

A LIVELIHOOD CENTRED LAND DEGRADATION ASSESSMENT FRAMEWORK (LILAF) for DRY AREAS

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Background

In dryland climates, about 1000 million ha are estimated to be degraded: 467 million ha by water erosion, 432 million ha by wind erosion, 100 million ha by chemical deterioration and 35 million ha by physical deterioration (GLASOD approach, Oldeman *et al.*, 1991). Degradation of drylands results in a deterioration and loss of unique ecosystems and their endemic components of biodiversity, as well as in the breakdown of traditional livelihood systems and major migration flows.

The challenge is to overcome land degradation and to ensure the sustainable use of the resources to secure food supply, conserve the environment and alleviate poverty (Steiner, 1996). Land degradation processes and its consequences are well-known and quite well described. However, it is difficult to grasp land degradation in all its complexity, and there are usually conflicting opinions about causes and consequences. Thanks to authors such as Blaikie and Brookfield (1987), socio-economic reasons for land degradation got more attention. In their famous 'Land Degradation and Society', they argued that "While the physical reasons why land becomes degraded belong mainly in the realm of natural science, the reasons why adequate steps are not taken to counter the effects of degradation lie squarely within the realm of social science". However, socio-economic studies on land degradation also tend to be single focussed.

Nowadays, it is well recognised that land degradation is a complex problem, which is influenced by many bio-physical and socio-economic factors. Nevertheless, the complex interactions between socio-economic and bio-physical factors are usually not well covered. This indicates that there is a need for a holistic and user-friendly assessment tool to analyse land degradation, which can provide relevant entry points for action research and sustainable land management. A holistic approach is proposed via the Driving forces – Pressures – State – Impact – Responses (DPSIR) framework (Fig. 1; OECD, 1993; EEA, 2000). It is an approach that links major drivers in society with land degradation processes, and its responses. The DPSIR framework is based on the assumption that economic activities and society's behaviour affect environmental quality. Although it is a good step forward, this integrated framework still has several shortcomings when applied to practical case studies at community level.

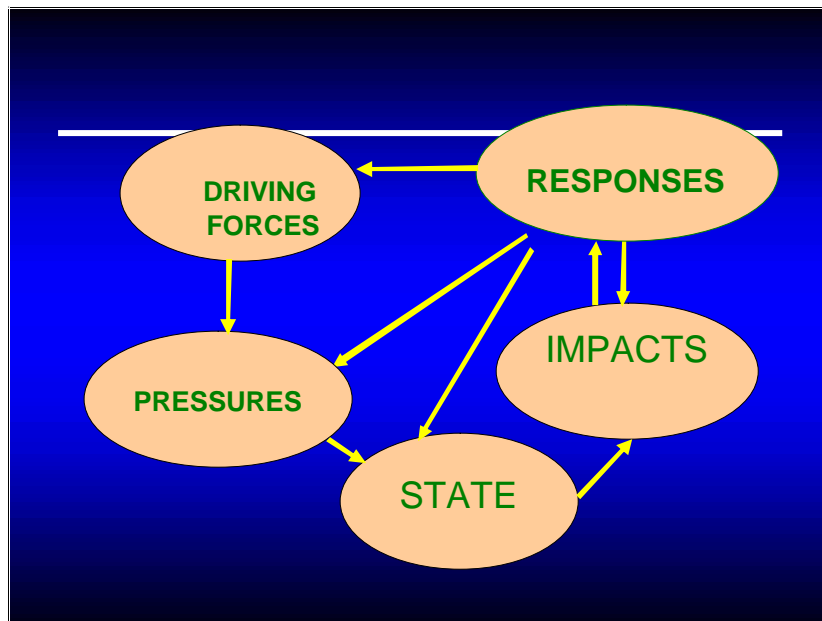


Figure 1: DPSIR model (EEA).

Objective and methodology

The objective of this study was to field-test, operationalise and possibly improve the DPSIR framework at the community level in dry areas subjected to land degradation.

The community level was focussed in this study, as this is the level where most of the natural resource management takes place. For influencing factors at higher levels (e.g. policies, markets), only those ones which have an impact on natural resources management at community level were incorporated. Data were collected via semi-structured interviews, soil sample analysis, and previous research results in the case study villages.

An alternative framework for land degradation assessment

DPSIR has for sure its merits and it overcomes some of the problems encountered by the previous models, but after using the DPSIR approach at community level in concrete case studies in NW Syria, a number of disadvantages became clear:

- It is not always clear what represents a “Driver”, “Pressure”, “State”, “Impacts” or “Response”. These definitions are a bit dubious and depend on the perspective from the stakeholder.
- There is not always a simple linear relationship between pressures and land degradation, and between land degradation and land management decisions. Land users make decisions based on a whole range of short and long-term considerations, of which the status of the land is only one. In DPSIR, the links between livelihood strategies, land management decision making, and land degradation are not sufficiently elaborated.
- Land degradation expresses itself in different ways at different scales. The multi-scale nature of land degradation and its interactions is not well incorporated.
- DPSIR only highlights negative changes, such as ‘pressures’ and ‘degradation state’. There might also be positive changes, such as opportunities for livelihoods, farmer investment in sustainable land management, and land resilience. A single-sided focus on negative processes will not allow to obtain a holistic understanding.

Considering that most of the land management decisions are made at the household level, an alternative approach is proposed: the “Livelihood-centred Land degradation Assessment

Framework” (LILAF, Fig. 2). The major differences between DPSIR and LILAF are the following:

- The single cycle of cause-and-effect has been replaced by two interconnected cycles: one socio-economic cycle and one land management cycle.
- Besides pressures, also opportunities for livelihood and sustainable land management were taken into consideration.
- The interactions between scales have been made more explicit (i.e. policies-communities-households, region-catchment-farm).
- The focus is mainly on the “rate of degradation”, and not so much on the actual “degradation state”.

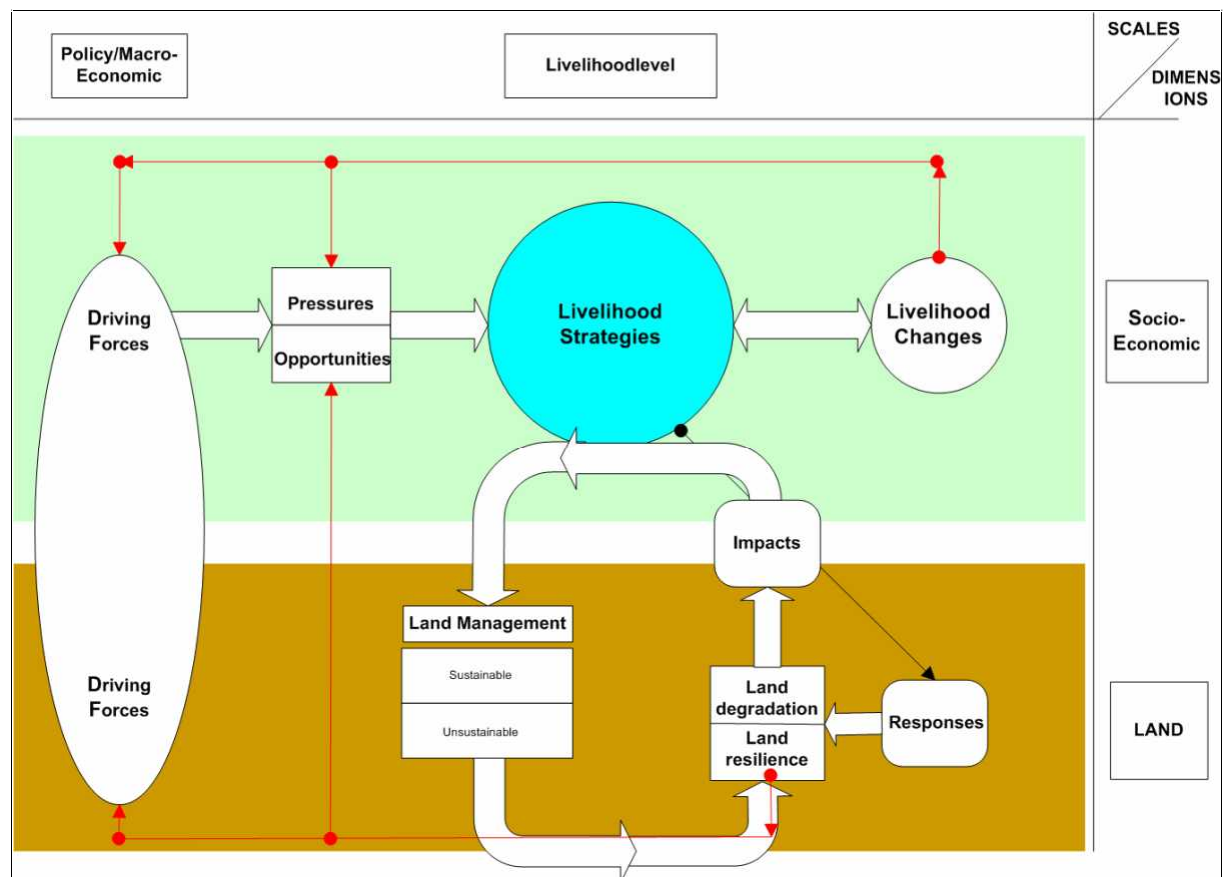


Figure 2: A visual presentation of the “Livelihood-centred Land degradation Assessment Framework” (LILAF).

Case studies on land degradation dynamics in NW Syria

In order to evaluate the tool under diverse land degradation scenarios, three villages in contrasting agro-ecosystems from NW Syria were selected:

- Pastoral system (Hammam): Farming system dominated by extensive sheep rearing. Gentle undulating plain border by rocky hill slopes. Annual rainfall 150-200 mm.
- Agro-pastoral system (Harbakiyah): Farming system dominated by barley cultivation, sheep rearing and few cash crops. Open valley floor surrounded by rocky hill slopes. Annual rainfall about 250 mm.
- Horticultural farming system (Yakhour): Steep mountain landscape dominated by olive orchards and few remaining forests. Annual rainfall about 600 mm.

The major driving forces for the agro-eco systems are the fast growing population, diverse policies for specific agro-ecological zones (e.g. cultivation ban in the steppe, irrigation ban at the 200-250 mm/year zone), and the diverse bio-physical conditions. The major pressures on the livelihoods are the lack of cash for investments, population pressure and the decreasing social relationships. On the other hand, there are also new opportunities for livelihoods, such as marketing opportunities for certain cash crops or animal products, and off-farm wage labour opportunities.

A striking outcome of this study is that despite obvious land degradation at the 3 villages, no or very limited responses were observed at the three villages. The reasons for lack of response could be deduced via LILAF: Livelihood strategies are based on household objectives, which are strongly influenced by pressures and opportunities. Land degradation is one of the elements that add to the total livelihood pressures. It is the household perception of the relative impact of land degradation to their livelihoods, which will influence their decision making related to land management.

The case studies showed two different scenarios:

- Type I (degraded villages): The first one is found in the case-studies of Harbakayah (pastoral system) and Hamam (agro-pastoral system). Land degradation is very obvious in the landscape, but is the result on centuries old degradation processes (probably from Roman times) and people got accustomed to live in such a degraded environment. The present rate of land degradation is quite limited, and it is simply not important enough compared to other livelihood pressures and needs to make major investments. This reflects in the limited awareness and concern about land degradation.
- Type II (degrading village): At Yakhour (horticultural system), the situation is quite the opposite. Although the landscape is less degraded and soil fertility is better compared to the other 2 sites, the present rate of soil erosion is very high and started only a few decades ago. Most households are very much aware about the occurrence of land degradation in their fields, its negative impact on olive productivity, the need for soil conservation. and possible conservation measures. However, as most households are too busy with short-term survival, they do not have enough cash available to invest in conservation measures. In addition, many male farmers are absent for extended periods to earn cash from off-farm wage labour.

A consequence is that resources for research and development are much better used in a Type II village, although present state of land degradation looks less severe than in Type I villages. The reasons are that in Type II villages, farmer awareness and interest in land conservation are higher, and that possible impact is more promising. In other words, the return of investment in research and development are much higher in a village such as Yakhour.

Conclusions

The proposed LILAF approach is a practical and holistic tool to describe land degradation dynamics at the community level in a structured and relative easy way. It can be especially useful to find out why farmers manage their lands in certain unsustainable ways, or find out of the reasons why farmers' responses to land degradation are inadequate. This understanding is essential to make interventions for sustainable land management more relevant. As such, , LILAF is a sort of rapid rural appraisal (RRA) which helps to find out the critical points in the livelihoods-land degradation interaction, and which can provide suitable entry points for a scientific and/or development agenda. Finally, the visual flow charts of a LILAF assessment can be very useful to increase awareness of stakeholders, such as farmers and decision makers about ongoing degradation and risks, and to prompt them to take action or to ask further questions from technical advisers.

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