

THE CONCEPT OF SOCIAL RISK: A GEOGRAPHICAL APPROACH

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ABSTRACT: Social risk is an interdisciplinary concept used with various meanings in the social and in the natural sciences. The article presents some of the social insights into this concept, particularly in connection with the global environmental research project and with geography. The special dimension of social risks, as well as some current methodological aspects regarding models and the main indicators used in the multidimensional assessment of social risks are analysed at local, regional and national levels. Of special interest is the link between social risks and a series of key-concepts, such as: hazard, impact, social vulnerability, resilience, adaptive capacity.

KEY WORDS: social risk, social vulnerability, interdisciplinarity, sustainability, social geography

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Introduction

The concept of social risk, initially used in the social security literature (Machlskaya, Dobromyslov 2009), involved several approaches, mainly social, economic and geographical ones, becoming an important interdisciplinary concept for future research into the human dimension of global environmental and socio-economic changes.

The studies referring to the development of the social risk concept, reflect the diversity of applicable domains, conceptual and methodological approaches being specific to the natural and social sciences. In the past, natural disasters and health problems represented a major concern for the population and for society (Beck 2001). Later on, the evolution of mankind favoured the development of new types of social risk which are reflected in the structure of present societies, being rooted in human activities and the modernisation of society.

The international literature on social risks has recently focused on some important topics which promote the efficient involvement of the social sciences in approaching environmental problems and sustainable development (e.g. *natural disasters* – Bălteanu, Sima 2013; Kruse, Seidl 2013; Wilhite et al. 2014; Zemtsov et al. 2016; Bădescu 2017; Schröter et al. 2017; *poverty* – Elgar 2015; Leoni 2015; Faura-Martínez et al. 2016; Ayala et al. 2017; Carmo, Matias 2018; *health* – Sirovátka, Winkler 2010; Boričić et al. 2015; Gonzáles et al. 2017; *social exclusion* – Kvist 2014; *education* – Lavrentsova, Valkov 2017).

The contemporary society is confronted with a series of situations connected to the expansion of environmental problems, the risks of natural disasters, with important climate changes, inequality in the distribution of water resources, food and energy, economic inequality, all needing sustainable and efficient solutions. In this

context, the International Social Sciences Council (ISSC) promotes the efficient involvement of the social sciences in approaching environmental problems and sustainable development, by identifying efficient solutions to the arising challenge (ISSC Report, 2016), strictly connected to sustainable development goals (SDGs, 2015). In order to understand the socio-economic factors that limit the adaptation of local communities to natural disasters, one has to make detailed social and economic analyses based on using and matching some representative indicators (Dumitraşcu et al. 2017; Gonzáles et al. 2017; Musolino et al. 2017; Callander, Deborah 2018).

The present study highlights the main aspects of the social risk concept, which integrate socio-economic problems strictly connected to sustainability studies. The aspects referring to social

risks are subjected to an interdisciplinary analysis, under the main global research programmes and sustainable development goals, in an attempt to promote a relationship between the three dimensions: economic, social and environmental. This paper approaches the spatial dimension of social risks, discussing also some methodological aspects of the representative indicators used in the multidimensional assessment of social risks.

Differences in defining and approaching social risks

The changes occurred in the ordinary rhythm of life, because of some risk events, represent a major concern for population and society. Social risks are a global phenomenon, having

Table 1. Differences in defining social risks.

Domain	Definition of social risks
Sociology	Social risks represent the probability of some threats and uncertainties which have arisen as a result of modernising the society, which imply irreversible damage for all forms of life (Beck 1992)
	Social risks represent key-factors for economic and social cohesion, which contribute to increasing the local community's quality of life (Hruska-Tvrđy, Foldynova 2011)
Geography	The social risk refers to the possibility for a potential social disturbance, conflicts and social damages, caused by insecurity factors from different fields. Modern social risks refer to dangers and insecurity from the systematic process of modernisation (Li Hong et al. 2017)
	Risk is the combination of the probability of an event and its negative consequences (Bălţeanu, Sima 2013)
	The probability of possible losses (loss of human life, injury, disturbance in economic activities, goods deteriorated or destroyed, alterations of the environment) determined by a certain danger, under some circumstances of exposure and vulnerability (UNISDR 2009)
Psychology	The social risk represents the susceptibility in compromising one's survival/quality of life, or in provoking socio-economic disturbances. (Larousse 1999)
	The probability of a loss as a level or degree of a possible loss, as a weighted loss according to its probability, or as a variant of an event. For the public, the risk can be any of these occurrences and maybe even more than that, risks can be seen in almost every field in our lives (Havârneanu 2015)
Law and social security	The social risk refers to a series of unfavourable events (loss of income, incapacity for work, etc.) which involve income discontinuity; the total or the partial loss of income (Convention No. 102/1952 of the International Labour Organisation)
	The probability of potential losses as a consequence of the post-industrial transition, of deindustrialisation, of poor employment, of increased instability of family structures (Bonoli 2007)
Economy	The social risk is a potential danger under the action of a possible event, predictable or unpredictable, which generates profits or material losses that should not be seen only as a negative event, because it can also bring extraordinary opportunities for those who are able to assess and deal with it (Ziman 2013)
	The social risks are a phenomenon which must be evaluated from the viewpoint of society and not from that of an individual, having two essential dimensions: economic inequality and the unequal distribution of the resources among society members (Rohde I., Rohde K. 2015)
	The social risk is the possibility for some potential threats to emerge and as a threat to the possibility of maintaining social relations and social cohesion as a result of negative events (Mika 2009)
Public policy	The social risk represents the probability for a person to be affected by an unexpected, uncertain situation (unemployment, debts, family disintegration) associated with loss of control over one's personal actions (Sirovatka, Winkler 2010)

irreversible and direct implications for society, incurring large-scale prejudices, depending on the cultural, political and economic context in which this phenomenon manifests itself.

In defining the concept of social risk, several approaches are taken which reflect the multidisciplinary character and the complexity of the applicability domains. The identified differences in defining social risks are given in Table 1.

The definitions talk about the same phenomena, but from different perspectives, showing the variety of risk concepts in various disciplines and application areas. Moreover, the definitions not only highlight the complexity of the concept, but they also point out the different perspectives on vulnerability and impact. Depending on the characteristics of each scientific field, significant differences were found across the types and sources of social risks, with specific consequences. In this respect, it is obvious that the interdisciplinary research is required to understand contextual influences.

In geography, *social risk represents the probability of some losses to occur as a result of a damaging event, along with vulnerability (population exposure to social and environmental problems)*. Said otherwise, *social risk represents a combination of the probability of some insecure or harmful factors and the development of some social disturbances because of vulnerabilities*.

Studies on the development of the social risk concept in the social studies generated a series of controversies and ambiguities, being a dynamic and complex concept, difficult to capture and assess, seen as a multidimensional quantity which includes: the probability of an event, the consequences connected to the event, the population exposed to the event. In sociology, social

risks are dealt with differently, representing “the probability for physical and psychical prejudices that occurred as a result of a negative event” (Buzducea 2010).

Sources and types of social risk

According to Beck (1992), in the 19th century social risks were poverty, health and local industrial accidents. Later on, the changes and socio-economic imbalances of the last decades favoured the development of new social risk sources in contemporary societies, connected with changes in the labour market, the unequal distribution of income and of other basic resources, the demographic structure, which is permanently changing, deindustrialisation, or political transformations. In the international geographical literature, the main risk sources are strictly connected to the action of technological and natural hazards, having a series of consequences which are hard to predict or control. Table 2 summarises the main social risk sources and highlights the complexity of the phenomenon within the present socio-economic context.

The first two categories represent essential social risk sources, characterised by severe consequences, with long-term catastrophic effects, not only on the population, but also on society (human and material losses, evacuation, isolation, no access to essential services), and on the environment.

The international scientific literature encompasses a significant number of current studies, devoted to approaching this phenomenon through socio-economic changes, in which a series of fundamental topics were identified:

Table 2. Sources of social risk.

Categories	Sources
Natural	earthquakes, landslides, volcanic eruptions, storms, floods, tornadoes, aridity and drought, avalanches, frost, forest fires, hail and heavy rainfall, etc.
Technological	industrial pollution, industrial accidents, nuclear radiations, toxic wastes, dam failures, transportation hazards, plant explosions, fires, chemical spills, etc.
Biological	epidemics, epizootic diseases, etc.
Economic	changes/economic shocks, financial crisis, labour-market instability
Demographic	population ageing, death, increased mortality among children in single-parent households, demographic dependency
Political	political transformations, wars
Health	disease, accidents

According to Nelson 2018; Damian 2013; Holzman, Jorgensen 1999.

poverty, unemployment, disease (accident), access to education, access to medical services, population ageing (Glaymann 2007; Yanova, Klimashin 2010; Tubeuf et al. 2012; Beblavý et al.

2014; Kvist 2014; Elgar 2015; Leoni 2015), ethnical conflicts (Machulskaya, Dobromyslov 2009; Beblavý et al. 2014; Leoni 2015), social exclusion (Kvist 2014). Some authors narrowly distinguish

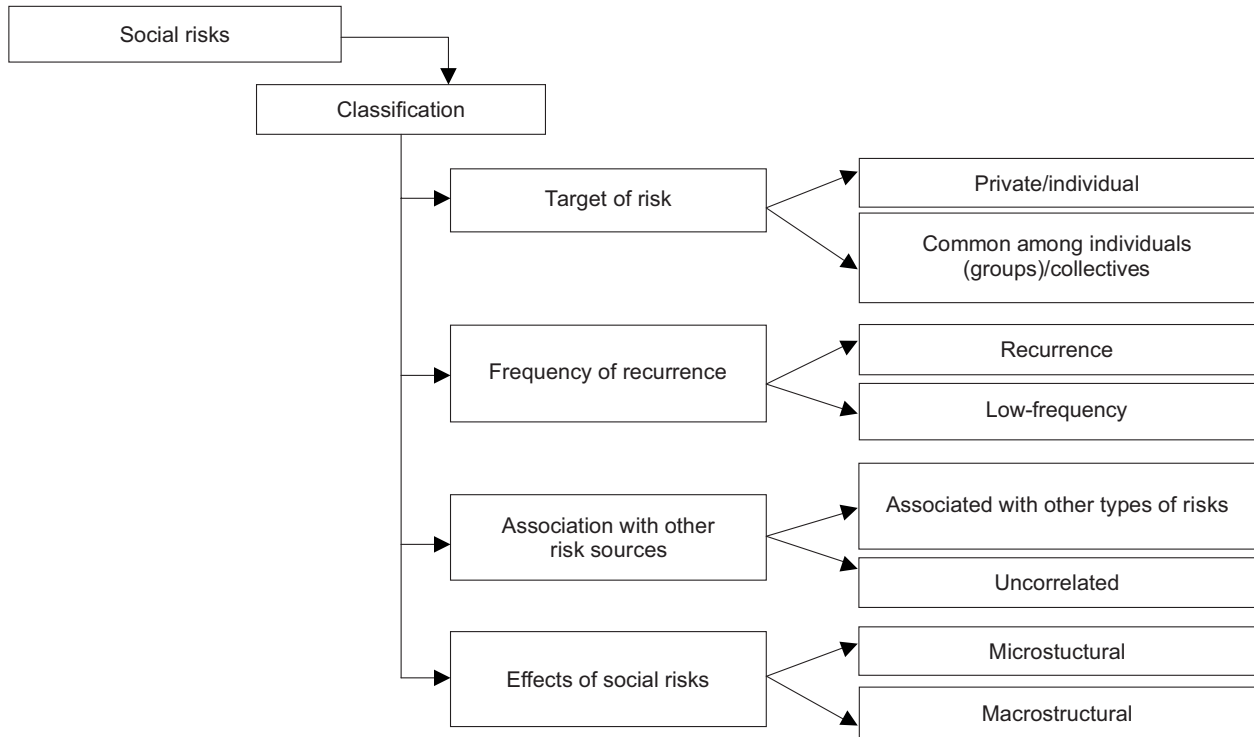


Fig. 1. Classification of social risks.
According to Holzman, Jorgensen 1999.

Table 3. Key concepts in social risk research.

Concept	Definition	Author/source
Hazard	A potentially damaging physical event, phenomenon, or human activity that may cause loss of life or injury, property damage, social and economic disruption, or environmental degradation and can have different origins: natural (geological, hydrometeorological and biological), or induced by human processes (environmental degradation and technological hazards)	Hyogo Framework for Action 2015–2030
Social impact	Refers to everyday life disturbances which lead to the interruption of activities, or the unavailability of some services or utilities, over various periods of time, for a variable number of persons, for a variable number of services.	Bădescu 2017
Vulnerability	Represents the degree in which an individual, a community, a system is exposed to the effects of a hazard based on some essential conditions: physical, economic, social, environmental factors and the processes that increase the susceptibility of an individual, or a community at the impact with various dangers.	UNISDR 2017
Risk	The probability for some potential losses (injuries, losses of human lives, disturbances of economic activities, destroyed or deteriorated goods, alternations of the environment) caused by a danger that can occur within a time-period, in some exposure conditions, vulnerability and capacity.	UNISDR 2017
Adaptive capacity	The ability of people to face risk situations and disasters, using all the available resources.	UNISDR 2017
Resilience	The capacity of society exposed to hazards to resist, to adapt itself and to recover after the impact.	Bălțeanu, Sima 2013

social risks as a possible threat for the social relations of individuals/small groups/communities, or as a threat to their social security: crime, spread of terrorism, ecological disasters, epidemics, interethnic war (Yanova, Klimashin 2010).

Understanding the social risks complexity, through risk sources, the frequency of production, exposure or types of associate effects, represents a component in the assessment process of potential dangers, as well as of adopting the most efficient measures of response and adaptation to socio-economic changes and also to environmental changes. According to these criteria, the main social risks types are summarised in Fig. 1.

In geography, social risks are rarely approached areas, the notion of *social risks* being used later, especially in social geography works, as a consequence of the transition to a post-industrial society. In geographical research, social risks are associated mainly to natural hazards, and understanding the concept is highly connected to some key-concepts: vulnerability, impact, hazard, adaptive capacity. The terms used in the social risks study correspond to the UNISDR (United Nations International Strategy for Disaster Reduction) definitions and to some EU Directives and specialist international commissions (Table 3).

Methodological aspects

The interdisciplinary character of social risks and their implications for the quality of life of contemporary societies are reflected in various conceptual and methodological approaches specific to the natural sciences and social sciences. Recent scientific studies on social risks enhance important information about the methodologies used in assessing the potential probability for losses, specific to each domain, by using and correlating some representative indicators (Callander, Deborah 2018; Gonzáles et al. 2017; Dumitraşcu et al. 2017; Musolino et al. 2017).

In the last decades, many interdisciplinary projects, developed at national or international

levels, have dealt with the social risks associated with natural hazards: GRAVITY (2002, Global Risk and Vulnerability Trends per Year, UNDP); CapHaz-Net (2002–2003, Social Capacity Building for Natural Hazards towards more Resilient Societies); ARMONIA (2004–2007, Applied multi-risk mapping of natural hazards for impact assessment); ENSURE (2008–2011, Enhancing Resilience of Communities and Territories Facing Natural and Na-tech Hazards); MOVE (2009–2013, Methods for the Improvement of Vulnerability Assessment in Europe); CONHAZ (2010–2012, Cost of Natural Hazards); MATRIX (2010–2013, New Multi-Hazard and Multi-Risk Assessment Methods for Europe); CATALYST (2011–2013, Capacity Development for Hazard Risk Reduction and Adaptation); GRAM (2014–2016, GeoRisk Assessment and Management); RO-Risk (2016, Disaster Risk Evaluation at National Level). All these projects proposed a series of working methods, the assessment of a risk representing the final stage of a complex process, a process that enhances hazard studies, probability, impact (elements at risk and vulnerability) and risks.

In social research, regardless of the nature of a potentially destructive event, social risks are analysed in a variety of ways, as shown in Fig. 2.

The risk refers to different types of potential losses which are often hard to quantify, but from a methodological point of view the analyses of social risks are predominantly geospatial. In assessing social risks, in an overall analysis correlated with environmental problems and anthropic pressure on the Earth, an essential factor is gaining a complete picture of the dangers and uncertainties that a modern individual has to face and cope with.

Overall, social risks are a dimension of an empirical reality (Beck 2001), but the selection of the methods used in assessing social risks depends on the analysis scale and on the availability of the necessary data (Glade, Crozier 2005). Thus, the following methods can be used in assessing social risks: qualitative (expert-judgement, field mapping, historical losses), semi-quantitative

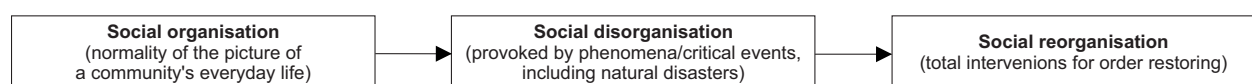


Fig. 2. Social risk assessment model.
According to Bădescu 2017.

(damage matrix, statistical analysis, consequences), or quantitative (local scales). The assessment of social risks is an expression of the interaction between hazard and vulnerability conditions, and can be expressed by the formula: Risk = Hazard x Vulnerability (Fig. 3).

The starting point of the risk assessment is the *hazard* analysis with the identification of adverse events, followed by a simple probability, consequential elements and their vulnerability (Corominas et al. 2014), and represents the translation of the natural effects of a disaster into social effects (Bădescu 2017). The methodology of assessing the impact is based on the aggregation of the results of relevant indicators for each impact criterion: physical impact (deaths, injuries, evacuation, persons without access to basic services, utilities, civil constructions, infrastructure), economic impact (costs associated with human, material and environmental losses), social impact (social disruption), environmental impact (affected areas, environmental degradation).

The major dimensions of *vulnerability* (Eidsvåg et al. 2017), adapted from Birkmann (2013), are as follows: physical, social and economic. From a social perspective, the assessment of vulnerability is based on a series of socio-economic indicators, among which some are specific to the analysis of the population’s quality of life, and to economic development (e.g. illiteracy rate/100 inhabitants, disabled persons, persons without access to different basic services, average income per household,

number of salaried persons, unemployment rate, number of hospitals, number of physicians/1,000 inhabitants), or indices developed within some scientific studies and projects, such as: Human Development Index (HDI – UNDP, 1993), Social Vulnerability Index (SoVI, 2003), Deprivation Index (Zamfir 2015), Social Vulnerability Index (SVI, 2016). In the recent years, many studies have focused on evaluating the vulnerability of population and of human settlements to specific hazard types: index of socio-economic vulnerability to drought (Dumitrașcu et al. 2017), index of social vulnerability to floods (Oulahen et al. 2015; Roder et al. 2017), socio-economic vulnerability index to landslide (Park et al. 2016), social vulnerability index to environmental hazards (Cutter et al. 2003). For the *adaptation capacity*, the relevant indicators considered refer to access to education, to information and financial resources, social protection systems, sanitary services, the existence of economic alternatives, the infrastructure quality, technological development, etc.

The *risk* is calculated as the product of two elements: impact and probability, and the resulting values are represented graphically on a risk matrix. The results concerning the risk dimension can be modified in a next stage, in connection with the analysis of intervention capacities.

The recent socio-geographical studies highlight new areas of interest which approach risks from a social perspective by assessing the vulnerability of the population and human settlements

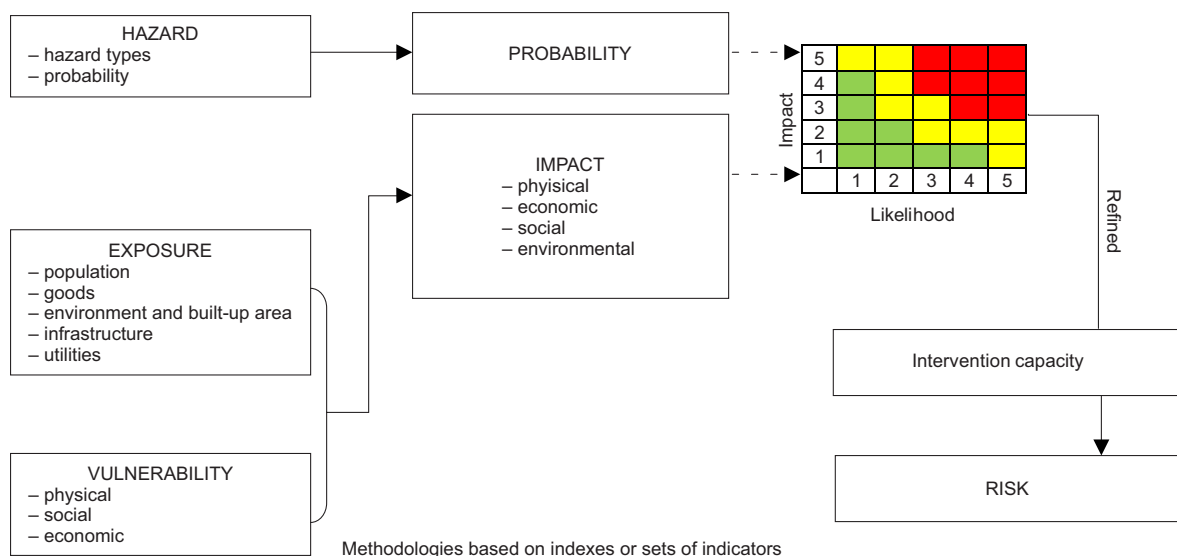


Fig. 3. Assessment model of social risks. According to Glade, Crozier 2005; van Westen, Greiving 2017; Aerts et al. 2018.

to socio-economic and environmental changes as well as their adaptation capacity, highly connected with a series of individual characteristics. People perceive risk factors differently and react when faced with a threat; the individual capacity of estimating the risk, in a certain situation, is determined by the perception of a risk by one's previous personal experience and by tolerance to risk. The sociological inquiry, independently of the instrument used, offers information on the way in which the population perceives possible dangers, but also on the degree of personal exposure to a harmful event. Most of the time, the population tends to worry about phenomena which do not represent a threat and neglects those that can produce considerable losses. The evolution of people's perception is more than a simple summing up of individual responses, it is a social perception of the entire population and it is useful not only for the community exposure to some types of hazard, but also for the present social and economic transformations. Information on the social impact of disasters are obtained by using different methods, among the most relevant ones being sociological inquiries concerning the memory of risks and case studies.

Social risks in global research programmes

The assessments that involve global environmental changes for society have been gradually included in different international research programmes (IHDP - International Human Dimensions Programme, Diversitas - International Programme of Biodiversity Science, IGBP - International Geosphere-Biosphere Programme in collaboration with WCRP - World Climate Research Programme). The research accomplished highlighted not only greater anthropogenic pressure on the environment, but also the decisive influence of environmental changes upon society. Starting with 2012 (Rio+20 Conference), these programmes were integrated into the programme "Future Earth - Research for Global Sustainability", a new programme of global research, its main goal being the continuation of previous global programmes with focus on social risks (Bălteanu 2016). Future Earth represents a global platform, which promotes

interdisciplinarity and encourages international scientific collaborations by identifying some mutual solutions for facing the risks generated by environmental and socio-economic changes.

Among the projects launched by previous global research programmes, which became basic Future Earth projects, one is quite remarkable, namely that referring to risk governance (IRG - Integrated Risk Governance Project). It concerns the decrease in individual and community vulnerability to extreme events, and the adoption of some measures concerning the response capacity and institutional actions capable to protect the population from the effects of events, which implies understanding the mechanisms of risk formation and their impact on society (Future Earth - Report, 2018).

Poverty is identified as being a major consequence of negative events. Socio-economic inequality redistributes the risk of disasters by developing an unequal economic context, by diversifying urban development, climate changes and inadequate consumption of resources (UNISDR 2015). If inequality continues to increase, it can become a destabilising global force, which can increase not only disaster risk, but also decrease risk management capacity.

At the level of the International Geographical Union (IGU), social risks and those associated to natural hazards represent current issues and highlight the role of geography in reducing disaster risk, strictly connected to sustainable development. Special emphasis is put on climate extremes and reducing the risks associated to natural hazards as well as topics discussed by the Hazard and Risk Commission, which highlights the importance of the awareness of local actions and global effects. Within this context, not only the population, but also the local communities are encouraged to adopt measures and to connect individual actions with global decisions, in support of sustainability (IGU Report, 2016).

Conclusions

Identifying and assessing social risks is a complex issue, which implies a series of analyses at the level of natural or socio-economic systems as well as the development of a suitable methodology.

This paper presents main differences in defining and approaching social risks, strictly elaborated by some international directives which allow the assessment of social risks, both from a natural and social perspective. The main current methodological aspects concerning the assessment of social risks from the viewpoint of impact and probability are presented based on a complex and rigorous analysis. The analysis of social risks is made as part of the development of the main global research programmes oriented towards reaching major sustainable development goals.

Human communities live their lives in a safe space and any deviation from the critical thresholds of the steady state can have direct and irreversible implications for society. Within this context, the main objectives in assessing social risks focus on determining the probability of loss in case of a potentially destructive event, by estimating intrinsic vulnerability in order to identify the most suitable intervention methods.

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