

Full Steam Ahead: Women in the Geothermal Industry

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Keywords

Visual ethnography, gender equality, women, girls' education, social impact

ABSTRACT

A cross-cultural visual ethnography which investigates the status of women in geothermal industries in countries around the world addressed in this paper arises from a project that focuses on the position and status of these women, the challenges and obstacles they face, and what is being and has been done to address them. The paper also addresses the seemingly global question of why so few women enter the field of geothermal science, why the retention rate of women working in the field is low, and what can be done to level the playing field.

“Full Steam Ahead” focuses on gender inequality within the geothermal workplace in countries where women’s roles and state of gender equality for women in the workplace is very different looking at women working within the geothermal industry in Iceland, Kenya, Ethiopia, Japan, Mexico, New Zealand and the USA. Our focus is on the changes that have taken place within the industry in the past 50 years, both positive and negative. Questions arise about how much culture, tradition and lack of a strong women’s movement slows down progress and change towards gender equality in the workplace. Steam heat from the earth has been used by women for centuries for laundry and cooking. Today, women can work as geothermal engineers designing direct-use projects, choosing to work with geothermal energy as a sustainable energy source for their communities. Yet women remain a tiny percentage of the geothermal workforce, everywhere in the World. In this paper, we seek to answer the questions: How can Icelandic companies promote gender equality through their work in countries lacking gender equality laws? How can activities like UNESCO’s “Science Camp for Girls” in Kenya influence girls’ STEM education in Iceland? How are support and network organizations such as WinG International (Women in Geothermal Energy) which primarily reach out through social media and meetings at international conferences - such as ARGEO - strengthening women’s assertions of workplace equality in different cultures, or not? What forms does female solidarity take and what strategies do women choose to use in seeking leadership positions or promotions? How do male-dominated geothermal companies make room for women “at the top”? Why are women in geothermal interested in working in direct use and social impact strategies? In this visual ethnography, we are filming women at

their work, conferences, and in classrooms as they negotiate equality, represent companies and through their work they are breaking down gender barriers.

1. Methodology

The project sets out to document the professional lives and experiences of women working in the geothermal energy sector in five different countries: Iceland, Kenya, Ethiopia, Japan and New Zealand. This is social science research based on audio-visual qualitative data in the forms of interviews and video footage. The research is innovative and rests on analysis of semi-structured interviews and visual ethnography of social interactions between the documentary subjects (women) and their work environment (Given, 2008). The primary objective of the proposed study is to document women's stories within the geothermal energy sector and emphasize the importance of women's participation in the transition to a green economy.

The research project is an academic social research project based on field notes, observations, interviews and visual ethnographic material collected through the documentary film project Full Steam Ahead, a collaborative endeavour between Women in Geothermal (WinG), the United Nations University Gender Equality Studies and Training Programme (UNU-GEST) and Bless Bless Productions. Field work for the documentary commenced in Ethiopia in 2016, where the filming crew attended the 6th African Rift Geothermal Conference (ARGeo - C6). The ARGeo meetings are a forum for leading geoscientists to meet to promote regional cooperation and exchange information. This field work generated hours of interviews with women from all parts of the world working within the sector who share their stories. Field work and data gathering in the other subject countries is already under way and/or planned and will be used for the visual ethnography. In addition to the production of a documentary, this wealth of visual data offers a unique opportunity for conducting more in-depth analysis which offers a tremendously valuable contribution to the scholarly field. The intent is for this research to build upon the existing visual material collected for the documentary making, and applying the methods of visual ethnography for analysis.

1.1 Status of knowledge

There is no doubt that access to geothermal energy has had great developmental impact on Icelandic society, and while also considering that gender equality in Iceland is among the highest in the world, it is important to shed some light on the potential interactions between those two spheres and seek to generate lessons learned. Research has shown that energy poverty disproportionately affects women, as it is the traditional responsibility sphere of women to spend time collecting fuel, such as firewood for household consumption. Most household chores are traditionally the roles of women worldwide, and without proper access to modern energy sources, such traditional gender roles become significant obstacles to women's educational and career advancement. Moreover, the lack of access to sustainable energy sources threaten human health and quality of life, degrade the environment, affect ecosystems and contribute to climate change. Thus, a better understanding of sustainable energy resources such as geothermal energy combined with an improved understanding of gender issues in society and workplace can be "an engine for poverty reduction, social progress, equity, enhanced resilience, economic growth, and environmental sustainability" as pointed out by UNDP (UNDP, 2016, 9).

From a business and economic point of view, the promotion of gender equality is a sensible action to take as correlation between gender equality within the workplace and productivity exists. A study by Hunt, Layton and Prince (2015) indicates that companies in the top quartile

for gender diversity are 15 percent more likely to have financial returns above their respective national average industry means. However, women in traditionally male-dominated fields, such as in Science, Technology, Engineering, and Mathematics, or the so-called STEM fields, face different obstacles within their workplaces. If they succeed, their co-workers, both male and female, may unfairly see them as unsociable and difficult to work with (Heilman et al., 2004). Given the economic incentives geothermal companies have for promoting gender equality, most have issued and implement an internal gender equality policy but even for reasons of equality and social justice alone, such policies are fundamental pillars in the strategies of energy companies across the world. Despite this, to this day, women make up a very small percentage of workforce in the (renewable) energy sector, e.g. only 22.1% in the EU (EIGE, 2017), and statistics show that although women comprise nearly 50% of the total US labour force, women comprise less than 26% of the labour force in the fields of Science, Technology, Engineering and Mathematics (STEM) and within certain specific jobs within STEM sectors much less, especially in the engineering and technical sectors of STEM (Landivar, 2013; New Scientist, 2016; Beede et al, 2011).

Existing research on women in the renewable energy sector, science and engineering, especially in the EU, highlight the most common obstacles for women to enter the sector and stay there. These highlights include: the male-dominated culture at workplace, traditional hierarchies and the non-transparency of promotion processes. Similar findings have been documented in the fields of science and innovation, where women's recorded experiences of promotions and career development opportunities are worse than within the renewable energy industry (Clancy & Roehr, 2003; Clancy et al, 2004; EC, 2012). Further, there are multiple causal relationships between access to renewable energy sources, equality, social development and environmental health. This research will capture these linkages and contribute to a better understanding of them while documenting the various stories of women within the geothermal energy sector in different geographic, social and cultural contexts.

Reflecting on these findings and experiences of women working in the industry, who felt a need to form a women's professional organization Women in Geothermal (WinG), we identified a gap in research on gender relations in the sector. This project is therefore one step towards filling this academic research void. The experiences, challenges and advances of women in the geothermal sector that are being documented in a documentary collaboratively produced by Bless Bless Productions, UNU-GEST and WinG thus provide us with a unique opportunity to use this data for relevant and innovative academic research, in which the interviews and video footage are analyzed by using visual ethnography research methods.

1.2 Previous projects

Preliminary literature review indicates that no visual ethnographies have been conducted on gender equality within the geothermal sector as a profession. Surveys among women within the profession have been carried out, such as in Kenya (UNU-GTP, 2017, unpublished source). To date, no attempt has been made to capture the realities of women within the geothermal sector through a visual ethnography.

1.3 Rationalisation of Methodology

The film will feature different generations of women; some are pioneers in breaking the gender barrier in the workplace while others have just been recruited for the job. Some are just beginning their science and engineering studies. By showing and telling the experience and stories that these women have endured in different eras within the geothermal industry, we will be able to ensure that their voices will be heard outside the walls of the companies

and faculties. In the aftermath of the MeToo movement, women have come out of the woodwork demanding to be heard and that men are made accountable for their behavior both in and outside the workplace. The wave of stories of women from all walks of life on the experience of sexual harassment and “boys’ club” as power tools in the workplace has just touched the surface of what women have endured during their lives.

Iceland is one of the countries that fought for gender equality in many spheres of life, most recently passing a law for equal pay and transparency within all companies’ payrolls. It must be noted that these accomplishments have been built on the back of a strong women’s movement, and there are still many barriers to women being treated as equals in day to day life, not just at home but in the workplace as well. Recently, the National Theater of Iceland was filled with women who read out true encounters written by women from all walks of life about what discrimination or humiliations they had experienced during their professional lives. Shared in this way, such encounters can be wry, even humorous, but also tragic, sad, and ultimately can affect a woman’s entire life - often women have left or changed careers due to harassment. This is the story we want to capture, by looking at women working in one of the most male-dominated industries in the world, the geothermal industry.

It is a universal story that is told through the women of the geothermal industry in Iceland, Kenya and Japan. Research in other countries is ongoing. Three very different cultures and roles for women. It is our duty to tell these stories and make sure that these women who paved the way, serving as mentors and role models, get the credit they deserve, by giving younger generations the understanding that conditions at work got to be where they are today because of these women who fought for a better place for women, in society, the workplace and in government. It takes a woman to make a change for women!

Most of our work is both political and personal, dealing with injustice, women’s rights; through our stories we are able to ensure that women’s voices from diverse backgrounds and experiences are heard and seen. Women are still fighting for basic human rights in many parts of the world and the fight for gender equality is far from over; #MeToo has simply put the struggle on the map for everyone to see, revealing a lot of facts about how the old boys’ club in any field operates with regard to women and promotion of women, not to mention exposing sexual harassment, both verbally and physically, as a means of control. The way to the top, through the proverbial glass ceiling, is a lonely one with many barriers, including being demoted and passed over for leadership roles in favor of less- qualified male colleagues. However, these things are changing, and women and their male supporters are forming groups and organizations to give women skills and networks that will back them up as they look for a way to equality, and leadership.

It is the many stories of women in a man’s world that this documentary, “Full Steam Ahead”, focuses on, featuring women who work in the Geothermal Industry which, until very recently, was entirely dominated by men. The film features different generations, the pioneers, the women who came in because of those women, and who are now in the latter phase of their working career, and the young women who are just starting out in their field, or still studying. What has changed between these generations? How fragile are these changes? Why are professional women today still passed over for promotions by men who are far less qualified? Why are the majority of directors and board members men? What is the role of international companies in using their position to push for gender equality in more traditional societies? These are just few of the topics are dealt with in Full Steam Ahead.

2. Full Steam Ahead: Focusing on Women

Full Steam Ahead is a passionate story of women's fight for their place within a male dominated workplace, for gender equality on the job and finally to ensure that women get credit for their own achievements and not have their credit and accomplishments stolen by others. It is an international story that can inspire audiences worldwide without boundaries of class or economics. It is our hope that the film will inform, inspire, challenge, and make sure, that women's lives, battles, and victories will shine. Gender equality is back on the table internationally, and we feel it's more vital now than ever to focus on what women have accomplished to get to the place they are today. Different generations of women give us rare insights into their world and what it takes to be able to grow and work within the geothermal industry, a male-dominated field. Successive generations of women share their struggles and successes, and the changes that have taken place in the workplace over the years.

Full Steam Ahead gives a rare insight into lives of pioneering women who broke the gender barriers within male-dominated industry. Firsthand personal stories of different generations of women and their experience, their fight for their rights and equality and the changes they have seen during their working-life within the geothermal industry. This raises questions about progress and backlash, as well as what will the future of gender equality be and how do we fight backlash such as the war against women's rights that we are experiencing right now in the year of 2018. It's a timely film in the era of #MeToo, which finally has given many women the courage to speak out and break the silence of sexual harassments and other oppression that women have had to tolerate for way too many years.

The film has been shot in *verité*, observational style, with interviews, where the stark beauty of the Icelandic and other landscape, the workplace, field work, and archival footage adds the immediacy of the physical geography to show the difference in then and now. Interviews, for the most part, have not been done in a studio, but on location, often out in the field or workplace, maximizing the beauty of the geothermal spots and where the fieldwork is taking place in each country.

The film includes women of different generations who work in the geothermal industry, who have in common their careers in a male-dominated profession; women are still minorities in this field in all three countries. Through the visual, the personal interactions, and the interviews, we gain some insight into crucial questions: What do we have in common? How do companies define and promote gender equality in the workplace in Iceland, the Rift Valley countries of Kenya and Ethiopia, and Japan? These countries are very different, in culture, tradition and opportunities for women and girls. Two are economically stable and privileged; the Rift Valley is largely developing and rife with instability and poverty. By using such contrast of not only the male-dominant work place but also wildly diverse roles and expectations for women in general within each society and culture, we found that the common – and age-old – issues – like maternal leave and the family role of the married woman – concern us all, rich and poor, developing and developed societies. Even though Iceland leads the world's countries when it comes to gender equality, in society, the work place, and education opportunities for women and girls, there is still work to be done, and the Parliament has just passed a law which guarantees equal pay for equal work. It remains to be seen how this law will be implemented and who will supervise its implementation within companies? The big question still looms over us all, in different ways and different places: what does equality look like?

3. Brief Overview of the Film

3.1 Iceland

Our project, *Full Steam Ahead*, is a work in progress that sets out to answer the above questions. We have filmed and interviewed women in the field of geothermal energy in different countries, and, while some countries remain, and our investigation is ongoing, we do have a lot of fascinating footage and revealing insights into their daily lives, challenges, and achievements. We would like to offer a brief overview of the film, revealing some of our findings along with our methodology and perspectives.

We begin in Iceland, a country known for its gender equity as well as its geothermal energy industry. The opening segment of the film introduces the women in the field doing their work, and we get to know what they do, cutting from one to another. The methodology is based on a ‘show rather than tell’ principle. In the opening sequence, therefore, we see two women slide down a snowy hill after a research trip to Krísuvík, Iceland, and we follow the women during their day doing their research project. We intersperse these segments with shots of snow and steam at one of many geothermal spots in Iceland, drawing the viewer into the atmosphere of their place of work.

The women we meet in Iceland offer a range of experiences in the field, during their careers, and in their personal and professional lives. It is clear, from their accounts, that while much has been achieved in terms of gender equity in Iceland, much remains to be done. The following is a sampling of some of the women we met and the insights we have gained into the world of women in geothermal industries, through their experiences. Through a mix of older women who were pioneers in the field, and younger ones who walk in their footsteps and also chart new territory of their own, we try to piece together a composite picture of the challenges and achievements of women in the geothermal industry in Iceland.

For instance, we meet Eyrún (all names changed), an Icelandic pioneer within the Geothermal industry, who is now retired, and in the past 40 years as an employee of one of the big energy companies, has seen positive change in the industry during her career. She has also been ignored when it comes to promotions that she rightly deserved, with the position being given to a man with lesser qualifications and experience, because Eyrún “had children.” We meet Eyrún out in Seltjarnarnes where she still does work for the community of Seltjarnarnes, taking samples from the geothermal steam sites. Eyrún talks about when she started working in the geothermal industry, what it was like to get a job in the field and then to hold a job in the field. As a young engineer, she was awarded a work fellowship to Japan and her supervisor tried to stop her going because she was a divorced, single mother. Despite this, she went and brought her children with her. The film weaves together old photographs, old footage from work being done in the field, and footage from today as Eyrún shares her experience.

In contrast, Gudrún, a young woman who graduated as an engineer a couple of years ago, and has a position in the geothermal plant in Hellisheidi, very convincingly tells us that she has not had any bad experience in her work, and feels that her workplace is very focused on gender equality and equal pay for men and women for their work. We note, however, that in her company, only two women work at this location - the rest of the employees are all men.

Inga, a former employee of the Obama administration, was headhunted by an Icelandic company and moved back to Iceland; she spoke to us about transparency and gender equality,

or the lack thereof, as well as the roles of both male and female parents in the home-work spheres.

Herdís is, again, an older woman who is very close to retirement, who feels she has not been given the same opportunities in the company to lead projects as her male partners, who are not as qualified or experienced as she is. Now, at the end of her career, she is facing age discrimination as well. Older women face even more challenges in the workplace in societies where youth is prized and the elderly are not very visible.

The film provides footage of women, protesting and demanding equal pay for equal work, cuts to younger women telling us very convincingly that they have not experienced any discrimination in their workplace, sounding like they have gotten it all. We intersperse these shots with deeply personal stories of being ignored for promotions, of research opportunities given to less qualified men and other obstacles that women have experienced for years in the workplace. Through these superimposed, contradictory, testimonies, we discover that all is not as perfect as it seems to be at first glance.

Some of these insights appear as we move around the premises of the infrastructure provided to workers in the field. For instance, we meet a young woman at her workplace in Hellisheidi who shows us the dressing rooms at work. The women's dressing room is tiny and the men's dressing room is very big and spacious: a small indication of the simple, everyday situations that women live with in the workplace. It also shows us that the problem of gender equity is more deeply integrated into the workplace culture and more extensive than simply managers who pass women over for promotions, etc. It shows us that the engineers, architects, and designers who produce the physical environment in which men and women work, carry with them the unconscious biases that create unequal workspaces. So, when the company was planning the buildings with the architect and engineers, nobody thought about the nuts and bolts of gender equality in the designing and construction of the workplace infrastructures.

3.2 Kenya: "For a woman to be [thought] half as good, you have to do twice as much"

We go next to Kenya, a country as far removed from Iceland as might be thought possible. The women, however, are as inspiring and courageous in their common pursuits as their Icelandic counterparts. In setting the scene, and to give the viewer some sense of the fascinating landscape, this segment of the film opens with shots taken from the top of a drilling platform in Baringo, in the Menengai Caldera, in Kenya. From there, we move over to women working as roustabouts on top of the platform.

We focus on a young woman roustabout working on a drilling platform. This is a one of the roughest jobs on a geothermal project, requiring little formal education but a lot of strength and focus for long hours at a time. For many young women in Kenya who cannot afford higher education, access to this kind of secure work means a better standard of living. However, the working environment is very much a man's world and most of the time, this young woman is the only woman working among many men.

As we follow this young woman working on the drilling platform, the film cuts to her (all) male colleagues in the trailer on a coffee break, as they talk about the difference of working with women and men in the field. In Kenya, the number of women working in the Geothermal industry is very small, and they are all breaking into a field that just a few years back, had only a handful of women working within the STEM core of the industry. Women who work as supervisors or engineers in the field are usually in isolated remote areas surrounded by male colleagues. The men still talk about 'allowing the women to be

promoted' as if it has nothing to do with their work or education, not to mention rights: it is clearly all up to the kindness of the boss, or favors. Not being promoted is also seen as being in a women's best interest to "protect her" from being in the field.

Through the stories of the Kenyan women we also find out, first hand, if the international companies in Kenya are using their position and experience with equality to promote gender equality in the workplace by setting examples themselves, and making sure that women and men are treated equally. One of the more pertinent questions thrown up by this exercise is how these companies can be more involved in promoting gender equality and promote education and jobs for women?

For women in Kenya to make it to a job in the geothermal industry is that much harder, because women are traditionally seen as being unworthy of higher education, or that the limited household money may be better spent on a boy's higher education, or, indeed, that the STEM subjects are not 'naturally' a woman's forte. Women are encouraged to be married young and to produce and look after children instead. This situation is not, of course, unique or peculiar to Kenya; it is seen in most countries in varying degree, whether developed or developing, 'western' or in the rest of the world. Societies that consider themselves 'advanced' and which provide ample educational opportunities for women, nevertheless carry these prejudices and biases when it comes to a woman's ability or suitability to study the STEM subjects or to engage in careers, such as those in the geothermal industry.

The women we meet in Kenya are inspiring in the manner in which they have overcome great social, cultural, and economic odds, to be where they are in the geothermal industry. Often, their stories are of enabling communities and parents. Their stories are both inspiring, as well as cautionary tales of how many challenges lie in the path of women, and how they can be overcome or they can become obstacles, without the aid and support in their personal and professional lives.

We meet Rita, who is a Maasai, a community in which girls and women are traditionally not educated and rarely leave home for a job. Rita is an exception as her parents made sure that she and her sister were educated. She takes us back to the site of her old village where she grew up and shows us huts made out of cow dung and filled with fleas. Rita's journey is very special; in the Maasai tribe, women are not allowed to look at men in the eye, or talk back to them. Rita's new found freedom - she has a job in community relations at a progressive Geothermal company — has not only given her confidence, it has also given her improved living conditions.

Susan, a drilling engineer and supervisor from a small village without electricity, is being pressured by her family to get married and have children. Her parents worry about her getting older, so that no man will want to marry her. She is now at the ripe age of 25, already considered to be getting too old. Susan wants to get her master's degree in Iceland at the United Nations Geothermal Programme, but this year she was passed by for a male college who was chosen for the program instead, even though Susan did better on the application and had been already accepted in the programme.

Mathilda, an engineer in her late 50s, is in a leadership role at a large geothermal company where she has worked for almost her entire career. She started out at the United Nations University - Geothermal Training Programme in Iceland – and was one of the first women to attend. She says that she sacrificed friends and society, and was only able to achieve success in the workplace because her husband supported her emotionally. She put off having her last

child until she could afford to spend time with her and now has a six-year-old daughter. She remarked on the gendered perspectives in the sector.

For a woman to be (thought) half as good, you have to do twice as much. That was really really terrible. For you to be (thought) half as good, you have to do twice as much. So, for you to be (thought) the same, you have to work four times. Number one: it does not matter how intelligent an engineer you are, at one point, you will find yourself expecting and getting children, and the men have a mentality that women cannot be able to do it.

Today, she develops direct use projects for communities, so that women and children have time and money to go to school and get proper food and health care. She is also working to reconnect with friends whom she lost contact with because of her intense focus on work.

Caroline, a geoscientist who now works for the Ministry of the Environment, shares her struggle to be considered fit for the job, and how she balances family and work. She used to work as a scientist in a Geothermal company but was forced to quit because of family pressure to stay home and take care of her children – she could not work in the field which was part of her job. „You know,” she says, “you are trying to be a mother, you are trying to be a wife, you are trying to be the worker. That one person is needed in twenty-four hours to do all the jobs.” For a four-month long training stint in another country, while the men went for all four months, she had to go in short, two week periods, staying home with her family in equal amounts to staying away.

The film follows the women in the field and at work. From amazing remote locations in Kenya, such as the vast Menengai Crater, with a geothermal site, to the top of drilling platforms, and to Kenya’s Iceland-inspired re-creation of the Blue Lagoon in the Hell’s Gate region of Nakuru, these locations frame the story and the people in the geothermal industry Kenya. Each story, thus framed, allows the viewer to see each individual story in itself, as well as part of a large socio-cultural story of women’s rights in Kenya.

3.3 Japan

We are still in the research phase when it comes to Japan, the last but not least important, country that we feature in the film. Japan, like Iceland, is a fairly homogeneous, educated, and wealthy society. However, Japanese society, like many others, still carries its burden of sexism and rigid traditional gender roles; and, as in other countries, change is not going to happen overnight. Like Iceland, Japan is primarily a genetically homogeneous, privileged society, but it nevertheless has its own challenges to face in terms of gender equality. The Geothermal industry in Japan is very much dominated by men, and all top positions are held by men, with a very few positions being held by women.

The film follows three women in Japan: one older, one middle-aged, and one young woman just out of university. The older woman works in a progressive sustainable energy company, with geothermal and wind power. She studied in Iceland and made her life there for twenty years. She is eager to talk about the shock of returning to some of the more conservative aspects of Japanese society. As in the other countries, these women are featured in the field, and at work. The company that these women work for is a young, progressive, sustainable energy, company just starting to explore geothermal energy, eager to examine gender equality in the workplace, and to explore ways of changing the status quo of gender inequality in the workplace.

4. Women and Girls in STEM

One of our major concerns in this project, is to track the position of women and girls in higher education in pursuit of STEM subjects. We are interested in what motivates and supports, and what challenges and impedes, the entry of young women into this area of education. In the course of our research, some notions regarding this area were reaffirmed. For instance, it is clear that in many countries it is still a fact of life that boys are the ones chosen to be educated, and girls only get basic education, as their future is based on marriage and family life. Education is still not a right for all, everywhere. One challenge is getting women and girls interested in STEM (Science, Tech, Engineering, Math) careers, and what we need to do to change that. How can parents be convinced that a woman can be a scientist or engineer? We went to Nairobi, to a girls' science camp, an initiative of UNESCO and the Kenyan government to introduce girls – especially girls from rural areas - at a young age to science and math, two fields still today heavily dominated by men. All of the science mentors at the camp are women who work in the field, who want to inspire young women to dream big and go into science and technology. Some of these mentors are featured at work in our film; they also feel personally responsible for mentoring the few young women studying engineering at the University. This was one of the many exciting initiatives in helping to bring change about in this area. These young science campers and their mentors share their dreams and hopes with us about the future, and what role they foresee for themselves as adults.

4.1 “You have to show them how you are strong”

As with this wonderful initiative, our research repeatedly showed us that all is not bleak – exceptions and inspiring individuals do exist, and during a research trip to a conference in Ethiopia we met Lydia, who is from rural Ethiopia. Her family are pastoralists and illiterate. They farm in remote rural Ethiopia, and they support their family with cattle; yet, they decided to put all their girls through school, and Lydia is now in Iceland getting her Master's degree at the University of Iceland, after attending the UNU- Geothermal Training Programme in Iceland. At the same time, her parents decided to keep her brother at home and not allow him to go for higher education; instead he is expected to take over the cattle and take care of their parents in their old age. We traveled with Lydia to her home, which involved days of traveling to northwest Ethiopia, and we interviewed her parents and brother at her childhood home.

Through this journey and the interactions with Lydia and her family, the film looks at several important issues and questions: what prompted these parents to go against tradition? What were the obstacles and challenges they faced? How did they overcome them? Did they receive support from their communities? Will other families follow their example?

Lydia tells us about her experiences with sexual harassment at the work-place and how she was forced to deal with it:

Yes, for example, I got this kind of problem for the first time, then, for me, it's better to stop the work instead of [dealing with the] sexuality problem. Yeah... There are this kind of men, [and] it's a big challenge, but if you want to go ahead, and you want to fight for your future, [you have] to be strong. And then it shows them how you are strong, and [you can] do your best.

Stories and experiences such as these are crucial in that they expose the challenges for women in the geothermal industry, but also showcase progress and success in the most unexpected places. Such is the power of the individual story.

In all the countries we will, as we feel benefits the film, use archival footage to show change that has taken place or to focus on a specific struggle that has led to change for women. The footage will be integrated as a part of either one of the women's stories talking about a change that has taken place; in this way the footage is not decorative as films sometimes use archival footage, but in a direct relationship with the spoken word. It will create a contrast, but also reinforce the fact that it was not so long ago that women had no basic human rights, and that we have come a long way – thanks to the efforts and experiences of individual, ordinary, women, who have fought extraordinary challenges, and on whose shoulders we stand. These ordinary women are the heroes which we hope will inspire change around the world.

5. Emerging Themes

It is becoming increasingly clear to us, as we interview and film women from different countries and cultures in the geothermal industry that, in spite of the many differences, there are some common themes that emerge in our observations and conversations. A few of these common themes can be stated as being:

- The difficulty of women being sent for higher studies that would qualify them for work in the geothermal sector;
- The popular sense that women are not meant to study STEM subjects;
- The critical importance of support from their families for women to go for higher studies, take up STEM subjects, and work in a field like the geothermal industry;
- The familial pressure for women to choose marriage over career;
- The pressure on women to balance their time with their families with the time spent working;
- The difficulties faced by women with children, especially, when it comes to going out of town on work;
- The challenges women face at work in terms of infrastructure provided for women;
- The harassment and discrimination that women face in their place of work in terms of sexual harassment as well as being overlooked for promotions and other opportunities to further their careers.
- The critical importance of support from their families for women to go for higher studies, take up STEM subjects, and work in field like the geothermal industry.

6. Gendering the Understanding of Environmental Influences and Climate Change

Social research exposes the positive correlation between gender equality and relatively lower CO₂ emissions in countries, and that working towards gender equality is likely to help curtailing climate change at the same time (Ergas & York, 2011; McKimney & Fulkerson, 2015). This is particularly important for the renewable energy sector, as it plays a central role in powering sustainable development and eliminating harmful carbon emissions from energy production. The novelty and scientific value of this project lies in the unusual yet very relevant thematic and its innovative research methods. The research themes of gender equality in the renewable energy sector is a central one in the just transition to zero carbon economy debate (Terry, 2009; Kronsell, 2013). The research methods used in the study present yet another novelty: an ethnographic study of gendered dynamics within the

geothermal sector has not been conducted before. The collection and analyses of interviews and visual representation of gender relations in an academic field, where this kind of research is very scarce, constitutes another innovative strength of the project. The potential long-term impact of the project for enhancing gender equality within the geothermal sector will contribute to an increased effectiveness in applying geothermal energy as a basis for a green economy. Numerous studies show that the lack of gender equality and women's perspectives in energy, science and engineering has negative effects on social development as well as environmental sustainability (Clancy & Roehr, 2003; Clancy et al., 2004; EC, 2012). Researching women's positions within the field and suggesting appropriate actions and policies has the potential to reduce and (eventually) close the gender gap existing in the geothermal energy sector. The sector, in turn, will have the potential to benefit from increased gender equality, women's perspectives and increased diversity, which research has shown to have positive effects for the development of sectors (Hunt et al., 2015; Pearl-Martinez & Stephens, 2016).

7. Conclusion: Finding a Common Cause Amidst Diversity

In conclusion, our work so far, has shown us that it is very important for us to listen, and give visibility to, women from all walks of life who are not the elite of society but ordinary women with extraordinary lives. These are the women whose voices and stories need to get told and reach broader audiences. Theirs are stories of courage, leadership, and the power of women as they work at breaking down the old boy's club and the privileges that men have given themselves over centuries of gender inequality, without conceiving of a time when they would have to share these privileges. We realise that there is no easy way to ensure that such a sharing of power happens. We see, also, that cultural and historical differences amongst the different countries that we have taken into account in this project make it very difficult for us, or anyone else, to make simple generalisations or to find single solutions that can be equally effective across these cultures and histories. Instead, while affirming the many issues and needs that are common to us all and which bind us into a sisterhood, our research and documentation has reaffirmed how important it is for us to allow each woman to reflect on her life, and see how she sees the future ahead when it comes to herself, and her sense of women's rights. The path to equality is an emotional journey of women's lives from different countries and cultures; on this path, their own words will enlighten and help create understanding between all of us no matter who we are and where we come from.

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