POLICY FRAMEWORK ON LAND DEGRADATION FROM A POST CONFLICT PERSPECTIVE OF BOSNIA AND HERZEGOVINA

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Abstract

Bosnia and Herzegovina (BIH) is developing country facing extensive land degradation. As a post-conflict society with underlying poor socio-economic conditions, the value of land and its degradation status are not perceived to be an important problem neither a priority to address. BIH currently exists as a decentralized state, where land and land resources are under exclusive jurisdiction of two entities and one district, rather than state-level legislation. Complex land related administration between entities functioning independently from each other, and thus not sinchronized, leads to frequent political conflicts about land property, and limited data exchange which may exacerbate current land degradation. This paper investigates (i) the institutional setting and policy framework related to land, discussing the effectiveness and limitations of the current policies in this post-conflict society; (ii) stakeholders' perception of land degradation under such complex institutional and policy structures; and (iii) the current state of land degradation, with a focus on soil erosion as one of the most important indicators in BIH. Communication and cooperation are major challenges for sustainable land management in post conflict societies. The existence of a policy framework is important, but not sufficient if implementation is weak and the perception of decision makers differs. Limited data on the impact of 1992 War on soil and land status represents an additional challenge to combat land degradation. Reliable national data on land degradation are crucial for assessment and development of strategic and policy frameworks devoted to those issues and to raise awareness on how to foster their implementation.

INTRODUCTION

Land degradation is a global concern and a major threat to the livelihoods and well being of people across the globe (Rodrigo-Comino and Cerdà, 2017, Ferreira et al., 2018, Scholes et al., 2018, Willemen et al., 2020). The European Environment Agency (EEA) and the Joint Research Center (JRC) of the European Commission have published numerous papers and reports describing soil degradation problems in Europe (EEA, 2000; 2003). In post conflict countries, however, soil and land degradation data are often missing due to a lack of historical data, as in Bosnia and Herzegovina (BIH) which often appears on European soil maps as an area without data. In fact, in BIH one of the most significant impacts of the Civil War, recorded between 1992 and 1995, was the destruction of historical land data, including land records. Even 25 years after the conflict, land data availability is still scarce, and represents one of the major challenges to assess land degradation status and implement environmental policy frameworks (Kapović Solomun, 2018; Tošić et.

al., 2019). Policy and legal frameworks of BIH recognize the importance of land, but significant barriers still exist for the effective implementation of policies (Marković and Brujić, 2017).

Conflicts often have an underlying land dimension (Guterras, 2009; Putzel, 2009), thus how post-conflict societies address land issues is a critically component of post-conflict reconstruction (Betge 2019). The overarching challenges regarding land degradation drivers and impacts are exacerbated by the post conflict political environment, which may have weakened institutions and policy frameworks. Unsatisfactory levels of communication among governmental institutions, and political infighting are usually prioritized over environmental problems. Thus, addressing land issues immediately after conflict and during the subsequent years is very complex and multifaceted (Leckie, 2000).

In BIH, the Civil War was an important factor influencing current land administration structure. Due to decentralization of BIH, each one of the three administrative units (Republic of Srpska entity (RS), Federation of Bosnia and Herzegovina entity (FBIH) and Brčko District (BD) has their own land administration and jurisdictions on land, except those regarding state level. Due to post conflict weak political communication between entities, land administrations are not synchronized and cooperation among them is not sufficient. Nevertheless, even given the complexity of the post-conflict environment in BIH, the country has significant commitments to reduce land degradation. BIH ratified the United Nations Convention to Combat Desertification (UNCCD) in 2002, recognizing the importance of land degradation and commitment for the implementation of the Convention. In 2014, BIH voluntarily committed to the Land Degradation Neutrality (LDN) Target Setting Process. Between 2016 and 2018, LDN was implemented separately by each administrative unit across BIH, contrary to other countries which conducted the LDN target setting process at the national level. Sustainable soil management emerged from LDN traget setting process as an issue of utmost importance for BIH (Kapović Solomun et al., 2018; Čustović and Ljuša, 2018), wich aligns with the United Nations and EU priorities that underline soil protection as a key land-use policy issue (Keesstra et al., 2016a; Cowie et al., 2018, Metternicht et al., 2019). Well-designed and implemented policies are a prerequisite for sustainable land management in every natural ecosystem (Muñoz-Rojas et al., 2015).

Besides the political context, additional current and emerging issues regarding land degradation in BIH are associated with migration, during and immediately after the conflict. BIH is located along the migration route to Western Europe from southern Asia and the Middle East, which has contributed to significant migration from outside the country. Many areas of abandoned land are now observed, particularly in rural regions, and sometimes land is not available to farmers because of property right issues. In fact, conflicts regarding land property rights between entities and among refugees from other entities represent the main impact of the war in BIH. Additionally, in post conflict period, land mines and associated contamination cover approximately 2.1% of BIH territory, as a direct consequence of war (Report, 2018).

The current complex political and administrative structure of BIH, together with land tenure issues and land mines represent common challenges to post-conflict societies (Todorovski et al., 2012; Unruh and Wiliams, 2013), namely regarding the implementation of environmental policy frameworks and mitigation of land degradation. This paper aims to (i) assess the policy framework related to land degradation, (ii) investigate the stakeholders' perception on land and their attitude regarding existent legislative and strategic frameworks related to land degradation; (iii) report on the state of the land and examine soil erosion as a key driver of land degradation. This study focuses on BIH case study, and first reviews its policy and institutional framework on land, and then reports the results from a field survey comparing the perceptions of land degradation of three different groups of stakeholders: decision makers, land owners/users and non-government sector. The study also reports on pre- and post-conflict soil erosion within the Republic of Srpska. The BIH case study may be relevant for other post-conflict societies, and raises concerns about land degradation mitigation in post-conflict environments.

METHODOLOGY

The medology used to investigate BIH case study is focused on i) assessment of the policy framework, ii) investigation of stakeholder perceptions, and iii) survey of soil erosion.

2.1 Assessment of Policy Framework

To better understand current policy and institutional structures in BIH, a literature review was conducted about land related strategic and legislative framework in BIH and its administrative units. An evaluation of existing institutional frameworks of BIH related to land resources, policies, and strategies was performed. The existing state of land was given from previous research and data collected by different sources, including scientific manuscripts and reports.

2.2 Stakeholder perceptions of land degradation

A survey of the stakeholder perceptions was performed to understand the current policies involving aspects of land degradations focused on knowledge gaps, failure in policy implementation, and institutional responsibilities and their role in the process under the post-conflict environment. A total of 60 relevant stakeholders, inclucing state, entity and local land related policy and decision makers, farmers, private forest owners, non-governmental organizations (NGOs), scientists and public companies were interviwed (**Table 1)** . The structure of stakeholders is defined based on the level at which decisions are made, and involvement in decision making at three levels: state, entity and local. The stakeholders were grouped in three classes: (i) *decision makers* , including people who design and implement land related policy framework on the state, entity and local level of decision making; (ii) *land owners/users* , those individuals and institutions who directly influence soil health by applying different practices, such as farmers and private forest owners*; and (iii) non-governmental institutions* , including people from universities, institutes and NGOs who are aware about land degradation problems in BIH.

The survey was based on oral questionnaires, focused on the perception of stakeholders on legislative and institutional frameworks related to land degradation, having in mind the post-conflict perspective of BIH. Interviews were designed in order to gather relevant information from institutions and representatives responsible for soil and land, and land owners/users. The interviewed were questioned on their perception of land degradation and its drivers, soil policy frameworks and their challenges, their willing to participate in policy design, and personal benefit of incentives for SLM. Another question was the legal status of the interviewed, if they were refugees from another entity during the Civil War, in order to infer the about the influence of post conflict environment on their atitude toward policy framework. Further details on the questionair are provided in the Supplementary material. Interviews were conducted online through a google questionnarie, and some of them (for land owners/users) were taken personally. Questionnaries were distributed from July to November 2019.

2.3 The status of Soil Erosion

In order to better understand soil erosion, considered as one of the most relevant land degradation processes (Tošić et al, 2012;), the study focused on RS which covers 49% of BIH territory. RS is located in south-eastern Europe (**Figure 1a**), covering a surface area of 25.128,22 km^2 and embrassing a population of 1,170,342 people (Census, 2017).

Figure 1a. Location of Bosnia and Herzegovina and Republika of Srpska with three morphologic clusters; 1b: Administrativ

RS is organized into 62 municipalities and comprise 2,745 settlements. The average population density is 47 people per km^2(Census, 2017). The entire territory is part of three morphologic clusters: Pannonian region, mountain-valley region and Adriatic region (Figure 1A). These regions contain diverse climatic regimes which are characterized by a Mediterranean climate in the southwest, continental-mountain in the central and north region, and moderate continental climate in the remaining area (Trbić et al., 2017). According to the World Reference Base classification (WRB, 2014), the most widespread soils in RS are Mollic Leptosol, Haplic Cambisol and Leptic Cambisol. RS is a predominantly mountainous region, mainly covered by forest (52%) and agricultural (40%) land, with some urban areas (8%) and few water bodies (Corine LC, 2018). Large proportion of forest land are degraded from deforestation on steeper hillsides (Kapović et al., 2013), resulting in soil erosion and consequent land degradation (Kostadinov et al., 2019). Most of the arable land in RS is

not used (45.5%) (Statistical journal, 2017), and has been abandoned since the late 1990s (Tošić et al., 2019). Large areas of abandoned land are now overgrown with vegetation (UNEP, 2017) and have practically lost the status of agricultural land. This was linked with population decrease in RS, from 190.804 people in 1985 to 53.781 households in 2012 (Agency, 2017). This is due to migration of people from these lands, which resulted in significant declines in agricultural production and a 7% increase of abandoned land since 1985. In the northern region of RS, agricultural production decreased due to migration during both the conflict and post conflict period, but is still dominant land use. Agriculture areas managed under intensive agricultural practicies (i.e. cropland cultivation, monoculture of main crops) are impacted by erosional processes and are the most serious land degradation driver mention on literature (Tošić et al., 2011; Tošić et al., 2013).

Data on soil erosion intensity and trends are given by the reconstructed Soil Erosion Map of the RS, developed during the period from 1979–1985 (Lazarević, 1986) and then compared with the soil erosion map developed only for the RS territory after the war (Tošić et al., 2012).

RESULTS

3.1 Policy framework assessment

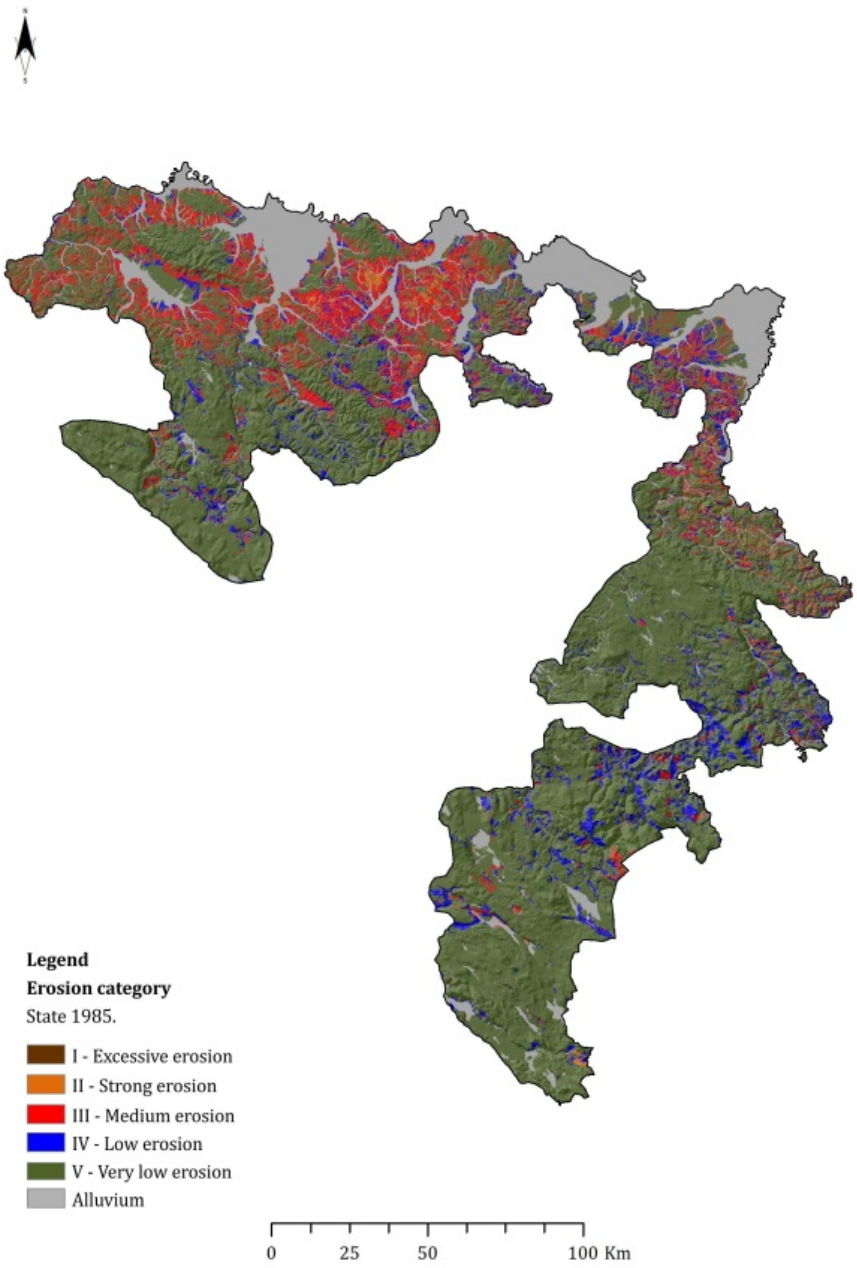
BIH is a sovereign state with parliamentary state regulation and a decentralized political and administrative structure. Land and land resources are under exclusive jurisdiction of three administrative units, which include the Republic of Srpska Entity, the Federation of BIH Entity (FBIH) and Brčko District (BD). FBIH comprises ten cantons with their own governments, legislative and administrative framework (**Figure 1b**). There are 13 Ministries of Agriculture, Forestry and Water Management MAFWMs in BIH (Agency of statistic BIH, 2017). For each one of the three entities and ten cantons of FBIH, land is under the jurisdiction of the MAFWM. Due to decentralization at the state level, land policy implementation and enforcement takes place at the entity level in RS and BD, and entity and cantons level in FBIH. In BIH, no specific law is devoted to soil protection and, thus, the legislative framework does not recognize land degradation explicitly. The main laws at the Entity level that indirectly address land degradation are listed in **Table 2** . Land degradation falls under agriculture, forestry and water legislations, but without a specific legal framework.

In 2017, however, BIH adopted an Action programme to combat land degradation and mitigate drought effects. In FBIH, the implementation of strategic documents and legal acts is complicated by the fact that this entity has ten cantons and each have their own government, policy framework and legislation for land management and environmental and spatial planning. In regards to the local policy framework, current legislation requires local governments to create local strategies on land use planning, but many local communities do not accomplish this task, due to the weak economic situation. With limited budget devoted primarily to solving crrent economic problems. In addition, the existing land use planning system differs between entities and cantons in FBIH. Thus, the complexity of the legislative and strategic framework also creates complexity in approaches and framework implementations.

3.2 Land degradation and soil erosion

Many reports which were a result of projects funded by international donors, revealed land degradation drivers in BIH, and described the situation in which land related data was widely unavailable (Kapović Solomun, 2018; Čustović and Ljuša, 2018). The main conclusion from these reports was that BIH does not have available soil data or soil monitoring systems at any level. As a result, the state of soil resources is based on qualitative assessment instead of quantitative measurements. According with UNEP (2017), the main land degradation drivers in BIH are soil erosion, floods, abandoned agricultural land, drought and forest fires. Other drivers are overexploitation of forests due to illegal logging, unsustainable agriculture practices and uncontrolled urbanization (UNEP, 2017). Many of these drivers were partially a result of the post conflict environment in BIH, where weak socioeconomic conditions and instituions make environmental issues of secondary importance (Kapović Solomun et al., 2018). Soil erosion is one of the most important land degradation drivers all over BIH. During the civil War, significant amounts of soil data were destroyed, including for example, the most complete overview of soil erosion provided by the Soil Erosion Map of the Socialistic Republic of BIH, developed during between 1979 and 1985 (Lazarević, 1986). This early

map of soil erosion indicated an increased intensity of erosion from the central part of the country (Dinaric Mountains) to northern part of BIH (Posavina), the main agricultural production area before the War, and decreased towards the south of the country for the observed period (1979-1985), before the War. The soil erosion map for the entire BIH territory has not been updated, but in 2012 the erosion map was reconstructed for the RS (Tošić et al., 2012). Thus, soil erosion in RS area was analyzed before and after the Civil War, and soil erosion intensity was estimated. Comparing soil erosion maps in 1985 and in 2012 for the entire RS, it is observed that the extent of affected area remained the same (21.851,04 km^2, covering 86,96% of the RS), but the intensity of soil erosion decreased over this time period (**Table 3**). Although the dominant erosion intensity was very low and remained constanct in both years (76.8% of the RS), part of the territory under medium (III) to excessive (I) erosion category in 1985 was converted into low (IV) erosion category in 2012, associated with incrase of the later from 9.2% to 17.1%, respectively. The updated map showed that the general trend in erosion decreased throughout the RS territory over the 27-year time period (**Figure 2**).



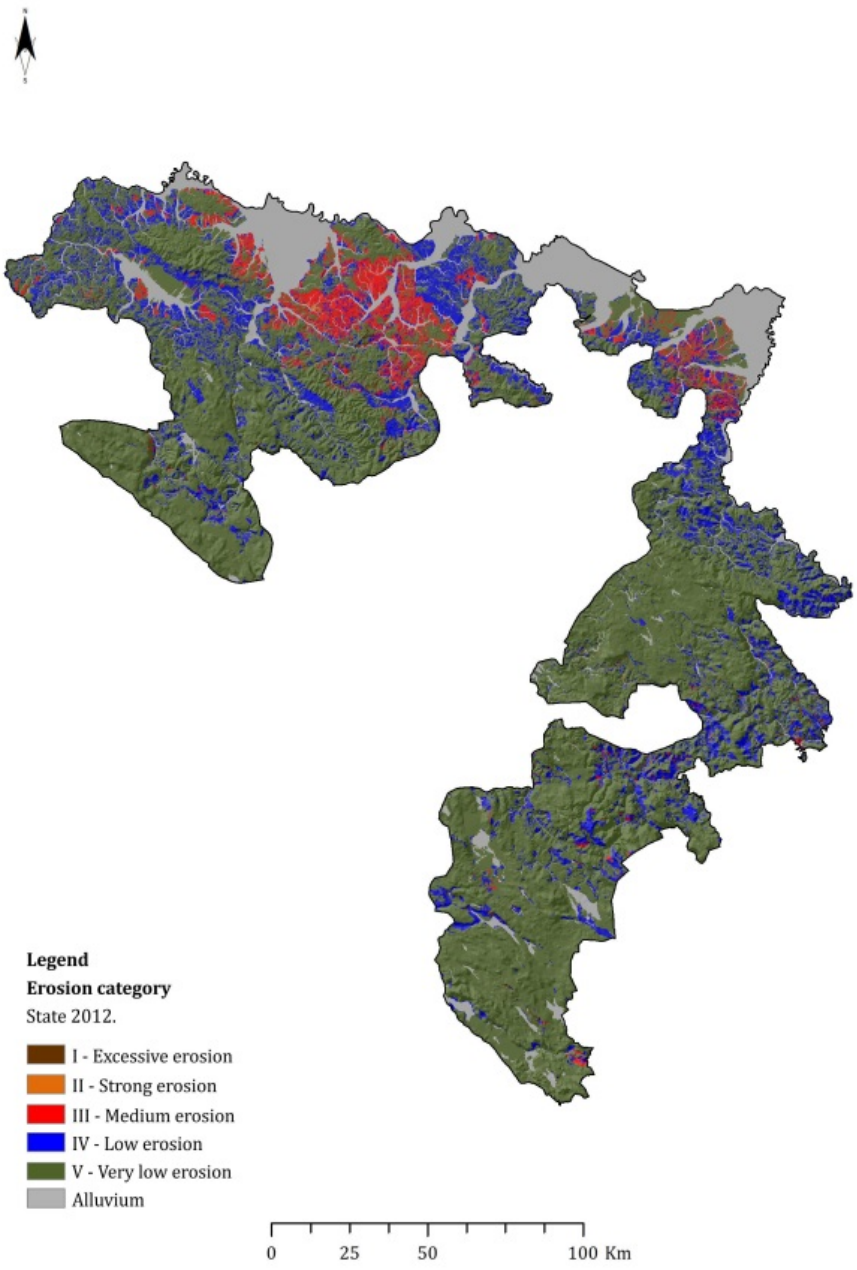


Figure 2. Map of soil erosion in the RS; left: state in 1985, right: state in 2012

Nowadays, land monitoring systems for the whole BIH have not been developed and no historical data are available, which greatly complicates any estimate related to land condition in BIH or its Entities. The shortage of existing soil data at the state, entity, canton or local level revealed many challenges, especially when it comes to the implementation of international commitments and uncertainties in reporting to UNCCD. Currently, BIH must rely on global databases for reporting processes, despite the uncertainty of global data to the reality of local land condition.

3.3 Perception of stakeholders about land policy frameworks and land degradation

Perception of stakeholders about land policy frameworks and land degradation is important to assess the potential to mitigate the problem. Interviewed stakeholder groups represent key individuals or institutions that are instrumental in addressing land degradation. Of total interviewees, 45% were female and 55% were male. Most of the interviewees were farmers/ forest owners (33%), but also public companies (17%) and representatives from the local government (15%) and academia (13%). Most of the interviewees did not migrate during or after the War (75.00%), but from the interviewed refugees from another Entity, most were land owners/users (13.75%), whereas decision makers (7.50%) and representatives from non-government sector (3.75%) were in smaller number.

Only 13.3% of the interviews were not familiar with the term land degradation, embracing mainly land owners/users (Q4 in supplementary material). But the majority of those with knowledge about land degradation do not have many details about its drivers and impacts (60%), despite most of them are decision makers. Furthermore, considering global policies and commitments of BIH related to land and soil, 60% of responders had never heard about UNCCD, most of them included in the farmers/users stakeholders' group (33%), followed by decision makers (21%) (Q10 in supplementary material). In addition, 62,2% of the responders had no knowledge about land degradation neutrality.

Stakeholders have identified several drivers of land degradation in BIH, including (i) soil erosion, floods, and torrents, (ii) overexploitation of forests in erosion prone areas, (iii) week implementation of existing policy or deficient policy framework, and (iv) overuse of chemicals in agriculture (Q8 in supplementary material). Nevertheless, most of the interviewees reported to never been affected by any kind of land degradation (58%) (Figure Q7 in supplementary material).

Perceptions toward existing policy frameworks that addresses land degradation is not considered appropriate, mainly among the land owners/users and non-government sector (Q5 in supplementary material). It is interesting to record that most of the decision makers are satisfied with the existing framework (25% vs 10%). Also, respondents reported on different gaps and challenges in existing land related policy framework (Q6 in supplementary material), identifying the weak implementation of existing frameworks as the main challenge (38%), as well as the need to improve the existing policy framework (28%).

Regarding the need of new rules and legislation to mitigate land degradation (Q9 in supplementary material), most respondents point out the need just to implement the existing ones (28%), but also to develop local strategic documents for land use planning (14%) and a law on pesticide use (14%).

Policy design processes are not sufficiently coordinated, because land owners/users, unlike decision makers, mostly do not participate in these processes since they are not interested (Q12 in supplementary material), and would not like to participate in future design of a policy framework (Q13 in supplementary material). Nevertheless, most stakeholders (62%) reported a willingness to participate in future policy design, particularly decision makers.

It is curious that only a limited number of stakeholders, mostly land owners, know and use incentives available at the entity or local levels for sustainable land management (SLM) (4%) (Q14 in supplementary material). About 47% of the interviewees have never heard about these incentives, while 29% of the farmers/users do not apply for the SLM incentives in their production.

Based on the questionnaire survey, the current awareness and knowledge of land degradation is not sufficient. The majority of the interviewees (82%) reported the importance of education and awareness raising campaigns as a mean to understand the drivers and impacts of land degradation, and measures to mitigate the problem (Figure Q15).

Traditional agriculture in BIH is still dominant and stakeholders have distinct perceptions about its impact on soil quality, with 54% of the respondents (mainly from non-government sector) considering to have negative impacts, and 46% identifying positive impacts on soil, mainly land owners/users (Figure Q16). Informally, during discussions performed during the questionnaires, some stakeholders identified different agriculture practices that are traditional but not sustainable, such as uncontrolled use of chemicals, shortage

of manure usage, soil compaction due to heavy mechanization, cropland monocultures and land fragmentation. Stakeholders also identified possible reasons of land degradation, such as low education and awareness about sustainable land measures that will also provide economic support for households, because so far agriculture is not economically attractive in RS, people are generally reluctant to adopt new approaches and techniques. It was interesting that some stakeholders reported that land users not owning the seem to care less about degradation problems.

DISCUSSION

Post-conflict societies deal with several problems and facing land issues are too politically sensitive or technically complicated to be tackled early in the post-conflict period, which is the case of BIH (EU-UN, 2012). Land degradation is an important problem in BIH, particularly driven by soil erosion, despite 76.8% of the RS territory is affected by very low intensity (Table 3). Nevertheless, some stakeholders are not aware of land degradation (Q4 in supplementary material) neither soil erosion problems (Q8 in supplementary material).

Considering the complex political and administrative structure of BIH, where land-related competences are at the entity level, political communication and appropriate implementation of the existing legal and strategic framework, synchronization and mutual co-ordination is of great importance to combat land degradation, despite representing a real challenge (Q9 in supplementary material). The post-conflict situation often leads to a dysfunctional land administration system, characterized by limited prioritization of land policy and poor institutional and regulatory framework (Augustinus and Barry, 2006), as highlighted by 64% of the stakeholders interviewed (Q5 in supplementary material).

As a "potential candidate country" to the European Union (EU), BIH transposed over the last years many EU environmental directives that address soil indirectly (e.g. water directive, nitrate directive) into legislation, at the state and entity levels, but environmental policy frameworks are still not aligned with EU frameworks. Existing environmental policy frameworks are dispersed in several documents in BIH (Table 2) which comprise an additional challenge, but if implemented appropriately, land degradation issues would be addressed more effectively. Analyzing existing land related strategic and legislative framework, namely under LDN commitment in BIH, separately by each administrative unit (in the period 2016-2018), in the RS and BD, the main conclusion was that the existing policy framework is sufficient but implementation is weak (Kapović Solomun, 2018a). In contrast, in FBIH it may be necessary for additional laws on soil protection (Čustović and Ljuša, 2018). This confirms that both the complexity of land administration and weak political communication on land in BIH. Also, the existing land use planning system differs between entities, and entity and cantons in FBIH. Thus, the complexity of the legislative and strategic frameworks also creates complexity in approaches and implementations. In a post conflict environment, this presents a significant challenge to reduce, restore and reverse land degradation, starting from the local to the entity and state level.

The Civil War contributed to the destruction of valuable data, which suggests the need for further research to update what has been done in the past century. Land related issues most often rely on the academic community and non-governmental organizations, particularly in regards to understanding the consequences of soil degradation. The lack of soil data as well as land monitoring makes it difficult to assess current land condition and to define priorities to address land degradation.

Drivers of land degradation are further exacerbated by the insufficient and complex administration and weak land planning system. General assessment toward one of the most important drivers - soil erosion - is that the current state of many areas is more favorable, primarily due to displacement during and after the Civil War and reduction of anthropogenic pressure on soil. This consequently led to restoration of vegetation cover and encroachment, but only of those regions where the productive soil layer was not destroyed by erosion. The decrease in soil erosion intensity was due to migrations, where many households were abandoned especially in the area at the border between the two sides of the conflict, which resulted in shrub encroachment, and spread of forest cover and areas that were suspected of land mines (Lazarević, 1986; Tošić et al., 2012). However, in context of economic and social development, this is devastating and symbolizes a decrease in the

population and household numbers, migration, decrease of arable areas, very slow technological development and economic growth. Another consequence of the Civil War was intensive deforestation and illegal logging in hilly/mountain areas, near the former war lines between the two entities, which has resulted in additional land degradation today and weakened protective function of forests upstream (Kapović and Eremija, 2009).

As a post-conflict society with a weak socio-economic situation, BIH is often faced with the misunderstanding of the importance of land conservation, not only by decision makers but also by the land owners and users. Local stakeholders assessed land degradation as less important and severe than soil experts (Q8 in supplementary material), and individual perception about land degradation and drivers, depends on the main source of income for their households. A common issue in post-conflict countries, where many people are still refugees and land they cultivated is not their property but someone from "another" entity (Lal, 2015). Perceptions of the severity of land degradation often depends on education level and knowledge, income source for the individuals, and whether they are affected or not (Marioara and Tăușan, 2016; Jendoubi et al., 2020).

The perception of land degradation differs between decision makers (on all levels) and other stakeholders, where decision makers claimed that the existing policy framework is sufficient and it should not be improved, while others disagree on this (Q5 in supplementary material). Design of entity policy framework on soil gathers mostly representatives of other ministries, institutes and academia, while local level and NGOs are underrepresented (Q9 in supplementary material). Policy design processes are not sufficiently coordinated, because land owners/users mostly do not participate, unlike decision makers (Q12 in supplementary material). There are public debates on laws, but people usually perceive it as "they cannot change anything" therefore they are not active. Among the stakeholders, decision makers and non-governmental sector were more motivated to contribute to improving or developing land related policies and strategic framework rather that land owners/users (Q13). Perception of land policy frameworks by different stakeholder' groups is important to understand the willingness of these groups to participate and act upon policy design and implementation.

Since policy and legislation is politically very sensitive question in BIH due to the post conflict environment, land related strategies and laws are entity jurisdiction, but the state level encourages every document to be on the state level, which have caused political discrepancies between two entities and entity- state level for the last 30 years. This research has shown that political and administrative organizations have a significant influence on the implementation of land-related legal and strategic frameworks.

CONCLUSIONS

This study investigates the policy framework on land degradation under post conflict environment in BIH, and stakeholder perception on policy framework in relation to land degradation. It was concluded that (1) Political communication and cooperation is the greatest challenge for land management in post conflict societies; (2) The existence of a policy framework is important, but not sufficient if implementation is weak; (3) Post conflict societies frequently face shortages of soil and land related data which creates additional challenges in addressing land degradation, because reliable national data are crucial for any assessment and development of strategic and policy framework that will address those issues; (4) Land owners/users are not active stakeholders in land related policy design and implementation, which relies primarily on decision makers; (5) Land degradation occurs at the local level, so local decision makers play an important role in sustainable land management, particularly from a land use planning perspective; (6) The susceptibility of the land to soil erosion slightly decreased from pre- to post-war period, driven by migration and land abandonment; (7) Knowledge is crucial for active participation in policy design, so education and awareness raising is a chance to build capacity of individuals and institutions in this regard; (8) Land degradation issues are of low importance at all levels of the decision making process in BIH, due to the need to address issues such as weak socio-economic condition, which is further aggravated by inadequate political communications among institutions, and migrations to the region.

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