The Theory of the Geographical Risk and the Territorial Planning. Questions and Priorities

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Abstract

The economic and social damages caused by the manifestation of unfavorable and dangerous phenomena (proceses), (risk providing factors) tend to increase in time. There are proves that make us believe that these damages grow faster than the G. N. P. even during the economic stability (Mjagkov, 1989, 1990). The pressure that these phenomena have on social-economic system in transition, as it is the Romanian case, is extremely dangerous. The probability that these phenomena endanger any attempt of development and push the country towards the outskirts of the world economic system is also very increased.

The geographical risk problem has many aspects. Some of these aspects will be analyzed in the following article.

Concepts and definitions

In the specialized literature the geographical risk is defined as a threatening event or as the probability that a natural or human induced phenomenon with a destructive potential occurs in a given area and period of time. The possible number of human losses, injured people, material damages, interruption of the economic activity during a given period in a given region can explain it. We will not discuss the semiological meaning and certain nuances of these terms and definitions, that have already been analyzed (Florina Grecu, 1997). Nevertheless we will see that, in a larger sense, the geographical risk may be considered as an influence on the society and economy (sometimes over the nature too, but only from the same human point of view). This influence is able to destabilize the social-economic and the ecological system at different levels of intervention (local, regional, national). It is also necessary to estimate the social-psychological context: a phenomenon or a process is considered unfavorable or dangerous only if it is seen as such by the population or by the authorities.

The theory of the geographical risk appeared at in the beginning of the 80's, develops very quickie. jet the elaboration of the theoretical concept encounters some difficulties. The more often used concepts are: the systemic concept (which includes both the general theory of the systems and the extended one) using such terms as critical status, critical charge, limits, bifurcation's, catastrophes fluctuation, superposition of the states, the multivariate principle, bistability of the perceptions, yet unfinished in a plausible concept, maybe lucause of the quick development of the theory of the system itself, the principle of chain reactions and the principle of neighborhood. We should start with the problem of elaborating the concept of the (financial) administration of the geographical risk and that of elaborating a unique system in order to be able to evaluate it. But, we think that it is not enough. Concepts like "The General Theory of the Cumulative Cause", "The Theory of the Complementarity of Risks", The Principle of

Minimal Qualitative Deterioration of the Environment, The Principle of Limitative Regionalism (H. Siman, 1957), The Concept of Coordination Using the Information, The Concept of Mimesis (imitation of nature, knowing the fact that dangerous of unfavorable phenomena are contained in the genetically cod of natural geosystems, more than that, being they are a very important component, an indispensable one in the determining of its evolution).

The system of geographical risk

As a system, the geographical risk is made up of two main constituent parts:

- the processes (phenomena) which generate risk, usually having direct effects upon the exposed elements;
- the vulnerability of these elements with indirect effects (fig. 1).

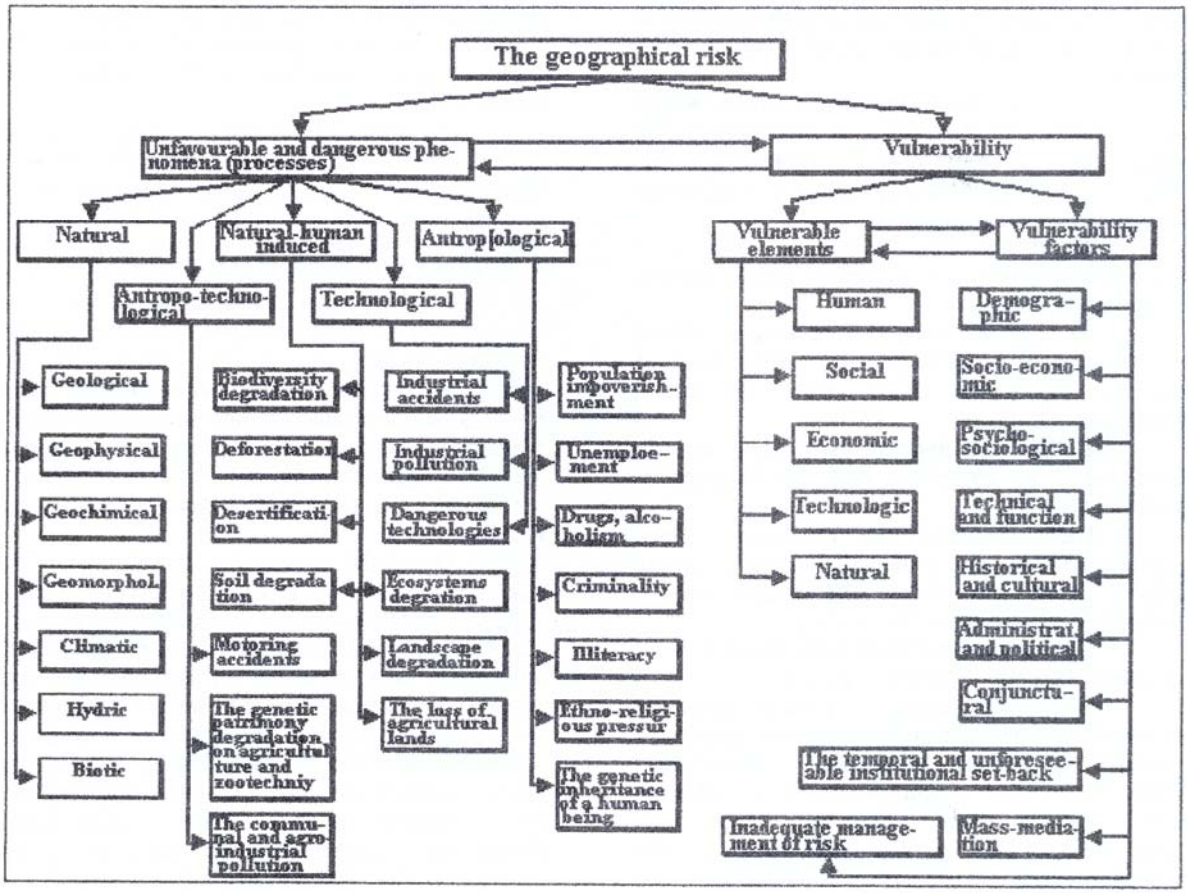

Figure 1. The system of the geographical risk.

Through procees (phenomena) which generate risk we understand all the misguiding of the environmental statuses from the optimal one, for the functioning of different types of economical activities, technological proceses, constructions, as well as for the social- psychological or physiological activity performed by men.

The number of types of this kind of processes is constantly rising, together with the rising in complexity of the society and its globalization.

Nowadays, there are tens of types of generating processes. They are differentiated by the place they come from, by spreading, by last, by frequency, by strength, by forms of impact and they are subdivided by the last category in: unfavorable proceses (phenomena) and dangerous proceses (phenomena).

The first ones present an oppressive influence, the last ones – a destructive influence, as a manifestation at the limit – the natural calamities or the human catastrophes.

The boundary between the unfavorable proceses (phenomena) and the dangerous ones is relative and depends on the natural or concrete social-economical status.

In the theory of risk, the vulnerability is described as the predisposition of the people and of the economy to the influence of the unfavorable and dangerous proceses (phenomena), the fragility of the social-ecosystem, the capacity of responding to various destructive provocations.

The predisposition to the influence is the function of placing the population and the economy in the factorial field of the unfavorable and dangerous proceses.

The vulnerability depends on various factors: the durability and the degree of protection of the various types of construction and technologies, the structure of the territorial complexes of production, the structure of the population, etc.

The vulnerability must be seen as a constituent part of the problem of the general security elaborated by V. Legasov.

As a concept, the system of the geographical risk (which is basic ideological part of the theory of the risk), the system of the geographical risk is characterized through:

Holism (the integral vision upon the risk itself and in its integration with the geographical system).

Hierarchisation (the phenomena which generate risks are subordinating themselves by certain criteria: cause, state-effect, "the domino effect", intensity, strength, manifestation, etc.).

The knowledge of these subordinations is extremely important in taking decisions.

Spatial-temporality in terms of risks, the notion of euclidian space and newtonian time loses its meaning; we can talk here about a virtual space, objective-subjective, multidimensional; the time, as well, manifest itself differently, being the "characteristic time of the phenomenon", "the relaxation time", but also the direction (the arrow) of time or "the density of time".

The tendency, the direction of development.

The rhythm (it's about the internal rhythm of the risk system as well as about the dependency on the oscillatory external phenomena (processes) (as: the long waves of development by of Kondratiev, etc.).

The degree of autonomy of the processes.

"The stability" of the generating processes (phenomena).

Autodevelopment processes (phenomena).

But also the "stability" of the environment regarding the risk, its capacity of autoregulation.

The administration of the geographical risk

The administration of the risk encounters sometimes difficulties especially technical ones, and last but not least difficulties coming as a cause of the methodological misunderstandings.

Some methodological problems such as: the systematization and spreading of all the risk phenomena, the knowledge of the risk factors, finding a unique system of measuring setting some criteria and parameters of appreciation, choosing the allowable level of the risk, the elaboration of complete maps of the geographical risk, enounced a few years ago (Florina Grecu, 1977) were solved only partially.

A successful attempt to systematize and typify the risk factors (but only for the climatic ones) was performed by Octavia Bogdan, mappings of the geographical risk were made by several authors such as I. Mac, V. Surdeanu, Florina Grecu but usually, these mappings refer only to the geomorphological risk, in some cases to the hydrological one (the flood), being far from a complete observation of the geographical risk. As for the criteria and the appreciation parameters of the risk witch must have a physical precise meaning (as for example the scale of the seismic intensity), they have not been elaborated yet. The qualitative gradation by the level of danger is not according to the effective administration of the risk.

One of the ways of the administration of the risk is presented as a scheme in figure 2. Such a system is meant to store the sources (the proceses and the phenomena) which manifest a risk for the society, to forecast their evolution on medium term (the administration before – risk), as well as to present the ways of current operative administration of the risk or the mediation of the processes already existing (the administration after – risk). One of the advantages of this system is its capacity to " learn" – getting perfect through the inverse connections. Also, this system takes into account the realization of some strategies to direct the geosystems in extreme situations. But still, there remain some unsolved problems such as:

- the factors of incertitude resulting from the analyses of hazard and its provenance;
- the problem of the forced vulnerability of the multiplication and diversification of the factors of vulnerability;
- the setting of the system of the feed-back relations and of the possible states of sill which constitute the system of geographical risk;
- the notation of allowable risk; in some cases (such as the irradiation risk etc.) we are obliged

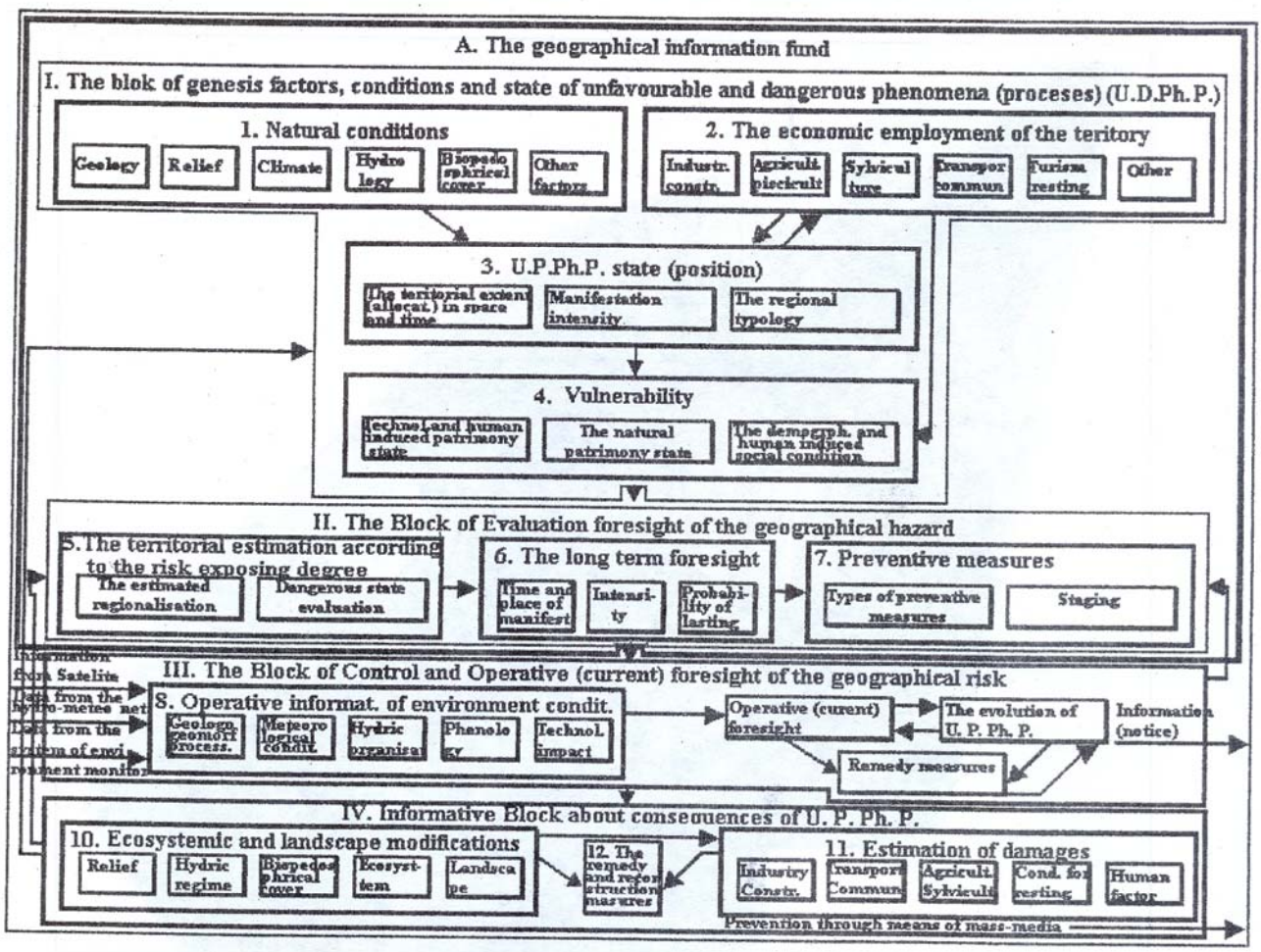

Figure 2. The model of informational and administration geographical risk.

- to admit the concept of unallowable real manifestation of the risk;
- the elaboration of a "sliding scale" of the allowable risk compared to the conditions of the moment of the environment.

A lot of problems result from the multidisciplinary character of the risk.

The Geographical Risk and its territorial planification

An aspect not enough analyzed of the theory of the geographical risk is its implement in the territorial planning. Paradoxically, the main problem is not that of the absence of the implement methodology, because there are a lot of methods of this kind in special literature, but the fact that there aren't suitable legal modalities. The first attempts have being made since 1996, but they didn't have a logical end.

Also the authors of this article studied the problem of the implement of geographical risk in the territorial planing, both at county and communal level. The maps of the dangerous and unfavorable proceses (fig. 3, 4, 5) were elaborated in three steps:

- the identification of all the dangerous and unfavorable phenomena and processes existing in the territory;
- the standardization of these proceses and phenomena, taking into account their genesis, the establishment of their force and frequency in time and space (also by using the method of inquiry);
- the integral zoning of these dangerous and unfavorable phenomena (processes) (after Siscenko method).

These steps, together with the analyses of the causes that lead to these risky phenomena and the modalities of controlling and forewarning them,

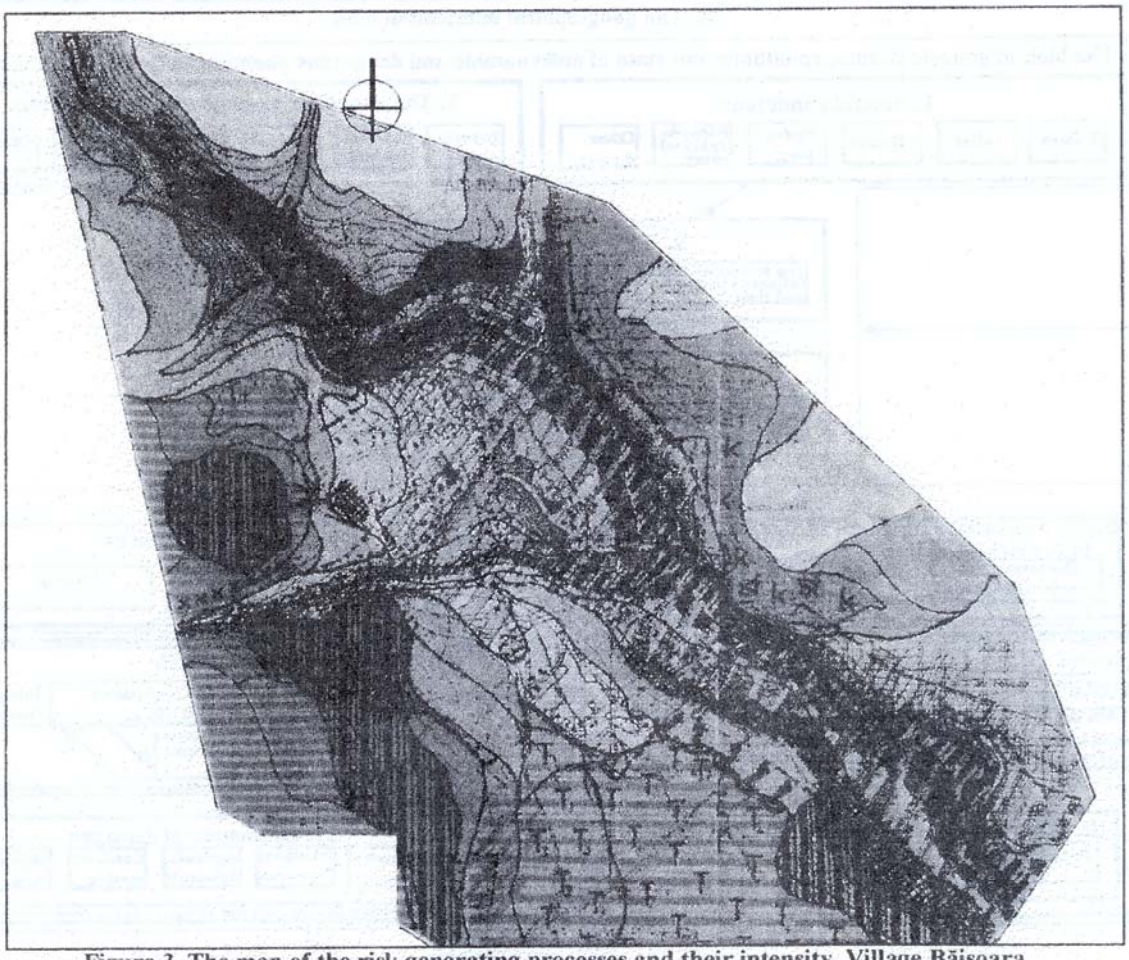

Figure 3. The map of the risk generating processes and their intensity. Village Băişoara.

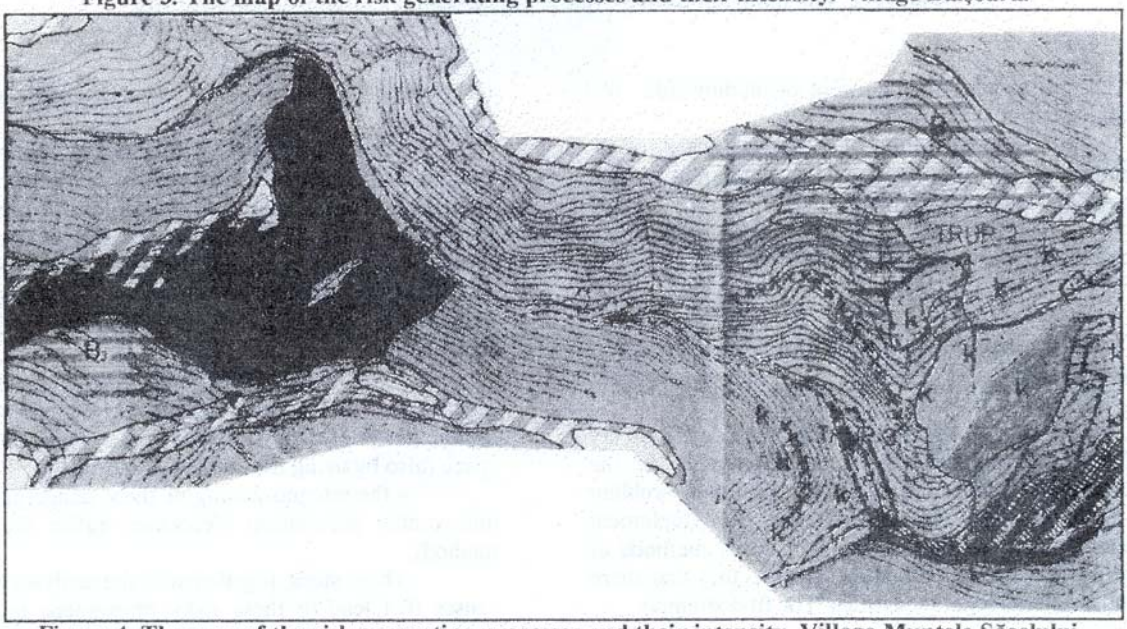

Figure 4. The map of the risk generating processes and their intensity. Village Muntele Săcelului.

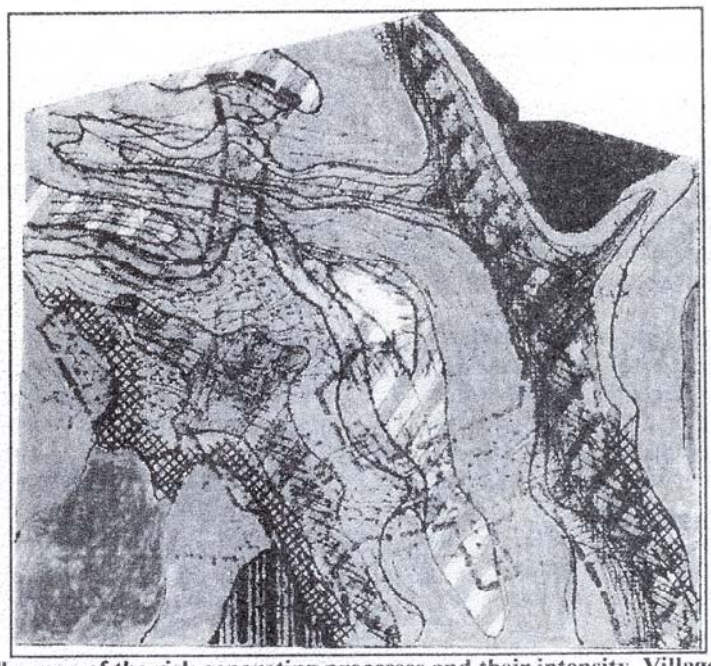

Figure 5. The map of the risk generating processes and their intensity. Village Săcel.

LEGEND

	Unfavourable and dangerous phenomena (processes)	Intensity		
A	Natural processes	a	b	c
1.	Flooding with surface water			
2.	Flooding by rising the ground water level			
3.	Geochemical contamination			
4.	Surface and depth erosion			
5.	Proluvial and aluvial silting			
6.	Landslide			
7.	Mud-flow			
8.	Caving-in, rockfall			
9.	Solifluction, creeping			k, S3
10.	Pipping, settling		T2	T3
11.	Parasitical biocenosis			B3
	Anthropological and technological processes			
12.	Biodiversity degradation by overpasturage			
13.	Deforestation			
14.	Organic water pollution			
15.	Air and soil chemical pollution			

constituted the base of elaborating of some local rules of urbanism.

During the elaborate of these maps there were faced a lot of difficulties concerning bases of the methodological aspect and the technical one. The subjectivity of the analyses of these factors wasn't outrun, the gradation of the force, frequency and the danger extent being made, as what concerns the qualitative aspect, in a great part by lacking the physical sense.

Another unsolved problem remained the determining of the admissible risk and the understanding the danger of this risk by population.

It was noticed a correlation between the understanding of the danger this risk and the extent of the exposing to it. For the stable traditional communities, the correlation is very strong (overrunning in a few cases 0.7), while for the communities disturbed by the changes occurred in the communistic period (collectivization, systematization), and not only, also for the communities that were formed often the postcommunistic one, the correlation is very reduced (tending to 0). These communities are the most affected by the unleashed risky phenomena. We are witnesses at a so-called "explosion of ignorance" with destructive consequences in the next future.

Conclusions

We consider that the practical and theoretical activities in the field of the geographical risk theory are totally insufficient, at least for now. It should be created an operative informational system in this field as soon as possible, structured using the scheme proposed by us (if it is possible). It should also be introduced some legislative modalities, concerning even the field of ensurances so that firm steps of forewarning and interrupting, stopping the evolution of these risky phenomena could be taken. For the time being, they are evolving according to an ascendant curve.

A new vision on the geographical risk would be necessary, starting by solving some of the problems enumerated here.

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