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Climate change and gender: economic empowerment of women through climate mitigation and adaptation?

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1 Executive summary

The discourse on climate change does not pay adequate attention to women, either at the local project level or in international negotiations.

Women are unable to voice their specific requirements even though the impact of climate change affects women and men differently. In several rural areas of the South, although women are responsible for feeding their families and are therefore more dependent on natural resources such as land, wood and water, their access to these resources is limited. They are also denied full access to loans, education and information.

Second, the potential of women as agents of change for climate mitigation and adaptation remains untapped:

Their extensive theoretical and practical knowledge of the environment and resource conservation is not given due consideration.

In terms of economic participation, they are not paid for the environmental services that they already provide (e.g., reforestation). Their potential contribution to climate mitigation by being part of the economic cycle is not sufficiently exploited.

There are, however, several ways of promoting women's economic participation while also counteracting climate change. One approach in the field of climate mitigation is the promotion of renewable energies that help avoid greenhouse gas emissions. Not only are jobs created for women who can be engaged in the upkeep and maintenance of solar plants, but solar-powered lamps also extend the productive time available to street vendors. Additionally, pilot experiences in climate adaptation have shown



that women, given their vast knowledge, are able to develop and disseminate innovative cultivation methods that are adapted to climate change. It goes without saying that the involvement of men in gender and climate-related issues is of crucial importance. Nevertheless, the main focus of this discussion paper is on the advancement of women's economic empowerment because of its relevance as described above. The economic empowerment of women through climate mitigation and adaptation fosters economic growth and socioeconomic development, reduces poverty, keeps environmental problems in check, and increases the potential for adaptation, which is to the benefit of both women and men.

2 Introduction: combining climate change with the economic empowerment of women?

The discourse on climate policy is increasingly addressing the development dimension of climate change, not only because the effects of climate change can jeopardise the progress made by development, but also because mitigation¹ and adaptation² offer opportunities both to industrialised and developing countries. The latter, in particular, can benefit from the transfer of innovation, technology and funds within the scope of climate-policy measures. Similarly, enhancing the economic empowerment of women is a catalyst for development, which helps boost a country's economic growth, promotes the socioeconomic development not only of women, but of the entire population, and helps reduce poverty (see BMZ 2009, OECD 2008, World Bank 2006a).³

The opportunities for developing countries that lie in mitigation and adaptation are only rarely mentioned in the gender context in general and the empowerment of women in particular. Little has been done so far to address the gender-specific dimension of the climate problem. If the issue was considered at all in the discourse, the discussion has focused primarily on how women are particularly susceptible to climate change (women as victims). While this is a part of the connection between climate and gender, the potential of and for women with regard to climate protection is rarely addressed (women as stakeholders and actors of change).

Even less attention is paid to the potential that lies in the combination of climate mitigation/ adaptation and the economic empowerment of women. Yet mitigation or adaptation activities offer opportunities to advance the economic empowerment of women. In particular, this applies to work that is already being undertaken by women or activities in which women could assume a leading role. In developing countries, for instance, women frequently play a major role in the reforestation and afforestation of cleared land and in forest conservation. Yet they have hardly ever benefited from these environmental services, say in the form of payments for environmental services (PES). Similarly, the Clean Development Mechanism (CDM) defined in the Kyoto Protocol is a tool to promote emission reductions in developing countries. Small-scale projects in which the level of emission stored is low (compared with large industrial projects) could be

¹ In this paper, **climate mitigation** is understood as the reduction or storage of greenhouse gases. The United Nations Framework Convention on Climate Change (UNFCCC) describes it as follows: "In the context of climate change, a human intervention to reduce the sources or enhance the sinks of greenhouse gases. Examples include using fossil fuels more efficiently for industrial processes or electricity generation, switching to solar energy or wind power, improving the insulation of buildings, and expanding forests and other 'sinks' to remove greater amounts of carbon dioxide from the atmosphere." (UNFCCC 2010)

² Based on the IPCC definition, UNFCCC describes **climate adaptation** as "Adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (UNFCCC 2010). With reference to development policy, we should add "[...] that adaptation can take place at different levels of society and be influenced by various groups of vulnerable actors" (Rodenberg 2009: 8).

³ For analyses of the impact that gender inequality in training and employment has on economic growth in developing countries, see, for example, Blackden/Bhanu (1999), Blackden et al. (2006), Klasen (1999), Klasen/Lamanna (2008).



included in CDM⁴; these would be projects in the agricultural sector, in food production, domestic energy generation, etc. (in other words, in areas in which the majority of those involved are women). This potential is, however, seldom tapped even though women could benefit from the transfer of technology, access to finances, etc., which would contribute to their empowerment, to greater equality, the socioeconomic development in a particular society, and to climate protection. In other words, there is the potential, albeit largely untapped, to facilitate the integration of women's economic empowerment in mitigation and adaptation measures and thus be able to achieve several objectives simultaneously.

This discussion paper attempts to describe the potential that lies in climate mitigation and adaptation for the economic empowerment of women. It intends to discuss the aspects to be considered in order to enhance economic empowerment with the help of mitigation and adaptation measures and to contribute to the genuine advancement of gender equality as against merely cementing existing roles.

3 Climate change and gender – the linkages

Development-policy issues, particularly gender equality aspects, have long been ignored by the climate discourse. Gender equality has been paid increasing attention only since the publication of the UNDP report and that of the Intergovernmental Panel on Climate Change (IPCC) in 2007 (Rodenberg 2009: 7ff.). This is surprising as the consequences of climate change are by no means gender-neutral. The gender dimension in climate change comprises primarily two aspects: women, particularly in developing countries, are more vulnerable than men to the consequences of climate change (higher vulnerability); second, men and women play different roles in dealing with climate change, whereby women are major actors in several areas of mitigation and adaptation (agents of change).

Gender-specific impact

As a rule, poor social groups bear the brunt of climate change not only because they are more dependent on natural resources, but also because they lack the requisite capacity to adapt to climate change. About two-thirds of the world's population living in poverty are women, which underlines their greater vulnerability to the changing climate. The differential impact of climate change on women and men is due to social norms, traditional roles and different power structures (Schalatek 2009: 14).

Women are usually responsible for providing the family with its basic nutrition, yet they rarely have access to and control over the resources required to fulfil this task when cultivation conditions deteriorate. Hence climate-induced crop failure also puts the food security of the entire population at risk (Denton 2002: 14). More than anything else, however, women lack land rights, ownership rights for the means of production, technology, finances, information and training, e.g., in climate adaptation and disaster prevention (see Rodenberg 2009: 11). Studies have shown that women and children are 14 times more likely to lose their lives in a natural disaster (Araujo et al. 2007:1). This is also explained by socio-cultural stereotypes: warnings of disasters announced in public places that are often inaccessi-



⁴ CDM is one of the Kyoto Protocol's three flexible mechanisms (Article 12) to meet the emission-reduction commitments of industrialised countries. The financing of emission-reduction projects in developing countries is a cost-efficient option for the donor country to meet its Kyoto commitments. The partner country, for its part, benefits from the additional funds, the transfer of modern technologies and know-how [Oberthür/Ott (2000), 203]. CDM is intended to facilitate not only climate mitigation but also sustainable development (Article 12.2, Kyoto Protocol). It enables developing countries to participate in carbon trading, as they can sell the emission credits generated by CDM projects to industrialised countries. The problem is, however, that this increases the overall volume of emissions for industrialised countries. Nevertheless, the significance of CDM, particularly with regard to expanding environmentally-friendly capacities in recipient countries, is not to be under-estimated.



ble to women (and which often do not reach them) are only one example (Rodenberg 2009: 30). In the aftermath of natural disasters, the lack of ownership titles poses an enormous problem to women, as they are denied the right to buy a new plot of land should they have to resettle (Rodenberg 2009: 27). Moreover, after a disaster, women face a heavier workload involving clean-up work, subsistence activities and nursing the sick (Rodenberg 2009: 30). Consequently, not only are they left with virtually no time for income-generating activities, but they also run the risk of being exhausted and overworked (BRIDGE 2008: 3). Given that women are frequently discriminated against in the distribution of resources such as food or medicine, as it is the risk of them falling ill is higher than that of men and, because of economic or cultural constraints, they are often denied access to medical facilities (BRIDGE 2008: 3). Climate change also increases the frequency of heat waves and other adverse weather conditions, resulting in a higher incidence of disease; rising temperatures encourage the spread of infectious diseases such as malaria or dengue fever (Rodenberg 2009: 29). Moreover, the likelihood of a woman's health deteriorating increases because of the discrimination against women referred to above. In post-disaster situations, there is also a greater danger of women becoming victims of sexual violence (Rodenberg 2009: 13). Climate change and its impact on the income security for the family increases the potential for domestic violence, as it shatters the image of the man as bread-winner, which can cause psychological stress (Rodenberg 2009: 13).

Gender-specific adaptation

With regard to climate adaptation, it should be noted that women often do not have much of a say in decisions taken by the family or the community and are therefore unable to diversify cultivation, for example (see Rodenberg 2009: 3). Furthermore, it is usually women who are responsible for collecting water and fuel (e.g., firewood) for the household. The scarcity of these resources induced by climate change increases a woman's workload and time poverty, burdened as she already is by the many roles she has to play. She is consequently left with no time for income-generating activities, education, training or participation in community decision-making processes. In overall terms, climate change intensifies the existing economic and social gender disparities (Rodenberg 2009: 26).

Apart from the differential vulnerability, the sexes also play different roles in dealing with climate change. It is generally recognised that women are major actors in mitigation and adaptation measures (see IUCN 2007; Rodenberg 2009; UNDP 2009; UNFPA/WEDO 2009) and their role in adaptation measures in developing countries is often highlighted. Women play a particularly significant role in ensuring a family's food security. They shoulder the responsibility for this activity, have extensive knowledge about their natural surroundings, and are at the forefront in the conservation and selection of seeds of different crops (IUCN/ UNDP/GGCA 2009: 122). In many areas women are already adapting to the fallout of climate change and are fully aware of where their own needs and those of their families lie (BRIDGE 2008: 12). Greater decision-making powers for women at the family and community level with regard to agricultural cultivation and the farming of new and more resistant crops could increase agricultural production, leading to greater food security, the production and marketing of surpluses, and ultimately to a source of income.

Gender-specific mitigation

The role of women in mitigation measures should not be under-estimated. Developing countries have the potential to reduce or store greenhouse gases, particularly in areas in which women are already active. Thus providing energy for the household is usually a woman's job and she often resorts to the energy-inefficient open burning of biomass, e.g., firewood. The use of efficient energy systems at the household level (e.g., special cooking stoves and ovens) could reduce emissions and harness the potential of women as actors for mitigation measures (see



IUCN/UNDP/GGCA 2009: 159). Women worldwide are also involved in natural resource and forest conservation. The forests supply women with vital products and are used not just to gather firewood, but also to obtain other raw materials, food or medicinal plants to provide for their families and to boost their income (IUCN/UNDP/GGCA 2009: 155). The conservation and care of forests coupled with reforestation and afforestation for which women are responsible helps avoid the emissions caused by deforestation and leads to greater sequestration of greenhouse gases from the atmosphere. Women therefore contribute directly to climate mitigation. Given their significant role in mitigation and adaptation efforts, it is imperative that women be involved in the relevant measures.

4 Economic empowerment: strengthening the economic participation of women

4.1 An attempt at conceptualisation

Before the potential in mitigation and adaptation for the economic empowerment of women can be identified, this paper's understanding of the term and the main building blocks that can contribute to economic empowerment should first be clarified.

Although there is no agreement on the term *economic empowerment* or on the general concept of *empowerment* in the literature or within the development cooperation/international cooperation community, a few key elements are repeatedly mentioned in this context: options, choice, control, power (Malhotra/Schuler/Boender 2002: 5). The authors Malhotra, Schuler and Boender favour the definition of empowerment formulated by Kabeer (2001), according to which empowerment describes "the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them" (Kabeer 2001: 19).

Applied to the economic context, the World Bank concludes in its Gender Action Plan: "Economic empowerment is about *making markets work for women* (at the policy level) and *empowering women to compete in markets* (at the agency level)" (World Bank 2006a: 4). Incidentally, the markets mentioned include the informal sector, and infrastructure development is one of the conditions that facilitate market access for women (see World Bank 2006a: 4-5).

Premised on this understanding of economic empowerment, it can be concluded that political and institutional measures along with measures that target the individual are required to support the process of **empowering women economically** in development cooperation. In development-policy literature, it is generally believed that the following elements are necessary to guarantee the integration of women in economic and development processes; women must:

- have **access to education, training and upgrading**
- have **access to and control over productive resources** including **access to land and ownership rights**
- have **access to markets** (land, labour, financial and product markets)
- have **access to services**
- draw benefit from the use of **public funds**, particularly for infrastructure, and enjoy access to **public goods**⁵
- enforce claims for **unpaid (reproductive) work** and be able to benefit from re-distribution and remuneration for such work
- be able to generate **income** from the use of their own labour.

(see, for example, BMZ 2009, Klasen 2006, Klasen/Lamana 2008, UN 2009, World Bank 2006a).

⁵ This means firstly **exclusively public goods**, i.e., there is no competition for consumption, and nobody can be excluded from consuming them (Donges/Freytag 2004: 168). The term also refers to **common goods** that are also not excludable, yet which are rival in consumption; in other words, they are scarce (Donges/Freytag 2004: 168).



4.2 Conclusions for mitigation and adaptation measures

Before concrete starting points and examples of projects can be discussed to illustrate how climate mitigation and adaptation strategies can be usefully combined with the economic empowerment of women, this paper's understanding of the *economic empowerment of women* must be concretised. The aspects listed below, which can be considered general prerequisites for the consolidation of economic empowerment - have therefore been supplemented with additional elements that are of special relevance to the problem of climate change:

Access to education, training and upgrading: In the context of climate, measures designed for training and continuing education could be particularly significant in the following areas:

- Awareness of the causes and consequences of climate change in order to sensitise women to the dangers of climate change and to the possible requirements/mechanisms of adaptation
- Awareness of existing mitigation and adaptation programmes in which women can be involved and from which they can benefit
- Training programmes on adaptation measures with a special focus on the needs of women (e.g., alternative cultivation methods and more resistant crops in agriculture, more efficient domestic and agricultural use of available water resources, alternative sources of domestic energy)
- Training programmes on the use of (new) technologies (e.g., means of agricultural production, energy-efficient cooking stoves and ovens, renewable energy systems, information and communication technologies)
- Awareness of existing rights and laying claim to these rights in different spheres of life (e.g., land ownership or land use rights, ownership rights for means of production).

Access to and control over productive resources, including access to land and ownership rights presupposes the existence of a relevant legal framework; in the context of the climate and gender problem, this means, above all:

- to own land and be able to use it according to one's own needs and wishes in order to be active in climate mitigation and adaptation
- to procure, own and be able to use the means of production, particularly new technologies, and the related technical know-how⁶
- to obtain, own, and be able to deploy financial capital for one's own undertakings in order to have investments available for the adoption or development of climate-related work.

Access to services means first and foremost:

- to have access to (medical) care and child-care services in order to ease the burden on women, reduce time poverty, and gain more time for income-generating activities
- to have access to the (agricultural) extension services required, for example, to expand agricultural production or nature and resource conservation work
- to be able to formalise one's own enterprise, which involves neither a great deal of time nor money.

Access to markets (land, labour, financial and product markets) in this context implies:

- to be able to acquire (additional) land or sell it
- to be able to use one's own labour in the formal and informal⁷ labour markets

⁶ Women are often denied the use of new technologies, as in some cultural contexts technology is traditionally reserved for men.

⁷ The integration of women into the formal economy is one of the concerns of development cooperation. The informal sector in developing countries, however, de facto tends to be quite substantial in size (see, for example, Chen 2001, Pratap/Quintin 2006). Additionally, women



- to have access to loans and funds and, in the context of climate, (indirect) access to international climate finance mechanisms (e.g., climate funds or CDM)
- to be able to access product markets to sell one's own products and so have access to the information required about market prices and trading options.

Drawing benefit from the deployment of **public funds**, particularly for infrastructure, and enjoying access to **public services** means:

- being equipped with the necessary technical and social infrastructure⁸ that helps reduce working time and fosters economic activity; this implies primarily
 - ✓ safe and affordable public transport
 - ✓ (medical) care and child-care facilities in the locality
 - ✓ electricity and water connections
 - ✓ access to information and communication technologies (ICT) to develop one's own capacity and business potential.

Enforcing claims for **unpaid (reproductive) work** and being able to benefit from the **re-distribution and remuneration** for such work means:

- being remunerated for reproductive work or not being solely responsible for such work and so having more time available
- being able to obtain benefits and/or remuneration from environmental services that are to the benefit of the community or society as a whole.

And finally the **ability to generate income by using one's own labour** should be understood as follows:

- to be able to undertake work or income-generating activities outside the house
- to have control over the income earned and be able to determine how it should be used.



5 Approaches to the economic empowerment of women through climate mitigation and adaptation

5.1 Greenhouse gas reduction: natural resource conservation, agroforestry, energy

As described at the outset, while climate change and its consequences may pose challenges, there are also opportunities to be found in adaptation and mitigation. In several developing countries, the people (chiefly women) are already engaged in traditional work that does not cause greenhouse gas emissions or captures emissions that have been released. Several commitments to enhance the economic empowerment of women have also been made by donors and partners at international, transnational and national levels.⁹ These are two key arguments that support the integration of the economic empowerment of women into climate mitigation and adaptation measures.

Natural resource conservation

Women worldwide are at the forefront of the **conservation** of forests, the reforestation and afforestation of cleared land and the conservation of **natural resources** in general (IUCN/UNDP/GGCA 2009: 155, UN-FPA/WEDO 2009: 4).

in developing countries are over-represented in the informal sector (Chen 2001), which explains why both sectors are referred to here.

⁸ Infrastructure includes "the basic physical and organisational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society or enterprise" (Oxford Dictionaries).

⁹ See for example the UN General Assembly Report A/S-23/10/Rev.1 (2000), AU Maputo Protocol (2003), AU Solemn Declaration (2004), EU Council conclusions (2007a, b), and G8 Summit Declaration (2007). For a more detailed list, see GTZ Programme Promoting Gender Equality and Women's Rights (2009).



Natural resource conservation

However, they have rarely been paid for these **environmental services**. Yet with instruments such as CDM, emissions trading, as well as numerous bilateral and multilateral climate funds, recourse could be made to resources (climate finance) for compensation and support for these services. Mechanisms such as Reducing Emissions from Deforestation and Degradation (REDD) are potentially suited to ensure that women are paid for forest conservation. The REDD approach, which is meant to be an integral part of the follow-up agreement to the Kyoto Protocol that expires in 2012, attempts to assign an economic value to the carbon stored in forests. Developing countries are offered (financial) incentives to preserve their forests and so reduce emissions, and to invest in low-carbon, sustainable development (UN-REDD Programme 2010). At the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change in Bali, the industrialised countries committed themselves to co-finance climate mitigation and forest conservation in developing and newly industrialised countries (Spencer/Bals 2009: 17). A decision adopted by COP 13 encouraged industrialised countries to mobilise resources to help reduce emissions released by deforestation in developing countries (UNFCCC COP 13 2007). However, it is still not clear whether the requisite measures should be financed through a fund and/or emissions trading.¹⁰ Nevertheless, it is clear that when planning and implementing REDD projects in developing countries, it is essential to involve the local communities that often live in and from the forest and know a great deal about forest conservation and natural resource management, to ensure the ecological and social success of REDD (see IBRD 2010, UN-REDD Programme 2010). As primarily women use forest resources and play a role in forest conservation, there are paid employment opportunities for them within the framework of (internationally funded) REDD projects.

Natural resource conservation. Project example: *Green Belt Movement*

The Green Belt Movement (GBM) is a Kenyan women's NGO that began to plant trees at the grassroots level in 1977 to tackle the problems of deforestation, soil erosion and water scarcity. The programme has since evolved into an instrument that facilitates the empowerment of women. It pursues a holistic approach, as trees (including fruit and other "commercial" trees) are planted by voluntary networks of women and their families. The participants are also trained in sustainable agriculture with the aim of diversifying their livelihoods and earning an income. They undergo comprehensive capacity-building, e.g., in food production, processing and marketing, apiculture, and the planting and care of trees — activities that aim to empower women to generate an income of their own.

The programme makes an overall contribution to climate mitigation, as emissions are hindered and absorbed because existing trees are cared for and new ones planted. A contribution is also made to climate adaptation, as the communities learn about the sustainable use of scarce resources and about sustainable agricultural techniques. And finally, the Green Belt initiative also empowers women economically, as they now have alternative sources of income created by the planting and caring of trees. GBM is currently aiming to implement a pilot project for CDM with a view to obtaining international carbon finance and being able to fund further projects. In 2006, the World Bank and GBM signed an Emission Reduction Purchase Agreement under which the World Bank's BioCarbon Fund pledged to buy the GBM emission reductions that resulted from the cultivation of trees on land in Kenya.

Source: GBM 2009, World Bank 2006b.

¹⁰ For a description of various approaches to the implementation of REDD, see GCP 2008. For a discussion of all the different challenges in connection with climate and forest policies, see Forum Umwelt & Entwicklung (German NGO Forum on Environment and Development) 2009.

Agroforestry

Agroforestry

As part of the reforestation and afforestation efforts, women can also plant trees that not only sequester emissions, but also produce a crop (agroforestry), which may provide them with a source of income. Such projects could be tied to emissions trading, and reduced emissions resulting from afforestation could be traded in the form of certificates. This could be used to fund further measures and related services in such projects. Complementary training programmes that focus on the processing and marketing of these products would further enhance the economic benefits for women. In many developing countries, women are traditionally excluded from the commercial production of agricultural produce (cultivation of cash crops) (see GTZ programme on Promoting Gender Equality and Women's Rights 2008, UNCCD, USAID 2005), and agroforestry could help address this problem.

Energy

As is the case with the cultivation of agricultural products for the market, the **energy sector** is also largely viewed as a 'male' sector in which women are assigned a minor role (Carlsson 2007: 9). However, in most developing countries, domestic energy, e.g., for cooking, heating or lighting, is still obtained from the energy-inefficient and toxic burning of biomass, such as wood, charcoal or agricultural waste, which is traditionally women's work (Carlsson 2007: 9). Even when households are connected to an electricity network, the power available is usually used only for smaller electrical gadgets and for lighting; it is not used as a substitute for biomass, particularly not in rural areas (Carlsson 2007: 11). Women therefore continue to spend enormous amounts of time on procuring the biomass they require and they need larger amounts of fuel as they burn it inefficiently. Not only does this give them even less of an opportunity to pursue alternative, income-generating activities, but, as it is virtually impossible for them to meet this need sustainably, the practice exacerbates deforestation, land degradation and desertification (GTZ HERA 2007: 5). The use of energy-efficient stoves and ovens (promoted by GTZ HERA, for instance) could help reduce unhealthy emissions and improve the situation described, not least because these stoves and ovens reduce the quantity of biomass required while cutting down on cooking time. It is also conceivable that projects promoting such stoves and ovens are tied to emissions trading. The sale of emission certificates could help expand their production and increase their distribution besides bringing down prices and enabling a larger number of people to have access to cleaner, safer, time- and cost-saving energy (GTZ HERA 2009: 6).

Energy

Besides energy-efficient ovens, it is particularly important for the rural population to be connected to the electrical grid, with electricity ideally generated by renewable energy. The production factor that is most readily available to the poor, and therefore above all to women, is the use of their own labour (UN 2009: vii). Hence the bulk of a woman's income-generating activities is labour-based, which is why greater attention should be paid to the issue of energy supply as it is directly responsible for reducing the human workload involved in production (Ramani 2002: 8). In other words, power is required to run electricity-based means of production that would increase a woman's productivity while reducing her workload.





Social empowerment through economic empowerment. Project example: solar energy as a catalyst

The Self-Employed Women's Association (SEWA), a trade union for independent women in the informal sector (small entrepreneurs) in India, has been striving since 1972 to improve the living conditions of its now 1.3 million members.¹¹ Thanks to its needs-based approach, it responded to a growing demand among its members for access to electricity with Project Urja. Together with the social enterprise Selco India, a solar energy services company, the microfinance approach pursued by the SEWA cooperative bank brings energy and light to households, thus reducing health hazards, costs and CO₂ emissions caused by the use of kerosene. Additionally, thanks to technology tailored to their needs, women in work are also able to boost their productivity: by using solar lamps, women street vendors spend less on kerosene and reduce the risk of accidents while also increasing their income, as they can now extend the time available to them to sell their products by up to two hours. As they remain unaffected by the power outages in the overall grid, they have a competitive advantage. Women who work in horticulture or as midwives also benefit from solar energy through solar-powered headlamps. Flower pickers have both hands free to pursue their livelihoods, while midwives report that they are able to assist with twice as many births. True to SEWA's philosophy of empowering women economically in order to boost their self-confidence and create greater respect for them within the family and in society, these lamps provide for greater mobility, make women feel more secure, and boost their self-confidence. Hence solar energy does not only mean reduced emissions because of reduced kerosene consumption, but also translates into social and economic benefits for the users.

Sources: SEEP Network 2007a, SEEP Network 2007b, SELCO 2008, SEWA 2010.

Another option for the use of solar energy would be to install domestic solar power systems; as an emission-reducing development measure, they could also be linked to CDM. Similar measures would contribute to efforts to adapt to depleting sources of energy. A climate-friendly path of development can also be supported within the framework of small-scale projects, particularly in areas for which women are traditionally responsible (e.g., food security, water and energy for the household).

Sustainable energy generation; project example: *Grameen Shakti & UNIDO*

Grameen Shakti has set up a project in Bangladesh, which has brought together several individual and small-scale mitigation projects at the grassroots level and facilitated access to CDM funds. In concrete terms, the project trains women to install and maintain 30,000 domestic solar home systems in rural households that are not connected to the electricity network. Access to electricity allows households to cut down on their use of diesel and kerosene generators. The emissions saved are bought by the project operator in the form of Certified Emission Reductions under CDM and can be sold in the emissions trading market. Resources can thus be mobilised to reduce project costs and to keep the cost price of domestic solar home systems as low as possible. The households involved are also granted micro loans by Grameen Bank to help them purchase the domestic solar home systems.

By replacing fossil fuels with regenerative energy, the project not only contributes to reduced emissions, but also impacts positively on poverty reduction and on development, particularly for rural households that benefit from an affordable power supply. The project also advances the economic empowerment of the women who are trained to install and maintain solar systems, which provides them with a source of income. In households equipped with these systems, the project does at least have the potential of advancing the economic empowerment of women who now have access to power and related technologies. If the power available were to be productively used, the workload involved in production could be reduced.

Source: Heinrich Böll Stiftung 2009: 16.

¹¹ Ela Bhatt, the founder of SEWA, was awarded the Rural Livelihood Award in 1984.

5.2 Adapting to climate change: agricultural production, soil and water source conservation, environmental services

Areas in which women are traditionally engaged and which are closely tied to the availability of natural resources (e.g., food security, domestic energy and water) will be hit particularly hard by the consequences of climate change (WEDO 2008: 6) and require greater adaptation. As numerous bilateral and multilateral funds designed to support climate adaptation and mitigation measures have been set up in recent years,¹² it is possible to access these funds for the adaptation effort.

Adapted agricultural production

In order to effect comprehensive adaptation to changing climatic conditions, a number of measures in vastly different sectors and at different levels are called for.¹³ In concrete terms, the adaptation measures required with reference to climate change, gender, and the advancement of women's economic empowerment should specifically enable women to secure or expand their livelihood options. In the context of **agricultural production**, in which most of the women work to ensure food security for the family (IUCN/UNDP/GGCA 2009: 118), this refers primarily to the use of cultivation and irrigation methods that allow for crop security even in the case of natural resource depletion or unforeseen weather events. In irrigation, it is important to adapt type, time, and use (IUCN/UNDP/GGCA 2009: 129). Ideally, one can switch from traditional irrigation methods to efficient, technified irrigation systems. As regards cultivation methods, it is advisable to select crops that can flourish despite floods or heat waves or those with a short growth cycle which can, for example, be harvested before the flooding season or can be planted during the (short) rainy season. Moreover, it would be possible to grow different crops on one and the same field in order to optimise the use of soil and irrigation and perhaps to counter the onset of erosion. Locally produced organic fertiliser could also be used that would not only fertilise the soil, but would also prevent disease or ensure crop survival in times of drought or frost. All in all, these adaptation measures could actually increase production, as with the existing resources the highest possible yields could be attained. However, complementary training and agricultural extension services are required to teach women about the economical use of scarce resources and about processing and marketing methods for agricultural products. The latter includes converting raw materials into derivatives that usually fetch higher prices and reduce dependence on raw material prices.

Adapted
agricultural
production



Adapted agricultural production; project example: INADES Formation Tanzania

With its *Innovative Farmers Programme*, the Tanzanian NGO INADES Formation supports the preparation and dissemination of cultivation methods that enable users to secure and even achieve higher crop yields and levels of income despite increasing soil erosion and uncertain rainfall. INADES is active in the field of rural development where it focuses on advising and training smallholders in ecological land use. Innovative (adapted to climate change) cultivation methods are further refined and disseminated with the help of the NGO. The participants learn to convert agricultural waste into cost-neutral organic fertiliser, conserve seeds and cultivate more resistant species, counter soil erosion and improve rain water storage in the ground. Together with the Verband Entwicklungspolitik Niedersachsen (VEN/Association for Development Policy in Lower Saxony) and the Bolivian NGO CENPROTAC, INADES conducts workshops within the framework of the project *Empowering Women. Changing the Climate!* The aim is to disseminate the lessons learned by the NGO during its many years in this field and pass them on primarily to women who are often engaged in agriculture and are responsible for securing food for the family. The workshops, designed for women from all three partner countries, are held in Tanzania, Bolivia and Germany, and generally serve to deepen a woman's knowledge of climate change and its effects, and to develop perspectives, positions and options for action.

Source: EED 2010, VEN 2010.

¹² For an overview of existing climate funds, see <http://www.climatefundsupdate.org/Home>.

¹³ For a comprehensive overview of the need for adaptation in different fields with gender aspects taken into account, see IUCN/UNDP/GGCA 2009: 117-130.



Soil and water conservation

Soil and water conservation

Besides adapting production methods, it is also important to **conserve soil and water sources** as the basis of agricultural production. Here, too, women across the world are involved as central players and therefore could make a significant contribution towards meeting adaptation requirements (IUCN/UNDP/GGCA 2009: 118). Soil degradation and the unused water runoff could, for instance, be reduced by planting the area or by constructing infiltration ditches (WEDO/ABANTU for Development/ActionAid/ENDA 2008: 31). According to a case study from Senegal, women are keen to address the problem of erosion mainly because erosion reduces their agricultural productivity and makes it more difficult for them to access water (WEDO/ABANTU for Development/ActionAid/ENDA 2008: 31). Both are fundamental requirements if production is to be increased and is to generate income. In addition to soil and water sources, ecological systems in the wider sense must be rehabilitated to conserve soil, water sources and habitat and therefore also to maintain the basis for life and livelihoods. As repeatedly mentioned, women today are already often engaged in work that addresses the rehabilitation of eco-systems encompassing not just traditional forests but, for instance, mangrove forests as well. They thus help combat desertification and the loss of biodiversity in coastal regions (WEDO/ABANTU for Development/ActionAid/ENDA 2008: 29). These **environmental services** that facilitate adaptation and partly help mitigate the effects of climate change could be paid for within the framework of related programmes (payments for environmental services – PES; see example of Costa Rica p. 14).¹⁴

Payments for environmental services. Project example: *The Costa Rican Payments for Environmental Services Program (PESP)*

Environmental services such as the rehabilitation of cultivable soil or the conservation of clean water sources are rarely remunerated. The Costa Rican PESP is one of the few exceptions and pays the private owners of small and medium-sized forested areas if they help conserve the ecosystems. The programme distinguishes between four kinds of services: 1) reduction of greenhouse gas emissions; 2) hydrological services, e.g., improving water availability; 3) conservation of biodiversity; and 4) preservation of natural beauty. The landowners sign agreements with the Fondo Nacional de Financiamiento Forestal (FONAFIFO), which is responsible for PESP, and pledge to implement the corresponding environmental services for a specific period. FONAFIFO also buys the emission reduction units that may result from the conservation of forests from the landowners and sells them in the emissions trading market (use of climate finance). The revenue is one of the programme's sources of funds. The Costa Rican government also levies a tax on fossil fuels and raises charges from private-sector beneficiaries (e.g., for bottling drinking water). Women who, given their role in society, often know a great deal about resource conservation, could benefit from such programmes in the form of a new source of income. In Costa Rica, one does not need formal land rights to be involved in the programme — in other words, women without land deeds can also participate.

Source: Engel 2008, FONAFIFO 2010, Malavasi/Kellenberg.

¹⁴ For an explanation of the PES concept and the related difficulties and options, see CIFOR 2005.

Energy

Energy

As already mentioned, another prerequisite for productivity is the availability of **energy** and its sustainable and efficient production in view of the decline in biomasses such as wood.

Disaster prevention

Disaster prevention

At this point one final, but essential aspect of climate adaptation should be mentioned, namely disaster prevention which must ensure that livelihoods are not destroyed by natural phenomena such as floods or storms induced by climate change. With reference to gender, it is important for women to be involved in disaster prevention measures and related decisions.

5.3 Challenges and problems

On the basis of the afore-mentioned information it is apparent that climate mitigation and adaptation offer several possibilities for interlinking these measures and the economic empowerment of women.

However, it must be acknowledged that a meaningful alignment of these two areas comes with numerous challenges at various levels. At the level of concrete **project measures** in the field of climate mitigation, several aspects must be taken into account to ensure that the concerns of women are always given due consideration and the requirements of the gendered approach are fulfilled to ultimately achieve the genuine empowerment of women. This is particularly important as, if ignored, there is the danger that women will be discriminated against more or that they will have an even greater burden to bear as a result of the projects (the worst case scenario). In climate mitigation and adaptation measures women must therefore be perceived as *actors* with specific needs.

In addition to all that is generally required to ensure a gendered approach, the linkage between climate change and economic empowerment also poses challenges to the design of the project. The two themes can be successfully combined only if they are thought of together from the very start of a measure and are translated into an **integrated project design**. The interfaces between the two themes already exist and only need to be supported by the correct elements to facilitate the development of the positive side-effects of the economic empowerment of women in mitigation or adaptation measures. Measures are required to do more than just deal directly with climate change. Added value can then be achieved for climate mitigation, for the economic participation of women, their empowerment, gender equality and economic growth in the partner countries.

5.4 Climate change and women's empowerment: a question of governance

“Economic empowerment is about *making markets work for women* (at the policy level) and *empowering women to compete in markets* (at the agency level)” (World Bank 2006a: 4).

Another look at the term 'economic empowerment' and how it is understood reveals that what has been described so far targets essentially the actor level and pays less attention to the policy advice level. Yet this is precisely what is needed to influence the **structural and institutional parameters** that stand in the way of advancing the economic empowerment of women. Individual projects that promote women's empowerment at the local level are starting points, but cannot on their own bring about comprehensive and sweeping improvements in terms of the opportunities available to women for economic participation. It is not enough to have the requisite knowledge and skills to adapt agricultural production to changing



climatic conditions and so increase yield and income. For women to play an economic role, an institutional, legal and political framework is required that enables and/or makes it easier for women to hold their own in the market. Concrete, promising project measures at the local level should therefore be combined with advisory services at the political level related to climate change and the economic empowerment of women, with a view to initiating **structural reform**. Of importance here is advice on how to access and use the resources of international climate finance mechanisms. To encourage and promote the deployment of these resources for such projects, it is important to illuminate the potential that lies in combining climate-related measures with the economic empowerment of women.

6 Conclusion

The description of the opportunities and challenges associated with the joint pursuit of the objectives of climate mitigation and adaptation, as well as the economic empowerment of women, has shown that in certain areas of climate-related projects the two issues could be successfully combined. However, any prospect of success will be tied to an integrated approach and to institutional and political measures that are required to create the basic structural conditions necessary for broad-based and sustainable economic empowerment.

If women are to be empowered to take strategic decisions, it is advisable to supplement the measures at the target group level with long-term structural approaches. This becomes even more apparent when one considers that the aim is not simply to help women better fulfil their roles, but to contribute to genuine gender equality in the long term and so advance socio-economic development in the partner countries.

In terms of development cooperation/international cooperation, the results arrived at in the discussion paper allow us to draw the following conclusions:

- The combination of climate change and the economic empowerment of women creates an opportunity for both fields to create mutual synergy on the path to poverty reduction and development.
- As a rule, the potential that lies in linking climate mitigation/adaptation with the economic empowerment of women should be discussed with colleagues in the climate sector.
- In the review of climate mitigation and adaptation measures, the enormous potential of integrating aspects of women's economic empowerment should be highlighted.
- For added value, it is advisable to work towards integrating those measures into development cooperation climate projects that go beyond direct climate-related aspects, particularly training measures for women entrepreneurs, further training measures, etc.
- It should be argued that the combination of these two themes can impact positively on
 - 1) climate mitigation and/or adaptation
 - 2) advancing the economic participation and empowerment of women
 - 3) gender equality
 - 4) economic growth and poverty reduction in the partner countries, which will bring positive added value for society as a whole – for women **and** men.
- For in-depth analyses of the correlation between the two issues, it is important to discuss
 - ✓ whether the perspective underlying this paper - that measures to promote the economic participation of women can be integrated into climate mitigation and adaptation initiatives (as overlaps already exist) - could also be reversed. Would the inverse approach therefore also be possible and would it be a viable approach against the background of gender mainstreaming? Is it

conceivable for climate-related aspects to be integrated into development measures promoting the economic participation of women?

- ✓ the areas where such opportunities could arise
- ✓ whether promoting the employment of women in green jobs, namely in the environment-related industry (renewable energy, energy-efficient systems, etc.), could be a starting point.

Further work on the theme of this discussion paper will certainly lead to additional lines of enquiry regarding a possible future approach. It is the explicit purpose of this paper to encourage the discussion, fine-tuning and exchange of further questions and ideas.

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List of abbreviations

CDM	Clean Development Mechanism
GBM	Green Belt Movement
GTZ	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication Technologies
IPCC	International Panel on Climate Change
IUCN	International Union for Conservation of Nature
PES	Payments for Environmental Services
REDD	Reduction of Emissions from Deforestation and Degradation
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNFPA	United Nations Population Fund
WEDO	Women's Environment and Development Organization

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