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# Towards Implementing Transdisciplinarity in Post-Soviet Academic Systems: An Investigation of the Societal Role of Universities in Armenia

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Received: 27 July 2020; Accepted: 16 October 2020; Published: 21 October 2020



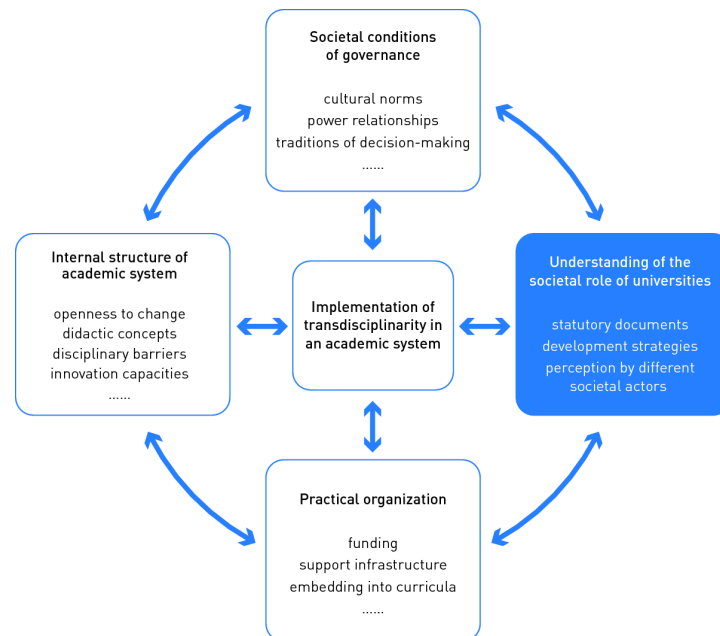
**Abstract:** The concept of transdisciplinarity (TD) has been introduced to find solutions for complex sustainability challenges via knowledge co-production by scientists and societal actors. The understanding of the societal role of universities is a critical factor when implementing transdisciplinarity in the academic systems of Post-Soviet countries, given their historic development. Using Armenia as a case, we adopted a qualitative research approach by analyzing legal documents, conducting semi-structured expert interviews and focus group discussions with a range of stakeholders. We identified discrepancies of expectations between stakeholders as challenges for a joint understanding of the societal role of universities, as well as differently perceived competences and motivations, which can lead to trust deficits. The results are discussed according to four main features of transdisciplinarity: focusing on real-life problems, transcending and integrating disciplinary paradigms, ensuring participatory research and teaching, and searching for unity of knowledge beyond disciplines. Findings show that no formal obstacles exist for implementing transdisciplinarity in two Armenian universities and that the societal understanding of the role of universities could be expanded. Yet, while society is in principle ready for collaboration, the initiative is expected to come from academia. A particular responsibility will lie with teachers from the younger generation to become key-agents for change.

**Keywords:** transdisciplinary approach; participatory research; higher education; university social responsibility

## 1. Introduction

Today's society is facing complex problems, addressing which requires bringing together different types of knowledge and skills. In this regard, universities can play an important role by facilitating integration and co-creation of societally relevant knowledge [1,2]. The concept of transdisciplinarity (TD) frames these processes of co-production of knowledge between academic and non-academic actors in research [3–6], as well as the integration of experience from practice into teaching [7–10]. If and how TD is incorporated into the academic system is influenced by various basic conditions (see Figure 1), such as, for example, the internal structures of the academic system, the operationalization within an organization, and the societal conditions of governance in a certain country, as well as the understanding of the societal role of universities. These aspects make it evident that, in order to

implement TD, it is important to take local peculiarities and perspectives into consideration [11]. TD approaches have been implemented in many collaborative research programs and, to a lesser extent, also in study curricula. However, most of the theory has been developed in academic institutions in Western countries [12–15], and there are only a few studies on implementing TD in developing countries.



**Figure 1.** Framework for investigating the implementation of transdisciplinarity in an academic system. Highlighted is the focus of the present paper (“Understanding of the societal role of universities”).

Hardly any references exist so far regarding the implementation of transdisciplinary approaches in the academic systems of Post-Soviet countries. The process of transition from the Soviet education model towards a Western model often took place without careful consideration of the individual countries’ needs, local mentalities and cultures, which then resulted in disorientation and uncertainty within the academic system [16,17]. Therefore, the current research aimed at identifying the specific challenges and opportunities of implementing TD approaches in Post-Soviet countries, considering Republic of Armenia as a study case for this paper. We argue that the understanding of the societal role of universities affects the implementation of transdisciplinarity. We address this through the two main research questions: (1) How do different actor groups from within and outside the academic system perceive the societal role of universities in Armenia? (2) How does this perception of the societal role influence the implementation of TD in the academic system in Armenia?

This research was conducted within the framework of the project Transdisciplinarity for Sustainable Tourism Development in the Caucasus Region (CaucaSusT), funded by the Austrian Partnership Program in Higher Education and Research for Development APPEAR. Project partners are the Armenian State Pedagogical University (ASPU), Tbilisi State University (TSU), Georgia, the University of Natural Resources and Life Sciences (BOKU) Vienna, and the University of Applied Sciences IMC Krems, Austria. The project, implemented between 2016 and 2020, aimed to integrate transdisciplinary approaches into the academic systems of partner universities in Armenia and Georgia with a focus of addressing challenges of sustainable tourism development and long-term sustainable development of the Caucasus mountain region.

Armenia as a member state of the Soviet Union shared all aspects of the Soviet educational and labor system: curricula, tuition-free study places offered, and mandatory employment assigned to university graduates [18]. While natural and technical sciences were highly prioritized, the role

of social sciences was marginalized [19]. Moreover, the removal of research from higher educational institutions and its placement under the Armenian Branch of the Academy of Sciences of the USSR in 1935 undermined the research capacity of the higher educational institutions [20].

Liberalization of the education system after the disintegration of the Soviet Union led to the establishment of many private universities. However, there was a lack of quality control and planning, which resulted in a large number of unqualified graduates and mismatch between professionals produced and available workplaces [19].

Currently, the higher education system in Armenia consists of public, private, inter-governmental, and transnational higher educational institutions (HEI). In order to have academic freedom, many universities changed their legal status from a state entity to that of a 'foundation', which constitutes a non-profit institution and implies legal independence in financial, tax, academic, and staff management. While during the Soviet-Union period HEIs were fully state funded [21], today, the Armenian state universities' budget is mostly formed from the students' tuition fees [17].

Current developments, such as the integration into the European Higher Education Area, and therewith the Bologna System, aim to ensure comparability and integration of standards of higher-education qualifications, to increase opportunities for international collaboration, and to facilitate adaptation of innovative scientific approaches [22]. However, certain obstacles, such as a persisting Soviet mindset, as well as the challenges of political, economic, and institutional restructuring, have slowed down the adoption of the new academic system and has markedly shaped how Armenian society perceives the universities' role.

Section 2 discusses the theoretical framework, reflecting on the concept of transdisciplinarity, as well as on the societal role of universities. Section 3 depicts the methods and materials. Section 4 presents the results of the two case studies in Armenia, followed by Section 5, discussion. Section 6 concludes and reflects on the research questions.

## 2. Theoretical Framework—Transdisciplinarity as a Framework Concept for Science-Society Interaction

### 2.1. *The Role of Universities in Society: An Overview*

The role of universities in society has always been a topic for discussion, and transdisciplinarity provides one framework amongst others for this debate. In scholarly literature, many different concepts and interpretations of the role of universities can be found, such as Triple Helix University [23], Entrepreneurial University [24], Engaged University [2], and Sustainable University [25]. In Europe, Third Mission (in addition to the first two missions of teaching and research) is increasingly used as an umbrella term describing the societal engagement of universities and the commercial and non-commercial services provided by higher education institutions, yet it is still a blurry term with many different interpretations [26].

In recent years, universities have become more engaged in societal problem solving and sustainable development processes at regional level in their immediate vicinity [27]. Functioning as change agents towards sustainability, they work together with local communities in knowledge co-production processes [6,28,29]. Universities respond to the societal needs by teaching, research, and providing services to the community [30]. They play an important role in society by contributing to knowledge transfer, economic initiatives, and policy development [2]. Including societal issues into higher education curricula, teaching, and research activities provides a way towards strengthening the acceptance of the role of universities in society [31]. We are aware that the societal role of universities cannot be considered in isolation from the societal conditions of governance and the internal structure of the academic system, as well as the organizational level (see Figure 1). Table 1 summarizes the main findings of the above-mentioned models and concepts with regard to their societal role. In doing so, Table 1 guides the investigation of the societal role of universities in the Armenian case.

**Table 1.** The societal role of universities in different concepts and models of university—region interaction (own illustration).

Concept (Core of the Definition)	Societal Conditions of Governance	Structure of the Academic System and Organizational Level	Implications for the Societal Role
Entrepreneurial university (university applies an economic mission and focuses on commercialization of knowledge)	University provides knowledge as a commodity. Collaboration with economy and politics is characterized by commercial rationality. Loss of autonomy of the university	Commercialization activities enter the regulatory framework of the university. R&D cooperation, spin offs and patent gain in importance; Establishment of an entrepreneurial culture	Universities provide knowledge (via graduates, spin-offs, R&D cooperation, patents), especially to support the (regional) economic development
Engaged university (focus on regional needs in teaching, research and 3rd mission activities)	Public financing takes into account regional engagement activities; regional engagement activities are appreciated by various economic and political actors	Integration of the regional focus into the mission and strategy of the university, into research and teaching; adoption of TD approaches; participation in strategic regional networks	Universities are recognized partners in the elaboration of regional development strategies and recognized contributors to regional innovation networks
Triple Helix university (university—industry—government relations are generated endogenously)	Interdependencies between the three institutional spheres: economy, politics and university	Foundation of hybrid organizations, such as knowledge transfer offices, incubator facilities; transdisciplinary and working methods emerge	New mode of science—policy making; the three institutional spheres, science-policy-industry, interact and interfere with each other's tasks
Sustainable university (sustainability is incorporated as key principle into management practices, as well as teaching and research)	The sustainable university understands and serves its surrounding environment from a systemic point of view and considers different spatial levels from local to global	Change of management and operational practices, as well as incorporation of sustainability and therewith approaches, like transdisciplinarity, in teaching and research	Based on universities' main functions (i.e., teaching, research, and services); defines sustainability as the institutions' impact on the wider society in a specific spatial context; the surrounding environment is part of its sustainability mission

## 2.2. Implementation of TD in an Academic System

The concept of transdisciplinarity emerged in the late 20th century in order to strengthen the societal role of academia and enable researchers to tackle societal problems in a more systemic way [5]. Today, it is interpreted in the sense of academic actors from different disciplines working together with people outside of academia in order to solve societal problems [3]. TD is a co-learning process that provides solutions for complex real-life problems [10]. As described by Hirsch Hadorn et al. [5], TD takes into account the complexity and diversity of real-world problems, links abstract and case specific knowledge, and constitutes knowledge and practices that promote the common good. Scholz [32] sees the role of transdisciplinarity in developing social and technological innovations for society in order to achieve sustainable development missions.

Transdisciplinarity can be integrated into academic systems through both research and teaching by implementing the following key features: (1) initiate cooperation among different scientific disciplines in order to analyze the complexity of systems, (2) involve non-academic actors, such as practitioners, case-specific experts, and the local community members, into academic activities (e.g., research), and (3) co-design and co-implement a proper methodology to integrate knowledge from all relevant stakeholders in order to provide possible solutions for the real-world problems [1,3–10,33]. The theoretical and conceptual ideas of TD have been integrated into various activities of educational and research institutions, very often in the context of sustainability and environmental sciences [6,9,33–37]. Scholarly literature also addresses transdisciplinary curricula and academic program development [5,11,37–40], as well as teaching and learning [4,8,10,13,35]. Several studies showed that universities can provide sufficient solutions to real-world problems by applying transdisciplinary approaches [3,5,14,34,40,41], and, today, TD is regarded as a key term in the context of the universities' responsibility for the implementation of the UN Sustainability Goals [42].

The integration of TD into an academic system has numerous interrelated theoretical and practical aspects [1,3,4,8,11–15,33–38,43]. In order to explore the challenges and opportunities of implementing transdisciplinarity in academic systems, based on scholarly literature, we propose a categorization as depicted in Figure 1. The main dimensions are (1) societal conditions of governance, (2) the internal structure of the academic system, (3) the practical organization of science-society cooperation, and (4), as a more fundamental aspect, the understanding of the societal role of universities.

This paper discusses transdisciplinarity as an approach for mutual learning among science and society and co-production of societal robust knowledge by integrating all relevant stakeholders from and outside of academia [3,5,7,12,32,41], as well as a strategy to raise the societal role of universities by involving them in the real-world sustainability problem-solving process [1,14,29,34,35,44]. The aim of the present paper was to investigate how the perception of the societal role of universities in particular influences the implementation of TD in the academic system of Armenia. The analysis on the implementation of TD follows the four main characteristics of TD: (1) focusing on real-world problems, (2) transcending and integrating disciplinary paradigms, (3) ensuring participatory research, and (4) searching for unity of knowledge beyond disciplines [33].

## 3. Materials and Methods

This study aimed at understanding the societal role of universities and its influence on the implementation of TD in the academic system of Armenia. For this purpose, we studied the definition of the universities' role in legal documents, as well as the perspective of academic actors (teachers, students, university leadership), of local case actors (political leaders, decision makers, non-governmental organizations (NGO), etc.), and of experts in the field of sustainable development.

We conducted qualitative research in order to gain in-depth insight into specific concepts or phenomena [45]. This has been proven to be a useful methodology for the evaluation of TD research [11,14,15]. We carried out the following research steps:

### *Case selection*

Given the project context (see Section 1) and its focus on transdisciplinarity and sustainable tourism, the academic interviewees were chosen from the field of education, tourism, and sustainable development. Local community actors associated with local governance and tourism development were recruited from the project *CaucaSusT* case study areas: Meghradzor community (Marmarik River Valley) and Dilijan community (Dilijan National Park area).

We selected two higher education institutions, both of them state universities, being the dominant type of universities in Armenia and successors of the Soviet education system: Yerevan State University (YSU) is a multi-faculty university and the largest in terms of student numbers in Armenia; Armenian State Pedagogical University (ASPU) is a university with a clear focus on teacher education.

### *Data collection*

The data for this study was collected both from the legal documents and from the interviews:

#### 1 Legal documents

Legal documents constitute the formal basis of the academic system. They provide a foundation for the implementation of educational and research programs, ensure autonomy, and define rules for governance and the overall development strategy of academic institutions. For this reason, we considered the following documents as data sources for our analysis:

- Law of The Republic of Armenia on higher and postgraduate professional education (Adopted by the Gov. of RA, Dec 14, 2004);
- Statutes of Armenian State Pedagogical University Foundation and Yerevan State University Foundation; and
- University Development Strategic Plans 2016-2020 of ASPU and YSU (for the details, see Appendix A)

#### 2 Interviews and focus group discussions

Interviews were conducted mostly face to face, and only in a few cases via video conferencing, during June–December 2018. We conducted focus group discussions, semi-structured and expert interviews. Ten students from each university participated in focus group discussions, including Bachelors, Masters, and Ph.D. students. The participants were chosen based on their disciplinary affiliation to the fields of tourism, education, and sustainable development, and considering a balanced representation of gender and study experience in both groups. Interviews were conducted with teachers (n = 8) and local societal actors (n = 9). Teachers were selected according to their professional experience in the field of tourism, education, and sustainable development. Local societal actors were chosen based on their community engagement due to their societal and professional activities. Data collected via semi-structured interviews and focus group discussions was complemented by information gained through additional expert interviews (n = 13). Experts were selected by the snowball sampling method. For more details on the study participants, see Appendix B.

Many interview partners had dual roles: practitioners who teach at universities, practitioners who are also Master's students, university teachers who occupy university leadership positions, etc., which proved to be useful when discussing different perspectives.

Interview questions and focus group discussions were based on the main research questions of the study and touched on the following points:

- the current role of universities in Armenian society,
- how this role is reflected in practice,
- which changes are needed in the understanding of the role of universities,
- experiences with cooperation within universities and between academic and non-academic partners,

- existing challenges for cooperation within and outside of academia (legal, financial, organizational, infrastructural, etc.), and
- how these challenges could be overcome.

The duration of the interviews was 15–20 min for local stakeholders, 20–30 min for teachers, and around 40 minutes for students' group discussions.

### *Data analysis*

#### 1 Document analysis

We conducted qualitative content analysis [45] of the above-mentioned documents with an aim of defining the representation of the role of universities, particularly:

- the state policy in the field of higher and postgraduate professional education, autonomy and the main tasks of the higher education institutions in the Law of the Republic of Armenia on higher and postgraduate professional education; and
- the mission, vision, values, strategic goals, and the main stakeholders of the universities in the development strategic plans of ASPU and YSU.

#### 2 Interview analysis

All interviews were recorded and transcribed with permission from the interview partners (a consent form was introduced to all of the interviewees). Thematic data analysis was conducted using Atlas-ti 8 Windows software (Berlin). Significant keywords were collected and considered with respect to results from other studies [3,5,10]. We used an inductive approach through open coding of the data [45]. Codes were grouped into different themes and presented according to the main features of TD as described by Pohl [33].

In the subsequent phase (January–April 2019), we analyzed the data and formulated our preliminary conclusions. To ensure the validity of the analyzed data, additional discussions were conducted with interviewees and other stakeholders from inside and outside of academia. Additional comments have been taken into consideration for formulating the results. Finally, the results have been presented and discussed during a public event, held in the national capital, Yerevan, in April 2019, with a large number of actors (60–65): representatives from the state government, educational experts, university leaders, teachers, and students from different academic institutions, as well as societal actors from the study regions. The outcomes of the seminar were considered for the final discussion and recommendations sections in this paper.

## **4. Results**

### *4.1. Perception of the Societal Role of Universities in Armenia*

The analyzed documents do not explicitly define the societal role of the universities, they only include some statements that can be interpreted as indirect references. Appendices C and D present detailed information about implicit references to the universities' societal role in these documents. Article 5 in the Law on Higher and Postgraduate Professional Education enumerates "Tasks of state policy in the field of higher and post graduate education" with regard to the quality of education and research, to meeting the demands from the labor market and, in particular, to the need of preparation of specialists in thematic priority fields defined by the government, such as information technology. While the text proposes the introduction of innovative teaching methods, the need for a broader dialogue between academia and society in the sense of transdisciplinarity is not explicitly mentioned in this text.

More explicit statements about the role of providing consultancy services to society can be found at the level of the individual statutes and strategic development plans of ASPU and YSU. Yet, the overall

impression is that the main task of a university is to produce graduates that fit the requirements of the labor market. In addition, the term “stakeholder” is rather used in this context (e.g., potential future employers). As such, the analyzed documents display characteristics of the entrepreneurial university.

According to the interviewed teachers, the role of the university is to provide students with appropriate education and skills useful for integration into the labor market. However, students perceived a wider role of universities in supporting them to become active, creative citizens with critical thinking abilities, which will enable them to contribute to societal development. Local societal actors referred to the responsibility of universities to provide good education; they hardly considered universities as contributors to the development of the society. Experts and practitioners believe that universities should constitute centers of innovation and knowledge creation that respond to the society and market demands.

There are several practical issues affecting the perception of the role of Armenian universities in society. Students and experts mentioned that some teachers do not regularly update their teaching materials (even for many years). Some cases were highlighted where the professors’ scientific background or practical experience is seen as irrelevant for the course they teach. Students also complained that, because of limited resources (e.g., for field studies), they are not able to engage in thorough research to contribute to local community development. Moreover, they mentioned that the senior generation of teachers is for the most part unfamiliar with modern technologies, which makes their lectures unappealing.

Practitioners do not trust students’ grades: there is an imbalance between the grades and the knowledge that students gain at the universities. Practitioners complain that, after hiring students and graduates, extra time and resources are needed to train them. Moreover, experts criticize that many universities try to maximize the number of students without considering their competencies and performance in order to gather more education fees. Teachers raised the same concern by stating that they are often pressured by university leadership to give passing grades to students in order to secure the income from tuition fees.

Another factor influencing the perception of the university’s societal role is the motivation of teachers towards teaching and research and students’ enthusiasm towards learning. Interviews revealed a lack of motivation towards teaching and learning by both teachers and students and gave reasons for this. Almost all interviewees mentioned that only a small number of teachers were motivated, passionate, and enthusiastic about teaching. The senior generation of teachers and university leaders tends to be less motivated and committed to quality teaching or integrating changes into the academic system. As many of them are in decision-making positions, they prevent younger teachers from introducing innovative approaches and from being promoted into more important positions. While a system of teacher evaluation exists, it does not play a significant role in affecting teachers’ performance, and teachers do not face any consequences as a result of either poor or good evaluations.

Some teachers mentioned that low salaries are demotivating and often compel them to take on additional jobs (the monthly salary of a full-time teacher is only between 300 and 400 Euros). Yet, other teachers also stated that receiving salary is not the main purpose of their work at the university: important factors for them include holding an academic position and educating future generations. At the same time, teachers complain about the lack of appreciation of teachers by Armenian society in practice, evident from low salaries and the common perception of teachers as “poor” members of society.

According to both teachers and students, there is also a widespread lack of students’ motivation. Many students attend higher educational institutions because of societal pressure to have a higher education diploma, which is often required to get a job. Moreover, there are cases when parents choose the specialization for their children, often disregarding their talents and interests; thus, the main aim of such students becomes receiving a diploma rather than obtaining the knowledge itself.



#### 4.2. Influence of the Perception of the Societal Role of Universities on the Implementation of TD in the Academic System in Armenia

The results are presented along the four main characteristics of transdisciplinarity, as proposed by Pohl [33], which are: (1) focusing on real-life problems, (2) transcending and integrating disciplinary paradigms, (3) ensuring participatory research and teaching, and (4) searching for unity of knowledge beyond disciplines.

##### 1 Focus on real-world problems

The interviews revealed a perceived lack of responsibility within the academic system towards society. Three educational experts mentioned that the university faculties do not feel responsible for unsuccessful teaching outcomes, more specifically for the lack of professionalism and knowledge among their graduates. One of our interview partners (a department head) mentioned that universities themselves do not have a sense of responsibility towards society because the study programs do not reflect market demands. An expert mentioned that Ph.D. topics hardly reflect real life needs and are barely applicable in real life.

Most of the teachers highlighted that societal responsibility does not only concern university staff but also the students' sense of responsibility towards the learning process and societal development. According to them, there are cases where students pay tuition fees but do not attend classes, do not care to receive sufficient knowledge, nor feel responsible to contribute to society.

Students and experts mentioned that study programs are rather updated based on foreign curricula than on national needs. They found most of the teaching materials outdated and not relevant for the current societal needs. Moreover, they believe that there are only a few individuals among university staff who are interested in innovation.

A lack of practical skills among the students makes them uncompetitive in the labor market; many students face difficulties in finding a job after graduation. Language barriers have also been mentioned as a challenge preventing many teachers from reading international publications and keeping their knowledge of the subject, as well as awareness of innovative teaching approaches up to date.

In general, most of the interviewed local societal actors did not perceive academics as useful contributors to solving societal issues.

##### 2 Transcending and integrating disciplinary paradigms

Most interview partners mentioned that research and teaching at universities are mostly discipline-oriented. This is also reflected in the scientific periodicals of ASPU and YSU: most of the papers are co-authored by representatives of the same academic discipline. Two of the interviewed teachers mentioned that there are cases when the power relationship of senior teachers prevents young scholars from expanding their field of research.

Interviewed students complained that after graduation they face many challenges regarding the lack of knowledge, which is outside the scope of their respective professional disciplines, but relevant for professional work.

Teachers mentioned that even though the university leadership encourages interdisciplinary research, there are very few examples of collaboration with colleagues from different disciplines, and most of them are multidisciplinary rather than interdisciplinary. Moreover, there are no clear mechanisms and many obstacles for interdisciplinary teaching and research (e.g., in case two teachers teach at the same time, only one of them could be paid). Successful cases are mostly based on the teachers' personal relationship when they invite colleagues from other discipline to teach their students.

Experts mentioned the mindset of academics as the main obstacle for integrating disciplinary barriers. During the Soviet Union, education was organized in a way that specialists were equipped with the necessary knowledge and skills to solve discipline-oriented tasks. There was no need to go beyond a discipline for an additional opinion or support. Moreover, different scientific approaches and

jargons are causing extra problems in this regard. During the Soviet period a systematic approach was not encouraged, as well. This way of thinking still persists in some universities, especially among senior teachers who are in decision-making positions. Hence, the integration of different disciplines is not considered important.

The next issue is financial: an interviewed expert mentioned that even though state grants encourage interdisciplinary research, there are hardly enough budget allocations for interdisciplinary group formation. For a research group, it is easier to limit their study focus instead of conducting systematic research.

Teachers and researchers who are not experienced with interdisciplinary research approaches avoid taking a risk. There are no platforms to support interdisciplinary research and little space for discussing research challenges that cannot be solved within the one single discipline. This gap causes competition instead of cooperation among researchers (e.g., an expert mentioned that in the field of tourism, the economists, and environmentalists cannot come to a consensus on the role of research and teaching in tourism).

### 3 Participatory research and teaching

Both academic and non-academic actors find mutual cooperation important and useful. However, in reality, they see a lack of collaboration between academia and practice. Some interview partners mentioned that cooperation with non-academic actors exists rather on the individual level, mostly based on personal relationships and is rarely institutionalized. Long-term collaboration based on contracts or formal agreements is rare.

Diverging value systems of academic circles and practitioners affect the understanding of the universities' societal role. Interview partners from academia expressed that practitioners are mainly seeking financial profit and that they are not interested in cooperation with universities. Individuals from academia also considered their values (holding scientific knowledge, educating younger generations, and shaping members of society) to be ethically superior to the values held by practitioners. Yet practitioners contradict this perception of teachers about them and expressed their interest in collaborations and sharing their experience and practical knowledge without getting paid. Moreover, practitioners expressed disappointment with the limited support provided by the teachers to the students during internships.

Interviewed teachers consider that practitioners are mainly responsible for successful internships. At the same time, they complain that practitioners often lack the time to provide enough support to students during internships. One teacher mentioned that some professionals do not want to engage students in internships based on previous bad experiences. Teachers mentioned successful cases of establishing cooperation with practitioners and inviting them as guest lecturers. In addition, examples exist of students' research results being useful for practitioners. Moreover, some companies promote their cooperation with the students for marketing purposes.

Some experts mentioned that involvement of practitioners in teaching has rarely been successful due to the lack of appreciation of practice-based knowledge among teachers. Others suspect that some teachers are reluctant to cooperate with practitioners due to their fear that students will find practitioners to be more competent than the teachers themselves. Experts and practitioners believe that universities lack respective mechanisms and experience with involve practitioners both in teaching and in practice. The lack of management skills among academic actors and the university leadership, as well as non-flexible bureaucracy, challenge the establishment of cooperation with practitioners.

One interviewee representing university leadership explained that cooperation between universities and practitioners in the Soviet Union had been determined by top-down orders from the government, which also provided funding for academia. Due to this, some universities are still not used to initiating cooperation themselves; moreover, they would need to find resources for carrying out collaborative projects. Interviewed local societal actors mentioned that academics mostly cooperate with local communities in the scope of various international grant projects. Another interviewee, the mayor

of a local municipality, mentioned that, while he is ready to cooperate with universities, the community is lacking resources to cover associated costs, which are sometimes requested by universities.

#### 4 Unity of knowledge beyond disciplines

The perception of the educational system varies among students, faculty and practitioners. From the teachers' viewpoint, students are mostly provided with the necessary knowledge in their individual disciplines, which, in their opinion, is enough for professional integration of graduates into society. They believe that practical skills should be gained later on during work experience.

Most of our interview partners emphasized the lack of trust between academic and non-academic actors. The value of local and expert knowledge is perceived differently by various stakeholders. Experts mentioned that teachers disregard the value of practical knowledge, considering it "non-scientific". Local community members complain that the interaction with them is mostly based on a top-down approach instead of accepting them as research partners and taking their opinions into consideration. Another obstacle for the integration of non-academic knowledge is the lack of research capacities, field studies, and previous experience among academics. In the classroom, few opportunities exist to integrate knowledge beyond academic disciplines.

Financial compensation offered by state universities to practitioners contributing to teaching is minimal; nevertheless, some practitioners (often alumni of these universities) are willing to share their knowledge, even though they criticize students' lack of motivation towards learning. Some of the experts prefer to teach at international private universities (e.g., the American University of Armenia), which offer higher financial compensation and where they perceive students to be more motivated.

Another practical obstacle is the system of allocating teaching hours: In state universities, the salary of a teacher depends on the number of teaching hours. The responsible persons tend to allocate paid teaching hours to a teacher from his/her own faculty (even though he/she might be less competent at teaching a certain course), rather than invite specialists from outside of academia or from a different faculty.

### 5. Discussion

Our paper investigated two research questions in the context of Armenian universities, which are: (1) How do different actor groups from within and outside the academic system perceive the societal role of universities in Armenia? (2) How does this perception of the societal role influence the implementation of TD in the academic system in Armenia?

It became evident from the investigations that there is no common understanding of the societal role of the Armenian universities. The conducted interviews confirm this and reveal considerable differences and contradictions in the understanding of this role among different actor groups (teachers, students, experts/practitioners, and local residents) and point to a communication and collaboration deficit between universities, society and industry. The term "transdisciplinarity" is not mentioned in any of the legal documents and our interview partners were unfamiliar with the concept of TD. Although the university strategic documents highlight the universities' responsibility towards society on a national level, no specific actions and mechanisms are outlined for achieving the envisioned role and integrating university responsibility into practice. The lack of clear links between strategic documents and practice is evident; it results in implementation gaps with respect to education, research and societal engagement of universities in Armenia. These gaps hinder university participation in technological innovations and contribution to societal progress, as highlighted by the authors of [46].

A further obstacle for the implementation of TD in Armenian universities is the low level of research. While the strategic documents of ASPU and YSU refer to research as a fundamental activity, it is hardly functional in both universities (except for in the natural science faculties). These findings are in line with the results of previous studies [21], demonstrating that the lack of research capacities in the social sciences and humanities in most Post-Soviet countries is the result of the research function being taken away from the universities during the soviet time and transferred to the Academies

of Sciences. This led to a loss of research traditions in these fields, as well as a lack of financial and time resources allocated to research activities. Inadequate research competences of staff and students still prevail today. The lack of research limits the universities' capacity to disseminate knowledge, create innovation, and respond to complex societal problems [38]. The high teaching load of university staff, which forms the basis of their salary, also limits their capacity to initiate and participate in research projects. A similar conclusion was reached by several studies [1,4,5,34], that paucity of research in general renders universities' engagement in transdisciplinary research even less likely.

Collaboration with non-academic actors, as well as community engagement, are not specified in the analyzed strategic documents, which implies missing awareness on the strategic level of the need for societal engagement. In fact, the interviewed members of the general population, who face substantial challenges due to marginalization and under-development of their communities, did not perceive universities as potential contributors to solving societal challenges and did not consider universities as potential partners in community revitalization. The lack of experience in cooperation between universities and the general population, and particularly the missing trust of the population towards academia could be a barrier for initiating TD collaboration [1,3,7,15,47]. Lang et al. [34] point out that the lack of trust and weak collaboration can especially challenge the core elements of successful TD research: joint problem framing and team building. On the other hand, initiating these processes could contribute to trust building, if mutual concerns are addressed and mutual benefits achieved as a result, as highlighted by authors of [4,7,10,36].

The strategic documents have the potential to frame the universities' role in society by inducing regulative development along with normative and cultural change. This societal role can be fulfilled via knowledge transfer, economic initiatives [2], teaching, research and services [30]. However, our results point to implementation gaps with respect to education, research, and societal engagement of universities in Armenia. In this respect, university leadership should play an important role in ensuring social responsibility [47–51]; moreover, responsibility towards society must be integrated as a fundamental value in every level of university activity, accompanied by implementation guidelines as implied by our results, and demonstrated by authors of [27,46].

In line with existing studies [6,27,28,47], our research results indicate that besides leadership, motivation and relationships of individual teachers are important for enabling collaboration and co-production of knowledge with people outside academia. Bürgener and Barth [52] highlight the importance of teachers as key agents, who play an essential role in linking education with sustainable societal transformations.

Furthermore, our results highlight that the mutual perception of the value systems of academic and non-academic actors, as well as the perception of the teachers' role in society, are key factors for the establishment of successful collaboration between academia and society. The interviewed academics and practitioners seemed to share the same values, even though they perceived the values of the other group as different. Moreover, there is a discrepancy between the way the teachers' role is portrayed in political statements (as important and noble) and the actual perception of the teachers by other societal actors, influenced by the low salaries and the poor image of the teaching profession. The latter contributes to undervaluing of educational institutions and undervaluing employment in the academic sector with respect to other economic sectors and fuels mutual misunderstanding between the educators and practitioners. Stronger social involvement by the universities could contribute to overcoming this challenge and improve the image of academia in society. This could be achieved by integrating transdisciplinary research and teaching, as well as internships, into the university study programs, as highlighted in previous studies [1,15,41], and making efforts towards TD institutionalization by providing relevant funds and mechanisms [14,34,35].

A potential limitation of this paper is the focus on two state universities of Armenia (ASPU and YSU) and selection our interviewees who are mostly representatives of the fields of sustainability, education, and tourism. Another challenge of this study is limited prior research in the field of transdisciplinarity conducted in the Post-Soviet country's context. Nevertheless, we think that several insights can be

generalized for the academic system of Armenia. Specifically, the perception of practitioners, experts, and locals referred to all universities. Due to the fact that most countries of the former Soviet Union passed through the same transition processes and today face similar problems [21], we assume that our results could be representative of the academic systems in other Post-Soviet countries. However, it seems necessary to conduct more such studies in order to obtain results specific to other countries. Particularly, it would be useful to accompany and evaluate the application of transdisciplinary research and teaching in Post-Soviet countries, in order to reveal the potential for universities in these countries to play a greater role in addressing real-life challenges.

## 6. Conclusions

The study shows no legal obstacles for implementing TD approaches in the Armenian academic system. According to our results, society is in general ready and open for collaboration but expects an initiative to come from academia. Interest of department heads towards enabling collaboration between teachers and practitioners could facilitate fruitful results. However, this would imply extensive effort and bureaucratic burden for department heads. This, in addition to low salaries, often leads to demotivation and lack of support for collaboration on a department level, which adds to the existing barriers for teachers, described in the results and discussed above.

Despite the many challenges and barriers, our interviews with experts, teachers, and students showed that a few enthusiastic and motivated teachers (mostly of the younger generation) are open to innovations and tend to integrate new teaching and research methods into their practice. These teachers could become change agents for integration of TD into the Armenian academic system. Our research shows that TD is a new concept in Armenia and implies that transdisciplinary approaches could facilitate collaboration between academia and society, thereby engaging universities in addressing societal problems. This will in turn enhance the perception of the role of universities in society in Armenia.

In addition to the tuition fees universities could generate income by providing services to society (e.g., ASPU providing advanced training for teachers). This would increase teachers' income and improve the universities' role as an expert in the relevant field. Adoption of TD approaches could support universities to become a bridge between society and policymakers, thereby playing an important role in current policy projects (e.g., higher education and science law). Even though these already constitute elements of the Entrepreneurial and Engaged Universities concepts, we believe that a future vision should be targeting the concept of Sustainable University by adopting sustainable development principles in research and teaching agendas. In this regard, we do believe that university leadership (e.g., rector and department heads) should not only be good scientists but also enthusiastic leaders with strategic and managerial competences.

A number of specific guidelines for initiating TD approaches exist [3,7,8,11,12,22,23,34,50], which could be adapted and applied in Armenia, while considering the local context. Cooperation of the Armenian universities with international peers who have experience in TD research and teaching could be helpful in this regard. Case studies of integrating TD approaches in Armenia and other Post-Soviet countries should be designed, implemented, monitored, and evaluated considering the local peculiarities. This can contribute to the new practices of applying transdisciplinary approaches and their institutionalization in the particular country context. Such case studies could also support development of action guidelines for operationalizing university societal responsibility, which could help to "translate" university strategic documents into practical outcomes. We consider that students' and practitioners' active participation in study program evaluation can improve the quality of higher education and research. Linking Master and Ph.D. theses, as well as the university research agendas, with real-life problems can increase university social responsibility and provide solutions to sustainable development—related issues. Finally, we suggest that references to interdisciplinary and transdisciplinary approaches should be integrated into the relevant national strategic documents (state development agenda/new law for higher education and science), as well as the individual

universities' strategic development documents, in order to strengthen incentives for university leadership to encourage and support these approaches in teaching and practice.

The paper has demonstrated that there is a strong interconnection between the perception of the societal role of universities and the implementation of transdisciplinarity in the Armenian academic system. We hope that the outcomes of the study stimulate further research, discussions, and strategic planning to promote sustainability:

- academics will ensure that their research and teaching activities focus on societal challenges;
- practitioners will collaborate with academia to transform society in a sustainable manner; and
- policy makers will integrate and support transdisciplinary approaches in their decisions and action.

**Author Contributions:** Conceptualization T.K., A.M., T.M., V.R.-P.; Methodology and analysis T.K., A.M., T.M., A.K., V.R.-P.; Data collecting T.K., A.M., T.M., A.K.; Writing T.K., A.M., T.M., V.R.-P.; Review and editing T.K., A.M., T.M., V.R.-P. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was conducted in the context of the project “Transdisciplinarity for Sustainable Tourism Development in the Caucasus Region *CaucaSusT*”, which was funded by the Austrian Development Cooperation via the Austrian Partnership Program in Higher Education and Research for Development (APPEAR). Furthermore, research was partially supported by the FWF Grant (T761-G27).

**Acknowledgments:** The publication of this article in an Open Access journal was supported by the BOKU Vienna Open Access Publishing Fund. We would like to thank all of the respondents for participating in our interviews. We would like to thank Christian Pohl, co-director of the Transdisciplinarity Lab at ETH Zurich, for his valuable input and feedback to the research design and the data analysis.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Appendix A. List of Analyzed Documents

1. Law of The Republic of Armenia on Higher and Postgraduate Professional Education (Adopted by the Gov. of RA, Dec 14, 2004). Available online: <https://www.arlis.am/DocumentView.aspx?docid=25820> (accessed on 3 September 2018).
2. *Statute Yerevan State University Foundation (Government Resolution 1408-N, November 27, 2014)*. Available online: [http://documentation.y-su.am/wp-content/uploads/2015/07/YSU\\_kanonadrutyun\\_Nov\\_201411.pdf](http://documentation.y-su.am/wp-content/uploads/2015/07/YSU_kanonadrutyun_Nov_201411.pdf) (accessed on 3 September 2018).
3. *Statute Armenian State Pedagogical University Foundation after Khachatur Abovyan (Government Resolution 138-N, February 4, 2016)* Available online: [https://aspu.am/website/images/files/Kanonadrutyun\\_himnadram.pdf?fbclid=IwAR24mn6BAEjBL18ngUIVk6gImRnfcQqlwgdG6B1HcHUUkyT-K2MK\\_TJpLLo](https://aspu.am/website/images/files/Kanonadrutyun_himnadram.pdf?fbclid=IwAR24mn6BAEjBL18ngUIVk6gImRnfcQqlwgdG6B1HcHUUkyT-K2MK_TJpLLo) (accessed on 3 September 2018).
4. University Development Strategic Plan 2016–2020 (Adopted by the Board of Trustees, 30 March 2016). Available online: [https://aspu.am/website/images/website/docs/HPMH\\_RC%20%20FINAL.pdf](https://aspu.am/website/images/website/docs/HPMH_RC%20%20FINAL.pdf) (accessed on 3 September 2018).
5. University Development Strategic Plan 2016-2020 (Adopted by the Board of Trustees, 23 December 2015). Available online: [http://extension.y-su.am/images/pdf/1473058805-0EPH\\_razmavarakan\\_tsragir\\_2016-2020.pdf](http://extension.y-su.am/images/pdf/1473058805-0EPH_razmavarakan_tsragir_2016-2020.pdf) (accessed on 3 September 2018).

## Appendix B

**Table A1.** Actor groups and organizations/institutions participating in interviews or focus groups.

Actor Groups.	Name of Organization/Institution	Total Number
Academic actors: Students, teachers	Yerevan State University	10 + 4
	Armenian State Pedagogical University	10 + 4
Societal actors, representatives of different societal groups: Local mayors, museum directors, NGO presidents, local authorities, etc.	Municipalities of Dilijan and Marmarik	9
	Local NGOs	
	Dilijan National Park	
	Tourism Development Agency of Tavush Region	
	Entrepreneurs in Tourism field	
Experts and practitioners in the field of tourism and education: Governmental workers, educational experts, managers in the field of tourism, etc.	Dilijan Geological Museum and Art Gallery	13
	Ministry of Education and Science of the Republic of Armenia *	
	Supreme Certifying Committee of Armenia	
	International Network for Quality Assurance Agencies in Higher Education	
	Caucasus Network for Sustainable Development of Mountain Regions	
	Caucasus Nature Fund	
	Education and Carrier Development Foundation	
	Erasmus + Higher Education Reform Armscoop EduLab	
	Amberd research center	
	Civic Initiative for Education	
	Levon Travel agency	
	Armenian Association of Professional Tourist Guides	
Total	23	50

\* In June 2019, the Ministry of Education and Sciences of the Republic of Armenia was dissolved and reestablished as Ministry of Education, Science, Culture and Sport.

## Appendix C

**Table A2.** Representation of the role of universities in the Law of The Republic of Armenia on higher and postgraduate professional education (highlights by authors).

<b>Tasks of state policy in the field of higher and postgraduate professional education</b>	assuring the quality of education; contributing to the development of international scientific and educational cooperation and to the integration; introducing international (European) standards for internal and external assessment of instruction quality and accreditation; <b>bringing the educational program in line with the labor market requirements; introduction of new forms of knowledge testing and quality assessment; introduction of new educational concepts and technologies</b>
<b>Autonomy, competence and academic freedoms of HEIs</b>	act independently in respect of matters concerning the choice of organization of academic process, educational technologies, implementation of scientific, research, creative, innovative, educational, methodological, <b>consultative activity in the different spheres</b>
<b>Tasks of the higher education institution</b>	developing science, education, economy and art through scientific research and creative activities of scientific and pedagogical workers and learners, applying the acquired results in economy, research and educational process; <b>enrooting civic views, skills and responsibility for work among learners</b>

## Appendix D

Table A3. Main elements of development strategic plans of ASPU and YSU (highlighting by authors).

	ASPU	YSU
<b>Mission</b>	Educational, research, and cultural institution Training high quality professionals for the spheres of education, art, social, human, and natural sciences in concordance with national and international best practice	Educational, research, and cultural institution implementing fundamental and applied scientific research and educational programs in various directions of science, social economics, humanities, technics, and culture
<b>Vision</b>	educational programs, which are in line with the integral principles of European Higher Education Area based on latest educational technologies, novel teaching/learning methods, research, and innovation	providing high-quality educational programs, competences and skills based on research, creative work and innovation and consonant to the fundamental principles of European higher education; provides <b>continuous educational and professional consultative services consonant to the needs of the society</b>
<b>Values</b>	mutual respect and trust, collegial and cooperative environment and relationships, honesty and transparency, innovation, and self-perfection	student's success, qualified teaching staff, academic freedom and honesty, democratic atmosphere, <b>social partnership, national responsibility</b>
<b>Strategic Goals</b>	<b>novel approaches</b> towards high quality education, research and <b>innovation, public engagement, social cooperation and services</b> , expansion of foreign relations, and external activity	quality education, research and innovations, <b>community involvement, and services strategic partnership and internationalization</b>
<b>Stakeholders</b>	physical and legal entities related to the spheres of education, science, culture, and industrial science	

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