THE HEALTH RESPONSE IN HAITI AFTER THE EARTHQUAKE

Some food for thought

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1. CHARACTERISTICS OF THE CONTEXT

1.1. A complex history

The Republic of Haiti, which covers a third of the island of Hispaniola, has had a turbulent history which has had a significant effect on governance and development and which explains in part the current situation.

Haiti is the poorest country in the Caribbean and is one of the lowest countries on the Human Development Index. The concept of socio-natural disasters, which is commonly used in Latin and Central America, corresponds precisely to a country like this with its eroded mountains and its pauperised population which is extremely dependent on aid and money from the Diaspora.

The weakness of the state, which is the result of the country's turbulent history and the recent years of political instability, has made Haiti very vulnerable to external shocks and natural disasters are particularly destructive there. The difficulties encountered in managing natural disasters are one of the consequences of this vulnerability. The number of victims was much lower when a cyclone recently hit Cuba compared to when the same cyclone hit Haiti (several hundreds), even though it had already reduced in intensity (having changed from a cyclone to a tropical storm).

Since 2005, major progress has been made thanks to efforts to improve governance (at national and regional levels) and to restore the rule of law and reform the security forces (support/training of the Haitian police – the only force with a legitimate mandate to use force in a country where there is no army).

This improvement is one of the effects of the presence of the MINUSTAH, a UN integrated mission, which, through its civil component, does a great deal of capacity building work with regional authorities (town halls, etc.). In addition, a major effort has been made in terms of capacity building with regard to anticipation and response to natural disasters, and particularly hurricanes and tropical storms which have repeatedly hit since 2004.

It should be pointed out that the population has an ambivalent attitude towards the MINUSTAH. The problems which certain troops have encountered in communicating with the population have sometimes made dialogue difficult.

1.2. Frequent disasters

Due to the frequency of natural disasters, a national institution, the *Système National de Gestion des Risques et des Désastres* (SNGRD) was set up in 1999. A permanent secretariat coordinates the activities of 26 governmental and non-governmental organisations involved in natural disaster preparedness and response activities. The Minister of the Interior is in charge of policies via the *Comité National de Gestion des Risques et des Désastres* (CNGRD). The *Direction Générale de la Protection Civile* (DPC) is theoretically present at the national, provincial and communal levels and is responsible for the coordination of operations. In an emergency, the *Centre d'Opérations d'Urgence* (COU), which brings together the members of the permanent secretariat of the SNGRD and the DPC, is responsible for organising and coordinating the response to a natural disaster.

The response to the last natural disasters showed both the dynamism of the DPC and the limits of its operational capacity. National coordination is often complicated by conflicting political allegiances, particularly at the communal level. Though certain members of the administration are loyal to national bodies, others are loyal to local mayors and their networks. In addition, aid has been highly politicised in Haiti with officials managing humanitarian aid in their own interest (for example, during electoral campaigns) or even embezzling it[1].

At a strategic level within the SNGRD, the Haitian government has set up the *Groupe d'Appui de la Coopération Internationale* (GACI), which brings together UN agencies, the MINUSTAH, international development agencies, donors and international NGOs. Its role is to coordinate international actors regarding preparedness activities and during the response, to mobilise funds and to organise technical cooperation.

In an emergency, international organisations are theoretically supposed to regularly take part in meetings, share information, take part in multi-sector evaluations, integrate their response into the government's action plan and produce a final report on their activities.

Within the aid system, the local version of the IASC, the *Comité Permanent Inter-organisations* (CPIO), is in charge of coordination between international organisations in Haiti. Considerable effort has been made since 2004 to strengthen preparedness and response capacity. The current tragedy has taken place in a context where the most frequent problems obscure the most serious problems. Though Haiti experienced earthquakes which destroyed Cap Haitien in 1840 and Port-au-Prince in 1700, these tragedies of the past only had a marginal influence on the national strategy for managing risks (see the map of risks in annex n°1). It should be noted that the DPC has been producing contingency plans for a number of years, but these focus more on what is probable (cyclones, floods, mudslides) and less on what is possible (earthquakes). Efforts were being made on this issue, with the development of communication tools for the general public on the risk of earthquakes. The first of these tools were ready to be launched when the earthquake struck.

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[1] According to interviews with representatives of the government and NGO national staff and documents from the Clusters.

2. THE HAITI EARTHQUAKE OF 12 JANUARY 2010

2.1.   An exceptional event

The earthquake which struck Haiti on 12 January had a certain number of specific characteristics:

- **Its force:** Though only of magnitude 7 on the Richter scale, the location of the earthquake's epicentre meant that it hit the urban settlements on the southern peninsula of the country with great force, from the centre of the bay of Gonaïves (Gressier, Léogane, Carrefour) to Jacmel on the other side of the mountain, areas with numerous known faultlines.
- **The timing of the earthquake** is also important. At 16.53 a lot of people were still at work or were just leaving and children were still at school. If the earthquake had taken place at night the number of victims would no doubt have been much higher. The earthquake took place when a number of important meetings were taking place at MINUSTAH headquarters, which explains why so many MINUSTAH top level staff were killed. Night fell very quickly afterwards, leaving the city agonising in the dark. When the earthquake struck it was the middle of the night in Europe, which created some mobilisation problems. Fortunately, most specialised units have 24-hour monitoring.
- **The number of victims and people affected by the disaster.** The number of people affected by the earthquake was very high. According to the *Direction Nationale de la Protection Civile* (DNPC), more than 217000 people were killed and over 300000 people were injured, with a very high number of serious and very serious cases. 1.23 million people were left homeless in Port-au-Prince and more than 500000 displaced people fled the capital. The disaster was as deadly as the tsunami of December 2004, but concentrated in one area alone.
- **Port-au-Prince, the capital and strategic nerve centre of the country is severely damaged**. National command centres were completely destroyed. Even though the government itself did not lose any of its ministers, a large part of the Presidential palace was destroyed and the ministerial quarter was raised to the ground. Human loss in the administration was high. Many civil servants spent the first days trying to find their friends and families and tending to their wounds.

- **The total lack of anti-seismic strategies in the building codes,** whether public or private, meant that buildings which were not designed to resist earthquakes were severely damaged. Basic rules concerning wall ties and concrete reinforcement in areas affected by earthquakes were hardly ever respected. More flexible buildings like the old traditional buildings on stilts or many of the houses in the shanty towns, which are made of very light-weight materials, suffered much less than the buildings made of concrete.
- **The UN mission (MINUSTAH) lost its leaders** and those who survived, from the top to the bottom of the hierarchy, were left in a state of shock, which partially paralysed its activity. The human loss was considerable: 101 employees lost their lives, among which were the Special Representative and the Head of Mission, 7 other top civilian staff, 36 military staff and 7 UN police officers.

2.2.   Constraints involved in managing the crisis

State institutions seriously hit: Haitians and many international actors felt that the Haitian government's leadership was very poor. It was clearly very badly affected by the earthquake and the weakened state in which it found itself reduced its speed of reaction and limited its ability to take charge of operations. In interviews, many Haitians repeated the same phrase: "the president is in shock". This state of shock, which lasted a long time in certain sectors, led to disaffection within the population and increased the suspicion felt by the population with regard to the authorities. The political repercussions of this situation should be analysed in detail.

The MINUSTAH lost its leader, the UN Secretary General Special Representative and many of its managers: The fact that top staff of the MINUSTAH were among the victims of the earthquake was disastrous. The UN Secretary-General quickly nominated a replacement for his missing Special Representative, which no doubt saved the reputation of the MINUSTAH. The new SRSG, Edmond Mullet, had been head of the mission from June 2006 to August 2007 which meant that he had credibility and was immediately operational. However, the MINUSTAH did not immediately cooperate with humanitarian actors. On the contrary, it felt that its political and security-based mandate did not allow it to do so, which created tension and difficulties, for example, with the UNDAC. Very quickly, the UN Security Council met on 18 January to listen to the Secretary-General who had just returned from a first visit to Haiti. On 19 January, the Council unanimously adopted Resolution 1908, increasing the authorised number of soldiers and police officers in the MINUSTAH by 2000 and 1500 respectively and, at the request of the Secretary-General, it gave the MINUSTAH a more humanitarian role[2]. The authorised number of MINUSTAH personnel was thus increased to over 12500.

As is typical in this kind of disaster, a certain number of constraints which were not properly taken into account led to problems. As a consequence, aid was blocked and operations were not coordinated.

Very rapidly, there were major communication problems: As often happens in disaster contexts of this kind, telecommunications networks were affected in the region and between the region and the rest of the world. Communication problems were significant due to the fact that the nerve centre of the country, its capital, had been hit. Skype and internet nevertheless continued to work intermittently after the mobile phone system had stopped working. For example, the MINUSTAH quickly had to switch to its High Frequency network to contact its different offices in the country, because the cell phone network had broken down. During the first days, information only really circulated via CNN.

Airport: Though the airstrip was not affected by the earthquake and could continue to be used by large carriers, the airport was not easily accessible except for pilots capable of landing without the support of the control tower, which was no longer operational. Aircraft, volunteers and money rapidly arrived, leading to the typical phase when the airport is blocked. The 82nd Airborne Division of the US army quickly took control of the airport, launching a large-scale military operation to evacuate thousands of US citizens and prepare the arrival of reinforcements. Though the decisions made by the Americans regarding priorities irritated numerous observers, everyone in Haiti agreed that the fact that they took control of the airspace around Port-au-Prince was essential to limit disorder and prevent accidents which would have had disastrous repercussions. If an aeroplane had crashed onto the tarmac or the MINUSTAH camp next to the airport, the whole aid dynamic would have been threatened. This localised, rapid and planned action allowed the aid to be regulated to some extent. But the fact that authorisation to land was much more restricted for non-American, civilian planes, carrying medical supplies for example (MSF lost two days as they were forced to go via Santo Domingo), clearly shows that the US army's needs took priority over flights in connection with the emergency response.

Logistical issues: Though certain USAR teams, UN agencies and NGOs had what they needed in their "deployment kits" to be autonomous, this was not the case for everyone. Many teams had difficulty finding means of transport. Many cars had been destroyed or blocked in the city by the debris of collapsed buildings. For example, the roof of the garage of the French Embassy collapsed destroying the majority of the Embassy's fleet of vehicles. Fuel was very hard to come by during the first days.

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[2] Letter sent by the UN Secretary-General to his Special Representative, Edmond Mullet on 22 January.

Initial problems with the MINUSTAH: The MINUSTAH did not make its logistics resources available to the humanitarian community for several days as it did not want to take responsibility for activities outside the DPKO mandate. It was not until 19 January and the new directions given by the Security Council for the following 6 months that the situation improved. It was only from that point that UNDAC was able to use MINUSTAH helicopters to carry out reconnaissance outside Port-au-Prince, on the coast towards Léogane and Gressier and on the other side of the mountains towards Jacmel.

Use of ports: The state of the port of Port-au-Prince and the damage done to it following the earthquake meant that it was difficult to use for aid logistics. The port of Carrefour suffered a small oil slick, but the majority of fuel stocks remained untouched, which proved to be crucial to restart activities (rapid re-opening of petrol stations). The military ships which were deployed to transport aid (for example, by the United States and by France with the "Sirocco") were not immediately able to gain access to the quays. The use of light ships with amphibious qualities (like the Francis Garnier) made it possible to unload goods rapidly on beaches, bringing, amongst other things, vehicles which were in desperately short supply during the first days. Repairing the ports was crucially important to allow food aid to arrive.

Access to the affected areas: There appear to have been considerable problems in gaining access to the affected neighbourhoods, particularly due to the urban characteristics of Port-au-Prince (densely populated mountainsides leading to small coastal plains). Even before the earthquake, urban development made it difficult to gain access to different areas (narrowness of many streets in Port-au-Prince and their characteristics due to the fact that they are situated on a hillside). Only a few main roads were rapidly accessible: part of Delmas, the roads on the coastal plain leading to the Presidential palace and the administrative neighbourhood, where the French Embassy is situated. The build-up of debris, the corpses (at least during the first days) and the numerous victims who stayed outdoors to protect themselves from after-shocks made it difficult to get around. For the majority of victims, the first aid that they received came from neighbours and friends.

Security: In this country, which experienced periods of turbulence[3] between 2000 and 2004 due to the actions of armed groups acting on behalf of political actors, there were major concerns about security during the first weeks of the response to the earthquake. It is important to remember that Haiti was confronted with serious food and political crises in April 2008. The riots in Port-au-Prince brought a very strong reaction by the MINUSTAH, certain units of which fired rubber bullets. Whereas a new government was formed, the WFP supplied emergency food aid to calm the situation, but the political mechanisms behind this situation have yet to be identified. Concern that the gangs of Cité Soleil would revive their activities was accentuated by the escape of prisoners from the central prison which was destroyed by the earthquake. A form of security-based paranoia began to appear as it had in 2004-2005. UNDAC staff had to gain the permission of UNDSS[4] and have access to a military escort to travel around Haiti from the MINUSTAH logistics base near the airport. This seriously reduced UNDAC's rapid deployment capacity, even though the head of UNDAC managed to do miracles to improve the mobility of USAR staff. The French Civil Protection units operated with light protection from military police units and were therefore relatively mobile.

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[3] Including kidnappings and demands for ransoms
[4] United Nations Department for Security and Safety. UNDSS is the United Nations institution which manages the security of United Nations staff and facilities in the field.

3. THE FIRST PHASE: SEARCH AND RESCUE

3.1. Very rapid extreme emergency response

The local reaction:
In shock following the earthquake, the local population tried to save what they could during the night and took shelter. Neighbours, friends and family members helped each other, saving thousands of Haitians who were trapped under light debris or were injured.

The evaluation team gathered numerous witness accounts of this collective solidarity, which also highlighted problems encountered due to the following factors:
- Night fell soon after the earthquake struck and the absence of electricity made the situation particularly difficult.
- The absence of rescue equipment made it difficult to free people trapped under the rubble.
- The extremely harrowing experience of dealing with hundreds of injured people and people trapped under the rubble calling out for help and for whom it was impossible to take action due to the lack of appropriate equipment even several days after the disaster.
- Managing corpses was made complicated by the religious context, where voodoo is a very sensitive issue.

The NGOs already present in Haiti, the ICRC and OCHA rapidly began to take action, carrying out situation analyses and launching emergency relief operations. During the night, MSF teams using motorbikes managed to re-open two hospitals, where the operating theatres were more or less intact: Cité Soleil and Martissant. The staff of different NGOs and agencies based in the provinces were transferred to the capital to help with the relief efforts.

The Haitian Civil Protection forces were immediately put into action despite the fact that their headquarters in Port-au-Prince had been badly damaged. Luckily, part of the operational team had been in the provinces and was not affected. They returned to Port-au-Prince during the night, having been contacted by mobile phone and then by HF radio (when the telephone system stopped working). Of course, they were not properly equipped to deal with a disaster of this size. Furthermore, the only Search and Rescue team which has some equipment is based in Port-de-Paix which is at the opposite end of the country.

WHO had just received a large stock of surgical equipments and consumables for its project for the reduction of female mortality linked to obstetric complications. This could be immediately send to what ever remained of health institutions that could undertake surgery

International mobilisation of Civil Protection units
The United Nations Disaster, Assessment and Coordination agency (UNDAC)[5] was active very quickly. The alarm was raised at the UNDAC centre in Geneva at 23.05, very soon after the event, taking into account the time difference. A global alert was sent out and at midnight UNDAC mobilised its Urban Search and Rescue (USAR) teams[6]. The Virtual OSOCC was then activated to gather and coordinate offers of services, taking into account the rules in application developed as part of the International Search and Rescue Advisory Group procedures.

The objective was to set up a system to organise USAR teams, identify needs and allocate tasks as quickly as possible. The setting up of the tasking system, the Reception and Dispatch Center and the

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[5] UNDAC is the United Nations body which coordinates initial activities in post-disaster situations, including search and rescue operations and is answerable to the Office for the Coordination of Humanitarian Affairs, OCHA. UNDAC is in charge of activating the Virtual OSOCC and developing and promoting the International Search and Rescue Advisory Group (INSARAG) Guidelines, which allow the teams deployed in the area to be coordinated.
[6] Search and Rescue teams which specialize in post-disaster operations in urban contexts.

centre for coordinating operations was immediate (INSARAG measures), but logistically complex due to the weak initial support provided by the MINUSTAH. Very quickly, major problems with regard to logistics and communication made operations difficult. Support for the UNDAC team (logistics, communication, cartography, etc.) began to arrive on 16 January. While the UNDAC system was being set up, USAR teams and health personnel began to arrive from all around the world. Over 1900 international first-aid workers, including several teams with dogs (175 dogs in total) were deployed in around fifty USAR teams, France having sent more than 1100 people in total, including 250 first-aid workers. More than 130 people were pulled out from the rubble alive thanks to the energy deployed and the money invested. This figure is both a record compared to other similar disasters and tragically low compared to how lethal the event was overall (more than 215000 deaths). Many people were treated by the USAR first-aid workers in the destroyed buildings, then evacuated to emergency medical units or what remained of Port-au-Prince's health system. Greater effectiveness would have been possible if more helicopters had been available.

The Dominican Republic reacted very quickly by sending USAR personnel and medical teams the day after the earthquake took place. It provided significant medical and logistical support at the border to treat the injured and contribute to the relief effort[7]. In the 24 hours following the disaster, due to their geographical proximity (units based in the « Antilles zone »), the United States and France were able to send units (the US Disaster Assessment and Response Team left Washington on the 13th), closely followed by the Canadians. There was significant engagement by other countries in the region such as Argentina, Chile and Peru, including those with troops in the MINUSTAH and by regional authorities (CEPAL). These were joined by contingents of Military and Civil Protection forces (Israel, China, etc.).

3.2.   The over-loading of the emergency medical system:

With more than 300000 injured people, among which there was a very large number of seriously and critically injured people, the surgical system became saturated. One of the complex issues which were debated regarding the humanitarian response of the first weeks was the high number of amputations which were carried out. It is important to look at the various factors involved:

The state of medical infrastructure and staff before the disaster: the Haitian hospital sector is essentially private and partly supported by religious institutions. Its main focus was classical surgery (minor surgery, obstetrics, appendicitus, etc.) and curative medecine (treatment of acute dengue fever, etc.). Before the earthquake, public health issues were one of the major difficulties which had resulted from lack of investment in the national health system in keeping with the structural adjustment policies of the 90s. It was not prepared to deal with a situation of this seriousness which affected Health sector staff in the same way as the rest of the population. Many health centres had been hit themselves and their personnel were busy looking after their loved ones.

Management of the health situation in the provinces: Very quickly there were a large number of injured people in the provinces, such as in the Artibonite. The hospitals of Gonaives, for example, rapidly became overloaded. Emergency surgery teams arrived from Canada and the USA and helped to take care of the 4000 injured people and the hundreds of serious operations which needed to be carried out (including 40 amputations).

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[7] In view of the historical relations between the two countries, this aid was a very positive political gesture.

The specific epidemiology of emergency relief medicine in post-earthquake contexts.
- In contrast to many disasters, including tsunamis, earthquakes kill and seriously injure large numbers of people almost instantaneously: smashed limbs, etc. The number of injured who die depends on the speed with which the rescue teams gain access, the quality of the treatment given (management of "crush syndrome"[8]-see below) and the speed with which victims can be transported to emergency surgery units. In Port-au-Prince, gaining access to the injured and then extricating and evacuating them to medical units was difficult and slow due to the fact that the town is situated on hills and the streets were full of debris.
- The USAR teams on the ground treated many people who then tried to reach medical centres where treatment was being given, but also where there was a certain comfort (water, electricity, the presence of women and men "in white"). Very quickly, the courtyards and areas around these medical centres became saturated with the sick, the injured and their families.
- Medical care and surgery in disaster situations are difficult tasks which involve a "selection" process which is both difficult and essential. Cases found on the ground needed to be treated "on site", to avoid "crush syndrome" for example, but they then needed to be rapidly evacuated to medical centres where major operations could then take place.
- Surgery in disaster contexts produces a large number of complex cases which, once released from the operating block, does not mean they can be released quickly from the hospital : wounds which need to be kept open and drained, bandages which need to be changed regularly, infections to keep under control etc. The fact that many injured people arrived in the medical units late, often several days after the catastrophe, caused many infection-related complications which needed to be managed. Very quickly, alongside the congestion in operation blocks, post-operation systems also became overloaded. In the end, it became impossible to manage the need to retreat many injuries, the carrying out of grafts and the treatment of serious infections like gangrene. The "simplest" solution was amputation.
- Medical boats (US Confort, TDC Siroco and Spanish aircraft carriers) attempted to take some of the weight off the medical centres, but very quickly bottlenecks appeared in terms of transportation and the number of beds available. These bottlenecks were reduced, but not completely eliminated by airlifts to take serious cases from the US Comfort to Miami.
- Difficulties quickly appeared in implementing reference systems for the sick and lightly injured in what remained of the Haitian health system, a system, which we must remember, is to a great extent private and fee-paying.

3.3.   Difficulty in managing bodies and forensic pathology

The management of bodies, forensic pathology and funeral practices are among the most difficult factors in a post-disaster situation. There are environmental hygiene issues (including the management of odours), culturally and religiously sensitive issues, the treatment of trauma linked to events which people have experienced and the challenges of forensic pathology.

Before the earthquake around 300 burials were recorded per month in the cemeteries of Port-au-Prince. This figure, which is well below the mortality rate of a city of three million inhabitants, shows how many clandestine burials took place and how many bodies were taken to the person's village of origin.

Very quickly after the earthquake, local people removed the bodies which were accessible from the rubble and lay them along the road or path so that they could be recuperated by their loved ones. All at once, the city and its population found itself confronted with thousands of bodies, scattered all over the place, in various states of mutilation. After several days of inactivity, the morgues began to fill up with bodies even though there was no electricity to keep them cool, or ice to conserve them.

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[8] "Crush syndrome" is the effect of a rapid increase in toxins which happens in limbs which have been blocked or squashed and which are suddenly released.

Drastic measures were therefore needed. The bodies which had not been reclaimed by their families after three days were buried in collective graves after three days. These bodies were rarely identified and the deaths were rarely recorded. This will no doubt have repercussions in the future in terms of transfer of property, eligibility to receive funds from the Diaspora, but also in terms of the ability of families to mourn their dead properly.

For its part, the ICRC had very quickly imported more than 4000 body bags. Each embassy and mission sent forensic pathologists to identify the bodies of expatriates who had been killed. French forensic pathology staff who were rushed to Haiti and French Consulate staff proceeded with this difficult work.

Though it is clear that the decision to proceed with mass burials was necessary due to the situation, to help the population to recover, it is also clear that in cultures like Haiti, where spirituality and rites (including voodoo) are deeply ingrained, such a decision can also have major psychosocial repercussions.

4. THE "CLASSIC HUMANITARIAN ACTION" PHASE

4.1. Situation and needs assessments

The implementation of situation and needs assessments was difficult and complex. Though, during the first days, satellite images and new mechanisms for sending information to specialist mapping sites played a fundamental role, this became difficult when the available frequencies quickly became saturated. It was necessary to rapidly carry out field assessments, but there were not enough helicopters. The fact that the MINUSTAH's helicopters were not made available immediately for UNDAC's reconnaissance missions could have been compensated for if the MIC had identified this access constraint early enough and had notified the EU CPT which was being deployed at the time. A European solution could have been implemented.

Several activities were set in motion:

- **Remote assessments:** Several mechanisms were set up as soon as the "Satellite Charter" was activated. On the one hand because of UNOSAT, satellite imagery was immediately available. Teams immediately set about analysing it and carrying out an initial assessment of the damage.. This was essential to have an initial vision of the scale of damage, to identify and monitor population displacement in Port-au-Prince (monitoring of the setting up of temporary camps) and to use as the basis of the initial Flash Appeal. At this point, GPS and SMS calls made it possible to connect people in precarious and even dangerous situations, with the operational mapping which made it possible to direct the USAR teams.

- **Initial Rapid Assessment (IRA):** This IRA was set up by the Atlanta Center for Disease Control (CDC) at the request of OCHA and was based on a pre-established 15-page questionnaire. It provided a description of the situation at the end of January but was only available from 19 February.

- **The evaluations carried out by each organisation:** In order to be able to prepare their operations and produce the detailed project documents that donors demand, NGOs and Red Cross national societies had to carry out ex-ante evaluations which allowed them to establish the key parameters of their future operations. The operational areas often overlapped and the same areas were frequently visited by several agencies.

- **The Rapid Interagency Needs Assessment in Haiti (RINAH).** The RINAH was the initiative of 3 NGOs and was supported by the Needs Assessment Task Force (NATF), which answers to the IASC[9]. It took place from 23 January to 6 February but the report was only published later for logistical, security and methodological reasons. The RINAH was based on a 12-page questionnaire which took one person three hours to go through (information recorded on PDA, brought back to the base in Port-au-Prince, then processed in the Atlanta CDC), and which involved more than 23 helicopter flights and 18 teams (a total of 128 people). Though it provides a massive amount of information, it is difficult to interpret and use operationally. Despite the considerable effort made by the RINAH team, this data was already out of date when the report came out. The issue of whether the information that was needed at this stage of rescue operations could have been obtained by other simpler, faster and cheaper means needs to be looked into. The results obtained were a little disappointing in relation to the 3 million US$ that the RINAH cost.

- **Needs assessments carried out by the Clusters.** This process, which involves coordinating the needs assessments carried out by different organisations and discussing them within the Clusters, is central to the role of the Clusters, as this allows gaps and duplications to be identified.

- **The Post Disaster Needs Assessement (PDNA).** The PDNA is not directly linked to the emergency humanitarian response. In theory, it allows the assessment means of major donors (WB, EU, Inter-American Development Bank), CEPAL, the UN and the national authorities to be pooled. The Haitians have mixed views of previous PDNAs, such as those which followed the hurricanes of 2008, considering that a lot of energy and money was spent for very few results and little in the way of real reconstruction impact. This PDNA nevertheless led to an enormous financial commitment during the meeting of donors organised by the UN in New York on 31 March 2010.

The analysis of this assessment and evaluation process highlights three challenges:

Time management: the time factor is a classic problem of ex-ante evaluations due to the fact that contexts are very dynamic. In an acute crisis situation, it is fundamentally important to receive information rapidly even if it is only moderately reliable, rather than to have more precise information too late. When the data gathered in keeping with complex protocols aiming for statistical representativeness is finally processed and analysed, it has often lost part of its relevance and validity due to the speed with which the situation changes. When the report comes out it is often already obsolete.

Taking into account the diversity of contexts: One of the issues raised by rapid evaluations of this kind is the quality of analysis of the diversity of contexts. Even though Haiti is small, it has very varied landscapes, micro-economies and risks. The direct and indirect repercussions of the earthquake are very varied. Urban processes are very different between Port-au-Port, Jacmel, Léogane, etc. Many Haitians have left the destroyed cities to take refuge in different types of rural area where life is already very precarious. The Initial Rapid Assessment and the RINAH tried to cover the different zones as much as possible by using helicopters and a large number of Haitian assessors, but they quickly came up against the security management style of UNDSS in a "phase 3" security context[10] and logistical difficulties. It is hoped that the PDNA will give a more complete view of the direct and indirect impacts of the crisis in order to ensure that the most appropriate responses are brought in the right places.

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[9] IASC: Inter-agency Standing Committee for Humanitarian Action.
[10] The United Nations uses a system of phases, on a scale from 1 to 5, which specifies particular types of behaviour. These also correspond to different levels of risk bonus.

Going further than a simple needs assessment and carrying out a more holistic assessment: one of the difficulties encountered is that it is often difficult to avoid the needs assessment dynamic, which is imposed by donors who want to know how to spend their money, in order to carry out a more complete analysis which includes a detailed and dynamic analysis of the situation, and focuses not only on local needs, but also on local capacities, and finally, the gathering of information which allows constraints to be taken into account.

4.2. Coordination by the national authorities

In a natural disaster context, national authorities are in charge of coordinating the response. In the case of the earthquake of 12 January, the implementation of coordination mechanisms was made particularly difficult due to the fact that the Haitian government, which had already been weak before the crisis, found itself in a very difficult situation. The COU, the permanent secretariat of the SNGRD and the DPC were themselves seriously affected. Though no Ministers were killed, many high-ranking civil servants and their families were very badly affected. With civil servants in a state of shock, offices destroyed, no or very little means of communication or transport, and often no electricity, the national administration was confronted with considerable challenges in order to function. The re-allocation of positions of responsibility in certain key units, including the SNGRD, after the earthquake did not make the task any easier.

The government instigated a system of regular meetings with the Prime Minister and the Interior Minister, with daily briefings with Heads of United Nations agencies and the Ambassadors of the main countries involved.

As was the case following the previous disasters in Haiti[11], but to a greater degree, coordination between international actors (United Nations and international NGOs) and the national authorities and national NGOs was seriously weak for the emergency response. This had created a great deal of frustration in administrative bodies both at the national and regional levels. It appears that a dynamic of the same kind, was in place in the first weeks of the response, but probably even stronger due to the scale of international aid and the implementation of a coordination system at the MINUSTAH's "Log Base" (which took a lot of time and human resources, was conducted in English via internet and was situated in a site which was not easily accessible for Haitians). However, even though it was still weak and regularly faced problems of governance, the Haitian state had made significant progress since the end of the crisis of 2004-2005.

Due to good connection between the WHO representative and the Ministry of Health, the WHO base in his compound close to the airport could offer some support to the MoH as well as some support to some MoH staff. He Health cluster also tried quickly to escape the "log base trap".

There have already been signs of irritation within the Haitian government, in the form of an increased tendency to drag its feet with certain decisions. And yet, even though the Haitian authorities had been badly hit themselves, they tried to take control of coordination. There is a danger that coordination without the Haitians will either become a source of real tension between the aid system and the government or a process which de-legitimises the Haitian state, which is already seriously weakened, due to the difficulty it has had in bringing a strong public voice to reassure the population.

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[11] See the report of the evaluation carried out by Groupe URD/GPPI in October 2009.

4.3. Mobilisation of NGOs and the Red Cross movement

NGOs mobilised themselves very quickly, some of them via their international networks (such as MSF international). DG ECHO very quickly allocated funds to NGOs who had signed the Framework Partnership Agreement.

A certain number of NGOs, like MSF, who were already solidly based in Haiti, were able to react on a large scale. They were able to deploy more than 300 medical staff with essential and very specialised support for the treatment of "crush syndrome" from branches like MSF Belgium.

Development NGO networks also mobilised themselves very quickly in connection with organisations from the Haitian Diaspora. In countries like Canada and the United States, the very large and active Diaspora advocated for aid to be sent.

The arrival of a great number of particularly American international NGOs and large associations with very varied mandates and experiences (many of which are linked to Baptist churches) made coordination excessively complicated. In the first month, more than 1000 NGOs arrived in Haiti, of which less than 20% had the skills and equipment needed to deal with the challenges of the situation. Two major NGO coordination bodies (Interaction based in the United States and ICVA based in Geneva) tried to establish a number of key principles for NGO coordination. It is clear that mechanisms have to be put in place to avoid the "flow of do gooders who contribute to congest the system.

For its part, the International Red Cross movement's response was massive, including the deployment of FACT teams, the mobilisation of more than 30 national Red Cross societies on the ground and involvement of Emergency Response Units for Water and Health. The activities of Red Cross societies were coordinated by the International Federation of Red Cross and Red Crescent Societies (IFRC) in keeping with the Seville Agreement[12].

4.4. The UN and the Cluster system

At the request of the new Special Representative of the General Secretary and Head of the MINUSTAH, the Security Council accepted to change the mandate of the MINUSTAH, placing support for the humanitarian response at its centre.

Compared to this quick reaction on the part of the UN at a political level, the response of the UN in terms of its civil humanitarian mechanism raised numerous questions.

On the one hand, on 15 January, OCHA launched a Flash Appeal for funds. Those who wrote the appeal told us that it was principally based on satellite data because UN, national and NGO staff were still in shock three days on and were not in a position to evaluate needs or the situation. Nevertheless, 12 NGOs and 16 UN agencies requested a total of 562 million US$ to assist more than 3 million Haitians affected by the earthquake.
This Flash Appeal was for funds for the first two phases of the response:

- Pursual of the emergency response;
- Beginning of the stabilisation process, when people are no longer directly in danger, with the difficult tasks of providing the millions of Haitians directly and indirectly affected by the disaster with shelter, food and protection.

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[12] Under the Seville Agreement, coordination of Red Cross operations is the responsibility of the ICRC in conflict situations and of the IFRC in natural disaster contexts.

To begin these operations, the *Central Emergency Response Fund* (CERF) allocated 25 million US$. At the end of January, 82-90 % of the Flash Appeal was accounted for. Very quickly (18 February), a revised version of the Flash Appeal was drawn up and circulated amongst donors for a sum of 1.4 billion US$. At the time of writing, 50% of this sum has been covered.
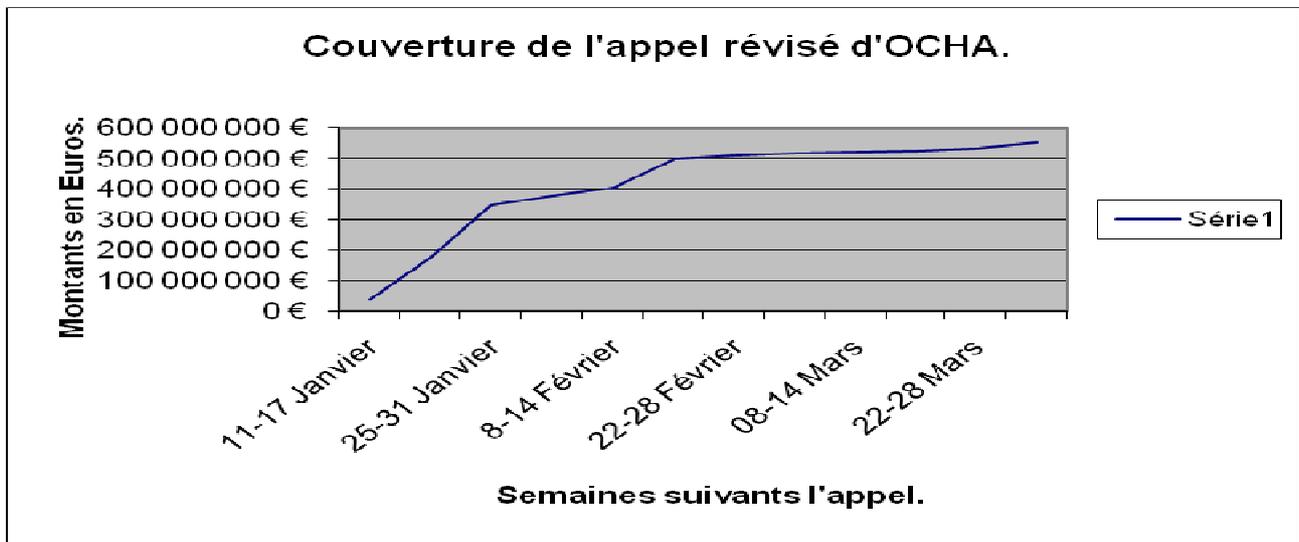
Things appear to have been more complicated in terms of operations. The Humanitarian Coordination system, led by a Humanitarian Coordinator who also has the roles of Resident Coordinator and Deputy Special Representative, was very badly affected by a series of deaths and family tragedies. One sign of the state of shock of the UN system in Haiti after the earthquake is that it took more than three weeks for the first inter-agency strategic coordination meeting to take place (Humanitarian Country Team and the IASC, including UN agencies, the Red Cross movement and NGOs). Reinforcements came much too late as it took more than a month for high-level support for the "Humanitarian Coordinator" to arrive in Port-au-Prince.

The launching of the Cluster system was quite quick, as the Clusters, which were activated in 2008 for the response to the hurricanes, were still active. The agencies already involved quickly took action to review the situation assessments that had been carried out up till then and the means available. Very quickly, these Clusters were submerged by the massive arrival of new NGOs, most of which did not know Haiti well and had non French-speaking personnel. The majority of Cluster meetings then began to be held in English (except for the WASH cluster – see below) and were therefore not very or not at all accessible to the vast majority of Haitians concerned (government, local NGOs,…).

United Nations agencies sent a large number of teams to set up Clusters. For these newly arrived teams, who were without operational means and whose movements were severely limited due to the high level of insecurity that had been decreed (phase 3 on the United Nations security scale), the logistical base of the MINUSTAH, next to the airport, was a practical place to work as it had internet access, a variety of different meetings took place there except the WASH Cluster which was run by the Direction Nationale de l'Eau Potable et de l'Assainissement – DINEPA and it was a place where almost everyone passed through making it easy to establish contact. However, it was also something of a trap, as it cut people off from the outside.

The Clusters were confronted with serious challenges in terms of effectiveness due to the facilities available for meetings: 90 people in a large over-heated tent originally meant for 30 people, where it is almost impossible to hear what is being said, without maps on the walls or enough room to properly record announcements, and where the same messages have to be repeated several times due to the constant flow of new arrivals. It became normal practice to have more and more meetings.

It is this condition that the "baby clusters" or private cluster system emerged. The 10 real "professional agencies were meeting on strategic and tactical issues in these special "get together" while the classical health cluster was doing more crowd management and damage control.

The new arrivals had to live and work in very poor conditions. They had to live in tents in an area with a great deal of dust, which then was flooded, following the first rains of February. They had to wait several hours to have a shower, there were very few toilets available and there was constant noise due to the close proximity of the airport and planes taking off and landing every ten minutes. They had very little chance of talking to local people for linguistic reasons and their movements were limited due to the security measures. For all these reasons, they had difficulty in doing their work.

The first direct repercussion of the United Nations' security measures was that access to the field was slowed down, both for needs assessments and for action, and security procedures around distributions were reinforced. But had the reality of a security problem and its causes been analysed? With serious shortages and aid slow in arriving, did the decision to establish displaced persons' camps which are practical in terms of logistics but can generate violence rather than providing support to mechanisms to disperse victims to their villages of origin create or reduce violence?

Managing a large-scale response to a natural disaster in a relatively unstable political context where there are security risks requires significant comprehension of the situation. It would appear that in order to manage the perceived risks linked to the context, the UN security system created others. Like the slowness and lack of visibility of governmental action, the tension created by aid that is inappropriate and slow can easily be recuperated for political ends and used to destabilise a situation, as happened in 2004-2005. That is no doubt where the real risk of insecurity lies and not in the re-activation of gangs, which, in the past, have been essentially linked to political agendas. In any case, this is one of the major concerns of the Haitian actors in charge of law and order, as the National Director of the Haitian Police clearly indicated to the evaluation team: "Any error made by the humanitarian sector can become a problem for me…"

The coordination system began to go round in circles and the scale of coordination efforts was oversized in relation to action.

During his visit to Haiti, the Emergency Relief Coordinator (ERC), Sir John Holmes, was able to see for himself the difficulties which existed. As a result, he sent an internal email to remobilise the UN system. Since then, everyone has been very active due to the effects of this email, which was widely printed in the media and sent shock waves all the way to Geneva.

It was in this difficult context that the United Nations were nevertheless brave enough not to hide from the truth. They faced up to the problems that existed and launched an inter-agency real-time evaluation in connection with the IASC.

4.5. The operational response

Health sector:

6 days after the earthquake, the WHO had registered 18 hospital units able to provide basic healthcare, thanks to support from NGOs, armed forces (US, France, Canada, Santo Domingo, etc.) and health teams supporting the USAR. After the emergency surgery phase and difficult post-operative care had been dealt with, the medical sector began to focus on the main priorities of this kind of situation:

- The epidemiological monitoring system, which was being implemented before the earthquake with the WHO and the Pan-American Health Organisation (PAHO), was re-activated. It should be noted that very quickly, and for the first time, it was the WHO which announced that the much talked-about large-scale post-disaster epidemic was, in fact, a myth for the most part. However, the setting up of the epidemiological surveillance system is an important issue.
- A return to healthcare fundamentals in refugee, IDP, shanty-town and extreme poverty situations (high density population, heightened risk of contagious diseases being transmitted – tuberculosis, which was already common before the disaster, acute respiratory diseases which will be even more common due to makeshift shelters and the arrival of the rainy season, heightened risk of water-related diseases or transmission vectors – dengue fever, etc.);
- A return to small-scale surgery fundamentals and obstetrics in a context of predominantly private healthcare.

Generally, in Haiti, you have to pay to gain access to healthcare and it is too expensive for many Haitians. Nevertheless, this sector is a large source of jobs. The instigation of free medical aid is crucial, due to the level of extreme poverty, but would threaten the viability of numerous medical centres. How to deal with these two issues is extremely delicate. In fact, after 3 months, several large health institutions have gone bankrupt and there is already a flow of needed competent health staff migrating to the US or Canada. This fact will make any recovery efforts much more difficult. How to deal with this phenomenon will require a strategic analysis of health economics in Haiti.

4.6. The operational timeline

Groupe URD has established a typical timeline for a response to a medium- to large-scale natural disaster, based on numerous evaluations and field studies. The key events of the response are shown in black in the diagram below. The arrows and dates in red show the sequence of events for the response to the Haiti earthquake.
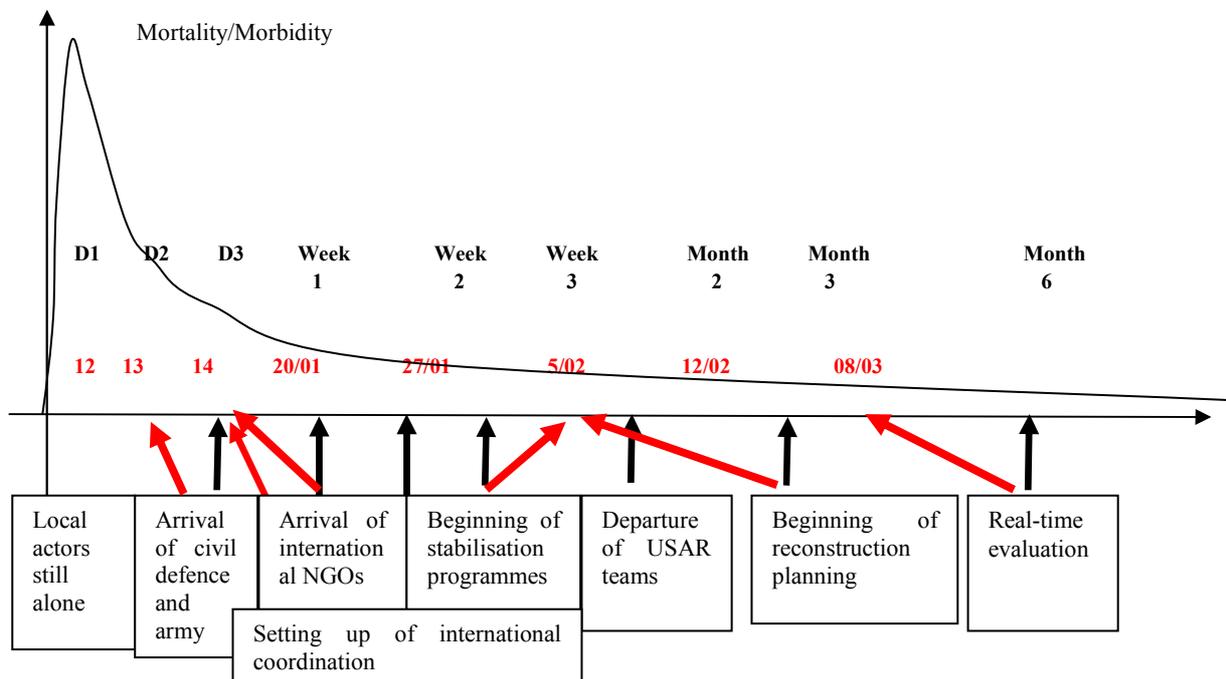
The sequence of events in the Haiti response shows that the system reacted more quickly than in a typical situation. The deployment of the USAR teams, of NGOs and of coordination mechanisms was, in effect, faster. Unfortunately, this does not necessarily mean that the overall response was faster. We also can see that rehabilitation also comes onto the agenda much earlier, as the result of work that has been done on early recovery, for example. This is a positive development and is the result of numerous recommendations in different evaluations. However, in this case, it would appear that humanitarian needs which had not yet been properly covered were consequently overlooked.

Once again, this response revealed the importance of the links between time (continuum) and space (contiguum) and between the immediate response, what could have been or should have been done before (mitigation, preparedness and risk reduction policies) and what will need to be done. Haiti is a perfect illustration of a subject on which there has been significant progress in terms of ideas, but where these are slow to be applied in practice.
- Lessons learned from other disasters: it is important to think about post-emergency and rehabilitation phases early on.
- Such considerations must be based on real needs on the ground or we can lose sight of the fact that the « humanitarian » phase is far from over.
- How can we improve the way we take into account the Haitians' points of view and provide them with support in the assessment of needs and how they develop? (Technical assistant in the Prime Minister's team, as has already been done on a temporary basis with someone from the French Development Agency, participation in the PDNA, etc.).

5. MANAGING FUTURE RISKS AND NEEDS

5.1. The risks ahead

There are a certain number of predictable risks in connection with the rainy season, which usually takes place in March/April, but, in fact, began at the beginning of February, and the hurricane season, which begins in June. Various specialists also fear aftershocks of the earthquake in the weeks ahead. How will the population react?

Others are more complex, and are the result of a number of factors such as those which caused a small oil slick in the port of Carrefour.

Will the sites be able to cope? Will the aid sector be capable of anticipating and reacting? Will it show resilience in the face of these risks? Is the humanitarian aid being implemented strengthening or weakening the resilience of the Haitian state, municipal institutions, communities and individuals with regard to these risks? The table below, which was drawn up during the evaluation mission, describes the particular characteristics of these different risks:

| Types of risks	Description	Probability	Level of preparedness
Climatic risks	Management of the rains to come which are going to make people's lives more difficult and increase health risks (those linked to sanitation and those linked to acute respiratory diseases or the increased number of vectors of certain diseases – dengue fever, etc.)	Very high	Low
	Management of the hurricane season which theoretically begins in June and usually ends in November. There are fears that the hurricanes will be violent this year due to perturbations to the El Nino – La Nina system[13].	High	Medium to high
Geological risks	Management of geological and geo-morphological perturbations linked to shearing, the creation of weak points and the risk of solifluction flow.	High	Low
Seismic risks	Management of seismic aftershocks[14] which have continued regularly since the earthquake on 12 January	Uncertain, but perceived to be high	Low
Socio-political risks	Development of insecurity linked to popular discontent which is exploited for political ends	Not insignificant, but should not be exaggerated	Medium (taking into account the MINUSTAH and the presence of armies from different countries)
Technicological risks	Related accident of a technological nature (like the management of the oil slick in Carrefour port)	Uncertain	Low

5.2. Predictable developments in terms of needs

In addition to the risks presented above, there are the predictable and known ways in which needs develop in situations like these. It is here again to be noted that for the first time, WHO went rapidly public to explain that the famous "large scale post-disaster epidemic" is more a myth than a reality and should not be overly used for fund raising: crying wolf does not pay on the long run.

The graph below, established by Groupe URD, presents typical ways in which problems and needs develop in post-disaster contexts. In the case of Haiti, particular importance has been given to the analysis of risks in relation to:

- respiratory diseases: the living conditions in IDP sites and shelters, which are over-crowded and have a high level of socio-economic insecurity, make it very likely that the number of cases of acute respiratory diseases will explode;
- future psycho-social problems: the Haitian population has undergone a major shock and managing the mourning, the pain, the prolonged contact with death and the difficulties involved in dealing with the bodies of loved ones who died could cause problems, the scale of which will only become clear in several months.

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[13] Meteorological phenomena which affect the Atlantic between the Caribbean and South-East Asia with alternating dry and rainy phases, with the potential for hurricanes depending on the thermal flow within the ocean.
[14] A tremor of 4.4 on the Richter scale was felt at 6.16 am in Port-au-Prince on 26 January.

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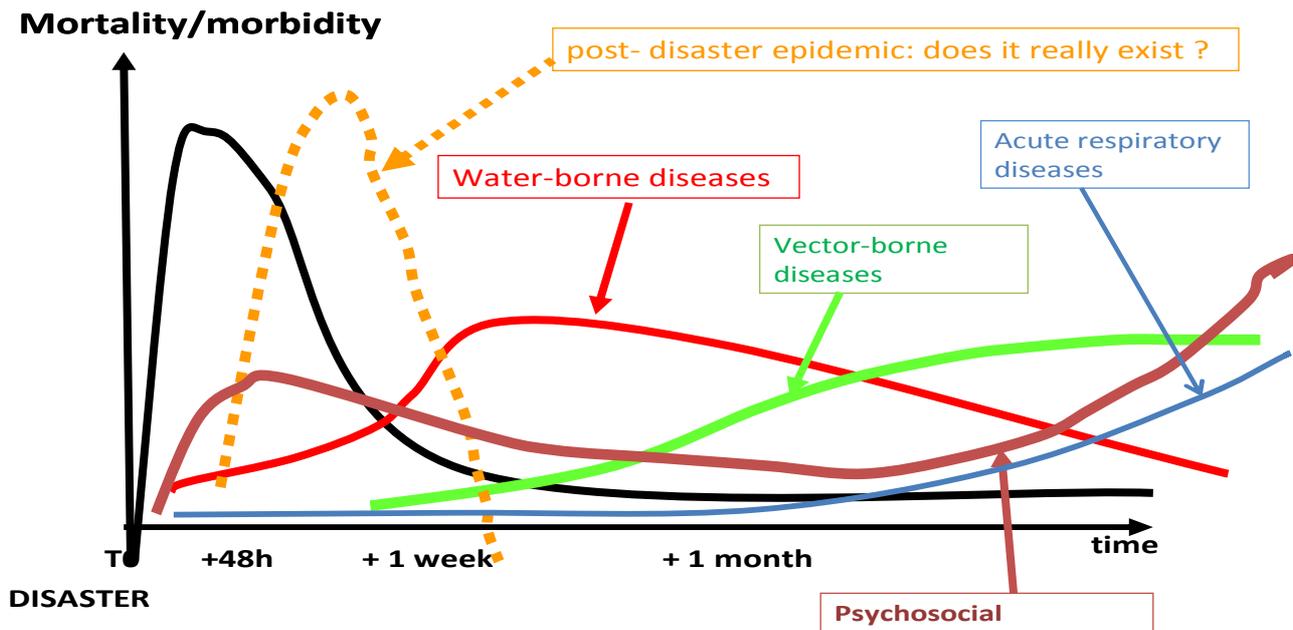
Finally, it will be important to provide proper medical, psycho-social and economic assistance for the handicapped. One of the effects of the earthquake has been to cause a large number of physical and psychological injuries (crushed limbs, badly treated gangrene, etc.) The psychological scars which will appear in the future will also be significant. And yet, there is very little capacity to deal with this kind of handicap. What is more, in a country which was already so poor and where unemployment was already so high, work opportunities for such a large number of handicapped people are virtually non-existent.

6. RECOMMENDATIONS

Strengthen the capacity of national institutions
While health aid organisations, including the WHO, made an effort to strengthen their tools and working conditions, nothing was done to ensure that the capacity of national bodies was strengthened so that they could assume leadership. Announcements about the "role of the Haitian state" remained a dead letter to a great extent despite the fact that the "DINEPA model" showed that, with adequate support, the Haitian institutions could play an essential role. It would have been possible to send detachments of experts to provide support, "offices in a box", etc. but the absence of a strategic and systemic analysis of post-earthquake capacities led to the current strategy.

Do not be too hasty in deciding the humanitarian phase is over: continue to closely monitor the needs of the population
Tropical rain had begun to fall during the mission, showing the extreme vulnerability of the population. A large proportion of the displaced persons and victims in Port-au-Prince, but also in Léogane, Gressier, etc. were still sleeping in shelters made with sheets and rags when the rain began to fall and the situation has only improved very slowly since then. It is important to ensure that funds are still available to reduce this vulnerability and to not jump to the conclusion that the emergency relief phase is over, even though it is useful to plan what comes afterwards.

Accelerate access to fast means of transport
One constraint which is systematically present when long distance deployments take place is that of rapid access to vectors which make it possible to get the necessary equipment and logistical support. The mobilisation of the military assets needed to support civilian operations can be very critical in the success of the response. However, this mobilisation is also dependent on political decisions, so it is important to maintain a permanent inter-ministerial mechanism to manage crises.

Improve the coordination between « search and rescue » and « disaster medicine/post-operative care»
It is important to systematically think about giving the response the right proportion in terms of « search and rescue – disaster medicine and post-operative care » with regard to bottlenecks which are either predictable (initial assessment) or are identified during the first hours of the response (rapid situation assessment). This requires both reflection about the instruments which should be deployed for the response in terms of disaster surgery (ESCRIM, ACA, etc.) and in terms of post-operative care (tents and beds, coordination strategy with the local institutions or those supported by other actors, etc.).

Engage more strategically with key "non cluster members"
In Haiti, some key health NGOs, ICRC, Civil protection teams and WHO often responded to the needs of the population effectively and rapidly, because they were very quickly operational and they were able to create their own base rather than set up at the Log Base. The most important and effective reaction came from non "cluster member" (MSF, ICRC USAR teams). This has to be studied and approaches developed in the direction of these actors.

Treat the Post Traumatic Stress (PTS) of staff deployed
Many individuals involved in the first weeks of the response will be affected by these events for the rest of their lives. It is important that they are provided with support, with someone to listen to them, and that they are provided with treatment if cases of Post Traumatic Stress Disorder are detected.

Develop a analysis and a strategy to deal with health economics
It is essential to develop mechanisms that will identify and mitigate the possible negative effects that health emergency response can have on fragile health systems.

New constraints, new tools

The key issues of operations in urban contexts[15]

The earthquake in Haiti once again underlined how complex humanitarian action is in cities, in the acute emergency phase as well as in the stabilisation and reconstruction phases. Humanitarian actors are not used to dealing with the specific characteristics of disasters in cities (population density, management of medical care, logistics and transport, urban forms of violence, relations with the authorities and social structures, methods of economic survival and access to energy, the role of telecommunications, etc.) and this represents a vast area of research to be invested.

New information technology applied to disaster management

Whereas the famine in Ethiopia in 1985 led to the advent of "showbiz" humanitarian action and the response to the tsunami in 2004 brought in the age of donations made via mobile phones, the Haiti crisis of January 2010 is the crisis of Facebook and Twitter, but also the intensive use of satellite images and SMSs. The range of tools which is being developed (communications satellites and satellite operators like TSF, Eurosat, Immersat, Iridium; satellites which collect and process images like UNITAR and those run by university centres, etc. and social networks, new SMS tools and "User Generated contents" such as Frontline SMS, USHAIDI and SAHANA) will need to be monitored at the strategic and technological levels.

Look into ways of improving local disaster management!

It is worth noting the considerable cost of deploying international Civil Protection units. The cost of deploying the fifty or so international search and rescue teams needs to be compared to the limited number of people who were saved. Everything that can contribute to improving the local response, even if this requires an initial investment, allows both significant gains in terms of effectiveness and, major savings in the long term. National and local Civil Protection units, prefecture and municipal entities, as well as national Red Cross societies and their numerous volunteers need to be given greater support.

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[15] Groupe URD has published three books on the subject: *Villes en guerre et guerres en villes*, 2004, Karthala; *Après le Tsunami : reconstruire l'habitat en Aceh*, 2010, Karthala; *Villes afghanes : les défis de la reconstruction*, 2010, Karthala.