

**INTERNATIONAL WORKSHOP**  
**"Forest Fires in the Wildland-Urban Interface and Rural Areas in Europe: An  
integral planning and management challenge"**  
May 15 & 16, 2003, Athens, Greece

## **Conclusions of the workshop**

The presentations and the discussions that followed resulted in a series of conclusions in regard to the fire problem in the WUI/RA. These conclusions range from the protection of individual residences to more general measures for the reduction of the potential for disaster in such areas. The conclusions, compiled by Dr. Gavriil Xanthopoulos, are presented below.

### **Conclusions concerning residences and their danger of destruction**

1. The **sensitivity of residences to fire**, both in regard to initial ignition and to the potential for flame spread to their parts (walls, roofs, furniture...) constitutes the most important element determining the extent of damage a wildfire may cause to citizen properties.
2. **Vegetation treatment around structures** is particularly important near them but is less important at some distance from them, at least in regard to the probability of a structure being burned. However a residence may burn even if the fire does not reach it.
3. Continuing from the previous conclusion, the **direct contact of parts of a residence with flames**, even small ones, increases steeply the probability of damages to that residence. To avoid this, there should be no vegetation around the house, mainly grasses, shrubs and tree branches, which will bring the flames up to the structure. **Exposure to flame radiation poses a less significant danger** except if there are especially flammable materials, such as nylon curtains, in the house.
4. Damages in houses are often due to ignitions within them from burning **embers that originate at some distance**. Open windows, ventilation openings and chimneys without protective wire mesh are the most common entrance points.
5. It is quite common to see residences which appear quite safe, to catch on fire during a WUI fire, because of specific weaknesses that make them especially vulnerable. Examples of such **weaknesses** are:
  - **Use of tar paper under the roof tiles**, because this paper is easily ignited
  - **Presence of nylon curtains**
  - Lack of **non-flammable window shutters** that will protect window glasses, the curtains and the interior of the house from radiation.
  - **External use of flammable materials** such as PVC rain-gutters, which are flammable. Concentration of dead needles and leaves in them aggravates the situation.
  - **Positioning of flammable materials**, such as firewood piles, outside the house but at a short distance from it or under it.
6. **Often residences are destroyed** quite some time after the passage of the fire **because there is no one there to locate and extinguish small fire starts** in and around them.

7. The conclusions above demonstrate the **possibility of citizens to take important measures in order to increase the safety of their residences. Residences in the Mediterranean areas of Europe are relatively non-flammable, mainly with regard to their exterior wall materials.** Given this fact, removal of weaknesses, such as those mentioned above, in combination with presence of the house owner in his prepared-for-fire residence, can ensure survival of houses when a fire arrives from the forest.

### **Conclusions concerning the planning and the protection of Wildland-Urban Interface areas from fire**

1. Technology today makes available many tools that can be very useful in support of better planning in Wildland-Urban Interface areas. Geographic Information Systems are one such tool that can support objective and quantitative problem analysis in such an area. Other tools include modeling and simulation of fire behavior and of the thermal field of a flame front. Such models can be used, among other uses, for the development of fuel treatment guidelines (shrub removal, tree distance from homes, etc.). Many applications of such technologies, both at research and at operational level, were presented during the Workshop.
2. In regard to making use of technology, one of the elements that should be evaluated in each WUI area is the possibility of effectively protecting it from wildfire. This can be done using various criteria such as type and characteristics of residences, their location, density, etc. More specifically, one of the conclusions that resulted from the discussions of the Workshop was that **when a certain number of residences (density) are exceeded, then, in critical conditions, any firefighting plan collapses** due to the requirement for protection of residents and their homes. This requires excessive number of fire trucks and firefighters, which once committed there, cannot work towards stopping the spread of the fire. Thus the fire spreads uncontrolled in other settlements down its path further worsening the problem. A characteristic example that was presented during the workshop was a fire that swept successively the communities of Sykaminos, Oropos, Miliesi, Bafi, New Livissi, Markopoulo, and Kalamos in Northern Attica, Greece, on June 4<sup>th</sup> 2001. The extent and density of the WUI areas that have been developed during the last two decades without developing the respectively required fire protection infrastructure are most probably the main reason for the serious fire damages that occur with increasing frequency in the last few years.
3. The **availability of technologies and knowledge is not enough** for correct planning that will lead to the development of safer WUI areas. They must be used for developing rules for planning and for enforcing application of these rules in practice. Furthermore, it is **equally important to secure participation of residents** in the effort.
4. Aiming for the last point, it is important to stimulate the interest of the citizens. They must be made aware of the problem and must become part of the solution, which will serve their immediate interests. The phrase coined during the workshop was **“we must learn to work together, or else we’ll burn together”**.
5. In general, a balanced approach is needed. Given the existing conditions (effort to escape the noise and pollution of the big cities, vacations, tourism..) which

push large number of people (and not a few individuals only) to built residences in WUI interface areas, it must be recognized that such development is inevitable. On the other hand, it is not fair for the society to bear the burden of protecting un-planned, often illegal, high-risk settlements. **The solution is development of rational, scientifically designed, stable laws, rules and standards.** These rules should be used for designing well-planned areas appropriate for such development.

6. **Certain laws may have negative results in the correct development of WUI areas.** In Greece, for example, the existing forest law tends to encourage illegal development of WUI areas. In reality there is very little land where such development can be done legally. Furthermore, according to the law, if an agricultural field has been left uncultivated for years, for example due to immigration of the owners, and this has led to growth of forest vegetation (e.g. shrubs), this vegetation cannot be removed for re-cultivation of the field. The result of this law is the development of an uninterrupted forest landscape around villages. In such conditions, fires reach the houses while in the past they would be stopped in the agricultural fields at some distance from the settlements.
7. In regard to sensitization and involvement of citizens, it was proposed to use scientists that deal with the problem as opinion leaders, promoting their projection through the media in order to achieve better **transmission of knowledge to the public.** They can present their research findings better than anyone else, and they can present analyses of previous disasters that will help improve citizen awareness about the problem. In parallel, they can propose solutions in a rational and friendly way that is often more effective than any effort to enforce the law.
8. It was pointed out that it is good to **avoid excessive pressure and police-like measures to the citizens.** The measures to be taken and the rules established must be reasonable and practical in order to be easily accepted. It was further pointed out there are already areas in Attica where sensitized residents have made significant collective efforts (fuel treatments, fire lookouts, labeling of streets, removal of garbage e.t.c. in order to make their settlements safer. Such actions and especially their results must be publicized and supported by the State.
9. Finally, during the Workshop, a series of examples of settlement planning and development in Central Europe were presented (North Italy, Czech Republic, and Slovakia). There, the order, the rational approach, the correct specifications and, most important, their application in practice, presented a picture quite different from the often anarchic conditions prevailing in certain Mediterranean countries.

