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Socio-Economic Impact of Super Typhoon Harurot in San Mariano, Isabela, the Philippines

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Summary. — This paper reports on the socio-economic effects and coping mechanisms of farm households affected by super typhoon Imbudo in San Mariano, Isabela, the Philippines. Estimations of economic losses are given based on 150 interviews among the rural population. The relative loss per crop as part of the annual household income for yellow corn, banana, and rice were 64%, 24%, and 27%, respectively. Unexpectedly, most farm households did not change their agricultural strategies and continued with "business as usual" (78%). The main explanation for this lack of adaptation is found in the cultural and societal structure of farm households and their traders. This paper concludes with a short-term and long-term vulnerability and resilience analysis for the households, the socio-agricultural system, and the ecological system.

Key words — South East Asia, the Philippines, typhoon, socio-economic analysis, household analysis, disaster coping mechanisms

1. INTRODUCTION

The Philippines is considered, both geo-physically and meteorologically, one of the world's natural hazard "hot spots," and suffers more natural hazards (e.g., earthquakes, volcanic eruptions, typhoons, floods, droughts, and landslides) than any other country, with an average of eight disasters per year (Bankoff, 2003).

Typhoons are tropical cyclones with very strong winds, of over 118 kilometers per hour, whose epiphenomena (e.g., landslides, storm surges, and floods) cause the largest loss of life and property in the Philippines (of all natural disasters). Each year about 20 typhoons, equivalent to 25% of the global occurrence of typhoons, occur in the Philippine Area of Responsibility. Most of the typhoons occur during the rainy season (July until September). The data analysis of the typhoon events during 1880–1994 seem to indicate a slow shift towards the end of the year, that is, the number of typhoons in the rainy season seems to decrease over time, while the number of typhoons which occur in December have increased. The island Northern Luzon, in which the province Isabela is located, receives by far the most tropical cyclones, as well as the highest number of remarkable typhoons (Bankoff, 2003).

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Natural hazards such as super typhoons are recurrent phenomena that may have devastating effects on the socio-economic development and environmental conservation programs, but foremost on the personal lives of the people in the disaster area. In land use change studies, environmental conservation studies, and economic development studies, understanding the effects of a disaster is pivotal, because they can drastically change the agro-ecological and political-economic landscape. The socio-economic effects of a disaster change the short-term and long-term motivations and options of farming households. Hence, on the aggregate level, they change the land use and land cover. Furthermore, these socio-economic effects on the farming household level change the economic development perspective of the farming household (micro-level) and of the region (the meso- or macro-level).

In this paper, a disaster is defined as the consequence of a process that involves a potentially destructive agent (hazard) and a population in a socially created state of vulnerability. Disasters are seen as a measure of a society's successful adaptation to certain features of its natural and socially constructed environment in a sustainable fashion. Disasters emerge as a result of human–environmental interactions; they arise when there is a lack of "mutuality," a measure of how well a society is adapted to the environment, and how well that environment fares at the hand of human activity. As a society interacts with its environment, it engages in a series of processes over which it has incomplete control and incomplete knowledge, particularly over long periods of time. It is these conditions that turn a natural phenomenon or hazard into a social crisis, a disaster (Bankoff, 1999, 2003).

This research primarily investigates the direct economic effects of super typhoon Harurot (international codename: Imbudo) and the socio-economic implications in the municipality of San Mariano, Isabela, the Philippines. This area was hit by the super typhoon on July 22, 2003. Another focus of this micro-level, actor-oriented research are the farmers' decision making and coping strategies under such extreme circumstances, within their structural and cultural context. The behavioral strategies of these primary actors, as well as the behavioral strategies of the secondary and tertiary actors are analyzed by combining economic disaster study theories (Bull, 1994) and the Action-in-Context (AiC) framework (De Groot, 1992).

After the introduction of the research background and the explanation of the theoretical framework and methodology in Section 2, Section 3 continues with the results of the analysis. Section 4 discusses the outcome and implications of this analysis. In Section 5, we conclude by placing this paper within the context of ongoing scientific debate regarding hazards and disasters.

In this scientific debate the focus of research has been primarily on societal responses to hazards and too little on the processes that produce disasters (Blaikie, Cannon, Davis, & Wisner, 1994). This reasoning implies a shift from a static effect approach (often with an economic focus) toward a more dynamic, politico-economic focus. Blaikie *et al.* (1994) further suggest, supporting this dynamic, process-oriented approach that root causes of a disaster reflect the distribution of power in a society. Dynamic pressures direct the root causes toward particular forms of insecurity that have to be considered in relation to the types of hazards facing those people. Accordingly, disaster is defined as an expression of social vulnerability (disaster is the result of the underlying community structure; of an internal and social process). The vulnerability of people is primarily rooted in social processes and underlying causes which may ultimately be quite remote from the disaster event itself. It is a means for understanding and explaining the causes of disaster (Blaikie *et al.*, 1994). As such, a disaster cannot be regarded as a discrete, static event, because by doing so it becomes separated from the activities and processes that create its context. Moreover, a disaster is not only part of its context; it is in part also caused by its context. This context is not only physical, but social, institutional and political as well.

Vulnerability is the opposite of resilience, where resilience is low, vulnerability is high, and vice versa. In agro-ecology, "resistance" describes the ability of a farming system to resist the impact of a disturbance, while "resilience" is the ability of the land manager and its wider socio-ecological system to recover from a disturbance. Resilience has been discussed within ecological theory, systems analysis, and disasters studies (Tobin, 1999). It is a quality that enables an organization, ecological system, household, or nation to recover quickly from a disaster. At the community level, class, caste, gender, ethnicity, age, level of education, and access to resources all determine vulnerability (Blaikie *et al.*, 1994; McGuigan, Reynolds, & Wiedmer, 2002).