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**Title of the Session:** Mapping of resources and vulnerabilities for crisis management and preventive management of the territory

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## **Summary**

Conventional methods of disaster risk management are generally founded on the characterization of the exposure to hazards of a territory. The approach of DRM through the cartography of the resources and the vulnerabilities of a territory proposes to identify the strengths and weaknesses of the territory that may be involved in emergency situation and to preserve them / reinforce them in normal situation. It offers to the civil protection services a practical and operational tool for crisis management and allows the public authorities to guide development policies for a more resilient territory.

## **Context**

This theme is based essentially on research conducted by the *Institut de Recherche et Développement* (IRD, French scientific research institute). IRD teams have developed over the last 25 years an approach to risk and crisis management based on the analysis of resources and territory vulnerabilities.

Risk analysis is generally conducted using rigorous scientific exposition of a region to hazards. Necessarily, it provides an indispensable characterization of the phenomena that could cause losses and damages to societies and territories. However, this approach for crisis management has some limitations because it often delivers a poor consideration to the existing stakes of a territory. The work of the IRD and its partners in several countries helped to develop a perception of the risk management of disasters and crises focused on resources and vulnerabilities of the territory.

The objective of such an approach is to improve the knowledge of existing strategic stakes in the territory that play a key role in emergency situations. For example, the methodology is considering the actors of first aid, the organizations providing medical care, or working for public security. The resources related to water, food and energy supplies, transport and mobility, means in the areas of civil engineering or telecommunications are essential for crisis management. The soil as well was found to be a particularly important resource, for example for the installation of refugee camps.

The vulnerabilities of a territory can be described by many parameters. The most obvious is the exposure to hazards. The approach developed by the IRD also proposes the inclusion of socio-economic parameters specific to the territories and their populations. For example, the vulnerability of buildings can be analyzed by the methods of constructions. Accessibility can also be decisive during a disaster: a poor road access will increase the vulnerability (access to a resource, or access to the population).

Geographic Information Systems (GIS) associate some geometric features (point, line, polygon) to information (text or numbers for example) and allow to represent them on a

cartographic support (topographic maps, aerial or satellite photos, etc). Brought together in a database, the information items called "geo-referenced" are then located on the territory. Delivered to the competent public authorities of crisis management, this "smart" cartography of the territory offers to the competent authorities in charge of the civil protection an operational crisis management tool and close to their knowledge of their territories. In terms of territorial planning, the mapping of existing resources and vulnerabilities is also useful. It enables decision makers to have the knowledge of the existing and to guide the future development of the territories towards resilience.

The IRD and the NGO COOPI developed in 2013 a cartographic webserver on resources and vulnerabilities for crisis management and preventive management of the territory in the municipality of Tabarre in Haiti (<http://sirv.tabarre.ht/>). COOPI is currently working in partnership with the National Center for Geo-Spatial Information of Haiti for the extension of this map database to the municipalities of Port-au-Prince and Cité-Soleil. COOPI has also developed this tool to other thematics in Haiti. In 2015, a food security (<http://food-security-map.ht/>) cartographic webserver had been created in two districts in the Center department. COOPI is presently working on a drought crisis management cartographic webserver in the South-East department.