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Analysis

Poverty, sustainability, and household livelihood strategies in Zagros, Iran

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ABSTRACT

The study addresses the two intertwined challenges of rural poverty and forest degradation in rural areas of Zagros, Iran. For a watershed in Zagros, a quantitative analysis based on the sustainable livelihood framework approach is used to identify household livelihood strategies, analyze livelihood choices, and investigate which strategies are most sustainable. The study revealed that most households (64%) follow a mixed strategy with a combination of forestry, animal husbandry, and subsistence agriculture. Households following a livelihood strategy that is highly dependent on forest extraction and livestock grazing (27%) are the poorest, whereas those that combine cultivation of commercial crops with non-farm work (9%) are able to earn higher incomes. The results also give some evidence of an Environmental Kuznets Curve: households that both adopt a mixed strategy and fall into the middle-income category are responsible for the highest overuse of forest resources and pasture. Since the end of 1980s, a number of households have shifted from a strategy based on forest and livestock to a strategy of mixed practices. An increasing share of households is adopting a strategy of non-farm and/or commercial practices, as well as outmigration to urban areas.

1. Introduction

Poverty and environmental degradation remain central issues in political debates in many developing countries (Cao et al., 2010; Sunderlin et al., 2005), and such issues are emerging in Iran. Sixty years of planning have led to improved living conditions (Klantari et al., 2008) and declining poverty (World Bank, 2004), but there is still a long way to achieve environmentally sustainable rural communities in the country (Asian Productivity Organization, 2004; Klantari et al., 2008). The mountain range of Zagros extends across parts of Iran, Iraq, and Turkey. It covers about 20% of Iran's territory and is a politically strategic and economically valuable region (Fattahi, 1994). Historically, the Zagros Mountains have been isolated from most economic activities and formerly were principally habited by nomadic tribes. In recent years, national efforts to develop rural areas have led to better infrastructure, improvements in the socio-economic situation, and population increases. The majority of the population in the Zagros Mountains is now settled, and nomads make up approximately 10% of the population. However, in some areas in the Zagros Mountains, poverty remains high (UNDP, 2004).

The Zagros Mountain's ecosystem and its biodiversity have been severely degraded. Soil erosion rates are in the range of 2–10 t per hectare (ha) per year, while 6.5 million ha (54%) of forest areas have been lost since the 1960s (National Biodiversity Strategy and Action Plan Secretariat, 2000). Forest clearance for cultivation and forest degradation due to overharvesting and overgrazing have led to conflicts over natural resource management (Fattahi, 1994; Fattahi et al., 2000; Jazirei and Rastaghi, 2003; Pourhashemi et al., 2004; Sagheb-Talebi et al., 2004; Shakeri et al., 2009; Soosani et al., 2009). For more than 40 years authorities have tried to stop deforestation and manage the Zagros forests through various forest management plans (Ebrahimi Rastaghi et al., 2003; Ghazanfari et al., 2004), but with little success.

Rural development and forest management in the region are complicated due to biophysical constraints, including low and uncertain levels of precipitation, infertile soils, and steep slopes (Klantari et al., 2008). A number of social and economic factors have added to the challenges. Since some of these communities living in Zagros shift to mountain pastures during summer, their villages in the valley are unoccupied for a few months every year. As a consequence of limited access to markets and infrastructure, people depend heavily on the natural resource base (Klantari et al., 2008). Extensive and low-yield agricultural activities often mixing crops and livestock are dominant in the livelihood strategies followed by the nomadic and semi-nomadic households in the region (Fami et al., 2007).

A large percentage (36%) of Iran's poor rural and nomadic households live in Zagros (World Bank, 2004). Many villagers in Zagros rely on natural resources, especially forests, for their livelihood (Fattahi, 1994; Ghazanfari et al., 2004). Their reliance has been considered one of the main reasons for forest degradation (Fattahi, 1994; Jazirei and Rastaghi, 2003). High reliance on forest resources and resulting

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unsustainable uses, and land degradation are important to identify and implement ways for people to break out of poverty. Further, policy-makers in Iran lack information on means to secure sustainable rural development (Klantari et al., 2008; World Bank, 2004) and sustainable use of forest resources in Zagros (Ghazanfari et al., 2004). Although there is a rapidly growing body of literature on using sustainable livelihood frameworks in Iran, most researchers have focused on sustainable agriculture (Fami et al., 2007; Hassanshahi et al., 2008; Karami and Mansoorabadi, 2008; Klantari et al., 2008; Rezaei-Moghadam and Karami, 2008; Rezaei-Moghadam et al., 2006; Salehi, 2009), and only few cases have dealt with forestry (Salehi, 2009). There is a lack of empirical information and research on existing livelihood strategies in Iran in general, and in Zagros in particular. The present article presents a new case study of sustainable livelihood from a little-studied region in Iran. Similar studies have previously been carried out in poor-income countries, for example, Ethiopia and Uganda, but the present study is the first one to focus on a middle-income country. Thus, the main objective of the present study is to provide Iranian policy-makers with information that may help them in the formulation of more effective policies to achieve sustainable rural development.

The research questions are as follows: (1) What are the main livelihood strategies pursued? (2) What factors influence the choice of the livelihood strategies? (3) What are the outcomes of the strategies? and (4) What were the main changes in livelihood strategies between 1988 (i.e. the year when the war between Iran and Iraq ended) and 2008?

The conceptual livelihood framework is outlined in Section 2. The research is based on data from a watershed in southern Zagros, where detailed household, village, and natural resource data were collected. The data and analytical methods are presented in Section 3. The results based on factor analysis, cluster analysis, and binary and multinomial logit regressions are presented in Section 4. Three livelihood strategies are identified and discussed further in Section 5, together with their outcomes in terms of income levels (poverty) and sustainable forest and pasture use. The article concludes and draws some policy implications in Section 6.

2. Conceptual Framework

A livelihood strategy (LS) may be described as the capabilities, assets, and activities required as means of living (Chambers and Conway, 1992) and may be defined as sustainable when it can cope with shocks and maintain or enhance its capabilities and assets, including the natural resource base, over time (Carney, 1998). Understanding poor people's livelihoods, whether sustainable or not, has become important within international development literature and policy debates (Cahn, 2002). The concept of sustainable livelihood (SL) was promoted by the Department for International Development (DFID) in the late 1990s (DFID, 1999). Since then it has been used in a large number of studies in developing countries (Barrett et al., 2001 in African countries; Birch-Thomsen et al., 2001 in Tanzania; Bird and Shepherd, 2003 in Zimbabwe; Ellis and Bahiigwa, 2003 in Uganda; Pender, 2004 in Central America and East Africa; Pender et al., 2004a in Uganda; Brown et al., 2006 in Kenya; Bhandari and Grant, 2007 in Nepal; Babulo et al., 2008 in Ethiopia; Berg, 2009 in Nicaragua; Salehi, 2009 in Iran).

The conceptual framework of the present study is based on the literature on SLs, and focuses on three aspects: livelihood platforms, livelihood strategies, and livelihood outcomes (Fig. 1). A household's choice of strategy is conditioned by its assets holdings (Babulo et al., 2008; Bebbington, 1999; Coomes et al., 2004; Ellis, 2000; Jansen et al., 2006). DFID (1999) categorized households' asset into five categories: human, natural, physical, financial, and social capital. Jansen et al. (2006) added a sixth type labeled 'geographic determinants of comparative advantage'. In the present study we subdivide this location capital into two main parts: environmental state and infrastructure. Location is a complex and composite variable. Our central hypothesis is that location has important effects on households' livelihood choices, in addition to the household-specific assets. For example, in villages with poor infrastructure and facilities and rough terrain, alternative livelihood strategies could be livestock production and collection of forest products. Hence, development strategies that facilitate these two livelihood strategies are more likely to be effective. On the other hand, in villages with gentle terrain but poor infrastructure, investments to improve market access and infrastructure might facilitate a process of sustainable development (Pender, 2004).

The second part of the conceptual framework relates to households' choice of strategy. Previous studies have used income composition (Babulo et al., 2008; Birch-Thomsen et al., 2001) or allocation of labor and land (Jansen et al., 2006) to identify household LSs. We used households' income shares of different activities as the means to identify LSs. Asset returns constitute a primary source of motivation for households to allocate their assets to different activities (e.g. cropland may be allocated to the most profitable crops, and trees may be used for the most profitable produce (wood or fruit)).

The specific strategy pursued by a household will generate a set of outcomes (Fig. 1), such as higher (or lower) income, and sustainable (or unsustainable) use of the natural resource base (Carney, 1998; DFID, 1999; Ellis, 2000; Scoones, 1998). In this study, we consider two outcomes of an LS i) poverty reduction and ii) sustainability of natural resource use.

Rural livelihoods are dynamic; for example, livelihood outcomes will affect households' asset holdings in later periods through savings

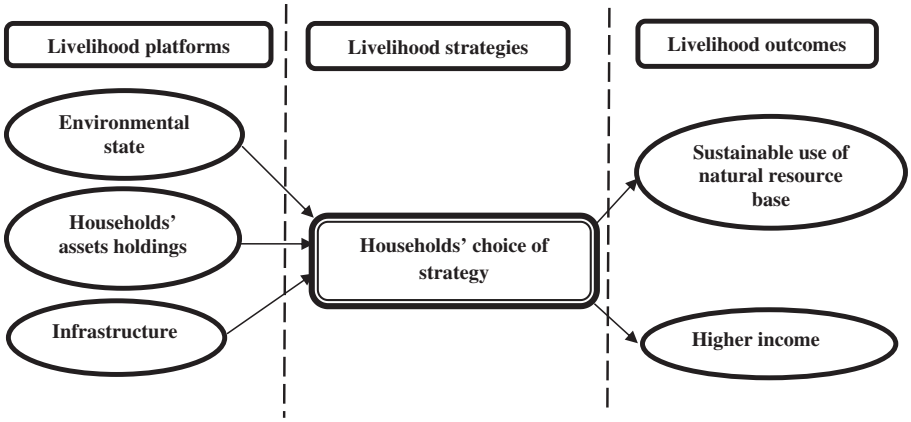

Fig. 1. Determinants and outcomes of livelihood strategies (authors' construction, based on Carney, 1998; DFID, 1999; Ellis, 2000; Scoones, 1998).