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Assessing the State of Sustainable Land Management Research in Kyrgyzstan and Tajikistan

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This article synthesizes findings from a review of the state of research on sustainable land management in Kyrgyzstan and Tajikistan and from an analysis of the interface between research and action. Using the Global Land Project (GLP 2005) analytical framework, we analyzed the distribution of 131 selected publications (including a clearly defined set of local and international academic and gray literature) across the framework's components and links in a social–ecological system. There is a strong emphasis in the literature on the impact of changes in land use and management on ecosystems; however, there is little research on the implications for ecosystem services. This finding is opposed to that of a similar analysis of publications at the global scale (Björnsen Gurung et al 2012). Another major gap was the lack of research on Kyrgyzstan and Tajikistan regarding the influence of global factors on social and ecological systems, despite social, economic, and political integration into global structures since the collapse of the Soviet Union and the increasing influence of climate change. Our analysis disaggregated academic literature published in the region and international academic literature, revealing stark differences. These differences are partly attributable to the legacy of the late Soviet era principle of "rational use of land resources," which fit the planned economy but lacks approaches for decentralized resource governance. Finally, the emphasis of research on systems knowledge, the lack of transdisciplinary research, and the critical feedback of stakeholders at a regional sustainable land management forum suggest that actionable sustainable land management research on Kyrgyzstan and Tajikistan is rare. Recommendations are made for targeted, application-focused, multistakeholder research and knowledge sharing, including local and international researchers as well as practitioners, policy-makers, and land users.

Keywords: *Sustainable land management (SLM); rational use of land resources (RURL); state of research; Kyrgyzstan; Tajikistan; Central Asia; Global Land Project (GLP); research–action interface; research recommendations.*

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Introduction

Mountain societies in Kyrgyzstan and Tajikistan have transitioned from a centrally planned, Soviet mode of land use and management to a de jure and de facto, more decentralized, market-oriented system with new drivers of land degradation (Kerven et al 2012) and greater socioeconomic, political, and environmental uncertainties. While new opportunities and challenges for sustainable land management (SLM) emerged as a result of the transition, there continues to be a lack of relevant, up-to-date, empirical, rigorously investigated, and adequately documented scientific knowledge particular to these Central Asian mountain societies. The capacity of local research institutions was undermined following the withdrawal of Soviet support (Abdurasulov 2007), and the emphasis of international research in the past 2 decades has largely been limited to donor project requirements (Kerven et al 2011). Further, there are numerous barriers hindering interactions between research and action in policy and implementation domains.

The state of research on SLM in Kyrgyzstan and Tajikistan and the interface between research and action were assessed in a thorough review of local and international academic and gray literature (in Russian and in English) (Shigaeva et al 2013). The present paper is a synthesis of the state of research assessment and focuses on identified knowledge gaps, comparisons between local and international literature, and an analysis of barriers between research, policy, and implementation. A brief comparison was also made with Björnsen Gurung et al's (2012) state-of-the-art assessment of research needs for sustainable development in the world's mountains.

Key concepts and frameworks

SLM and rational use of land resources (RULR)

The concept of SLM was an outgrowth of the 1992 UN Conference on Environment and Development (Smyth and Dumanski 1993) and quickly gained popularity in Western scientific and development assistance circles. As defined soon after the conference, SLM is "the use of land

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resources, including soils, water, animals and plants, for the production of goods to meet changing human needs, while simultaneously ensuring the long-term productive potential of these resources and the maintenance of their environmental functions" (United Nations 1992). The concept has been used widely in Central Asia as part of numerous donor-supported projects; however, its meaning is often conflated with what many Central Asian researchers and decision-makers refer to as the late Soviet era equivalent principle of rational use of land resources (RULR).

According to the Soviet technical standards known as GOST (a Russian acronym for *gosudarstvennyy standart*), standard 26640-85 on "Land: Terms and Definitions," valid as of January 1, 1987, defines "rational use of land resources" as land use where "all land users, throughout the production process, ensure maximum achievement of the objectives of their land use while giving due consideration to protecting the land and maintaining optimal interaction with environmental factors."

RULR was embedded within the Soviet planning system, in which the centralized authority dictated production parameters, leaving researchers to develop the technological capacity to achieve defined targets. Unlike SLM, social and political dimensions of land use and management are not part of the RULR principle. In the Kirghiz and Tajik Soviet Socialist Republics, as throughout the Soviet Union, there was a strong tradition of natural science schools of agrarian, soil, and botanical research, whereas a very limited number of research institutions dealt with social sciences in general, and almost no social scientists worked on land management in particular (Zaslavskaya 1990). While the review of literature presented in this paper focuses on SLM, it also includes publications more closely aligned with contemporary applications of RULR and, to some degree, analyzes the differences and tensions between these 2 concepts.

Socioecological framework and research concepts

The review of literature was guided by the analytical framework of the Global Land Project (GLP 2005), as well as additional concepts used in research for sustainable development (Wiesmann and Hurni 2011), such as transdisciplinarity (Pohl and Hirsch Hadorn 2007), different knowledge types (ProClim 1997), and the multilevel stakeholder approach (Hurni 1998).

The GLP framework helps to understand coupled human–environmental systems, changes in the interaction between social and ecological systems, as well as land use and management at local to regional scales. Figure 1 is a modified version of the GLP framework and was used to guide the review of SLM literature. The modified framework includes 3 system components (or circles) representing the social system, the ecological system, and land use and management, which is located at the interface between the social and ecological systems. Further, 2 themes describing the links (arrows) between the components were addressed: theme 1 on *Dynamics of Land Systems* and theme 2 on *Consequences of Land System Change* (GLP 2005).

Methods

Selection of publications

The definition of SLM and the GLP framework guided the selection of publications with regard to content. Specifically, publications were required to (a) examine at least 1 of the 3 elements of sustainability (environmental, economic, and social) and to (b) address the use or management of land and water resources within one of the major land use types (such as cropland, forests, or pastures). Also:

c. Publications that focused on purely disciplinary studies, such as research on single flora or fauna species or pure agronomy research, were excluded.
d. Publications that dealt with nonrenewable resources, such as mining, and environmental issues not linked to agriculture or forestry, such as contamination from nonagricultural sources, were also excluded.
e. Publications were selected only if they presented findings based on research in Kyrgyzstan or Tajikistan.
f. Publications that only briefly mentioned these countries were excluded.
g. The temporal range of publications covered the post-independence period from late 1991 to mid-2012.
h. Because Soviet era literature is both highly relevant and abundant, this was deemed to warrant a separate analysis.
i. Three types of literature were included: international academic literature, academic literature published in Kyrgyzstan and Tajikistan (henceforth referred to as "local academic literature"), and gray literature.

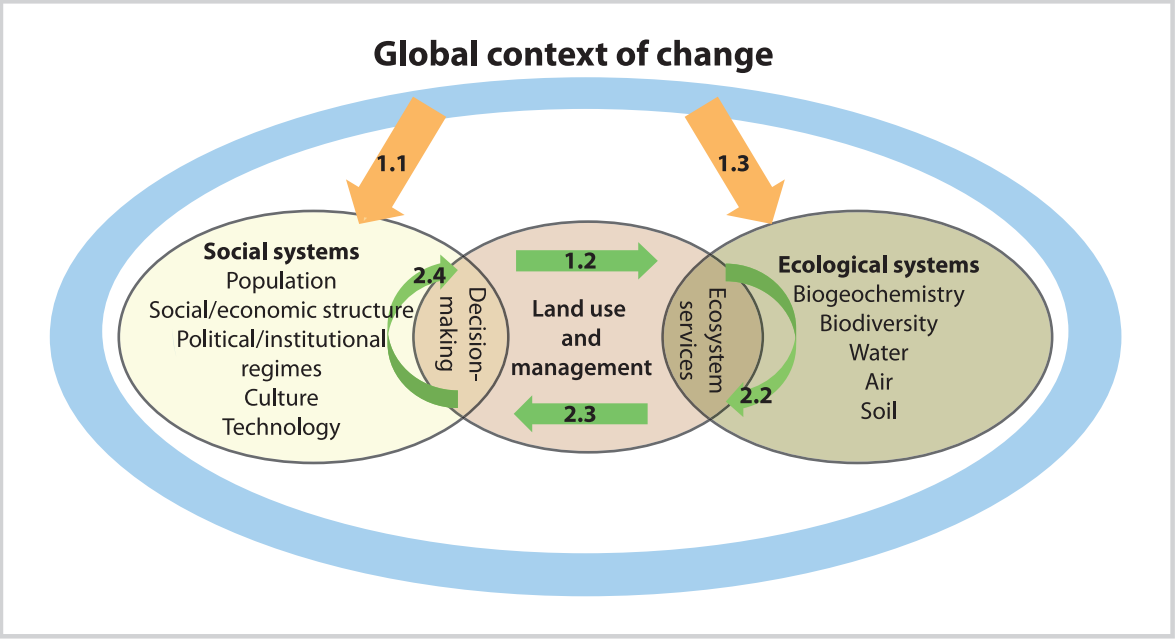
To identify all international academic literature, we conducted "full text" keyword searches on major academic archiving systems including Web of Knowledge, Scopus, and Google Scholar. Keyword searches included the following:

- Generic phrases associated with SLM, such as "land management," "land degradation," "land resources," "land cover," and "land use";
- Land use types as categorized in the Kyrgyzstan and Tajikistan land use codes, such as "pasture," "cropland," and "forest"; and
- Components within the definition of SLM, such as "soil," "water," "vegetation," "wildlife," and "livestock."

Each key phrase was searched for in combination with each of the following location keywords, also using the "full text" feature: "Central Asia," "Kyrgyz Republic,"

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FIGURE 1 Modified analytical framework of the GLP Science Plan and Implementation Strategy. (GLP 2005)



"Kyrgyzstan," and "Tajikistan." Results were reviewed to ensure their relevance and date range. In a second step, we searched the bibliographies of identified articles for additional sources that might have been missed in keyword searches.

Hard copies of local academic literature are kept in university libraries, public libraries, and the libraries of the respective Academy of Sciences. There is no comprehensive electronic archiving system and therefore no means of conducting thorough keyword searches. We therefore manually reviewed the hardcopy tables of contents of all available issues of relevant journals for the period from 1991 to 2012. As our aim was to identify the articles that were most likely to have undergone an objective peer review, we chose to focus on academic articles in multidisciplinary journals that are certified by the Higher Attestation Committees (HAC) of the Kyrgyz Republic and by the HAC of the Russian Federation for Tajikistan (Tajikistan relies on the HAC of the Russian Federation).

Additionally, the authors purposefully selected relevant and high-quality gray literature documents to include in the review. The definition of gray literature by Schoepfel (2010: 17) was adopted for this purpose. Examples of gray literature relevant to this paper include working papers; white papers; technical reports from government agencies, nongovernmental organizations, and research groups; external evaluation reports of development projects; and policy or development strategies.

The authors compiled a list of approximately 20 of the most prominent English-language gray literature documents on SLM in Kyrgyzstan and Tajikistan. Efforts were made to select publications addressing different thematic fields of land use and management and the different land use categories. For each thematic field, the most recent publications meeting our criteria were chosen. Additionally, publications that included primary or secondary research with clear methods were selected over publications that only reviewed literature or did not include a description of methodology. This list was distributed to SLM experts in the region for comment and was then finalized by the authors.

Unlike the methods used to identify articles published in international peer-reviewed journals and selected academic journals in Kyrgyzstan and Tajikistan, gray literature was purposefully selected and is not representative of all the literature on SLM defined as gray literature.

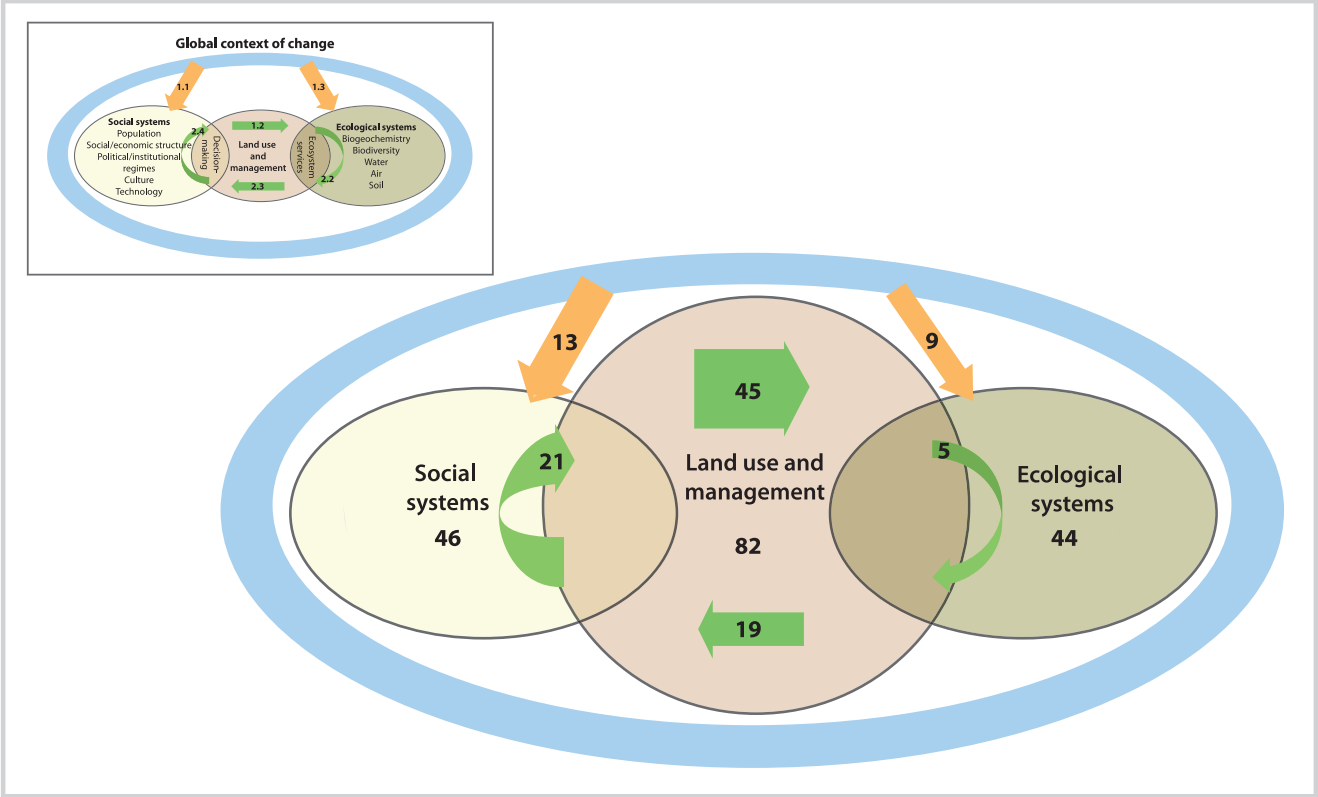
Analysis of the state of research

Similar to the procedures used by Björnsen Gurung et al (2012), we attributed each document to one or more of the components (circles) and one or more of the links (arrows) of the GLP framework. Excerpts that exemplified the main contribution of each publication were extracted and further categorized based on emergent themes. These themes were used to organize a narrative synthesis of the publications that informs the present paper and is presented fully in the larger review paper (Shigaeva et al 2013).

We used descriptive statistics to analyze the distribution of publications across other variables not related to the GLP, such as publication types, geographic focus, altitudinal zone, and stakeholder level. These

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FIGURE 2 Number of publications attributed to the different system components (circles) and links (arrows) of the modified GLP framework.



analyses revealed thematic gaps in research as well as gaps based on these variables. A brief comparison was also made with Björnsen Gurung et al's (2012) state-of-the-art assessment of research needs for sustainable development in the world's mountains.

Analysis of research–action interface

Analysis of the research–action interface was based on the publications as well as a stakeholder feedback session held at the September 2012 Central Asian Mountain Partnership Forum in Dushanbe, Tajikistan, the theme of which was SLM (CAMP Forum 2012).

Analysis of the publications involved attributing the main content of each document to one type of knowledge based on the categorization of system knowledge, target knowledge, and transformation knowledge (ProClim 1997) and assessing the research type (ie disciplinary, multidisciplinary, or transdisciplinary research). Further, the organizational affiliation of authors was analyzed to understand the degree to which collaboration was occurring between authors affiliated with local and international organizations as well as between authors from different types of organization (including academic and nonacademic organizations).

The feedback session identified barriers preventing policy-makers and practitioners from using research, reasons for research not being guided more extensively by the needs of policy-makers and practitioners, and recommendations to improve the interaction between research, policy, and practice.

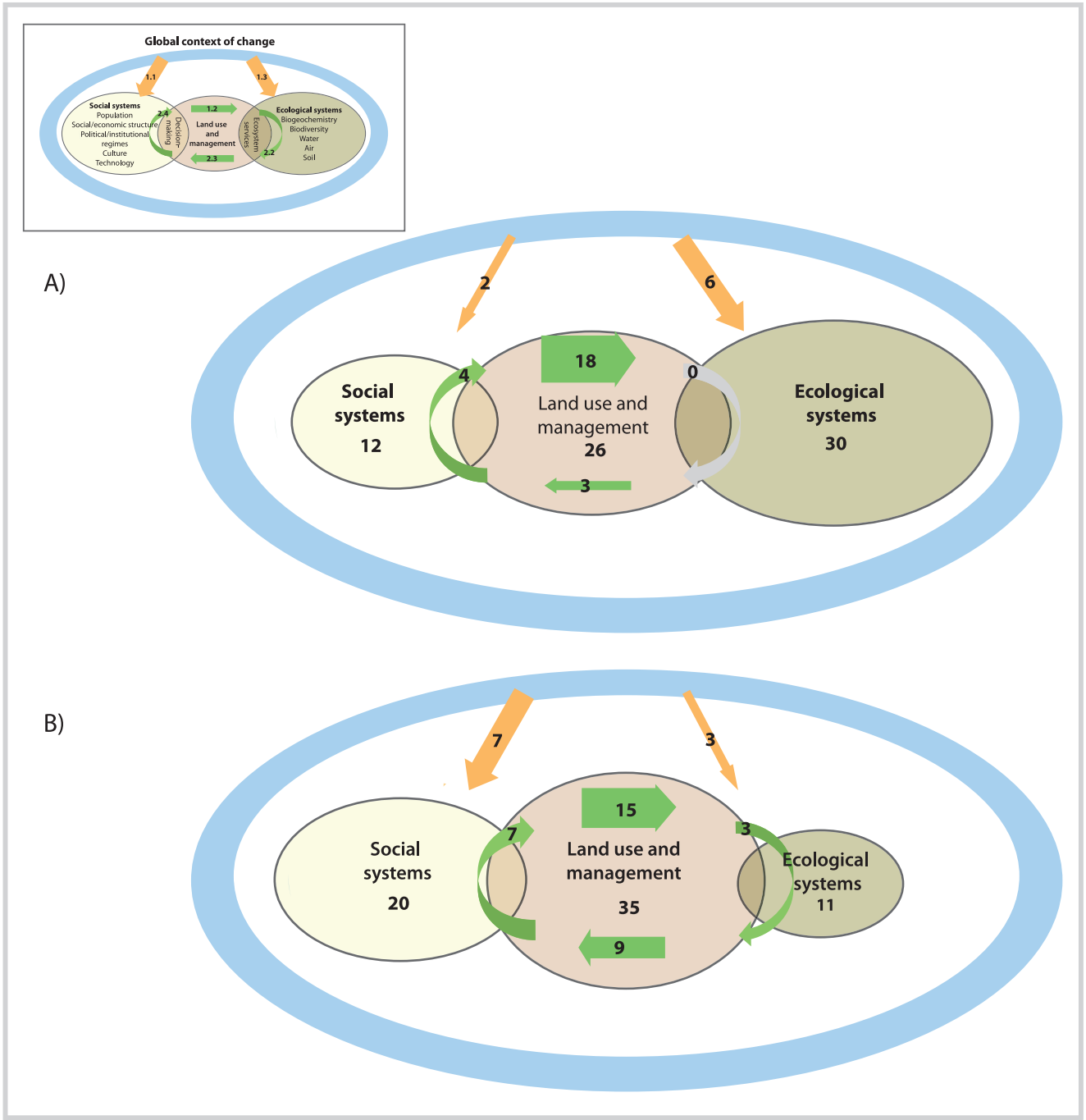
A more complete description of methods is provided in Shigaeva et al (2013).

Results and discussion

The review included 131 publications: 52 international academic articles (39.7%), 52 local academic articles (39.7%), and 27 gray literature publications (20.6%). For the full list of references see *Supplemental data*, Table S1 (http://dx.doi.org/10.1659/MRD-JOURNAL-D-13-00050.S1). More than three fifths of publications (61.9%) focused on Kyrgyzstan, 26.8% focused on Tajikistan, and 11.5% focused on both Kyrgyzstan and Tajikistan (10.8% of all publications included Kyrgyzstan and/or Tajikistan and other countries). Nearly two fifths (37.9%) of the publications focused partly or completely on mountain areas. Nearly one fourth (23.7%) focused partly or completely on valleys, and one fifth (20%) focused on foothills. Also, 18.4% of publications did not clearly identify on which altitudinal zone they focused.

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FIGURE 3 (A) Number of local academic publications attributed to different system components and links in the modified GLP framework. (B) Number of international academic publications attributed to different system components and links in the modified GLP framework.



The state of SLM research on Kyrgyzstan and Tajikistan

Figure 2 illustrates the number of publications attributed to the different system components (circles) and links (arrows) of the GLP framework. Analysis of the whole set of reviewed articles (including all types of publication) shows that the land use and management component includes the largest number of publications (82, or 47.7%), and that there is a nearly equal distribution between social systems (46, or 26.7%) and ecological systems (44, or 25.6%). Among publications attributed to social systems, the largest percentages address political/institutional regimes (48.3%) and socioeconomic

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structures (37.9%). The remainder is split almost equally between population (5.2%), technology (5.2%), and culture (3.4%). Among publications attributed to ecological systems, biodiversity (39.6%) and soil (30.1%) are the most popular topics. While it could easily be argued that there is not enough research about any of the components of the GLP with regard to Kyrgyzstan and Tajikistan, the findings suggest that there is an emphasis on land use and management and that there are no major distortions in the distribution of research between social and ecological systems when publications are assessed in the aggregate.

Prominent differences in the state of SLM research occur when the types of publication are disaggregated. For example, local academic literature focuses on ecological systems (30 of 52) and land use and management (26 of 52) while international academic articles focus on land use and management (35 of 52) and social systems (20 of 52). More specifically, local academic literature focuses on technical aspects of reseeding, weed control, fencing, and fertilization, whereas international academic literature focuses on institutional aspects of SLM. The different emphasis in local versus international academic literature is consistent with the differences between RULR and SLM and suggests that the structural and conceptual legacy of RURL continues to dominate local academic literature. This is consistent with Childress' (2004) finding that agricultural research systems in Kyrgyzstan and Kazakhstan "still largely reflect Soviet structures and research priorities" (9).

Kyrgyz and Tajik research that does address socioeconomic aspects (eg microfinance and other investments in agriculture) often does not include any connection to land use and management. The argument for social scientific analysis is exemplified by a World Bank report (2006) arguing that technical aspects of land management "may be locally relevant once the basic [institutional] constraint is resolved" (52). The disproportionately large number of publications in international academic literature on social and institutional aspects is reflective of an emphasis on promoting institutional change. Figure 3A illustrates the numbers of local academic publications attributed to different system components and links in the GLP framework while Figure 3B illustrates the corresponding distribution of international academic publications.

With regard to system links, the majority of all the publications reviewed focus on the impact of changes in land management decisions and practices on ecosystem properties and regimes (link 1.2). There is comparatively little research available on the influence of global factors on social systems (link 1.1) and in particular on regional and local land use decisions and practices. This is despite the fact that Kyrgyzstan and Tajikistan became dramatically more integrated into global structures and processes and affected by globalization trends after the collapse of the Soviet Union. There is a similarly small amount of research on global factors affecting ecological systems (link 1.3). Publications attributed to this link focus mainly on climate change and do not consider other drivers (eg biochemical, biophysical). But even the impact of climate change on ecosystem structure and properties has been investigated insufficiently, even though the Central Asian region is "particularly vulnerable to climate change" (Lioubimtseva and Henebry 2009: 963). It is noteworthy that among the limited number of publications attributed to global factors, international academic publications tend to focus on social global drivers (link 1.1) and local academic publications on environmental global drivers (link 1.3).

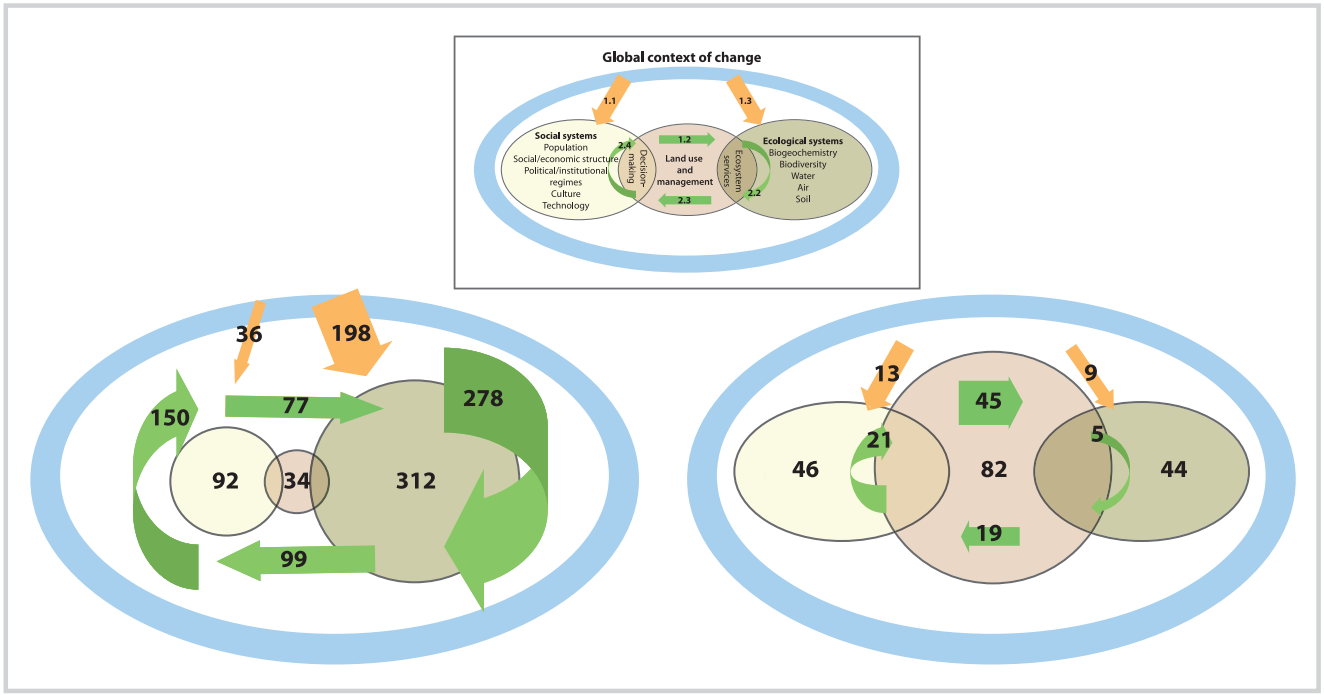
Moreover, little is known about the interactions within ecological systems (link 2.2). Only a few international academic publications and no local academic publications examine this link. One reason for this may be that knowledge about interactions within ecological systems requires long-term monitoring, the capacity for which was greatly reduced after the collapse of the Soviet Union. There is a comparatively large amount of research on the link between ecosystem services and human wellbeing (link 2.3); however, there is very little research on theoretical and methodological foundations for ecosystem service valuation. There are also few publications that look into how people respond to changes in ecosystem service provision (link 2.4). Specifically, little has been published on how people at various scales respond to changes in water discharge, an issue that is commonly known to be associated with social-political conflict.

Other topics that are very prominent in Kyrgyzstan and Tajikistan today were found to be hardly represented in the literature. Specifically, few publications were found on the relationship between migration and SLM (especially gendered aspects); water conflicts and governance; energy or energy efficiency and SLM; disaster risk management and SLM; payments for ecosystem services; household strategies for food security and SLM; soil and water conservation measures and their long-term benefits from the local to the watershed scale; traditional land use management; or the relationships between protected areas and populations living in and around protected areas. Further, even though specific topics such as forest management are more intensively studied, publications concentrate on specific forest types. For example, a lot of attention has been paid to walnut forests in Kyrgyzstan but none on the degradation of riverine (*tugai*) forests in Kyrgyzstan and Tajikistan.

Another important difference between local and international academic articles is the stakeholder level at which the underlying research was conducted. Similar to the Soviet era, during which household-level research was practically nonexistent, only 5.5% of contemporary local academic literature presents research conducted at this level. This may help to explain why small-scale farmers in

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FIGURE 4 Distribution of publications within the GLP framework at the global scale (left, as analyzed by Björnsen Gurung et al 2012) and in Kyrgyzstan and Tajikistan (right, as analyzed for this paper).



these countries (and the organizations that work with farmers) often claim that research by local institutions is not relevant for them.

Comparison with global analysis

The results of the GLP analysis performed by Björnsen Gurung et al (2012) using abstracts from the Global Change and the World's Mountains conference held in Perth, Scotland, in 2010, allow for a comparison between the state of research worldwide and the specific case of Kyrgyzstan and Tajikistan. A meaningful comparison is possible, even though the Perth conference dealt more broadly with sustainable mountain development, while the present paper focuses specifically on SLM.

When comparing the distribution of publications on social versus ecological systems, it becomes clear that the social sciences are generally underrepresented both at the global level (left side of Figure 4) and in local academic literature (Figure 3A). In international academic literature focusing on Kyrgyzstan and Tajikistan, however, the highly dynamic processes occurring within the social systems in Kyrgyzstan and Tajikistan have triggered a great deal of interest and resulted in a much higher share of publications on social systems (twice as many as on ecological systems) (Figure 3B). This existing knowledge base regarding social systems provides an opportunity for international and local researchers to enhance their understanding, for example, of specific topics, by integrating more local researchers and their perspectives and by comparing the different developments in Kyrgyzstan and Tajikistan. Such research may be of interest to the mountain development research community worldwide.

Further, comparison of the number of publications attributed to the links (arrows) shows that publications on Kyrgyzstan and Tajikistan (international, local, and gray literature) focus on the effect of land management on the state of land resources (right side of Figure 4), while at the global level the discussion has moved on to determine in what ways this degradation affects ecosystem services (left side of Figure 4). Thus, current research at the global level integrates feedback loops and applies system approaches. Research on Kyrgyzstan and Tajikistan (especially agricultural research) continues to apply simple cause-and-effect approaches.

Research–action interface

Responses from participants during the feedback session at the 2012 CAMP Forum indicated various hindering factors preventing better interaction between research, practice, and policy. The critical feedback from CAMP Forum participants and the findings of the review of literature presented in this paper suggest that directly applicable research on SLM is rare in Kyrgyzstan and Tajikistan. For example, there was a broadly shared perception among CAMP Forum participants that research on Kyrgyzstan and Tajikistan lacks clear utility. This was supported by a key finding of our analysis that only 20% of all publications (and 2% of local academic literature) contributed to target and transformation knowledge, with the remainder contributing to system knowledge.

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While it may appear that local academic literature, which is focused on agricultural technology and often includes specific recommendations for improved land use practices, aims to help identify or achieve a desired future condition (target and transformation knowledge), the publications concerned create mainly system knowledge because the means to achieve the desired condition are developed without involvement of the intended beneficiaries (Schmidt 2001; Childress 2004). As is detailed below, the recommendations given in local academic literature have subsequently been ineffective at facilitating change.

It was also found that less than 14% of all publications and none in local academic literature included participatory knowledge generation associated with transdisciplinary research. CAMP Forum participants highlighted the need to create incentives and mechanisms for communication and collaboration between researchers and potential users of research. The lack of stakeholder engagement in local academic research is likely due to the absence of a tradition of transdisciplinary or other participatory research in the region (Childress 2004). The lack of stakeholder engagement in international academic research may be due to short timeframes and language barriers, as well as an emphasis on academic as opposed to applied outputs. As a result, potential end users are not involved in research processes and are subsequently less likely to make use of research outputs, even if they do include practical recommendations.

In addition, many of the technologies recommended in local academic literature were developed on experimental plots at research stations and cannot be transferred easily to farmers' fields or scaled up for implementation across larger areas. This is due to several factors: land users do not have the knowledge or skills to use the newly developed technologies (see eg Giovarelli 2004; Kazbekov et al 2009; Shapakov et al 2011); there are no extension services that can effectively train farmers to implement new technologies (Mandler 2010), and some technologies are not affordable for farmers from a financial or human resource perspective. Even if research findings are well developed and appropriate, they are not disseminated to land users, practitioners, and decision-makers (Giovarelli 2004; Turgunbaev et al 2007; Kazbekov et al 2009; Giuliani et al 2011; Koichumanov and Sharsheev 2011; Shapakov et al 2011; Wiedemann 2012).

The discussion above points to many examples where there is no connection between research and application. Our analysis, however, also found many cases where institutional reforms recommended in the literature have taken place both in Kyrgyzstan and in Tajikistan. These reforms highlight that rates of change, especially within social systems, are still high even 2 decades after independence. In such circumstances, stakeholders often have to make decisions quickly and without recourse to a sufficient amount of valid and reliable research or other information. While we recommend improved means of generating and making accessible useful research and other knowledge for informed decision-making, we also acknowledge that many decisions will continue to be made under dynamic and uncertain conditions. Learning how to make decisions under such conditions is just as important as generating and making accessible information to reduce uncertainty.

Analysis of collaboration

Using co-authorship as a proxy measure, we analyzed the incidence of collaboration between authors affiliated with different types of organization (including academic and nonacademic organizations) and found that the large majority of publications (80.2%) did not involve such collaboration (single-author publications were coded as not including collaboration). Co-authorship was most rare in local academic literature (2 of 52), more common in gray literature (5 of 27), and most widespread in international academic literature (19 of 52). The low incidence of collaboration between authors from academic and nonacademic organizations is further evidence of the lack of collaboration between researchers and potential end users. Similarly, we analyzed the incidence of collaboration between authors affiliated with organizations from Kyrgyzstan and Tajikistan and authors affiliated with organizations outside of these countries. Based on this proxy measure, only 6% (8 of 131) of publications showed collaboration. There are numerous practical reasons why such collaboration is rare—such as language barriers, access to literature, and capacity constraints—but the differences, tensions, and confusion surrounding the terminology and concepts of SLM and RULR may also be a contributing factor.

Recommendations for new approaches and methods

SLM is of a holistic nature that is best informed by systemic, inter-, and transdisciplinary research approaches (IAASTD 2009). A broad finding of this paper is that there is a need for targeted, application-focused, multistakeholder research and knowledge sharing, including local and international researchers as well as practitioners, policy-makers, and land users. We acknowledge that implementing such research is fraught with challenges. In the authors' experience, engaging end users in identifying knowledge needs often results in wish lists rather than a strategic identification of knowledge gaps and a clear pathway to applying research results. One recommendation, therefore, is to focus on understanding the often context-specific challenges and opportunities of carrying out the type of research suggested above.

There are numerous structural constraints inhibiting systemic, inter-, and transdisciplinary research in

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Kyrgyzstan and Tajikistan, and such research will be effective and sustainable only if the Kyrgyz and Tajik governments, and specifically the Higher Attestation Committees, demonstrate openness and leadership in this area. A national research strategy needs to be elaborated and implemented that ensures institutional capacity building; inclusive processes for identifying priority research directions; governmental support for prioritized research; support for mechanisms facilitating collaboration among researchers, practitioners, and decision-makers, and land users; as well as mechanisms that attract and promote young researchers trained abroad.

Some additional specific recommendations are the following:

1. Conduct a similar review of literature on land use and management in the Kirghiz and Tajik Soviet Socialist Republics, with an emphasis on specific topics.
2. Conduct a thorough cataloging of biophysical monitoring data and a strategic rehabilitation of high-value stations from the Soviet and post-Soviet eras. Involve decision-makers (at multiple scales) and land users in identifying questions and problems that can be informed by biophysical and social monitoring. Based on the cataloged data and rehabilitated stations, design participatory monitoring systems with a view to facilitating informed land use decision-making.
3. Contribute to improvements in access to and management of knowledge, including the following measures:
   - Implement internet-based and other tools to facilitate exchange and access to information.
   - Kyrgyz and Tajik universities and research institutions should create incentives and an enabling environment for local researchers to publish in peer-reviewed international journals.
   - Similarly, publishing houses could allow authors publishing in international peer-reviewed journals to translate and republish articles in Russian-language journals.
4. Initiate and support collaboration between researchers, practitioners, and policy-makers:
   - Create incentives to conduct inter- and transdisciplinary research by changing the strictly disciplinary academic policies in Kyrgyzstan and Tajikistan, including removing the respective Academy of Sciences' restrictions on such research. This would facilitate critical internal review by a new generation of researchers, as well as smooth integration of local and international knowledge.
   - Recommendations made by CAMP Forum participants that we endorse include "to create platforms for better exchange between politicians, researchers and practitioners," as well as "to organize joint trainings and events including researchers, policy-makers and practitioners and conduct joint multi-stakeholder-level planning."

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Supplemental data

TABLE S1 Literature reviewed for the article (the selection criteria and timeframe are described in detail in the article).
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