

Gender and Energy in the North

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I. Introduction

1. Introducing remarks

As yet, in northern countries, there has hardly been any research on energy and the sustainable production and consumption of energy from a gender perspective¹. One reason for this is that gender specific effects are significantly more indirect and subtle in the North than in the South². Another reason is a general lack of gender specific data. Furthermore, gender aspects often seem to be neglected on purpose – even if they are evident.

The lack of gender specific approaches, as well as the under-representation of women in the energy sector in the North (in energy economy, policy, and planning), can be observed in the low participation of women's organizations at the relevant conferences and other decision-making processes, too, on national³ and international levels. Consequently, gender specific demands do not appear in the relevant documents.

Most of the few women working in the energy sector do not address gender aspects. This may be due to the fact that women in extreme minority positions in their professional work are subject to an enormous pressure to adaptation. Usually, they are struggling to be acknowledged as experts, and thus frequently outdistance themselves from other women. To take on the position of the "disadvantaged" in this situation – and this is how women are seen in terms of women promotion and women approaches – would mean to risk the hard won acceptance of their expert reputation. (Hickel 1994, Huber/Rose 1994, Jansen/Rudolph 1997, Molvaer/Stein 1994)

Even the few women who oppose to the pressure to adaptation and do concern themselves with gender aspects do not "mainstream" these aspects, but often address them in the frame of volunteer work or private initiatives, separate from the "real" energy policy and energy planning within their professional work. As a consequence, there is a complete lack of gender mainstreaming in the sense of screening of all politics to their different impacts on women and men. However, some years ago, several "women energy projects" have emerged. Recently, some EU funded projects to support women in energy utilities have been undertaken. These give reason for the hope, that gender aspects are slowly making their way into the energy sector – even though the latter projects focused on women's participation, disregarding the influence of gender mainstreaming on the contents.

Because of the described lack of gender related research and disaggregated data, the following exposition is to be seen as conclusions drawn from non-existing research, and from results of research neglecting gender aspects, rather than as results based on sound data and research.

The following report refers mainly to Europe. Most references and examples are based on German sources, however, most conclusions are valid other countries of the European Union, as well.

2. Characteristics of the energy sector from a gender perspective

As a sphere related to technology, energy is a highly male dominated issue⁴. Because of the predominating division of labour by gender, women are represented marginally in this domain. Professional access to the energy sector is mainly based on a scientific or engineering education, in which women

¹ With the exception of the transportation sector, which is often treated separate from the energy sector although its substantial share of energy consumption is growing. In contrast to the energy sector in a narrower sense, in the transportation sector, there are numerous gender related results of research, measures and planning available.

² "South" means the developing and low industrialized countries

³ e.g. the "Energy Dialogue 2000", organized by the German Federal Ministry of Economy and the German Society for Future Energy, was characterized by the exclusion of women

⁴ It should be noticed that the discussion about sustainable energy is limited to the technical aspects of energy, thus ignoring the **human** aspect of energy which is may be also considered as renewable, though finite. This lack is frequently criticised by women.



are extremely under-represented. The fields of skilled trade relevant to the energy sector such as construction, electric installation, plumbing, and installation of heating systems are male domains, too. Therefore, the influence of women on concepts, planning, decision-making, and implementation is limited. This is true both for research and development, and for technical realization. (see chapter II.6)

Moreover, energy is considered as dangerous and risky, in terms of the risks of nuclear power, as well as for electricity in private households. Boys are expected to face and master these dangers. Whereas they are encouraged to get acquainted with electricity step by step, girls are kept away not only from electric power but also from the power of knowledge. (Conrads/Uhlenbusch 1990, Hoffmann 1990)

As a result of this socialization, a clear gender separation is found as regards energy equipment and environmental friendly energy use in private households: Men are primarily considered to be responsible for the technical side and the investments in thermal insulation of homes, boilers, and hot water installations. In contrast to this, women are expected to save energy based on behaviour, and to communicate the necessary rules of conduct to the rest of the family, such as abstaining from the use of electric applications, reasonable loading of washing machines and dishwashers, etc., similar to other environmental fields⁵. (Doerr 1993, Buko 1995, Schwarau-Schuldt 1990)

Because of the growing plurality of lifestyles it is impossible to give valid statements about energy consumption and conservation of women in general. However, it can be proved that the elderly (women) consume less energy than younger ones, whereas single parents (90 % of these are women) usually have a more positive attitude to environmental protection and stronger refuse of nuclear energy than all other investigated groups (elderly, poor, unemployed), though consuming more energy (EPSECC 1997, Preisendoerfer 1999). These differences may be explained by socialization and experiences from a past without affluence: probably, elder woman may have internalized social values emphasizing saving behaviour. Certainly, the small income of elder women may play a role. Money may also be one reason for younger persons to favour energy saving based on technologies, while the elder women concentrate on daily-life saving behaviour (Preisendoerfer 1999: 124). Single parent mothers are compelled to consume more energy by living with children, resulting in a higher demand for washing heating. Moreover, the double burden of gainful employment and (single) motherhood and the related lack of time, frequently leads to a higher consumption of resources.⁶ These differences in energy consumption and energy saving behaviour call for much stronger research efforts, especially from a gender perspective. This is a requirement if women are to be addressed properly and effectively in terms of energy saving appeals.

3. Gender and energy in international agreements

In international agreements, the issue of gender and energy is primarily seen as linked to women in the south. Referring to the north, five main areas have to be addressed:

1. Energy consumption: the influence attributed to women regarding sustainable consumption and change of production patterns
2. Education: formation and further training in energy-related, scientific and engineering professions

⁵ The described allocation of responsibilities in private households can be compared to competencies on political levels: In the ministries for the environment on state, national, and European levels, there is a relatively high share of female professionals, even in managerial positions. It is no accident that these ministries have rather "soft" responsibilities. They are expected to communicate, to bring about changes in behaviour, and to "clean up" the damages caused by other departments. Rarely, environmental ministries are responsible for energy. Either this is covered by a department on its own, or it lies within the responsibility of the ministry for economy, usually of one of the most powerful ministries. Wherever, women are rare in these ministries who decide on economic strategies and large investments. Environment plays a minor role in their considerations.

⁶ For example the distances women have to cover if they accompany their children to school, kindergarten, doctors, music-school or sports which can not be managed by public transport systems, and the preparation of meals, which are often done by using energy intensive convenience products because of time constraints.



3. Involvement: improvement of the participation in processes and in decision making regarding environmental protection and the energy sector
4. Gender Impact Assessment: the screening of all policies, planning and conceptions as regards their effects on women
5. Mainstreaming: the inclusion of gender aspects in energy and climate change policy.

These demands have been put forward at the environment, development and women's conferences of the United Nations and their follow-up processes. At UN conferences related to climate change (and thus to energy) gender aspects have not been taken into consideration, whether related to the south nor to the north⁷. And the women's organizations don't notice the conferences. "The arguments used here are almost entirely economic. Decisions are made mostly with little consideration being given to survival. Perhaps women felt they could not penetrate this masculine perspective – and stayed at home" (Sargent 1997). The only exception was the First Conference of the Parties to the Framework Convention on Climate Change 1995 in Berlin. At that occasion, the German organization "Women for Peace and Ecology" organized an "International Women's Forum: Solidarity in the greenhouse", attended by 150 women from 25 nations who discussed for two days the social, economic and health impacts of climate change on the situation of women all over the world⁸. (Women for Peace and Ecology 1996)

It should be noticed, that at these international conferences on climate change, a strong emphasis is put on equity questions with regard to north-south relations. Inequity within individual countries is completely left out of consideration.⁹ This is true both for gender issues, and for the growing gap between poor and rich within industrialized countries. The gender discussion could be a good way to bring up social issues into the debate on sustainable energy use and climate change.

II. Results of research and experiences on gender aspects in the energy sector

The lack of disaggregated data and of results of research on gender and energy has been mentioned before. This concerns gender-differentiated consumption of energy as well as investive and buying behaviour and attitudes towards energy concepts. At least, some hints on the latter can be concluded from the reactions on the nuclear disaster in Chernobyl, from studies done in the USA in the 80th, and studies on environmental awareness of the German population.

1. Women's Environmental awareness and behaviour in field of the energy

Since 1991 the Federal Ministry of the Environment and the Department of Environment has been publishing regularly¹⁰ representative population surveys on environmental awareness and behaviour. For the first time, in 1999, these surveys were disaggregated by gender, age and income (Preisendoerfer 1999).

A conspicuous result of this survey is that women have a recognizable lower environmental knowledge, but recognizable higher values in environmental awareness and especially in the environmental behaviour¹¹ (ibid.: 14). Preisendoerfer classified "environmental types". Applied to women and men

⁷ Although there are a lot of high positioned women taking part in the conferences

⁸ At COP6, the UN conference on climate change 2000 in Den Haag, for the first time after 1995 a special event on "The power of feminine values in climate change" was offered, but was attended only by three women (maybe because of late announcement and a venue outside the conference center)

⁹ At COP6, there was another premiere: the U.S. organisation "Redefining Progress" offered an event on "Environmental justice and climate change" which focussed on the impacts of climate change within the USA especially on non-whites, poor, and elderly, however, once again omitting gender issues.

¹⁰ 1991 until 1994 annually, after that every two years

¹¹ Similar results are given for Finland by Niva/Heiskanen/Timonen (1997)



they show that women are less rhetoric and ignorant than men and more consequent in protecting the environment.

Environmental "types" (ibid.: 14, 99)

	Women	Men	Energy-saving in the household (m+w)
Environmental ignorants	6 %	14 %	10 %
Environmental rhetoricians	28 %	36 %	28 %
Environmental protectors without specific attitudes	31 %	25 %	16 %
Rigorous environmental protectors	35 %	25 %	46 %

Preisendoerfer concludes from his survey: "These results suggest the assumption that women tend to search for a more practicable way to handle the environmental problem – and evidently for many of them it's not easy to find starting points to make use of the often abstractly transferred environmental knowledge in their everyday life." (ibid.: 14, translation by author).

An important result of the study related to energy saving is that the environmental awareness in daily life is primarily linked to fields such as shopping/consumption and waste management, and less to fields like energy consumption and mobility behaviour (ibid.: 12). Generally it can be said that women have a higher environmental awareness in the spheres of waste, consumption and mobility, and behave more environmentally sound. An exception is the entire field of energy: here, no substantial differences between both sexes can be found. Once more this shows that obviously the field of energy is not the one women are feeling responsible for – and/or in which they see possibilities for action (see also Longstreth et. al. 1989: 216).

2. Energy production

Women and the anti-nuclear movement

In the seventies the fight against nuclear energy was a significant starting point of the women's environmental movement in the north, which reached its peak in the eighties.

After the nuclear disaster of Chernobyl (1986) women's groups were founded in nearly all affected European countries (e.g. "Mothers against Nuclear Power"), with the aim of phasing out nuclear power world wide. Once more this situation made evident, that with managing the crisis situation after such a disaster –dealing with the consequences in every day life –mainly women were burdened. In this, they felt left alone by men and especially by male scientists and politicians.

At that time, studies in the USA investigated options for energy supply in terms of gender differences in the preferences people have towards them. They started from the assumption that women would rather choose a "soft path" (solar energy, wind energy, biomass, hydro power), because this would be the more responsible solution in terms of the environment and the needs of the present and future generations. In contrast to that, men were expected to rather favour the "hard way" (nuclear power, coal and oil), as a result of their affection for control and power over nature (Longstreth et. al. 1989: 215).

The outcome of the study confirms the hypothesis on the stronger refusal of nuclear power by women. Even with the same knowledge about nuclear power, women regard it as more dangerous. Men's attention is drawn more towards the (supposed) economical advantages. The researchers explained this with the different socialization of women and men with regard to security and risk awareness. The nuclear disaster of Chernobyl indicates that women may be more realistic in their higher awareness for nuclear risks (see Ruebsamen 1994, Merchant 1996, EPSECC 1997).



Women for renewable energy technology

In the fight against nuclear energy not only the impacts of a risk technology on the environment and health were important, but also the possible alternative options. The promotion and increased use of decentralized, renewable energy was an important demand not at least of women.

However, together with an tendency to professionalize the protest, and with the increasing social acceptance of both the protest against the use of nuclear energy and the renewable energies as an alternative, there were less women in this field and they got less visible: More men started the seizure of power regarding strategic positions, whereas women rather got the communicative positions (Rueb-samen 1994a/b). "The result is a one-dimensional view of technical efficiency, which affirms itself again and again by the fact that the only acting personalities are almost exclusively men." (Preamble in the statutes of the energy co-operation "Windfang", translation by author)

The findings of the above mentioned study (Longstreth et.al. 1989), however, only showed modest gender differences in regard whether a "soft path" was favoured. Women prefer this path a little more than men, especially regarding the use of wind power. Compared to women, men favour a little more solar energy and hydro power (Longstreth et.al. 1989: 219).

Until today there are significantly more women to be found in the renewable energy economy than in the conventional, but the euphoria of the initial period, to get more than a small share in a growing technical labour market, has vanished.

What remains are several women's energy projects (see chapter V: Good Practices) and many women activists in the North promoting the use of solar energy in the South and supporting women in these countries by technical and structural know-how.

3. Energy consumption

Concerning the sphere of energy conservation, which is considered to be less exciting, less innovative and less good for a gain of prestige, appeals and implementation programmes primarily address women, however, without addressing them explicitly as women: "The consumer" or "the household" is expected to wash in an environmental-friendly and energy efficient way and to cook economically.

Technical equipment of households

To a high extent, women are responsible for consumption in the sense of making purchases and deciding what to buy, but the often quoted (female) purchasing power is only valid for a small share of consumption, namely the daily nutrition, cleaning and clothing. Larger, and environmentally more dubious decisions like the purchase of audio and communication devices are taken by the male members of the household. Studies on the technical equipment of households (Doerr 1991, Glatzer 1991)) show clearly that female headed households— one-person-households or single parents – have a lower technical equipment standard in particular with regard to consumer electronic articles and computers¹². In many studies, their share of electricity consumption is neglected, though rising constantly. By the year 2010, for Germany, a 100 % increase is predicted (Kloas, Rieke 2000).

Similarly, the equipment bought mainly by men for manual work and handcraft in the household, do not receive much attention. However, it is these layman devices that are less energy efficient than professional machines. (Schultz 1992)

Energy saving

The organization of every day life and the related domestic work are still lying mainly in the female area of responsibility (Statistisches Bundesamt Wiesbaden 2000, European Commission 2000b). Thus, requirements for sustainable consumption are primarily addressing women, without explicitly mentioning gender aspects: Women are expected to adapt their behaviour and needs to the model of sustainable consumption. However, a change of behaviour towards sustainable consumption requires

¹² These results from investigations dated 1990 and earlier need to be updated urgently



considerable excess work on top of the unpaid housework. Starting with searching for reliable, unequivocal and understandable information about the relevant consumption offers, this continues with processes of integrating disharmonizing demands (e.g. the esthetical questions, financial and time budgets, working standards and many others), and finally ends in constraints of the tight time budget of women caused by changes in well-adjusted demand and behaviour routines. In spite of all these unreasonable demands, women show a high willingness to include these requirements into their way of life. (Weller 1997)

This shift of responsibility to women – without offering them to actively influence the underlying reasons, but aligned with significantly more time needed – in the longer term, is facing the risk to over-use the existing motivation of many women to behave environmentally friendly. Finally, this might lead to the opposite effect (Weller 1997). In this context environmental demands are getting more and more into conflict with the breaking off of gender roles towards gender democracy.

These statements that apply to the consumption of households in general, can be transferred to the energy area, too. Additionally, the requirements resulting from the renunciation of energy consuming technical equipment in households are often beyond the female sphere of influence. The repeated demands to put the washing to the clothes line instead of using the electric tumbler does not necessarily create the drying room missing in many households. Moreover, both extra work and the use of an likewise electric iron would be required after the drying. In opposition to the demands to cook in a more energy saving way stands the fact, that e.g. 75-80 % of German households have an electric cooker, which is worse than a cooker fueled by natural gas from an economical and ecological view. But in this case, it is not the female consumer who is able to decide to cook with electricity or natural gas, but the house-owner who is in charge of installing the relevant supply options - and who is male in most cases. Thus, the circle is closed: Usually, it is not the house-owners who are asked to equip the kitchens with connections to the natural gas supply, but the women are asked to cook with their unecological electric cookers in an energy-saving way under the motto "good cooking is half saving"¹³.

The same is true for space and water heating, which are responsible by far for the largest share of energy consumption in private households.

Domestic energy consumption¹⁴ by applications in 1998 in Germany (VDEW)

	Without car	with car
Space heating	77.5 %	53.1 %
Water heating	10.9 %	7.5 %
Process heat (cooking, drying, iron etc.)	3.6 %	2.5 %
Mechanical energy (cooling and small devices)	4.8 %	3.2 %
Car	–	31.4 %
Information and communication	1.8 %	1.3 %
Lighting	1.4 %	1.0 %

Looking at the appeals to save energy, it is again noticeable how seldom the do-it-yourselfers are addressed.

However, an inevitable requirement for a more sustainable development is households and their members to behave in a more environmental-friendly way, too. Therefore, if the shift of environmental responsibilities to the households is criticized, this will not deny the necessary changes in consumption behaviour. But, moreover, the criticism should point out a) that the additional work is burdened

¹³ Tips to save energy by the German Ministry of Economy

¹⁴ These data are valid for the end-energy use. If primary energy input is taken into consideration, the share of electricity is substantially higher



one-sided to the women and b) that households as the smallest social unit are expected to carry the burden of an unsuccessful environmental and economical policy, and of the lack of responsibility by industry and trade. In contrast to this, such measures as setting efficiency standards for household appliances could prevent energy gobblers to have access to the market. Such standards would help assign responsibility to those who are in charge by development and production of these appliances: the industry.

It is obvious, that there is large discrepancy between urging "consumers" or "households" (meaning: the women) to behave in an environmental-friendly way, and the reality in terms of their influence on production of the goods (as regards the production process, as well as the development of products, as well as gap between professional knowledge and the daily life experience of women). Often, it is not the women who are asking for new products, but industry is developing constantly new electric applications if markets are saturated with usual products. "Usually, the development of new applications for the household is a result of fundamental innovations in technology development (e.g. in space technology). For these, suitable possibilities for application in the household are wanted" (Doerr 1993). With the promise of gain in time, women (and their husbands who buy the electric devices for their wives in order to "buy their freedom" from housework) are motivated to purchase them. The promised saving of time doesn't grip in reality, because the simultaneous increasing of standards (higher demands concerning the meals, more clothing, more frequently washing etc.) is compensating it right away. (Cockburn 1988, Methfessel 1988, Doerr 1991)

4. Energy market

The liberalization of the electricity market and the women

In the US, the EU and other countries, during the last years, major changes in the energy economy have been induced by the government policies to break energy monopolies and to allow consumers to choose their electricity supplier. This liberalization of the electricity market has been implemented in many different ways in the various countries, in particular in terms of the degree of liberalization (whether the free choice of the supplier is valid only for large consumers or for small ones as well), and in the degree of regulation of the market. In any case, stronger competition has led to negative effects on the labour market (see point 6, chapter II). On the other hand, price and tariff structures changed considerably, leading to lower prices especially for large consumers, and in many cases for households, too. As for environmental effects, in the course of liberalization and increased competition, many electricity supply companies reduced their efforts to offer energy services, such as energy conservation incentive programmes and schemes to promote renewables. On the other hand, liberalization opened up new opportunities for suppliers offering "green electricity" based on renewables or cogeneration. Currently, in Germany, there are 80 suppliers for green electricity, which are addressing exclusively private households. 5 to 10 % of all customers who changed their supplier until now favoured the ecological option (Mathes 2000).

Market studies in the liberalized telecommunication sector indicate that women put less efforts in getting acquainted with complicated tariff systems, and that they change suppliers less frequently than men. It may be allowed to transfer this to the electricity market, and thus assume that men will seek for the cheapest option or the most environmental-friendly one, depending on their interests. In contrast to that, women tend to maintain the electricity supplier they had before the opening of the electricity market and either depend on the more expensive or the "black" electricity (from fossil and nuclear fuels). A gender differentiated survey of individuals and households who changed their electricity supplier could lead to a better information strategy that addresses women in particular. This is true both in view of tariffs, and of education on how electricity is produced and what the impacts of the various options are. Marketing electricity with the help of tariffs and brands called "classic", "eco pure" and "multi connect"¹⁵ builds rather on emotions and imaginations than on real information.

¹⁵ Description of tariffs of the Electricity and water supplier in Berlin (BEWAG)



For the choice of the electricity supplier or a specific electricity tariff, it is also relevant that the "good" renewable electricity is obviously more expensive than the conventional one, which, in many countries, includes a high share of nuclear. Therefore, women are in the precarious situation to have no other option than to choose what they actually refuse: fossil and nuclear energy – because of their smaller income (caused by unequal payment of women and men, and furthermore by lower working times and more frequent unemployment). In that situation, women are additionally burdened by a bad conscience, because they are told that their consumer choice will be decisive for the electricity supply mix. "The competitive economy being concentrated on services is allowing (!) the customer to take more responsibility in forming the energy supply." (Energiedialog 2000)

Another consequence of the liberalization of the electricity market especially relevant for women is the above mentioned abrupt cancellation of the incentive programmes of the energy supply companies. In contrast to the former subsidies for the purchase of energy-saving "white products"¹⁶ (refrigerators, washing machines, dishwashers etc.), today, the additional costs for a purchase are to be offset by cheaper electricity tariffs, consequently leading to a less environmentally benign energy system.

In turn, renewable energy receives support by state subsidies for the installation of solar systems. It is an open question, in terms of a long-term sustainable energy path and of climate protection, whether it makes more sense to fund 1000 solar plants, or 20.000 energy-saving household appliances. After all, this should not be a question of "either – or": both must be done.

5. Policy instruments in the energy sector

Are energy/eco-taxes gender-neutral?

Energy taxes and ecological tax reform¹⁷ shall give economical incentives for the customers (private and industrial) to consume in an ecological way. They shall lead to save energy and to purchase energy-consciously. At the international women's forum "Solidarity in the Greenhouse" in the context of the first UN-climate summit, the green politician Michaela Schreyer said: "Women would be the winners of an ecological tax reform." Her reasoning was based on the fact "that female consumers have a lower share in energy-intensive production, e.g. like car production. Additionally, restructuring prices in the transport sector would make the public transport more attractive, and therefore be beneficial for women. (...) In their role as employees, women would be the winners of an ecological tax reform in the industrialized nations, too, because those sectors of the industry in which women are employed underproportionally would primarily be subject to increased financial strain, such as the chemical industry, while the service sector with its high employment-rate of women would be relieved and offer new employment chances" (Schreyer 1996: 29).

Five years later, unfortunately, the reality is different: In all countries that introduced an eco-tax/energy-tax scheme, energy intensive branches of industry are excluded from these taxes or at least enjoy lower rates. Predictions of the impacts of ecological tax reform on the labour market seem to be negative for some service sectors, whereas technology sectors, and above all the building/construction sector with a very low employment rate of women will profit.

In Germany, the eco-tax is counter-balanced for employees and employers by a discharge referring to the pension scheme contribution, because human resources shall become cheaper. Whoever is not or no longer paying for the social security, such as pensioners, is entirely hit by the eco-tax. Because of the higher life expectancy of women in the industrialized nations, the share of women in this group is extraordinarily high. Female pensioners, however, have significantly smaller pensions than the average male pensioner, often underneath the subsistence level. They can't hardly afford the more expen-

¹⁶ Consumption areas in which women are responsible for the purchases.

¹⁷ Which is used in many countries of Europe as an instrument for CO₂ reduction, e.g. in Denmark, Finland, Germany, Sweden. In other countries like Austria or Italy, energy taxes are also very high, however, they are not explicitly called "eco taxes" (Schlegelmilch 1998)



sive products and energy costs caused by the eco-tax. Here the need for supplementary regulations is urgent, in order to protect these older women from old-age-poverty caused by the eco-tax.

Moreover, women's leeway for action to reduce their energy consumption is rather limited. As mentioned above, they generally cannot influence space heating and water heating systems, and exactly those are, next to cars, the main energy consumption factors in the household.

Therefore, women currently seem to be not the winners, but the losers of the eco-tax/energy tax scheme.

Governmental funding and promotion

The state support for the energy saving is, under the given circumstances in terms of responsibilities for energy and share of women, distinctly "male dominated". Funding policy puts an emphasis, as mentioned above, on technical options with a bias towards promoting technologies rather than prioritizing environmental criteria, above all in the area of photovoltaics, solar thermal and cogeneration of heat and power. Energy-saving in the household receives almost no financial support, neither energy-saving office devices for small enterprises or for establishing one's livelihood (which in the case of women focuses on the service sector). Consequently, there is a complete lack of funding opportunities directed to women.

6. Participation of women in the energy sphere

Women professionals in the energy sector

The share of women in the energy economy is, on the basis of the above mentioned facts (few women in technical professions, male dominated area, risk technology), extremely modest. Europe-wide the mean average share is below 20 %¹⁸ with enormous variations between various countries. In Germany, according to information from the Organization of Electric Power Companies (VEW), the employment fell by 23,6 % from 1994 to 1999. For 1994 the share of women could be numbered with 19 %, for 1999 the organization could not provide data.

This share is even smaller in certain areas and at certain levels within the electricity economy. The share of female engineers in the electricity economy in Germany is about 6 %¹⁹ reflecting more or less their share in the relevant course of studies, the total share of women in the management amounts to some 4 %, with less than 1 % in the top management (Hoppenstedt 2000).

The effects of the liberalization of the European electricity market and the associated planned efficiency on the employment of women in this sector have been investigated in a study commissioned by the European federation Eurelectric (Eurelectric et.al. 1999). Once more, in this study, a lack of available data, and the modest willingness of enterprises to allow access to their data is complained. The study started from the hypothesis that restructuring of the energy markets would lead to intensified activities to offer energy services, marketing and customer services, and, consequently, may have positive effects on the employment of women. As mentioned above, the total effect on the labour market is negative.

The findings of the study indicated that the opening of the market does not have positive effects on the employment of women. On the contrary, in the countries where the reorganization is already advanced, it must be noted that the share of women falls outstandingly. According to the strong male over-representation, the number of men that lost their job is naturally significantly higher in absolute figures than the corresponding number of women. Often this is used as an argument to discontinue or completely stop support programmes for women (Eurelectric et.al. 1999).

In order to improve the situation of women in the energy economy the study, and the programme ENEQO (see Good Practices) suggest various measures. These are the familiar support measures for

¹⁸ ENEQO, www1.sydskraft.se/eneco/back.html

¹⁹ www.strom.de/ak_hf_9911.htm Arbeitsplatz Energiewirtschaft (work place energy economy),



women (Equality-Audit, Mentoring, Gender-Training), and, moreover, to clearly communicate to the enterprises that a higher share of women would be beneficial to them, providing new ideas and innovative thinking, improvement of internal and external communication, competitive advantages because of a positive image, and advantages in recruiting young people²⁰.

The labour market in the field of sustainable energy and its perspectives

Most of the jobs created by an energy policy aiming at combating climate change are found in the construction sector. According to forecasts, this sector will gain the most in terms of employment, if climate protection efforts are strengthened. Whether improving the insulation of existing or new buildings – which is the main field for energy conservation measures in the colder regions of the north – or installing solar thermal systems or combined heat and power plants, in any case, skilled workers are required. However, in these sectors, especially in the construction industry, the number of women is even lower than in the energy related economy (see Roehr, Simon 2000).

Participation of women in (political) decision making in the energy sector

As the under-representation of women in the energy sector, as expected, is reflected also in the corresponding decision making and consulting bodies, it may be sufficient to pick up only some extraordinary facts.

In contrast to the strong interest of women in the question of nuclear energy, they are nearly entirely absent in the relevant bodies. As for the federal bodies in Germany, there are four commissions related to radiation protection and nuclear technology. Three of them consist to 100 % of males, the fourth commission has a 5 % share of women. Expressed in absolute figures, a minority of four women is facing a majority of 200 men. (Bundesregierung Deutschland 1998) This situation will hopefully be improved at EU level by a decision of the European Commission in June 2000 stipulating a share of 40 % women and 40 % men in all committees and expert groups²¹.

The situation in non-governmental organizations does not differ much from the situation in politics and economy: The energy sector is more or less in the hand of male activists. The "Bund fuer Umwelt und Naturschutz Deutschland" (federation for environment and nature protection in Germany, the German branch of "Friends of the Earth") e.g. has a share of 6 % females in their energy team. (Saar 1994) The only exceptions are the above mentioned struggle against nuclear energy and the field of climate change policy, where many high qualified women are engaged.

III. Synopsis

The situation in the energy sector is characterized by :

- considerable segregation by gender in general in all sectors and at all levels
- strong pressure on women for adaptation in these extreme minority situations
- strong opposition against the use of nuclear energy by women and high approval with increasing the use of renewable energy
- the relocation of the responsibility for energy saving to private households
 - with traditional gender specific responsibilities
 - limited leeway and options for the private households
 - combined with a "feminization of responsibility"
- deficits of information on questions of energy economy and energy technology on the side of women
- lack of gender differentiated data and research in the entire field of energy use and energy saving.

²⁰ This is very important because the energy sector isn't at all attractive for young people: only 3 % of the boys and none of the girls wish to take an apprenticeship within the electricity economy (European Commission 2000a)

²¹ In Finland and Norway, similar regulations had been introduced earlier



IV. Conclusions and Recommendations

1. The lack of database considerably impedes the identification of gender differences in the energy sector and to develop appropriate concepts and strategies. This is true for all areas:

- for sound and constant data on the share of women in the energy sectors
- for consumer behaviour and differences in energy consumption by men and women (who buys and uses which electric appliances and for whom/how?) and their changes by removal of gender roles.

All actors in the energy sector – enterprises, associations, politics, authorities – should be obliged to ascertain their data in a gender differentiated way and to publish them on an annual basis. A Swedish law from 1994 stipulates all data ascertained referring to persons to be subject to gender differentiated analysis. This could be a model for other countries. Swedish women experienced that with this law gender differences became noticeable in places they were not suspected before. Based on these data, gender differences can well be addressed and balanced.

2. If women (and men) are expected to act as conscious consumers influencing the production by their buying decisions, they need support.

There is a need of binding regulations and instruments to be implemented by industry:

- Efficiency standards including intelligent turn-off-functions (to avoid stand-by) for all electrical appliances would make customer decisions easier and shift responsibility from users to the producers.
- Women should be involved into development and design of products. The establishment of customer-forums could provide an opportunity for this, giving women the possibility to put forward their ideas about function, design and environmental acceptability during product development.
- Instruments and models need to be developed to link the “every day life experience ” of women (and men, as far as existent) and expert knowledge.

Advice and information offers for specific target groups can support women and men in their efforts to develop an energy-saving behaviour. Women do not necessarily have to be addressed as a specific target group, but different situations in life and work have to be taken into account. With such an approach, energy saving in the office and at the workplace could become a target of the saving efforts, too. Investigations on user profiles of energy advice offers, i.e. who uses them why and for which purpose, could help with making consulting and information programmes more effective. Energy utilities, energy agencies and advice offices are as important as marketing experts and educational organizations for such an approach. Developing new methods and new models of awareness raising and information campaigns will also play an important role.

Financial gains through energy conservation, by means of subsidies when buying energy saving appliances or tariff structures encouraging energy saving (as yet, the price for a unit of energy is higher the less energy is used – this correlation tends to be increasing in the course of the liberalization of the electricity market) will motivate and support women with low incomes to save energy.²²

A fundamental requirement for all energy conservation activities that cause additional work load in terms of unpaid caring work is a more **just distribution** of this work between female and male members of the households.

3. There is no research on gender issues in the energy sector until now. To remove this shortcoming, research projects should be initiated and funded which aim on the determination of gender aspects in the environmental sector. In particular, research is urgently needed inter alia on:

²² Low-income-households (with a high percentage of women-headed households) spend 14.5 % of their annual income for energy, while all other households spent only 3.5 % of their income. (REPP 2000)



- the different impacts of eco/energy taxes on women and men and on women in different situations
- the impact of subsidies in the energy sector (grants for solar systems and efficient heating systems on one hand and household appliances on the other hand), to check whether they lead to a further reinforcement of gender relations, and to find ways how to avoid this
- the structural correlation between energy consumption and gender relation
- the conditions of participation of women in the energy sector respectively the failure of their participation up to now to get conclusions for concepts and methods of participation.

Research projects which are not directed mainly on gender aspects should always be obliged to take into consideration and to deal with gender aspects.

Furthermore, an evaluation of research programmes and results on national and international level is required with regard to the participation of women in these programmes and the consideration of gender aspects, similar to the current evaluation of the Fifth Framework Programme for Research by the European Commission. (ISOE 2000, Technology and Gender Group 2000)

4. The implementation of gender-mainstreaming and gender impact assessment in the energy sector requires the development of appropriate instruments for screening the impacts of energy and climate change policies and measures on the situation of women.

Models and concepts of sustainable energy use should be examined during the planning phase with regard to their impacts on gender related division of labour and possible additional strains for women. Today, the ignorance of planners about gender aspects hampers such approaches. Planners and decision-makers need to take notice of improved data bases (see point 1) and to learn about the results of research (see point 3). Furthermore, a **sensitization on unequal conditions for the different sexes** must be strived for. A method for sensitization could be **gender trainings**, which should be developed on the base of existing gender trainings in development policy and which are nowadays practiced by some progressive organizations like the Heinrich Boell Foundation. Especially decision-makers within every energy policy and planning related institution and organization should attend such a training.

A further step into the right direction might be to work out **guidelines** to simplify, standardize and operationalize a policies that take gender aspects into consideration.

5. The extreme under-representation of women in the energy sector requires strong efforts to promote women in all energy related organizations, institutions, utilities, trade unions and in vocational training.

Especially in the situation of massive restructuring and rationalization in the **energy industry**, programmes and measures supporting women (such as mentoring, internal company training, improvement of prospects of promotion, offers to improve the compatibility of family and profession) should be introduced. Equality-audit schemes should become a regular element of the environmental-auditing system (EMAS).

The same goes for **national, regional and local authorities as well as for non-governmental organizations**, which should seek to play a leading role. Women-supporting programmes are implemented in the public sector in many countries (more or less successfully), however, further progress is required to improve the representation of women in decision making bodies, in consultation and informal bodies.

Methodologies and instruments for participation should be reviewed with reference to their applicability and effectiveness to guarantee the involvement of women as active participants in planning and decision-making in the energy sector, and, if necessary, introduced and developed further.

Governmental and non-governmental educational institutions should increasingly engage in motivating girls and young women to choose non-traditional professions (particularly with regard to the energy related technical professions). There are successful practices which should be disseminated and supported (see the following good practices).



Women's organizations should put much more emphasis on the issue of "sustainable energy". There is a gap between feminist demands for sustainable development, and their interest in (for women) untypical technical issues which needs to be overcome.

Creation, expansion and financial support for national and international networks and focal point for information dissemination on "gender and energy" should support women professionals in the energy sector as well as the above mentioned measures and recommendations.

These activities should be supported by holding regularly national and international conferences in order to report progress and discuss experiences.

V. Good practices (projects and networks)

The following examples are mainly from Germany. Similar projects in other countries are not known except from those described below.

ENEQO – Equal opportunities in the energy sector

The aim of the project, funded by the European programme for Equal Opportunities for women and men, is to promote equal opportunities in the energy sector. Ideas and models are sought and good practices are identified to reduce the gender segregation in this sector.

In the frame of the project a network was build up, which is affiliated to Unipede/Eurelectric, the umbrella body representing electricity utilities across Europe. This connection is important, as the equal opportunities project is part of the mainstream activities of this powerful organization. The network shall work to underpin the strategic importance of equal opportunities as a core goal of effective human resources planning in this industry sector. Another important element of the project are the close partnerships on national and regional level with trade unions and others involved in the electricity industry.

A booklet outlining how the electricity industry sector can integrate equality into human resources thinking and practice and the advantages of this approaches has been published (in eight languages).

www.sydskraft.se/eneqo/back.html

LIFE e.V. – women develop eco-techniques

The connection between ecology and eco-techniques with the promotion of women in the labour market and in decision-making is one of the aims of the LIFE association. LIFE was founded in 1989 by women working at the Technical University of Berlin. Since 1991, LIFE has been running an "Ecotechnical Training Center for Women" in Berlin where apprenticeships (plumber, electricians), further education (e.g. environmental audit, environmental marketing), consulting for teachers and projects take place. Since 1994, LIFE has a branch in Frankfurt/Main, whose main issues are networking for women working in the environmental sector and regarding gender issues, studies and information on gender and sustainable development, and the support of women's involvement in Local Agenda 21 processes in German municipalities.

A similar project, "Sunwork", can be found in Austria. Sunwork puts its main emphasis on apprenticeships for young women in eco-technical trades and trainings for multipliers.

www.life-online.de

<http://members.vienna.at/sunwork>

Women studies on energy

"Women swimming against the stream" (in German language the word for stream and power / electricity is the same) is one of the slogans to motivate young women to study a subject in the area of energy. To this end, some universities for applied studies set up women studies. E.g.: "Energy consulting and energy marketing" (Universities for applied studies Bielefeld) for female students of electrical engineering prepares women for a job on the management level in energy and technology enterprises. The university for applied studies in Wilhelmshaven trains female economic engineers in the energy economics.



There is a great interest in these women's studies in male dominated sectors, and hopefully more women will enter the energy sector in the years to come.

www.fh-bielefeld.de/fb2/frauen

www.fh-wilhelmshaven.de/fbwi/studien/frauen

Women in Energy: Network of women working in the energy sector

In 1990, at the annual "Congress of Women in Science and Technology" (Germany) a working group was set up to start a women's project in the energy sector. Because of the distances (the women came from all over Germany) and different interests this couldn't be realized, but, instead, a network was created – Women in Energy – to share experiences and knowledge, to practice joint capacity-building, to discuss forms of labour, competition and the way to deal with technical knowledge.

The Women in Energy meet several times a year. In the last years, they organized study tours to European countries like Denmark, Switzerland and Sweden to discuss the different energy policies, to visit interesting energy projects and to meet women working in the energy sector to exchange experience on the different situation of women in male dominated professions.

The network "Women in Energy" has grown to an network of some 150 women working or studying in different fields of the energy sector: solar energy research, energy- and environmental policies, planning and education.

Women meddle in Energy: the Women's Co-operative Energy Association "Windfang"

In May 1992 the Women's Co-operative Energy Association "Windfang" was founded. Starting point were the male dominated structures in the renewable energy sector and the experiences women made in these structures. At „Windfang“, women with different professions are working together to realize renewable energy projects.

The principles of Windfang are:

- the co-operative association is to provide women the opportunity for ecological investment
- the work is done as far as possible by women
- expertise is to be transferred to any other woman who is interested and willing to participate in the work
- Windfang offers the opportunity for professionalisation to the women involved. Transferring knowledge from experienced to less experienced women is one of the main principles.

"Windfang" has yet realized four projects: one photovoltaic power plant at the Women's Museum in Bonn and three wind power plants in northern Germany.

www.kaktus.de/windfang

ENERGIA – International Network on Women and Sustainable Energy

ENERGIA is an international network on women and sustainable energy which links individuals and groups concerned with energy, environment and women. ENERGIA aims to strengthen the role of women in sustainable energy development through information exchange, training, research, advocacy and action. Founded in 1995 by an informal group of women involved in energy inputs of the Beijing Conference on Women, it has linked with a number of other informal initiatives. These include the "Women and Energy Forum" which developed at the International Solar Energy Society's Solar World Congress in Harare in 1995 as well as Women for Sustainable Energy (WISE) in the US and the Women and Energy Group (WEG) of South Africa. At present, ENERGIA has more than 800 members in Africa, Asia and Latin America, as well as in Europe and North America. ENERGIA's approach (since it is currently a loose network rather than a formal institution itself) is to seek to identify needed activities and then to encourage and if possible assist members and their institutions to undertake decentralized initiatives. ENERGIA is mainly engaged in women and energy in the South.

www.energia.org



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