Comparative valuation of ecosystem services across countries and genders

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Abstract

Ecosystem services (ESs) are essential for maintaining livelihoods and enhancing well-being. ESs are perceived and valued differently across geographic contexts and gender groups. This study conducts a cross-country and gender-based comparison to assess patterns in the sociocultural valuation of ESs such as crop, fuel resources, climate regulation, recreation, and spiritual and religious services. A combined dataset of 550 respondents from Brazil, Ethiopia, Namibia, Sudan, and Zambia in different natural ecosystems including watershed, semi-coffee forest, and forest was analysed using both exploratory and modelling statistics techniques. When analysing data for each country based solely on gender, Mann-Whitney U tests showed no differences in ES valuation between women and men in Namibia, Zambia and Ethiopia. In Sudan, men valued crop and climate regulation more highly, while women placed greater value on fuel. In contrast, women in Brazil valued climate regulation more than men. These findings indicate that gender plays a role in ES valuation, but its influence varies based on geographic context. In combined datasets across all countries, and when considering all independent variables (gender, age, and education), beta regression models indicated that gender was not statistically significant. However, education was positively associated with higher valuation of several ESs, particularly crop, fuel resources, climate regulation, and recreation. Regarding age, only the middle-aged group (30 to 60) showed a significance effect for climate regulation, valuing it more than both the younger (17 to 29) and older (above 60) age groups, suggesting a non-linear relationship between age and ES valuation. Our results show that education and age are the most influential factors in ES valuation when combining data across all countries, whereas gender is not statistically significant. However, when analysing each country separately, gender-based differences in ES valuation emerge in specific contexts. This suggests that sociodemographic variables should be considered alongside geographic context when conducting ES valuation studies. These findings contribute to future ES valuation by highlighting the importance of place-specific, contextual approaches that incorporate multiple sociodemographic factors rather than applying uniform gender-based assumptions across different regions.

Keywords: Age groups, cross-country comparison, ecosystem services, education, gender differences, sociocultural valuation