



Becoming Pro-active in Civil Defense: Why Knowledge Matters in Guarulhos, Brazil

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Civil Defense departments are central in addressing environmental problems, including prevention, rescue, humanitarian assistance, and reconstruction. In recent years, Civil Defense departments have been on the spot as various cities in the country have been severely impacted by floods and landslides, leading to displacement of entire neighbourhoods, deaths, social fragmentation, and significant damage of urban infrastructure. However, historically, Civil Defense departments in Brazil have played a secondary role, at most, in municipal administration (budget, personnel, local policy and programs). According to the 2013 national municipal survey (MUNIC) conducted by the Brazilian Population Bureau (IBGE), more than 50% of the 5,571 Brazilian municipalities have no Civil Defense department. Only 1,040 municipalities have such a department with a staff of 10 or more, including technical staff, administrative personnel and temporary employees. A decade ago, the scenario was even worse as several municipalities and state/federal agencies have invested in disaster management initiatives in that area in recent years in response to the impact of major environmental disasters.

Generally in Brazil, Civil Defense departments are poorly structured and work very much in a reactive mode or palliative fashion during crises and disasters. The beginning of the Civil Defense department in Guarulhos was similar, being established after an aircraft crashed in a poor neighbourhood in 1989. This accident, involving 25 deaths and more than 100 injured people, occurred close to the largest international airport in the country. Until 2008, the Civil Defense department in Guarulhos basically fielded calls and forwarded demands to appropriate

municipal departments. Since then there have been efforts for building a new vision around four strategic areas: prevention, rescue, humanitarian assistance, and reconstruction. This shift is a process under construction, and although recent and ongoing, it offers interesting insights in the area of knowledge building and how knowledge can shape urban governance. We focus on four major issues: personnel; institutionalization; setting an agenda; and knowledge and platforms.

Although much progress had been made since the early 1990s, the head of the Civil Defense department appointed in 2008 was instrumental in building this new vision. His professional profile shows that personal education and experience makes a difference. The department head is an educator with a professional life combining years of experience as a gymnastics teacher in the municipal elementary school system, coach and leader in extreme sports for recreational groups, and social activist and organizer with the labour movement. This heterogeneous profile, combining professional experience and interpersonal skills, and his interests and academic coursework in philosophy, created the necessary diverse knowledge base required to deal with civil defense, by definition transversal, cutting across domains, and not restricted to sectoral approaches. This area also requires being pro-active, responsive in real time, which also applies to extreme sports. Being able to manage knowledge generated in various fields and integrating it into a coherent whole is key for the type of leadership required.

The second element is institutionalization, which builds the needed infrastructure for medium- to long-term knowledge development and sharing. In Guarulhos, the department initially had no administrative autonomy or independent budget and lacked a minimum of personnel to cover basic demands. Almost all employees were on temporary detachment from other departments and turnover was high. This situation undermined initiatives for creating shared vision and understanding,

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elaborating standardized procedures, developing training programs, and building the basis for action in needed areas in an integrated and collaborative manner. In four years the department increased its staff from 18 to 78 people, and a specific professional career path on risk management was created to attract new talent. Currently, Civil Defense is a coordinating post with the same status of municipal secretary, with administrative independence and its own budget.

Third, having more staff and resources created the possibility for spending time in the field pro-actively, which was instrumental for setting an agenda. Four dimensions should be highlighted. First, this move was key for developing context-specific assessments of demand and geographic and substantive areas for action. Second, it helped the team in defining goals, setting priorities, and identifying means to put the new department's vision into operation. Third, it forced the group to develop a better sense of the required in-house expertise, what could be provided by other departments, and the professional help not directly available, which would need to be drawn from elsewhere. Fourth, through this process professionals interacted and learned much more with and from each other, creating synergies for mutual learning, exchange, and challenging views from a particular field. This whole process was an eye-opener in identifying existing types, formats and sources of knowledge (including community knowledge) that needed to become available.

Finally, developing knowledge and putting in place a knowledge infrastructure, including digital platforms for collecting, organizing, and disseminating knowledge, have helped restructure Civil Defense in Guarulhos in two major ways. On the one hand, knowledge about local situations and target populations has allowed it to be more responsive to needs and sensitive to how information flows among audiences. For instance, taking advantage of the social network based on kinship and neighbourhood relations, an early warning system was put into place combining digital platforms and word of mouth. The starting point for developing this network was the existing communication flow among members of neighbourhood associations. Using short message service (SMS) sent to cell phones, a flood warning message is spread to key nodes, which are forwarded to secondary nodes

and travel till the end of the chain by word of mouth. In 1-2 hours a whole neighbourhood can be alerted about a potential threat and informed what actions have to be taken (e.g. rescue places). This system is in place for selected neighbourhoods and results are encouraging. The system is being integrated into the 24/7 emergency 1-800 Civil Defense telephone number, speeding communication and increasing efficiency.

On the other hand, there is an orchestrated effort to collect, organize, and process information to generate tailored knowledge on risks, disasters, prevention, assistance, and reconstruction. Overall, data collection is being improved. Weather stations are being installed in strategic places in Guarulhos to collect data and monitor weather conditions. Professionals are documenting and reporting emergency calls in the field using a defined protocol and tablets. This new routine and equipment has resulted in collecting data that is more accurate and focussed on the issues. Professionals patrolling critical areas regularly are also documenting field conditions and on-site observations with tablets. A system of self-reported data operated by volunteers and ordinary citizens could also be integrated into this information base. The ultimate purpose of this database is developing comprehensive predictive models for improving assessments, generating warnings, anticipating disasters, and informing actions in real time. This is a quite ambitious long-term perspective, but several professionals, including engineers, are already dedicating time to these tasks and putting together such a data collection program.

Despite much progress, professionals feel that much more needs to be done in restructuring Civil Defense in Guarulhos. However, the shift from a passive response mode to a pro-active one aiming to anticipate problems, minimize traps, and search for solutions has been striking. This shift is framed by a vision combining mitigation and adaptation strategies, with knowledge playing a significant role in this process. Being aware of different knowledge types, formats and sources and how different actors construct such knowledge has been key in envisioning a Civil Defense open to people's perceptions, responsive to demands, and accountable to citizens. This is a quite promising start and an encouraging move towards more sustainable urban governance.

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