Example Gender Equality Statement Engineering/Climate Change Adaption – Doing Better Research with a Gender Sensitive Methodology

In response to requests from PI's this document sets out a **FICTIONAL** example of a 'bad' gender equality statement followed by an example a 'good' one. The 'bad' example is a fictional composite of the kind of missteps that we, and UKRI, have observed in gender equality (GE) statements included in GCRF projects.

Gender issues in research can be separated into two broad themes – gender balance on the research team, and gender issues in your project's design. This fictional example explores measures to identify how gender is relevant to your project's conceptualisation and design. This fictional example shows how an inadequate engagement with relevant gender issues in project design can mean that the technology the project develops is unlikely to be taken up, limiting the project's impact (see section 3.3 and 3.4).

Measures you can take to support gender balance on your research team are discussed in a separate document Example Gender Equality Statement Engineering/Climate Change Adaptation Supporting a Gender Balanced Team. You are expected to address both aspects within your own statement.

GenderED Toolkit and Guidance explains key terms and provides some background to the GE Statement requirements. The Edinburgh Research Office also provides many materials explaining the importance of concepts such as fair and equitable partnership working, ODA compliance and Theory of Change approaches.

Example: 'Bad' GE Statement Summary

"Our project applies two cutting edge technological solutions to tackle energy poverty in shack settlements: thermally reversable thermochromic paints and phase change materials (PCMs). Both these products help to reduce the energy burden on household both in summer and winter. Because physiological impact of cold and heat are the same for women and men our project will have gender neutral impacts."

1. Fictional Project Summary

Our project will test the effectiveness of two energy saving technologies in shack dwellings and share findings with urban planners in Nepal and Kenya. Informal settlement dwellers face cold conditions in winter and intense heat during the summer, each causing energy poverty (Kimemia et al. 2020). To respond to these challenges policy makers in many countries have developed both slum upgrading plans, and urban heat action plans. However, cooling

solutions in particular, often rely on technologies which consume high amounts of energy, thus exacerbating summer energy poverty (Kimemia et al. 2020). Our interdisciplinary project develops two cutting edge solutions to tackle these problems: thermally reversable thermochromic paints that can be applied to shack roofs and phase change materials (PCMs) that can be built into roofs. Each of these provide energy saving benefits in cold and warm weather.

Though the effectiveness of these materials is fairly well understood in formal dwellings, more research is needed to understand how effective they may be in informal dwellings (Kimemia et al. 2020). The team is led by Prof Kelpie at the Rebus Research Institute, University of Edinburgh and supported by engineers and sociologists at a Kenyan University and a Nepalese University.

Our project includes three work packages 1) lab testing of thermally reversable thermochromic paints and PCMs in simulated shack dwellings ; 2) refinement and retesting of adjusted materials; 3) the team's sociologist will hold impact an online seminar, sharing findings with policy makers in Kenya and Nepal.

2. 'Bad' Fictional Gender Equality Statement

Criterion 1: Ensuring equal and meaningful opportunities for people (researchers, participants and beneficiaries) of different genders to be involved throughout the project.

The Rebus Engineering Research Institute based in Edinburgh, holds a Silver Award for Athena Swan. The Athena SWAN Charter recognises and celebrates good employment practice for women working in science, engineering and technology in higher education and research. The Institute was granted the award in recognition of the additional efforts made, over and above standard university wide policies, to promote gender equality and address particular challenges for women within science. Our activities to promote gender equality include several outreach events aimed at schoolgirls during the Edinburgh Science festival, a series of blogs promoting the engineering achievements of Scottish women (both recent and historical) and the establishment of an Equality and Diversity committee, in 2020.

Criterion 2: Addressing the expected impact of the project (benefits and losses) on people of different genders.

All engineering team and co-ordinating members of staff will benefit from participating in the research project, gaining experience in leading a product from design to market delivery. The post doc in sociology will gain experience delivering an impact seminar. Our gender-neutral approach will ensure the recognition attributed to each member of staff will be fairly commensurate with their contribution.

Criterion 3 : Addressing the impact on the relations between people of different genders.

The physiological impacts of the cold and heat are the same for men and women. As such, our project will deliver equal benefits to both men and women living in shacks, without any disruption to relations between men and women.

Criterion 4: Avoiding and developing strategies to mitigate and monitor risks and unintended consequences on gender equality.

By adopting a policy of gender neutrality throughout its life cycle our project will mitigate against any potential for gender discrimination (unintentional or otherwise).

Criterion 5: Measuring relevant outcomes and outputs with data disaggregated by age and gender

To capture data on gender equality impacts we will monitor publications and intellectual property benefits to ensure that the female researcher on the team benefits in line with her contribution to the project, without discriminating unduly against male team members.

3. What's wrong with this Gender Equality Statement?

We can start reviewing this fictional 'bad', fictional, gender equality statement by referring to some of UKRI's most recent feedback to all UK University Research offices:

> *"listing of the gender make-up of the network team and the institutional policies or awards of their organisation has received does not sufficiently meet the gender equality requirements."* – UKRI feedback to UK HE Research Offices March 2020.

UKRI encourages applicants to discuss how gender is *relevant to a project* **throughout your proposal** rather than just in the Gender Equality Statement. Responding to this feedback from UKRI therefore involves thinking more precisely about the relevance of gender in the project's conceptualization and how to encourage gender equal participation on the project.

3.1 Gender in the Project's Design

The most obvious criticism of this fictional 'bad' gender equality statement then, is that it includes a lot of material listing the host institution's gender equality policy awards, rather than tackling the ways that gender is relevant to the project and its aims.

Assessments of a technology's social or economic impact are often considered beyond the scope of STEM researchers expertise and activity. Perhaps as a result, technologists can assume that their knowledge, products or technologies will automatically deliver improvements that will benefit all equally and that their work is socially and politically neutral (Collins 1990, 205; Felt 2017; Harding 2006). Additionally, STEM researchers often assume that all gender equality goals are addressed by combatting discrimination against female colleagues.

Practitioners in the international development sector, however, have learned through experience that the positive or negative impacts of technology are mediated by existing social and political hierarchies (e.g. ENERGIA 2019; UN Habitat Gender 2016).

3.3 Key Existing Knowledge on Engineering and Climate Change Adaption

These social realities 'on the ground' often mean that the introduction of technologies or infrastructure can have unintended consequences. For example, ENERGIA's five year study of energy access programmes in 12 countries, showed that initiatives that did not specifically engage with women's needs were frequently subject to 'elite capture' and **perpetuated gender inequalities in access to and control over energy** (ENERGIA 2019; Oparaocha and Dutta 2011). Similarly, evaluations of **slum upgrade programmes**, (installing electricity,

sanitation and replacing zinc shacks with more permanent structures) in South Africa, show that they **resulted in increases in domestic violence, rape and child abuse** in some communities, because they disrupted existing community networks and informal measures of social control (Brown-Luthango, et al 2017, 480).

These examples show how the introduction of technology and infrastructure can interact with existing gender hierarchies and gendered divisions of labour and create new and intensified inequalities in access to resources and safety. **ODA funded research projects, such as those funded through the GCRF/Newton Fund, push STEM researchers to think about these kinds of impacts at research inception stages, because the fund calls explicitly focus on the resolution of global development challenges**. Luckily, there are many easily available resources that PIs can draw on.

Gender sensitive frameworks used to plan policy responses to climate change, such as risk calculation, urban planning or energy provision offer thematically specific and validated frameworks that can help PIs identify the relevance of gender to their project and its goals (Few 2007; Ginige et al 2014; UN Habitat 2013; UN-Habitat 2014; ICUN Global Gender Office 2018; Care International 2019). Sex and gender sensitive engineering/product design protocols can also be applied to product design processes (Gendered Innovations n.d.). Many national and international NGOs also have experienced, in-house 'gender experts' who can provide theme specific expertise throughout the life-cycle of a project as a member of the research team.

In addition to drawing on these kinds of existing gender sensitive resources and expertise, development NGOS emphasise the importance of two practices: 'gender sensitive situational analysis' (explained below); and consultation with local communities about their needs and lives, using methods that take account of common gender differences (Oxfam 2019; Practical Action 2013).

3.4 Working Out the Relevance of Gender: Gender Sensitive Situational Analysis

The most basic models of gender sensitive situational analysis involve gathering information on the relevance of gender to your project considering three domains:

- **access to decision-making;**
- **access to and control over resources; and**
- **divisions of labour.**

GenderED's Toolkit and Guidance on developing your GE statement explains these three domains and provides a 4-step process to help you fill out your GCRF GE statement. Recommended methods to gather this information include **literature review, consultation with local communities and gender equality organisations/women's civil society, or collaboration with an academic or NGO based gender expert**. GenderED's toolkit also provides detailed prompts for the kind of *actions* you can take to respond to gender issues you identify.

Quickly working through these three domains in relation to this (fictional) project yields the following insights.

Decision making	Gender inequalities in access to **decision-making concerning maintenance of the home and energy consumption are extensively documented**. Evidence shows that in most instances men control expenditure over home improvement and energy related decision making within households. However this does vary across cultures, for example tin Kenya 68% of couples report joint decision making, though men as prime earners control actual expenditure (ENERGIA 2019). Evidence also shows that **women are systematically excluded from local, national and international level policy making processes related to urban planning/ energy policy** (Dekens and Dazé 2019; UN Habitat 2013). Decision making in **engineering firms and building material manufacturers in the private sector is also dominated by men** (Wawasi Kitetu, 2009.; ICUN Global Gender Office 2018, 2009:14). Decision making in higher education is also overwhelmingly dominated by men, including Nepal and Kenya (UNESCO 2018; 2017).
Access to and control over resources	Gender inequalities in access to and control over household and community resources are also well documented. In both countries included in this project men have more access to and control over financial resources that can be used to upgrade homes and the education and professional/DIY skills that enable them to participate in the provision of home upgrades. Though women have to maintain homes and are likely to spend more time working within them, for example caring for vulnerable and sick relatives (e.g. sufferers of heat stroke) they tend not to have *control* over resources such as fuel, appliances and materials for repairs (ENERGIA 2019).
Divisions of labour	In both of the countries included in this project women are expected to maintain and run the home (e.g. cooking, cleaning, laundry and collecting fuel) and care for dependents including children, the sick and elderly (Action Aid 2013; Oparaocha and Dutta 2011). These responsibilities are very time consuming and limit women's and girl's participation in paid work and education and evidence. Evidence shows that these **differences in division of labour shape differences in men and women's energy priorities within the home** – women have been shown to prioritise expenditure and energy consumption related to domestic responsibilities where men prioritise expenditure for in home leisure (ENERGIA 2019, 14). At community level, local gender norms create an expectation that men work in construction sectors and study 'scientific' disciplines whilst women study more social subjects and those associated with service industries (Action Aid 2013; Oparaocha and Dutta 2011; Khanal 2018).

Reviewing this simplified and very cursory analysis we can see that **this project confronts a real danger that it will have minimal impact** because several gender inequalities converge within the arena where this project is focused, which will limit technology uptake. The analysis also shows that women are most likely to benefit from upgrades that could result in cooler and warmer homes that consume less energy. Women work within the home for longer each

day and are responsible for the care of children and elderly relatives – two groups most vulnerable to for example heat stroke (Kimemia et al. 2020, 29).

However, women do not have control over the financial resources that would enable them to upgrade their homes, nor do they possess skills and knowledge that would enable them to do so. Evidence shows that these resources are controlled by men, who spend less time in the home and evidence also shows they are likely than women to prioritise expenditure to non-leisure home maintenance. In addition, participation in urban planning and engineering/energy related research and household maintenance/energy consumption choices is marked by stark gender differences. This means that without targeted efforts, women will be excluded from decisions regarding home upgrades and urban planning.

This project therefore confronts a real danger that it will have minimal impact. The team aim to design products that could significantly benefit women, reducing their time spent caring for family members suffering heat stroke, freeing them to undertake more paid work and education and increasing their personal comfort and health. **However, the uptake of the project's technologies is likely to be limited because the main beneficiaries of these products are excluded from existing decision-making structures that will decide whether or not to install them.**

4. 'Good' Fictional Gender Equality Statement

Example 'Good' GE Statement Summary:
"Our interdisciplinary project brings together anthropologists, engineers and sociologists to develop roll out models, for cutting-edge solutions to energy poverty in shack settlements: thermally reversable thermochromic paints and phase change materials (PCMs). Our project includes consultation with local civil society in in formal settlements in our two target countries and collaboration with ENERGIA a gender and energy focused NGO and Practical Action to develop role out models that up-skill and employ women.

Reconceptualized Gender Sensitive Fictional Project Summary

Our interdisciplinary project, led jointly by Prof Lumumba (Social Anthropology, Kenya) and Prof Kelpie (School of Engineering Edinburgh) refines cutting edge low energy consumption technologies aiming to alleviate energy poverty, in both summer and winter, in shack settlements; and develops effective roll out models. Our roll out models aim to maximise the social and economic benefits to local communities, including gender equality gains and opportunities to upskill residents. The team comprises three engineers, a social anthropologist, a sociologist and representatives from two NGOs and a UK based project administrator.

Residents of informal settlements experience cold conditions in winter and intense heat during the summer. Each of these cause energy poverty (Kimemia et al. 2020), whilst poor housing conditions increase caring responsibilities on women and increase their vulnerability to violence (Oparaocha and Dutta 2011; Brown-Luthango, Reyes, and Gubevu 2017).

Our interdisciplinary project develops two cutting edge, low energy consumption solutions to tackle these year-round problems: thermally reversable thermochromic paints that can be applied to shack roofs and PCMs that can be built into roofs. Though the effectiveness of these materials is fairly well understood in formal dwellings, more research is needed to 1) understand how effective they may be in informal dwellings (Kimemia et al. 2020) and 2) how uptake and the economic and social benefits of roll-out programmes can be maximised.

Our project includes six work packages. 1) Consultation with residents groups and civil society in informal settlements in Nepal and Kenya to understand local social structure, informal infrastructure, community cohesion and strengths, and key needs and problems. Here, social anthropological, relational approaches, emphasising intersectional understanding of the relationships between different genders, ethnicities and migration statuses (Corburn and Karanja 2016) will be used, to avoid unintended social disruption. 2) Lab testing of thermally reversable thermochromic paints and PCMs in simulated shack settlement environments that resemble living conditions in the two informal settlements. 3) Demonstrating prototype products to residents groups, civil society and policy makers in-situ, in informal settlements in Nepal and Kenya. 4) Co-design of a realistic installation and roll out model in partnership with local civil society, two international NGOs with experience designing and delivering gender sensitive energy upgrading projects: ENERGIA and Practical Action. 5) Refinement and retesting of adjusted materials. 6) Local residents and members of the project team, including social scientist and engineers, share findings and roll out models in online video materials or international professional/academic conferences.

Criterion 1: Ensuring equal and meaningful opportunities for people (researchers, participants and beneficiaries) of different genders to be involved throughout the project.

Our interdisciplinary project includes social anthropologists and 'gender experts' from NGO's whose project design expertise has been incorporated into the project from the outset to ensure equal and meaningfully opportunities for different genders throughout the project. Participatory methods will be used throughout the project to include women in community decision making and to gain access to national/international policy making networks. Barriers posed by gender specific harassment and safety concerns (for informal settlement residents and project staff) will be taken into account designing fieldwork and consultation. (N.B as explained on page one, this document does not deal with issues related to gender balance on the research team, these are dealt with in a separate document Example Gender Equality Statement Engineering/Climate Change Adaption – Supporting a Gender Balanced Team.)

Criterion 2: Addressing the expected impact of the project (benefits and losses) on people of different genders.

The interdisciplinary approach of our project specifically aims to design technological solutions that respond to local needs and priorities, including those of women and men. Evidence shows needs and priorities often differ between women and men (ENERGIA 2019). By designing consultation, testing and dissemination and roll out strategies that take these differences into account, our project aims to ensure equal benefit to men and women.

Criterion 3: The impact on the relations between people of different genders.

Consultative product design and roll out methods will be informed by social anthropological frameworks (designed by our Co-I Prof Lumumba) that enable a relational analysis (i.e.

taking a intersectional understanding of the relationships between different genders, ethnicities and migration statuses (Corburn and Karanja 2016)) of differences in access to, decision making, access to and control over resources and divisions of labour. See also above.

Criterion 4: Avoiding and developing strategies to mitigate and monitor risks and unintended consequences on gender equality.

Consultative product design and roll out methods will be informed by social anthropological frameworks that aim to avoid unintended consequences. Multi phased consultation and product testing, co-design and local resident involvement in dissemination to policy makers will enable ongoing monitoring of risks See also above.

Criterion :5 Measuring relevant outcomes and outputs with data disaggregated by age and gender

Participation in each phase of consultation, product testing and dissemination will be monitored according to gender and age. Appropriate impact accelerator grants will be sought to deliver and monitor uptake of our products and roll out strategies, after the completion of this discrete project.

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