

Promoting women's rights: A strategy for climate change mitigation or adaptation in the Global South?

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"No climate justice without gender justice": statements like this are heard more and more often lately, for example at demonstrations like *Fridays for Future*. But what is this all about? How are women's rights and climate change connected?

Many people are now aware that climate change has numerous and complex consequences for our natural environment and thus also for us humans. However, the fact that these impacts are experienced differently according to gender, that women and girls are globally more affected than men, is a relatively new topic in the socio-political discussion.

Take ice melt, one of the most mediatized consequences of current climate change. We have almost all seen images of polar bears floating on a tiny ice floe on the world's oceans. But what do these images and the climate change processes they are based on have to do with women's rights?

Melting ice is causing sea levels to rise, increasing flooding of coastal areas and threatening them with storm surges. Climate change also increases water temperature, causing more water to evaporate and thus more water vapor to be found in the atmosphere. This increases the greenhouse gas effect and increases the risk of extreme storms such as hurricanes and heavy rain. According to *Welt Hunger Hilfe* [1] climate-related natural disasters have increased almost tenfold in recent decades and have also grown in intensity.

Women and girls are particularly affected by such disasters for a variety of reasons. A 2007 study [2] shows that women die more often than men during extreme weather events and their life expectancy decreases more. To explain why this is so, it is important to look at the relationship between vulnerability and climate change. While all people are affected by the environmental consequences of climate change, the more vulnerable they are, the lower their adaptive capacity and the more impacted they are. There are numerous social, economic, political, or demographic factors that determine how vulnerable a person or community is to environmental degradation. The most vulnerable are also those living in poverty. 70% of them are women [3]. Being vulnerable means being exposed to crisis factors, being unable to cope with them, and suffering the resulting consequences. The decisive factor for gender-specific vulnerability is not biological but social gender, which is shaped by societal, cultural and social role behaviour as well as patriarchal power structures. Gender-specific vulnerability in the context of extreme weather events is demonstrated, for example, by the fact that women are less able to afford to consider preventive measures because they have less access to the resources needed to do so. In addition, women are more likely to be at home during natural disasters than men, and as a result are often warned too late. They also have limited access to weather warnings, due to limited access to technologies. Women are also less likely to be taught to swim, and their clothing prevents them from escaping. They are often also responsible for children and the elderly when it comes to coping with crises [4], which further complicates their situation. In the aftermath of extreme weather events, when those affected must fight to survive

without land or livelihoods, women are also exposed to increased violence, often of a sexual nature. If they lose their clothes while fleeing, they are sometimes not allowed to enter public institutions. The number of child marriages in exchange for resources is increasing dramatically, as is sexual exploitation and human trafficking, which victims are 80% of girls and women. [5]

Especially in the Global South, women are particularly disadvantaged by the consequences of climate change, as they generally have a significantly lower social status and less political and economic influence than men. They usually already have limited access to resources, work more often in agriculture and in the household, and often have fewer legally secured property rights due to discriminatory laws, even though they produce between 60 and 80% of all food. [6]. They are even more exposed to exploitation in crisis situations, when resources are scarce. During droughts or long periods of dryness, it is almost always women and girls who must travel longer distances than they already do to fetch water because of the roles traditionally assigned to them, which can among other things, lead to them dropping out of school. Epidemics also affect women more, not least because they are largely used as caregivers for the sick. Another gender-specific aspect in climate impact assessment is that men migrate to cities in search of work during crisis situations, while women often remain behind alone and without financial resources.

In the context of this thesis, the focus is on the countries of South Asia and, in connection with this, on the question of the extent to which the promotion of women's rights offers perspectives for climate change mitigation or adaptation. To be sure, most of the dynamics addressed also apply in other states of the global South. However, South Asian states are particularly relevant to our question because they are among the countries that feel the impacts of climate change most acutely. They also have some of the highest population densities in the world and very large social and economic inequalities that are linked to discrimination based on gender, ethnicity, or religion.

The first part of this thesis is dedicated to presenting the current situation in South Asia in the face of climate change. The focus of this chapter is not only on the general economic and social challenges, but also on the problems that women in these regions must deal with in this context. Building on this, the second part discusses strategies for promoting women's rights and thus for adapting to or mitigating climate change. A conclusion and a brief outlook on future developments conclude the paper.

I. South Asia - Challenges

South Asia is one of the most populous regions in the world. With almost 2 billion people, about a quarter of our current world population lives there on only 3 percent of the earth's land area. India, Bangladesh, Nepal, Pakistan, Bhutan, the Maldives and Sri Lanka belong to it, depending on the definition also Afghanistan. For the purposes of this paper, Afghanistan, Bhutan and the two island states are disregarded in order to limit the scope of the analysis. The first four countries mentioned will be examined more closely. They are also where a large part of the population is concentrated. South Asia is one of the regions with the highest levels of poverty in the world, where the effects of climate change can be observed particularly strongly, and

where social and economic inequalities are the highest. South Asia is characterized by overpopulation, wars, natural disasters, droughts and famine.

The great inequalities within society mean that discrimination based on gender, ethnicity or religion is very high. A very large proportion of women suffer from extreme poverty. Violence is part of everyday life for them. This is partly since there are many prejudices against women within society. To illustrate the situation of women, a few years ago the Bertelsmann Foundation published an infographic on the worldwide Global Gender Gap Index 2016 [7] which showed that South Asia would still need around one thousand years to achieve gender equality in the workplace if the current rate of development were maintained.

In this chapter, the current situation of South Asia is analysed in terms of social and economic starting position, women's rights and climate change. In order to understand the complex interrelationships and to be able to establish possible solutions, it is first necessary to understand in more detail where the challenges lie and why women are specifically disadvantaged, in order to then be able to explain how strengthening their position can lead to a climate change mitigation or adaptation strategy.

a) Initial social and economic position

The seventh largest country in the world and the largest in South Asia is India, which we consider here as an example, followed by Pakistan. But it is not only topographically that India achieves records; in terms of population, it is also among the most densely populated countries. Forecasts predict that India will even be the most populous country in the world by 2025. [8] Population density in South Asia varies greatly by region. The Himalayas in the north and the arid high-altitude regions in north-western India and Pakistan, as well as the Thar Desert, are more sparsely populated than the fertile regions in north-eastern India and Bangladesh, the coastal regions, the Ganges plain, or the south-eastern countryside.[9]

In India, Hindi and English are considered the official languages of the country. Along with Bengali in Bangladesh, these are the most widely spoken languages in South Asia. Overall, however, numerous ethnicities and cultures, and thus languages, coexist in this region. In India alone, there are 21 other officially recognized languages and a total of about 100 languages spoken by the population. [10]. India is known for its caste system, which separates groups of people based on social differentiation. This is also widespread in Nepal [11] as well as in parts of Pakistan. Hinduism is the most widespread religion. Along with Buddhism, Jains, Sikhs and Christianity, it is found predominantly in India and Nepal, while Bangladesh and Pakistan are predominantly Muslim. Every Hindu is assigned to a caste from birth. There are four main groups, called "varnas," which are then divided into further subgroups. Below these are the "untouchables," which include Muslims, Christians and Buddhists. They make up about one-fifth of India's population. [12] Discrimination on the basis of religion or caste is widespread in all countries of the region, although officially it has been banned for decades. In reality, however, there is still much inter-caste violence and discrimination. These social differentiations and inequalities, along with the exclusion of women and indigenous populations, make it difficult to climb out of poverty. Although India has seen a significant reduction in multidimensional poverty over the past 10 years, defined by a combination of several individual indicators from the three dimensions of education health and standard of

living [13], approximately 22% of the population still lives below the poverty line. Despite the high levels of poverty in many parts of society, according to the Human Development Index (HDI), India is a [14] India is considered a country of medium development and is currently one of the world's largest economic powers. Bangladesh and Pakistan have also seen massive reductions in poverty rates over the past two decades. [15]. However, both countries, along with Nepal, are among the poorest countries in the world. Economic growth is hampered by many climate- and country-related problems. In Bangladesh and Pakistan, these include underdeveloped infrastructure, and in Nepal, a lack of natural resources. All countries are severely affected by extreme weather events. Most people living in poverty stay in rural areas and engage in subsistence farming. Rural migration and migration to metropolitan areas are high due to severe poverty and widespread famine. In all the countries analysed, agriculture is the main employment sector, followed by industry and services.[16]. Child labour is still widespread. Although there are of course large regional differences within and between countries, the basic challenges and starting points are similar. There are high levels of discrimination based on religion, ethnicity, caste, gender, etc., a population that lives mainly in rural areas and from agriculture. A large proportion of the people live in poor conditions, if not total poverty. Hunger, rural exodus and violence are among the cross-border challenges.

b) Women's Rights

Assuming that over half of the South Asian population lives in rural areas [17] and many people, especially men, migrate to the cities in the hope of finding better livelihood opportunities there, it becomes clear that a large part of the rural population are women who stay behind alone, cultivating the fields, managing the household and often pursuing other occupations to ensure their survival.

According to the Food and Agriculture Organization of the United Nations (FAO), in Nepal 80% of women are engaged in agriculture, mostly in some form of subsistence farming [18]. In Bangladesh, the figure is over 50% [19]in Pakistan 72% [20] and in India 78%. [21]. In all countries, there are significantly more women than men. However, if one takes a look at the ownership structures, it quickly becomes clear that women own only a tiny proportion of the land they cultivate.[22]. This is because there are few adequate legal provisions and laws for women to hold land rights independently of their husbands or male relatives. For traditional reasons, women's direct access to land through purchase or inheritance is limited. Lack of land rights leads to limited access to resources (fertilizer, credit, etc.). They are thus a cause of poverty among rural women, which in turn severely limits their ability to adapt to the consequences of climate change, such as when extreme weather events require quick and decisive action.

It is paradoxical yet characteristic that farmers are defined as male in the prevailing image of society, while women are much more involved in all agricultural activities, producing between 60% and 80% of food. Unsurprisingly, they are also paid much less than men for their activities[23]. In Nepal they earn on average 25% less [18], in Pakistan about 34 [24]. Their main occupations vary between livestock, gardening and farming. They are involved in all stages of work, even in physically demanding areas such as plant transplanting or weeding. In the labour market, women have very few opportunities. As a result, they often only sell the food they produce door-to-door, as better marketing strategies are traditionally adopted by men. In

fact, in India, only between 4 and 10% of public offices are held by women[23]. The importance of women in agriculture is still largely ignored in public discourse. They often have little say in the ownership of the land, limited access to resources and innovative technologies, and little access to education. Because they are often also responsible for household chores and child rearing, few girls attend school, partly for lack of time and partly because their education is often considered unnecessary. They have lower literacy rates than men in all South Asian countries. Illiterate women in India alone account for over two-thirds of the 796 million illiterate people in the world [25]. These facts make women dependent on their husbands. They have little disposable equity and few credit options. This situation contributes to the high poverty rates of the rural population. Women are systematically oppressed by society not only through social and cultural norms, but also through the endorsement of violence. India was ranked as the most dangerous country for women in the world in 2018[26]

The situation in Pakistan is similarly problematic. Even though the essence of Islam places women and men on an equal footing, in practice these values do not conform to the norm. Patriarchal mindsets and male perceptions of women's roles mean that they are controlled by their fathers, brothers and husbands and have little rights of self-determination. Targeted social exclusion denies them access to development. [27] The low social status is also reflected in the high mortality rate of girls. This is since girls are considered a burden in many families, because they cause special costs through dowries. As a result, girls are aborted or murdered at birth. They often get less to eat than their brothers and are less likely to be allowed to see a doctor when they fall ill. As a result, their life expectancy is much lower. Girls are often married off very young. Dowry murders are not uncommon. Overall, one in three women suffers forms of domestic violence. The number of unreported cases is high because rapes are rarely reported and documented.

Violence, societal role models, lack of access to land rights, resources and education, and unequal work opportunities mean that rural women live in poverty with little to no means of adapting to extreme weather events, be they droughts and the accompanying crop failures, changing rainfall patterns, or destructive storms and floods. It can already be seen here that the problematic situation of women and the economic and social challenges are closely linked.

c) Climate Change

The consequences of climate change in South Asia are numerous and can be noticed in different forms and intensities depending on the region. There are a variety of climates from the arid zones of Pakistan to the tropics in the south. Rural populations depend on climate change sensitive sectors such as agriculture, fisheries and forests. The agricultural sector is monsoon-dependent, as more than half of the cropland in South Asia is rain-fed, making it highly vulnerable to climate variability. Ocean warming from the greenhouse gas effect has far-reaching consequences: Higher Sea surface temperatures weaken the temperature difference between sea and land, and with it the monsoon circulation and transport of moist air masses. Climate change alters factors such as temperature, precipitation, and humidity. This has a major impact on the hydrological cycle, causing monsoon rainy seasons to become increasingly unpredictable and stronger [28]. In the north, precipitation is likely to have a decreasing trend, while in the southwest it will have an increasing trend. At the same time, the total amount of precipitation will decrease. Moderate precipitation will become less frequent and extreme

precipitation more frequent. South Asia will have to contend with more severe droughts in the future. They are responsible for a drop in the groundwater table and thus reduce water quality and water availability. This has a negative impact on crop yields, leading to famine and disease. When temperatures are high during drought, soil moisture in the root zone of crops is reduced, further affecting harvests and food security [29]. This will have momentous consequences in arid regions like Pakistan, which already face water scarcity even in normal conditions [30]. But also in Bangladesh [31] where droughts have increased sharply in recent decades and more than half the population lives at risk of drought, India and Nepal. [29]. Projections indicate that heat waves are becoming more frequent and more severe. In recent years, they have killed thousands of people. The rural poor are particularly hard hit, often operating outdoors without shelter. Children and the elderly are also particularly at risk [37].

Due to increased extreme precipitation and the rising trend of cyclones, South Asia is also increasingly struggling with flood events. There is an increase in flash floods, erosion, landslides, and associated destruction of bridges, roads, crops, farms, and settlements [32]. In Pakistan, floods are among the most devastating natural disasters, mainly caused by monsoon rains. Together with the melting of snow, they lead to the most severe floods in the mountainous regions and the Indus plains. [33]. On the coasts of Pakistan, cyclones are the main cause of flooding. One of the most severe floods occurred a decade ago and submerged more than 20 percent of the country. [34]. Bangladesh and Nepal also suffer from heavy rainfall and numerous floods. In Bangladesh, the geographic location is a high risk factor for the population, as 80% of the country is located so low that it is potentially considered a flood zone [35]. **After Bangladesh, India is one of the most vulnerable countries in the world in terms of flood risk. Floods are among the most dangerous natural disasters and cause the greatest losses, not only on an economic level, but also in human lives.** Last year, floods killed thousands of people. Five cyclones caused the displacement of over 2.4 million people [36].

India's forests are already highly vulnerable without climate change due to insect calamities, forest fires, cattle ranching, and over-cultivation. Only about 16% of the former forest area exists today. In Pakistan and Bangladesh, there are hardly any forests left. Only in Nepal there is still a proud 66% of the former stands. Much of the forest area is already fragmented. Climate impact assessments indicate that the remaining forest types will shift. Indications point to a shift to wetter forest types in the north-eastern regions and to drier forest types in the north-western regions [38].

d) Conclusiones

Overall, southern Asia is one of the regions of the world that is feeling the effects of climate change particularly strongly. Although there are strong regional differences, it can be stated that all countries suffer strongly from extreme weather events. In addition, their frequency and intensity are increasing. A large part of the population, especially the poor rural population, is dependent on agriculture and very vulnerable to the change processes described. Despite major regional differences, the underlying causes and the resulting challenges are similar. Violence, societal role models, lack of access to land rights, resources and education, and unequal work opportunities all contribute to women living in severe poverty in rural areas. This leads to higher overall poverty levels in society and increases their vulnerability to the impacts of climate change. This in turn leads to famine, increased poverty, violence and rural exodus.

Strengthening women's rights and thus empowering a large part of the population could point the way out of multidimensional poverty. This, in turn, would benefit not only women, but society as a whole. Reducing poverty as a result of climate change creates more opportunities for adaptation to diverse extreme weather events, thus lowering vulnerability, not only of women, but of society as a whole. Several examples are discussed in the following chapter. They show how strengthening women's rights can lead not only to adaptation but also to mitigation regarding climate change.

II. women's rights and mitigation/adaptation

Improved access to education, land rights, innovative technologies and political participation for women increases their ability to adapt to the consequences of climate change. It is therefore of great relevance not only from a gender perspective but also from the perspective of society in the context of emerging climatological, ecological, economic, social and political change processes.

a) Access to education

The following takes a closer look at the role of education in mitigating vulnerability in the context of climate change [39]. As already underlined, women receive less education than men, especially in countries of the global South. This is also the case in South Asia. A variety of obstacles stand in the way of women. Poverty, socio-cultural role models, low esteem for girls' education, early marriage, etc. are among them. Yet education is a central key to a self-determined and responsible life. Indeed, there is strong evidence that formal schooling can reduce vulnerability in terms of life loss, injury, morbidity and damage following extreme weather events. There is a payoff for society as a whole in empowering women through better education and related investments, which can also enable an improved strategy of adaptation and/or mitigation in the face of climate change. A distinction can be made between direct impacts of education, such as improved cognitive skills, more extensive knowledge, increased risk perception, and improved conflict resolution skills, and indirect impacts, such as poverty reduction, improved access to information, and increased social capital. A study conducted in 75 communities in Nepal showed that women with secondary education and communities with higher mean years of schooling had lower mortality rates in the wake of disasters [40, 41]. It was also found that women with higher education were less likely to be trapped or injured by the water, possibly because they had learned to swim [42]. The number of livestock casualties and the number of families affected by floods and landslides in Nepal were also significantly lower in villages with higher levels of middle schooling [43]. Furthermore, the psychological aftermath of such a disaster was also reduced. A study conducted in the aftermath of the 2004 tsunami showed that post-traumatic stress reactivity (PTSR) was also significantly lower among the better educated. This, in turn, resulted in a low incidence of violence against women. In communities that had higher levels of education, there was significantly less loss of income after floods or droughts. This implies that educated individuals or communities are better able to cope with disasters. They are most likely to have more work alternatives, be able to plan ahead, or have better socioeconomic resources to compensate for losses [44]. Since many women in rural areas earn their livelihoods, it is of paramount importance to open the door to such opportunities for them as well through better access to education. Individuals and

households with a broader portfolio of coping strategies are more likely to choose mechanisms that are more sustainable and do not lead to chronic poverty. For example, in one study, the more highly educated in the aftermath of extreme weather events were significantly less likely to choose to withdraw their children from school as a coping strategy. Since girls are often taken out of school before their brothers, this again has feedback effects on the education of the next generation of girls [45]. Since this indicates that education can lead the way to more sustainable and thus climate change friendly practices, education is not merely a response to the impacts of climate change, but also has the potential to mitigate climate change through learning sustainable coping strategies. Women's development and education contribute to significant economic growth and well-being of vulnerable people of all genders in climate-sensitive rural areas. Education is consequently a key strategy to reduce vulnerability to extreme weather events in South Asia and mitigate climate change. It enables an increase in disaster preparedness [46]reduces mortality rates [40], improves adaptive capacities [47], reduces severe psychological and economic stress in the aftermath, and opens the door to more sustainable management practices. Investing in girls' education in conjunction with strict enforcement of women's enrollment and graduation should therefore be a priority, as it goes without saying that women's educational achievements can have far-reaching effects on families across generations and communities.

b) Land Law

Land not only provides a source of vital resources and income, but it also gives the owner social prestige and access to political power. The power to dispose of and own land is largely reserved for men in South Asia due to patriarchal structures of power, gendered role models, and cultural traditions. Land ownership has long been considered a key to advancing women's socioeconomic rights and well-being, as well as their status in society. Furthermore, ensuring equitable distribution of resources and property rights is a strategy for climate change adaptation and mitigation. Formal ownership and control of farmland, whether through land titling, improved documentation, or stronger community rights, improves women's productivity as farmers, thereby increasing their adaptive capacity to climate change and, by extension, that of society as a whole. They can better withstand economic shocks and gain easier access to credit [25]. When men migrate in search of work in the aftermath of extreme weather events, women are often left behind without legal control over the land. Insecure land rights reduce the incentive to invest in the land. Female-headed households have lower productivity than those of men, but this is because they own less land and thus have less access to resources such as fertilizer and work much longer hours as they are also responsible for the household and caring for children and elders. With equal access to productive resources, they would show as much productivity as men. It has been clearly demonstrated and documented that after controlling for access to inputs (land, fertilizer, credit), women are as productive and technically efficient as men [48]. It has also been found that female farmers are as economically efficient as men in responding to price incentives related to production supply and demand.

Now, considering that women provide a large portion of the agricultural labour force, it can be inferred that greater gender equality in land ownership, and thereby access to other agricultural inputs, would increase overall agricultural production and thus reduce the vulnerability of rural populations to climate change by improving their socioeconomic situation. When women own

land, it also improves their autonomy capacity, as demonstrated in a study from Chandigarh in India. Women were more involved in household decisions and had better access to information about financial matters. Their self-esteem was also increased and they were better respected by their husbands [49]. Access to land thus improved women's livelihoods and gave them a general sense of empowerment. This empowerment, in turn, reduced their risk of exposure to violence by increasing economic security and decreasing their tolerance for violence . [48]. Greater autonomy at home, in turn, led to improved well-being for women on dimensions such as health and educational attainment, which pointed the way out of chronic poverty, toward self-sufficient economic security and higher wages. This provides an opportunity for women, and thus society as a whole, to reduce their vulnerability to extreme weather events.

In a study [50], that analysed how men and women perceived climate trends differently, how they experienced the consequences differently, and what different adaptation strategies were in place, it was found that the amount of food available depended largely on men's decisions about how much to store and how much to sell. This is due to the fact that men hold the land rights and thus make the management decisions. It was also found that women, who were responsible for ensuring the family's food supply, hid part of the harvest without the men's knowledge to protect the family for bad times, while it was the men's responsibility to sell the harvest. It can be concluded that women would be able to better allocate resources and make more purposeful decisions about farming if they had more land rights and, consequently, a better overall view of the situation. Equitable distribution of land rights is considered a key strategy to reduce vulnerability to extreme weather events in South Asia. It enables increased agricultural productivity, more efficient use of resources and, in the long term, leads to greater decision-making capacity among women, ultimately enabling increased adaptive capacity of society as a whole to the consequences of climate change.

c) Innovative Technologies

The common mental image when talking about farmers refers to men in Europe as well as South Asia, which also has to do with farm orders and succession. This shows the extent to which society's focus when it comes to farming is on the male gender. This has widespread implications for the design of agricultural implements and tools. These are mostly designed with men in mind, assuming that women will automatically be able to handle them, even though the ergonomic characteristics of women and men differ. Women produce a large proportion of food in South Asia and are involved in all agricultural tasks. The introduction of more women-friendly, improved farm tools and equipment can reduce the amount of force required on the farm and improve agricultural productivity. A study conducted in Madhya Pradesh, India. [51] showed that only 4.78% of farms had farm tools adapted for women. The study tested the effectiveness of implements designed for women. For example, a peanut decorticator was refined by the ratings given by women, with the result that the cost savings per unit of output was about 79% compared to conventional practice. Since women often have longer working hours due to the combination of housework and agricultural activities, it is of key relevance to increase the efficiency of the equipment they use on a daily basis in order to be able to reduce unnecessary heavy labour. These implements can be successfully operated by both women and men, as men have higher strength and aerobic capacity than women. It is clear that the introduction of such equipment and tools would provide many benefits to women. Not only

does their physical health improve, but so does their productivity and efficiency, giving them more time and energy for other activities, such as education, but also an improved socioeconomic situation that reduces their vulnerability to economic crises following extreme weather events. But technology can be seen not only as an aid in practical agricultural work, but also as providing opportunities for increased political participation, better social integration, increased access to information, and increased education. In Bangladesh, for example, there is a government project on Research and Ownership of Technology, Information and Change [PROTIC], which focuses on women's cell phone use in remote villages [52]. Because women's needs are usually ranked below those of their partner, family, and collective needs, they have less access to technologies such as cell phones. Their lives take place mainly in the private sphere, while men are connected to the public sphere, for example through the labour market, for cultural reasons and social norms. The results show that female villagers experience a change in their ways of thinking, skills, and working through the use of the phone. Women in the study [52] had low literacy levels and rarely used writing skills before participating in the project. Through the use of the phones, illiteracy rates decreased, and participants learned to read and write and became familiar with technical language related to equipment and agriculture. They increased their knowledge of livestock and agricultural production and health. Phones were used to gather agricultural information, access government services, and find market information or resources for education from their children. Women also increasingly took the initiative to keep and write down information in analog formats and then share that information with each other. Consequently, access to technologies such as women-friendly work tools or cell phones not only improves health aspects, agricultural productivity and efficiency, and thus socioeconomics, but also access to social networks. Digital technologies help women access information about sustainable and efficient agricultural practices and financial assistance programs. In addition, and through increased literacy rates, it provides them with access to higher education and possibly alternative employment opportunities. Access to social networks can help women connect more with each other, putting pressure on established socio-political structures.

d) Political Participation

The aspects discussed so far are strongly focused on adaptation in terms of reducing vulnerability. The following one aims more at highlighting the potential of women in forest conservation as a climate change mitigation strategy. Political participation plays an important role. The relationship between forests and climate is complex. Forests can sequester and store large amounts of carbon, reducing the greenhouse effect. There is much evidence that increased participation of women in environmental decision-making leads to better outcomes in terms of conservation and regeneration of forest resources. Thus, increased representation of women in formal and institutional positions represents not only a strategy of women's empowerment, but also of climate change mitigation. One study [53] analysed the relationship between women's presence in community forest management institutions and forest resource conservation and regeneration in India and Nepal. In both regions, groups with a high proportion of women on the executive committee, the main decision-making body, were found to have a significant

positive impact on forest health. In Nepal, all-female executive committees resulted in a 29% higher probability of having very good forest regeneration and a 51% higher probability of having very good tree canopy growth. This was the case even though they had been given much smaller and more degraded forests to manage than other groups. These positive conservation results were due in part to the fact that women have more knowledge of plant species and methods of product extraction, as they are primarily responsible for collecting fuelwood, fodder, food, and non-timber items, while cutting trees tends to be the domain of men. As a result, they have greater knowledge on the sustainable use of forest resources, which is passed down through generations. On the other hand, it was found that actions taken by women were generally better respected by women, especially when they themselves contribute to decisions in the executive committee. They tend to disseminate information about rules among other women, convince them to follow the rules, and may even motivate them to be vigilant and report intruders. Sometimes women's vigilance alone prevented the spread of wildfires. Women's groups also have significantly fewer violations of firewood collection limits compared to other Nepali groups. In fact, women's violations of the law were found to decrease over time, while men's violations increased. Through inclusive policies for women, their diverse knowledge of their natural environment can be used to improve its protection. For example, women's increased participation in environmental decision-making results in better preserved forests through more efficient protection. The regeneration, reforestation, and protection of forests is one of the key strategies for reducing the greenhouse gas effect and thus mitigating climate change.

III. conclusions and outlook

Gender equality is still an unachieved goal worldwide. South Asia represents a particularly striking example of this. The challenges women face are reflected in every aspect of their lives. Equality for people of each gender is not only beneficial for women, but an asset for society as a whole. Especially in the countries of the global south, where many people live below the poverty line, there is much to be gained in this way. If you strengthen women, i.e., half of society, you help the whole society to find a way out of poverty. Any strategy to strengthen women's rights and positions has complex interwoven feedbacks. It is central to the economic development of South Asia's regions as well as to preparing for future climate-related challenges. There are a variety of noteworthy aspects of strengthening women's positions and rights, not all of which could be mentioned in this paper due to their number, but all of which are part of a successful climate change mitigation or adaptation strategy. Education plays a prominent role. It contributes not only to economic growth and poverty reduction, but also to lowering vulnerability to the impacts of climate change through learning different adaptation strategies and better risk perception. The effects of better education play a role in both the economic and social sectors, helping to loosen entrenched cultural and social role models. Education not only helps improve adaptation to climate change, but also opens the door for the application of mitigation strategies. Another key issue is gender equality at the legal level. One example of how this can help climate change adaptation is the positive impact of equitable distribution of land rights on the efficiency and productivity of agricultural land, as well as improved decision-making capacity of women, which in turn leads to higher levels of education and helps the entire society escape poverty, thus lowering vulnerability to climate change.

According to the FAO, agricultural production would be up to 30% more productive if women had the same access to resources as men, resources they could access by obtaining land rights. Globally, this could reduce the number of hungry people by up to 17%. The integration of women-friendly technology and the proliferation of digital tools as a reinforcement strategy also has multi-layered feedbacks that improve women's daily lives. First, it increases the production and efficiency of agricultural land, and second, it gives them access to information of all kinds for example health, educational opportunities, financing, weather reports, preventive measures, and many more. This creates improved adaptation to the impacts of climate change and facilitates the implementation of mitigation strategies. Through access to social networks, women can network more with each other, putting pressure on established political and economic structures. Another key aspect is inclusive politics. Increased participation of women in politics can lead to more effective laws and policies. As shown by the example of forestry administrations, it is important to create inclusive laws that include all social groups. This is especially relevant in environmental policy. To ensure the success of environmental protection measures, all social groups and genders must be included. Since women in countries of the global South often live in direct dependence on their natural environment, they are key actors in the implementation of environmental protection measures that mitigate climate change. In addition, their extensive knowledge of the natural world on which they depend represents a largely untapped potential. All these aspects listed in this paper refer to women, but they are transferable to other marginalized social groups. For us to develop sustainably as a human race, gender equity and the inclusion of marginalized groups are essential. It is not without reason that gender equality is explicitly listed in each of the United Nations *Sustainable Development Goals* (SDGs). In recent years, there have been growing trends around the world, including in South Asia, to promote gender equity, but much remains to be done. Climate change is not gender neutral and women's empowerment is key to the success of climate action and vulnerability reduction to the unavoidable impacts of climate change.

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