

ABSTRACT

INVESTIGATING FACTORS THAT PREDICT COMMUNITY VULNERABILITY TO URBAN FIRE: THE CASE OF BAHIR-DAR CITY

by

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It is well understood that the masters program on disaster risk science and sustainable development is the first in its type and status in Ethiopia. Accordingly, problems from hazards, vulnerabilities and disasters have not yet been touched from study and prevention perspectives. This situation has forced the country to stay under drastic effects of continuous and shifting/concurrent disasters without proactive and adaptive measures. As a result, we are mostly submissive to hazardous phenomena and their effects of economic, social, natural and political deterioration those jointly have loaded serious impoverishment over us. The case of fire disasters occurred at Bahir Dar city in 2008 that devastated huge amount of property (estimated in many millions of birr) and consequently worsened the life of many thousands of people, among the other previous fire events, is concrete evidence of the above mentioned problem. The lack of study made on fire especially on urban fire, its destructive events and even its incidence, has compelled me to do this research to solve the problem that has been mistakenly considered as having been controlled and, hence, obscured with covers of ideally existing resistant buildings and reliable early warning system, particularly in developing countries.

To this end, I have studied factors that predict vulnerability of communities in Bahir Dar city to urban fire. The city was categorized into three modes of living: using houses for business only, for residence only and for both residence and business. A model, having eight (8) constructs, two (2) vacant spaces for each of them to fill with variables as social indicators (in total 16 indicators) and a dependent variable, was used to do the research. This model was proposed by Rhodes & Reinhold in 1998 for measuring community vulnerability to natural hazards especially fire. An adaptation was made to the model by merging the construct called 'values' into the other

construct called 'attitude' and, hence, reducing the constructs to seven (and indicators to 14) as well as by filling out the two vacant spaces for writing indicators under each construct with variables that are believed pertinent to the case of Bahir Dar and the respective constructs as factors of vulnerability.

The main body of this study was a household survey with 117 closed-ended questionnaire questions for 105 sample cases selected randomly in each of the three house use categories, which total to 315. Observation, secondary data review as well as focus group and group discussion were the other means of data collection to consolidate and triangulate the survey method. The data analysis methods employed were mainly SPSS, Logistic Regression and chi-square for the quantitative information of household survey and narrative descriptions and theme analysis for the qualitative one gathered through group and key informant interviews.

Predictive relationship of independent variables with the dependent one; i.e., vulnerability has been identified. The rank of communities using their houses for different purposes to fire hazard vulnerability and the issue of whether or not a study zone is vulnerable to fire hazard have also been determined. Vulnerability index has again been proposed for each of the three house use zones. Results of the logistic regression revealed that:

- In Sefene Selam *kebele*: behavior, demography, built structures, economy, and society, as constructs, and practice, exposure to ignition, average monthly individual income, flammable materials, view on responsibility, social network, awareness, and sex, as specific indicators, significantly predict community vulnerability to urban fire.
- In Shumabo *kebele*: economy, built structures, society, attitude, demography and environment, as constructs, as well as exposure to ignition, diversity of income source, social network, average monthly individual income, awareness, gender, perception on preventability, political capital, view on responsibility and ignition sources, again as specific indicators, significantly predict community vulnerability to urban fire.
- In Shimbit *kebele*: all the seven constructs: attitude, environment, built structures, demography, society, behavior and economy were valid as well as flammable materials, perception on preventability political capital, social network, practice, view on

responsibility and density, as specific indicators, have been found to serve significantly predict community vulnerability to urban fire.

Results of chi-square and standardized residual analysis indicated that Sefene-Selam *kebele* with houses only for merchandising is vulnerable and first, Shumabo *kebele* with houses for both living and merchandising is vulnerable and second, and Shimbit *kebele* with houses for living only is not significantly vulnerable and third in rank of community vulnerability to urban fire.