

## **WARM**

### **III Workshop on Forest Fires in the Wildland-Urban Interface and Rural Areas in Europe. Fires of 2003: Lessons learnt and how can we use them. Madrid, 26-27 of May 2004**

## **CONCLUSIONS**

**Compiled by David Caballero from the presentations and discussion held in the workshop**

- The problem of forest fires in the wildland-urban interface or W-UI in Europe (also named peri-urban areas) has two main aspects:
  - Socio-economic and political aspects
  - Technical and operational aspects
- In both aspects, at least three levels of planning and management have to be considered:
  - Regional (province, department etc.)
  - Local (settlement, housing area)
  - Particular (house, lot)

### **Socio-economic and political aspects**

- This multi-level approach entails the need of an effective co-ordination of different level of Administration (i.e. regional government, municipalities and homeowners). In light of this, an effective organisational structure of responsibility has to be designed, which it is missed, specially, at settlement level in the planning and management of forest fire emergencies.
- The collaboration between Administrations should be extended to trans-boundary interaction between neighbouring countries. To be effective, it is suggested to articulate collaboration through specific, practical agreements at local scale.
- We have learnt that forest fires run across boundaries between countries. In this sense, it is needed an efficient collaboration and understanding of teams from both sides. This requires appropriate trans-national training exercises and language learning.
- Besides, wildland-urban interface requires cross-training of firefighters and rescue teams on both, forest fire management and structure fire management. These should complemented with specific wildland-urban interface defence operations, foreseeing the future creation of crews specialised on wildland-urban scenarios.

- There is a fundamental fact in the problem of fires in the interface: the poor perception of risk by homeowners and people living in these areas. This should be solved by periodic activities to raise public awareness, education and training. Preparedness of population is as important as the training of specific crews for such situations and scenarios.
- Homeowners, and other people involved in a forest fire episode, have to be appropriately and timely informed about the occurrence and unfolding of events. Mass media and other communication resources play a critical role in this sense and should be permanently co-ordinated with the protection bodies.
- Forest fire risk mapping should be incorporated in territorial planning. Fire prone areas have to be identified and risks forecasted beforehand, and preventive measures have to be taken in case of development of new settlements. This should be accompanied by strong regulations and enforcement.
- There is insufficient or inadequate specific legislation and regulation which, besides, should be accompanied by a strong enforcement and an efficient technical but also economic support, aimed at the planning and maintenance of preventive measures and infrastructures.
- Homeowners should have direct responsibility on the minimisation of risks and should work in accordance to regulations and in close collaboration with local authorities and Administration, particularly municipalities.
- In the aim to foster the direct and effective implication of homeowners in the preparation and execution of preventive operations, insurance companies can help noticeably by offering lower rates to houses and settlements which accomplish the rules of safety for human lives, properties and environment. However, it is suggested that insurance of such should be obligatory in fire-prone areas.
- In light of the experience, municipalities should have much more implication in the identification, planning and management of risks due to forest fire, particularly in such municipalities with large populations living in settlement (even when this happens in seasonal rhythms). Municipalities have good knowledge of all factors status and dynamics and have an adequate capability of communicating and influencing people living in its territory.
- Rural dwellings frequently hold old or disabled people with limited capability to perform prevention operations and with low mobility and reaction capacity in case of a fire emergency. Self-protection plans may be ineffective in these cases, which have to be treated taking these points into consideration. In this sense, it is suggested that special assessment and help programmes are envisaged.
- In the other hand, abandonment of rural areas has entailed the progression and invasion of wild areas into urban land.

- From a socio-economic point of view, forest fires in the wildland-urban area, particularly when they are recurrent, diminishes or even eliminate the confidence in the citizenship and investors, thus aggravating the problem in some areas which directly and solely depend on the outcome of such land. This is particularly serious in case of areas with tourism attractions and territorial development.
- It is strongly recommended to take action through very definite and practical actions thus diminishing the danger in advance. Some regions of Spain (Barcelona) have pioneered this idea by providing prevention and emergency plans to settlements with practical engineering and operational solutions.

### **Technical and operational aspects**

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- According to experience it can be stated that, in general, houses in the Mediterranean countries do not burn, mainly due to the fire-proof construction materials used in the buildings. Houses burn, in a large majority of cases, from inside.
- These ignitions are caused by fire entering through openings or breakthrough weak points. Heat sources near to weak points frequently entail the ignition of materials inside the house. However, these incipient fires inside can be extinguished relatively easy with a limited number of resources and be carried out by homeowner himself.
- Double-glass windows have proven to be effective in numerous cases preventing the fire to get into the house, while single-glass windows frequently break under the same circumstances.
- Despite of the considerations above, the total destruction of houses happens in a minimum fraction of the total number visited by fire in a forest fire contingency.
- People trapped by fire in a W-UI situation must understand, and react accordingly, that houses are probably the safest places in a fire environment, as experience clearly shows. Survival chances increase with an adequate preparation of the house and an appropriate behaviour of people. This should entail a change in mentality and be accompanied with education and training exercises and be part of the self-defence plans.
- In this sense, and given the historical facts, it is not always advisable to evacuate and it depends on the time needed and available to proceed to the evacuation and the existence of appropriate safe areas where to concentrate and maintain people, specially in large number. However, evacuation vs. confinement disjunctive sometimes entails a delicate decision making process, and each case must be treated separately.
- Recent studies show that fatalities rarely occur within houses in the pass of a fire front. Instead, most of fatalities happened outside while people was trying to escape from fire, some of them within their own vehicles.

- Another general conclusion is that it is needed a review of fire fighting strategies that should avoid the automatic concentration of forces in the defence of houses, while the main fire front is left unattended, thus growing freely and threatening new settlements. This must be coupled with effective self-defence of people present in the fire area, specially in the case of scattered housing in the wildland, which is a typical pattern in rural areas.
- Civil Protection and rescue operations have to be planned in advance, experience shows that improvisation can worsen the situation, specially when citizens are unaware of the risks and consequences involved in forest fires.
- In this sense, it is needed appropriate self-protection plans and behaviour guides aimed at citizens which can be involved in forest fire scenarios.
- Vegetation used for ornamental purposes, specially hedges, constitute a serious problem as frequently are associated to the propagation of fire and destruction of properties. The continuous treatment of hedges for aesthetic purposes entails the accumulation of dead fuel within the structure of the hedge, thus increasing heat release and intensity of flames. Highly flammable and dense species (i.e. *Cupressus*) should be avoided.
- Besides, some settlements with heavy vegetation, such as tree stands in the intermix, need of specific forest management, hence forest fuel planning.
- Settlements, frequently, are threatened by non-linear fire fronts. Instead, firebrands production and spot fires are associated to fire propagation in settlements: “fire comes from the sky”. This fire scenario diminishes effectiveness of fire extinction operations and difficults noticeably the evacuation and rescue operations. Also creates confusion in citizens and fire-fighters which are involved in the fire scenario, thus increasing risk for their lives. Safety-strips clear of vegetation around the settlement does not automatically entails the prevention of ignition inside it.
- One important factor in the reduction of effectiveness and safety of civil protection and extinguishment operations is the presence of dense smoke in the area. This factor increases noticeably the confusion of trapped citizens and, in the worst cases, kills people by asphyxiation.
- Specific on-the-spot observation and reporting teams allow the gathering of valuable information for further debriefing and explanation of fire behaviour, fire fighting efficiency, civil protection operations, human behaviour and properties destruction.
- It is also important to remember that settlements and housing areas are frequently source of fire themselves, thus threatening other settlements and natural areas (such as productive forests). This point has to be taken in consideration when designing guidelines for appropriate behaviour of citizens in settlements within fire-prone areas.