusion is more than relevant having in mind that technological revolution is not a purely technical (or economic) process but has social and humanistic dimensions, too. Within this context the gender equality characteristics of the policies that pave the way to smart living deserve a special focus. Information and communication technologies are pivotal in this respect since they can support women and girls to make a unique contribution to the digital transformations in all areas.

In 2012 the World Bank (WB) emphasises that "countries that create better opportunities and conditions for women and girls can raise productivity, improve outcomes for children,

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make institutions more representative and advance development prospects for all" [2]. Later in 2015 this idea is further elaborated and the WB Gender Strategy underlines that "promoting gender equality is smart development policy" [3].

For the 2030 UN Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs) [1] achieving gender equality and women's empowerment is a crucial element of the roadmap towards a smart future. Only by ensuring the rights of women and girls across all sustainable development objectives will we get prosperous economies and a sustaining environment now and for next generations. However, these promising prospects are not completely certain since technologies can work both ways and can cause not only progress but social disparities as well.

The aim of this study is to analyse how convergence phenomena impact men's and women's involvement, and what policies can be laid down to respond to the gender challenges in the digital world. There are still barriers hindering women from acquiring relevant training and accessing higher-productivity jobs. Unless women are given the same opportunities as men in the labor market, progress will be limited in contributing to economic growth and well-being improvements. Related to this is the efficient organisation of a smart city which should be perceived as a conglomerate of services and devices that requires not only secure technological basis but sound social strategies relying on a rich and advanced human capital. Gender equality is essential for creating human capital that can be a factor for reforms for the accomplishment of the smart cities' objectives.

The article is based on a desktop research and analysis of the documents of international organisations like UN, UNESCO and ITU, the European policy and academic sources.

2. Gender equality: basic premises

Gender issues are usually associated with the notion of equality among sexes. It is a fundamental human rights' principle that "women's human rights are an inalienable, integral and indivisible part of universal human rights." Article 1 of the European Convention on Human Rights (ECHR) guarantees the rights and freedoms to everyone in the 47 member States of the Council of Europe and the principle of protection against non-discrimination on the basis of sex is assured by both Article 14 and Protocol 12 to the Convention. The enjoyment of the rights and freedoms set forth in the European Convention on Human Rights shall be secured without discrimination on any ground such as sex, race, colour, language, religion, political or other opinion, national or social origin, association with a national minority, property, birth or other status.

Similarly art.21 of the EU Charter of Fundamental Rights (CFR) declares that "any discrimination based on any ground including sex (such as sex, race, colour, ethnic or social origin, genetic features, language, religion or belief, political or any other opinion, membership of a national minority, property, birth, disability, age or sexual orientation) shall be prohibited." Further to this art. 23 states that "equality between women and men must be ensured in all areas, including employment, work and pay" including a possibility for affirmative action. The European Union's social policy is interrelated with the gender equality goals and the EU has a Treaty obligation to pursue gender equality. Article 119 of

the 1957 Treaty of Rome (now Article 157 in the Treaty on the Functioning of the EU) mandates equal pay for equal work.

These basic norms derive from fundamental human values and from the core value of human dignity, enshrined both in the ECHR and the EU CFR. Gender equality is also a value in itself enriching democracy and facilitating social progress. The Recommendation CM/Rec (2007)17 of the Committee of Ministers [4] to member states on gender equality standards and mechanisms states that gender equality is not a women's issue only but it permeates the whole social texture and can be viewed as a "public good, providing social, political and economic benefits to the individuals in society and to society as a whole" (Recommendation CM/Rec(2007)17of the Committee of Ministers to member states on gender equality standards and mechanisms).

In the EU, since 1997, the gender equality problems have been more firmly embedded in the Union pursuits [5]. The broadening of policy context also signals a more instrumental approach to these issues: the EU policy-making shifted in such a manner that it "became an instrument of the wider agenda on employment and economic growth" [5]. As a logical consequence of these steps the European commission (EC) strives to boost the role of women in the digital age through a variety of actions and initiatives. In particular, the Commission stresses the need of more active involvement of women in the structuring and functioning of the digital single market, which in turn will bring more diversity, competition and innovation opportunities to society [6].

The new information and communication technologies can help women and girls access new professional avenues, means of expression and channels for participation. The convergence between traditional and online media, in particular, is blurring the boundaries between consumers and creators, and opening spaces for new voices, sharing and mobilisation in a more democratic setting. On the other hand, with respect to gender, if access is unequal, if algorithms or content available online are gender biased or do not reflect women's needs and cravings, or if women themselves are not involved in shaping that content, digitalisation can merely reproduce existing gender inequalities. It can also generate new threats such as online spread of misogyny and cyber-violence. A study of the European Parliament on Gender Equality in the Media Sector underlines that problems have changed and nowadays they are associated predominantly with the activities of Internet and Internet platforms: "Current policy priorities include addressing longstanding issues, such as the gender pay gap and gender-based discrimination in employment, but also finding workable solutions to relatively new problems, including how to respond to the dynamics of gender inequality within digital media platforms" [7]. These complications require policy solutions that reflect human needs and are forward-oriented. On the one hand, the policies should consider the modifications of incumbent problems, and on the other, approach new gender challenges in order to respond adequately to the situation.

3. Technology and equality
3.1. Digital gaps and divides
In a smart society all human beings will need a variety of skills to be able to engage with the smart city ecosystems in various ways using smartphones and mobile devices, connected cars and homes. Smart cities adopt digital technology into their infrastructure, governance, and workforce as well. Their operation demands higher than basic computer skills. To start from the ground level a lack of a variety of digital skills is now widely viewed as an important barrier to participation in public and private sphere [8]. The ITU Measuring Information Society report, for 2018, refers to the research of Cruz-Jesus, et al. [9] and Van Deursen, et al. [10] that point to the fact that inequalities in digital skills might increase inequalities between developing and developed countries and between socio-economic and socio-cultural groups. The unequal access to digital opportunities may result in digital gaps. In the digital society countries need to pay due attention to the digital gaps that are not once for all created but can be dynamic and elusive. What is necessary, however, with respect to the human smart future is more than that, namely to develop advanced skills and not rely on basic skills only.

Digital gaps can be aggravated to result in a digital divide. The digital divide is a social problem and represents the difference between those who have access to the Internet (especially broadband access) and those who do not have access. From a broader perspective, the difference is not necessarily determined by the access to the Internet, but by access to ICT and to the media. With regard to the Internet, the access is only one aspect, and other factors, such as the quality of connection and related services, including availability at an affordable cost and quality, are also of importance. The COVID-19 pandemic stresses even more conspicuously the necessity in bridging such technologically premised divides.

The people being left behind are typically those who can least afford access to networks. In addition digital divides reflect and amplify existing social, cultural and economic disparities. The bad news is that the gender gap in the global Internet use has been growing rather than narrowing, standing at 17 per cent in 2019, and was even larger in the least developed countries, at 43 per cent, according to the ITU [11]. Similar challenges affect also other vulnerable groups such as migrants, refugees, internally displaced persons, older persons, young people, children, persons with disabilities, rural populations and indigenous peoples.

The special term 'gender digital divide' is used to assess the difference between female and male participation in the information society, particularly access and use of ICTs and the Internet. Although this divide attracts increasing attention by stakeholders, it is a persisting problem since it reproduces technological digital divide.

Despite digital gaps and digital divides, in the modern technologically driven world there can appear a second-order digital divide which denotes the uneven use of the ICTs [12]. To cope with this problem the level of literacy perceived also as advanced skills in ICT becomes a key factor in realising the potential of the information technology and the Internet. With the expansion of the use of automated systems there is clearly a need to

improve digital understanding and data literacy across society to cover also the knowledge about AI and its application.

All these challenges of the technological revolution require their careful following and consideration. If the uneven distribution and use of the ICT continues, this may lead to the actual exclusion of countries and social groups from the chances for meaningful social contribution to the smart society.

In Europe the evidence provided by the Commissioner for the Digital Single Market in 2018 stressed the economic dimension of the digital gender inequality. This dimension can have a considerable general bearing on society's potential to innovate and move forward. A problem within the EU is the level of digital literacy since the number of women who have never used the Internet remains high (14 % of women compared to 12 % of men). There are proportionally more men than women with at least basic digital skills (respectively, 60 % men and 55 % women) but now the problem is about upgrading basic skills and acquiring much more advanced skills. In general, 40% of the enterprises recruiting ICT specialists complain of difficulties in getting qualified people. In cybersecurity a shortage of up to 1.8 million people is expected globally by 2022 of which over 350,000 people in Europe. Only 17% of the 8 million digital technology experts in the EU are women in the labour market where there is a severe shortage of skilled ICT professionals.The underrepresentation of women in entrepreneurship, economic leadership and the digital economy is a missed opportunity for Europe. The data illustrates the threat that there can be a significant loss of value for Europe on all fronts: economic, societal and human capital. A study on Women in the Digital Age that the Commission, published on 8 March 2018 shows that more women in digital jobs could create an annual €16 billion GDP boost in the EU and improve the start-up environment since female owned start-ups are more likely to be successful [13]. The authors of the same study conclude that "although women are underrepresented as entrepreneurs in all sectors, their low presence in the ICT entrepreneur ecosystem is particularly relevant since they represent less than a quarter of total entrepreneurs" . In the UK, one of the largest start-up hubs, male entrepreneurs (86%) are more likely to obtain venture capital funds than women". Another fact that needs contemplation is that only 7.4% of investors, who have invested in one or more start-ups, are women. The proportion of women in leadership roles and executive positions, both in the private and public spheres, is still a long way from achieving full gender equality. In fact, gender inequality in leadership positions is almost twice that of the labour force shows a study done by MGI [14]. The Global Gender Gap Report (2020) of the World Economic Forum points to "the slow but positive progress in terms of leadership positions" but "only a handful of countries are approaching parity" [15].

In the same vein the EIGE much earlier came to the conclusion that " there is a large degree of vertical segregation within media organizations where women are vastly under-represented at higher levels" [16]. Content industries are not only crucial to cultural diversity unleashing social creativity but they are also of paramount importance for the overall economy of the EU.

The reasons for the limited involvement of women and girls in the digital processes are complex. These reasons can be related to culture, traditions, stage of development of society, adopted policies and frameworks but also to the practices established, the skewed perceptions, the stereotypes about women's social role and the absence of inspirational role models. Stereotypes and biases towards technical education and professions in particular, exist even within the feminine part of society and they cannot be neglected. By and large women and girls show low interest in STEM studies and the ICT professions. Sometimes reasons are personal and are rooted in a long implemented tradition - often, women lack confidence to embark on STEM fields. This area in and by itself requires consistent awareness raising, education and teaching efforts to prepare women to face current challenges.

Experts stress the fact that cities across the globe that are enhancing their digital infrastructure, change their requirements for workers across career areas. If you are targeting a career in digitally intensive fields like smart cities, developing such skills named "new foundational skills" is essential, on the one hand, for the growing of the cities themselves, and on the other, for people's positioning for the jobs of the future advanced digital economy [17].

All these examples and figures convincingly show that there should be expansion of the digital skills to deeper knowledge about computing, new thinking and programming skills in order for all members of society to be prepared for the smart world. Developing a digitally confident and capable citizenry encompassing all persons through long-term technology innovation strategy and industrial policy is an essential factor of the digital economy and the smart cities.

3.2. Gender equality and AI
The quickly developing AI sector represents one of the most powerful modern challenges. Contemporary debates on gender equality will not be comprehensive enough if these are not extended to encompass also artificial intelligence and its impact on social texture. Advanced automation technologies can bring about many positive outcomes but also risks. The accelerated use of artificial intelligence without respecting such categories like gender, ethnic and socioeconomic diversity can generate serious difficulties for members of society. AI relies on algorithms that learn from real-world data and there is a concern that AI applications can advertently or inadvertently deepen existing gender biases. With respect to our issue here AI can affect gender equality through various means: algorithms and devices can spread and reinforce harmful gender stereotypes, recruitment of specialists in this new sector can rely more on men than on women, governance and operation of the AI activities can in general infringe human rights (equality included) if there are no other guarantees against that (specially tailored ethical and legal norms).

A recent report commissioned by the European Commission to study the future conditions of work and how artificial intelligence is transforming jobs and the labour market stresses the fact that AI includes "higher risk of automation for certain jobs overwhelmingly performed by women, a growing gender pay gap in AI-related professions, and algorithmic and data biases resulting from under-representation of women among AI developers" [18].

In addition international bodies like the Commonwealth Telecommunications Organisation (CTO) also warn that "transparency and accountability for the data behind AI is critical to reducing bias, but very difficult to govern or enforce" [19]. Other observations pertain to the continued dominance of AI industry by already privileged groups in society which is thus likely to exacerbate existing frictions in labour force. A series of new metrics developed in collaboration between LinkedIn and the World Economic Forum managed to shed light on the gender dynamics in the new economy with respect to AI. The Global Gender Gap Report for 2020 [20], explains that across the three technical frontier role clusters defined by LinkedIn, female workers make up an estimated 26% of workers in Data and AI roles (compared to 15% of workers in Engineering roles and 12% of workers in Cloud Computing roles).

The Toronto Declaration (2018) [21] emphasises the importance of "inclusion, diversity and equity" which entails "the active participation of, and meaningful consultation with, a diverse community, including end users, during the design and application of machine learning systems". Openness and variety of members in the design teams should ensure that human rights are respected – particularly the rights of marginalised groups who are vulnerable to discrimination. It is crucial to generate awareness regarding the importance and urgency of these issues, what gender responsive AI would look like, and what is required to develop and deploy such AI systems.

These findings illustrate an alarming trend and remind of the urgent action needed by all stakeholders to mitigate the threat posed, on the one hand, by gender biased outcomes in AI applications and in the AI industry organisation and workforce recruitment, on the other.

3.3. Women and innovation

Innovation as a process on which digital economy and smart cities can rely is also not gender neutral. In a world that is technology dependent innovation is a key factor. That is why the global gender imbalance in research and development is economically inefficient and socially harmful. Still in this forward-looking area the women inventors are in a minority due to various reasons. In their interesting interdisciplinary article based on a pilot study in Poland E. Okoń-Horodyńska, et. al, claim that male and female participation in innovation demonstrate specific features. They argue that the examination of the current situation of the women's and men's contribution to the process of innovation, is the first and necessary stage towards better understanding and use of women's and men's potential in innovation activities. In order to boost innovation, Okoń-Horodyńska and others hold the opinion that the moment has come to build new synergies taking into account a gender perspective [22].

Exploring the same problem, Charles Kenny and Megan O'Donnell [23] stress that "across the world, women accounted for about 10 percent of patent authorships" only. What is also striking is that "women inventors cluster around "traditional female roles" and their patents relate to "travel goods and personal belongings" plus "jewelry, symbolic insignia and ornaments" [23]. Obviously diversification of areas of women's research is needed among other conditions for fostering innovation. Some authors provide more explanation about the low women's involvement in patent work [24]. One reason is that women have fewer

industry and networks' contacts than men. Another reason is that women usually do not apply for public funding, while private funding for innovation to a large degree goes to men. Establishing gender diverse teams is also of great importance. In their book dedicated to this neglected issue Wadhwa and Chideya [25] uncover different stories and comment that the long lasting stereotypes on women's education discourage women from taking on hard mathematical tasks or doing world-changing innovation. As far as business approaches are concerned, women are more sensible and practical and value more their partners and networks. However, innovation is not an inkling only, it also encompasses a number of financial and organisational steps for its implementation. To accomplish such complex and costly process one needs capital and here gender balance is even more skewed. The optimistic stance is that under the conditions of paramount digitisation and through personal success stories the group of women innovators will grow but this is still not the case on a large scale.

The European Commission has come to similar conclusions. Though the EU has established the EU Horizon 2020 prize for women innovators, the Commission admits that there are still a handful of women that set up innovative enterprises. "Even though there are more women than men in Europe, female entrepreneurs represent only a third of self-employed people in the EU, and only 30% of start-up entrepreneurs. This means that female creativity and entrepreneurial potential are a hugely under-exploited source of jobs and economic growth" a statement explains why the prize is essential for the European society. [26]. In order to build a viable digital society the European policy aims to address all aspects of the gender gap and recognise European women to be also at the forefront of innovation and entrepreneurship. These women can serve as role models to other potential innovators (women and men). In this respect entrepreneurial education from an early age proves essential and should also be pursued.

The already cited report about future skills in future cities [17] pinpoints the role of the human skills cluster and creativity among others for the fruition of smart cities. Technology should establish conditions for a level playing field for all persons and groups not only because any social discrepancy or inequality is unfair but because greater involvement means more human ideas and efforts for the benefit of society. In practice these steps nourish effective and bright human capital that can count on a diversity of qualities and skills. The World Economic Forum Report based on the Global Gender Gap Index (2020) [15] stresses that "countries that want to remain competitive and inclusive will need to make gender equality a critical part of their nation's human capital development. In particular, learning between countries and public-private cooperation within countries will be critical elements of closing the gender gap."

It is worth mentioning the Innovation at UN Women initiative about finding new and more effective solutions that explicitly meet the needs of women and girls and have the ability to accelerate impact. The announced UN gender-responsive approach builds on women's and men's equal integration in the design of innovative products or services and pays due consideration to gender norms, roles and relations. On the basis of the initiative the Global Innovation Coalition for Change (GICC) was created in 2017 to improve women's access, participation and ability to innovate through a set of standards for a gender-responsive

approach to innovation. Such outlook on the improvement of the existing organisational and business practices is similar to what Okoń-Horodyńska, et. al, [22] argue about [27].

To fill in the gender gaps and assure the greatest value for workers and firms, to develop new skills and harness the value of these skills that will result in greater equality and justice with regard to any member of a group and community – these are issues that strike at the foundation of our society. They demand changing the norms and approaches in various areas. The involvement of men and women as innovators in the digital transformation should not rely on campaigns only but on stable regulatory frameworks that take on board a gender perspective.

4. Convergence, equality and human capital

Why these tendencies fostered by the fast spread of technologies are worrying and what will be their far-reaching consequences? In our view they may impair severely human capital and its key role in the digital society. Today human capital is one of the crucial determinants for economic expansion and prosperity as well as for any huge long term project. Human capital comprises the capacity of people (knowledge, talents, capabilities) to accomplish the goals of a nation or a state. The OECD research came to the conclusion that "Human capital, after all, is only one factor – albeit an important one – influencing growth. But a consensus has tended to emerge that the link between human capital and growth is real and significant" [28].

Technology can considerably influence and create human capital of a new quality. Such capital is mostly needed for the construction of smart societies. To improve human capital individually and collectively means to enable it to develop new ways of thinking and to acquire new capabilities. From an optimistic perspective, the technological boom could be perceived as a powerful factor for enhancing the competences of all members of society in order to contribute adequately to the economic development by their qualifications. Limited access to or exclusion from the advanced human capital may put at stake its role for social progress as well as its innovative potential. This inference is particularly pertinent with respect to women's and girls' role in the digital society. According to Podder [29] "inclusion and empowerment of women, however, is not solely a philanthropic cause. For businesses, it means opening out whole new markets, revenue streams and offerings" [29]. He cites Accenture's report "How Digital is Helping Close the Gender Gap at Work" that states that 100 million women can be added to the workforce by 2030 [30] if they become digitally fluent. This could contribute immensely to the economic prosperity and particularly in underdeveloped countries. Despite the economic implications a human capital relying on more active women's involvement in the digital agenda could have a beneficial impact on the human dimension of societies, on the quality of communication, on the formation of a diverse and just public sphere and eventually on democracy.

5. Gender equality and the COVID-19 pandemic: can the crisis be a light in the tunnel?

The COVID-19 crisis revealed may shortcomings of the gender integration in the digital environment as well as new risks that can cause additional aggravation of the situation. The UN reported that "lockdowns, stay-at-home orders and other measures implemented during

the COVID-19 pandemic have led to what the UN has called a "shadow pandemic" of rising gender-based violence" and trafficking for sexual exploitation [31]. Another broader point can be telling within the explored context: "Women are severely affected by the crisis and achievements in gender equality are seriously imperiled by the situation of working at home, taking care of homework and children, job losses and other shifts" [32].

The most alarming signal of these documents is that what has been achieved so far with respect to gender balance and women's emancipation, in particular, can be quickly wasted. Factually COVID-19 showcased how heavily modern societies are dependent on the power of digital technologies. The latter can either drive them to a computer heaven or bring them to the zero level. People regardless of gender, ability, age and location should be sure that they can enjoy equal access to platforms and services and benefit from them especially in trying times.

The draft conclusions of the Council of the EU on gender equality in the field of culture, a sector where women continue to face "a lot of obstacles" and where gender stereotypes, sexual harassment and abuse "remain major concerns", are interesting with regard to future action. The document states that "the current crisis caused by the COVID-19 pandemic has impacted the cultural and creative sectors extremely hard, and there is the risk of gender stereotypes and structural gender inequality being exacerbated, therefore measures towards recovery of those sectors should be seen as a chance to advance gender equality" [33]. Current situation could be a motor of reforms. It can give momentum to making steps towards gender equality in the cultural sector where most creativity and innovation is concentrated and then boost other economic sectors as well. Measures proposed combine research, policy, funding and awareness-raising efforts. This proves that in order to accomplish gender equality as a cross-cutting goal a holistic approach is necessary. Gender inclusion in the cultural and creative sectors is considered "a prospective gender equality strategy" for Europe.

That is why we think that now it is the proper time to speak openly and strongly about gender equality. The construction of digital societies is central on the public agenda and needs urgent responses to the risks they bring. Systemic and efficient policies and regulatory frameworks can be considered the first step to this end. To create conditions for a human capital for the new age and to move forward towards genuine gender equality means to apply comprehensively a mainstreaming approach.

6. Moving forward: regulating gender equality (mainstreaming)

According to the European Gender Equality Institute (EIGE) the regulation of gender issues should be based on gender mainstreaming, being an international "strategy towards realizing gender equality". Mainstreaming means "the integration of a gender perspective into the preparation, design, implementation, monitoring and evaluation of policies, regulatory measures and spending programmes, with a view to promoting equality between women and men, and combating discrimination" [34]. This principle is valid for smart cities, too. Ayona Datta expresses the opinion that achieving equitable gender relations in the private realm is the litmus test of smart cities. She argues to mainstream gender in the smart city agendas [35].

Gender mainstreaming can be considered a cross-cutting priority since gender equality underpins sustainable development and gender discrepancies should be diminished in all areas and fields. Despite the progress, the pace towards the accomplishment of the sustainable development goals 2030 is rather slow especially in the political sphere and "women are still underrepresented in managerial positions. In the majority of the 67 countries with data from 2009 to 2015, fewer than a third of senior- and middle-management positions were held by women" [1].

The newly adopted OECD toolkit for mainstreaming and implementing gender equality endorses mainstreaming as an important pillar for the promotion of this goal because it helps "consider every aspect of policy through a gender lens" [28]. The toolkit provides guidance to governments and organisations to pursue gender mainstreaming as an objective that can lead eventually to the accomplishment of good governance. The steps recommended pass from the adoption of suitable mainstream strategies, to the building of available institutional framework and mechanisms for implementation and eventually to the establishment of good practices which has to be consistently followed. Such a scheme can prove productive for the elaboration of an array of adequate measures to accomplish genuine and workable gender policy in various sectors including the media.

Analysing the European gender policy against the background of global trends, Lewis [5] underlines that mainstreaming carries the idea that policies in pursuit of gender equality will no longer be confined to an equal opportunities 'ghetto', but will rather be integrated across all fields of policy-making." Such strategy is the winning one if it could be systematically carried out. In addition building on Rees [36], Lewis argues that mainstreaming could prove to be 'transformative' and change the gender hierarchy which may go beyond policies but result in the construction of new gender fair procedures and institutions. Other authors are of the opinion that though participatory as a method allowing a women's perspective to be considered in the course of policy-making, mainstreaming generally relies on technocratic data collection only Squires [37] and Plomien [38], referring to Lewis [5], believes the shortcomings of the EU social and gender policies "stem from their uneven development in scope, content, visibility and impact." These authors do not mention the institutionalisation of gender equality principles through mainstreaming which is a guarantee for effective gender policy (from principles to actions).

These remarks do not overshadow the EU commitment to equality, which together with the European Pillar of Social Rights, is in itself a manifestation of the advancement towards social and gender progress. However, the right balance between the economic, the social and the digital has to be struck at the outset to serve as a solid ground for more efficient gender policies in society. In addition to this focused exploration of the social repercussions of technological development including gender impact is an area that merits special attention. Despite its pitfalls, mainstreaming if steadily pursued could support the implementation of the global sustainability goals as well. However, at the moment there are only separate initiatives triggered without all-encompassing mainstreaming efforts being visible. These initiatives are not evenly distributed across countries and regions. They can serve as initial steps and prepare the ground for mainstreaming on a wide scale.

7. Discussion and conclusions

Looking at the spotlight of 2030 the realisation of the sustainable development goals requires gender equality to be considered a core objective that permeates all others and at the same time being a valuable achievement in itself. In order to assure the implementation of these goals we need effective cooperation, greater transparency and novel ideas. Counteracting the risks of the new technologies should go hand in hand with empowerment.

The proper resolving of gender cases is indispensable to the comprehension of the complex environment we live in and its efficient governance. The difficulties in the gender inclusion should be more thoroughly examined to evidence when and to what extent these problems may lead to gaps and divides and reach the level of dangerousness to become discrimination. Human rights frameworks can underpin best mainstreaming strategies and decisions that could shape a more balanced and diverse society. Mainstreaming will fulfill its role if it becomes an unalienable element of the digital transformation policies - at a European level and globally. Two points merit special attention with regard to this. First, it is a task for all stakeholders to entrench gender mainstreaming as a universal policy being part and parcel of the overall policy of developing human centred smart society. Second, special accent should be put on preventing the hazards of AI.

The AI expansion may lead to a next generation digital divide and to the intensification of a new process of stigmatising and marginalising women. These harmful effects can jeopardise the society that AI factually supports – the smart society. One approach against such threat pertains to the examination of the consequences of AI and their impact on gender balance. The other comprises proactive steps to the development of such AI industry that would serve best human and equality principles. Some concrete steps in these directions can be briefly sketched. Hiring more women in AI developing and implementing is a basic – albeit not sufficient – measure for greater gender equality in this field. The real objective is to ensure that women have a say in the process and perform key roles such as development and coding. The valuable UNESCO report "Artificial intelligence and gender equality" [39] espouses the respect for human rights and fundamental freedoms to be a foundational principle for AI development and deployment but it also stresses the need of stretching beyond that and integrate "feminist theory and frameworks rather than merely adding in 'women' as a target group". This means that a particular gender oriented theory is necessary to be attached to the international human rights standards to shape the specific theoretical basis of the approach to AI and sharpen the focus on gender issues. UNESCO insists on treating "gender equality as a way of thinking, a lens, an ethos and a constant – not a checklist" and such permeating gender oriented culture corresponds well to gender mainstreaming as a practical tool integrating a gender equality perspective at all stages and levels of policies, programmes and projects.

Speaking about the risks one should not miss the great AI potential to serve education which should be intensely used for the purposes of gender empowerment and preparation for the challenges in the digital society. One of these challenges is women's presence in innovation activities. Through programmes and partnerships women should be encouraged to actively contribute to digital innovation.

However, at present there is a gap between good ideas, concepts and actions. It is not sufficient to formulate principles only but to design procedures that can put them into real practice. Expanding this process will also produce best practices that are mostly needed as guidance in the fast changing contemporary environment. The spotlight 2030 is not that far and we have to be prepared how we can reach 2030 milestones including gender equality.

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