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## Gender differentiated impacts from weather extremes: Insight from rural communities in South India

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### ABSTRACT

Several studies focus on the effects of climate variability on female and male gender relations as perceived through various biophysical and socio-economic aspects. More emphasis is given on the impacts of extreme weather events on rural communities of less developed regions. The results are often interpreted in a qualitative manner through policy measures that may reduce gender inequalities. However, the interpretation of the qualitative results to more crisp and measurable outputs is often not attained while the validation of the findings is rarely ensured. The current study suggests a gender-differentiated impact framework based on qualitative and quantitative components for the assessment of climate variability effects on rural communities in South India. Fifteen villages mostly practicing rice farming in Andhra Pradesh and Telangana states were selected as representative drought-prone case studies. The study results advocate that the qualitative outcomes were validated from the quantitative approach but for a few cases which could be attributed to methodological and case-specific differentiations. Policy recommendations are made on common gender trainings in water-resistant crops and livestock activities for the alleviation of drought impact and abatement of gender inequalities. Also, entrepreneurship workshops for women could enhance gender balance and diverse family income from the current sole dependence on farming revenues. Regional climate adaptation programs could be better implemented when the specific features and capacities of local communities are taken into consideration.

### 1. Introduction

The effects of climate change on gender constitute a major component in the international agenda that mostly focuses on less developed regions of the world. Researchers' attention to gender inequalities and climate change has been increased in recent years while the need for the inclusion of gender issues in the international policy discourse has been increasingly addressed (Djouidi et al., 2016; Jost et al., 2016).

A multitude of global policy aspects pertaining to climate change and gender inequalities has been stressed by renowned global organizations. Indicatively, the World Health Organization (WHO, 2011) has reported the potential inequalities emerging from climate change to women's health, while the International Labour Office (ILO, 2012; 2016) has investigated the deterioration of

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labour conditions. The insecure employment and low-income predictions as a result of climate change have been underlined (World Bank, 2015) while the Food Agricultural Organization has conducted a series of studies on climate change, gender nutrition and food access (FAO, 2010, 2013).

The gender-differentiated impacts of climate change on women's and men's assets in developing countries and the policy measures to be taken have also been well reviewed (Goh, 2012; Tschakert and Machado, 2012; Farhana, 2014). There are numerous in-depth and country-specific analyses pertaining to the above field areas, often clustered in well-elaborated web platforms (Eldis, 2015; OECD, 2015; World Bank, 2015).

Many global and regional studies suggest that the rural communities within less developed parts of South Asia offer some representative examples where climate change will aggravate existing gender inequalities. The well-being status of households, the social differences and the access to information, services and natural resources are acknowledged as potential domains of gender inequality in South Asia (Arora-Jonsson, 2011; Girarda, 2015; Gentle et al., 2014). Research findings indicate that men and women may be impacted differently by weather extremes in India, not only at the household, but also at the community, level (Ahmed and Fajber, 2009; Rao, 2010; Sugden et al., 2014; Palanisami et al., 2015).

Indicatively, the states of Andhra Pradesh and Telangana in South India have faced consecutive severe droughts the last decade, which highly deviated from the mean climatic trends of the region. A climatic variability was already noticed in various regional models as a derivative of the wider climate change developments occurring within the last century (Rupa Kumar et al., 2006; Jeganathan and Andimuthu, 2013; IPCC, 2014). Future climate projections emphasize that extreme weather events will intensify in the region by exacerbating drought occurrences (Hijioka et al., 2014; Palanisami et al., 2014).

The recent droughts in Andhra Pradesh and Telangana have resulted in human losses, severe impacts on agricultural production and have unequally affected the livelihoods of male and female inhabitants in rural communities (GoAP, 2015a).

The current studies on gender and climate variability are prevalently based on qualitative analysis by limiting the interpretation in measurable outputs. Further, the validation of the qualitative results is rarely verified through quantitative assessment. To this end, the present study initially introduces a qualitative analysis to evaluate the existent potential inequalities between genders and the potential aggravation of these inequalities induced by climate variability in South India.

In turn, a quantitative assessment clarifies the consistency of the qualitative results through descriptive and inferential statistical techniques. The high difficulty to distinguish the effects derived from pre-existing social deprivations and drought induced impacts is addressed. Practical policy recommendations are given for the designing of policy measures at the local and regional level. The suggested approach was tested in fifteen (15) villages situated in Andhra Pradesh and Telangana states as representative drought prone cases of South India.

## 2. Methodology

### 2.1. Gender-differentiated impact framework

The suggested framework is designed through a step-wise approach by indicating the activities to be taken in each stage while the relevant tools and sources are exhibited.

As shown in Fig. 1, the most significant areas that may host gender inequalities were traced by the relevant literature review, experts' opinions and consultation with local administrative officers. In turn, a qualitative analysis was introduced through a Focus Groups technique to evaluate the existing potential inequalities between men and women and the potential aggravation of these inequalities as a result of drought events. Further, a quantitative assessment clarified the consistency of the qualitative results through the introduction of surveying and algebraic techniques. Also, descriptive and inferential statistics underpinned the clarity of the quantitative results.

Policy recommendations are given for the designing of climate variability policy measures with respect to the gender inequalities met in the study areas and the profile of each village. A more detailed description of each activity is presented in the following sections.

### 2.2. Mapping gender inequalities

A relevant literature review was conducted to identify the most significant areas that may host gender inequalities. Studies show

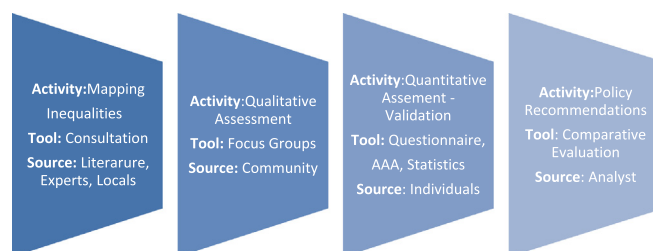


Fig. 1. Evaluation framework for gender differentiated impacts from weather extremes in South India.

Note: AAA = Attribute Agreement Analysis.

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