Highly underestimated risks of wildland fire in the rural-urban interface and the need for evacuation preparedness in recreational and protected areas in The Netherlands

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In the Netherlands the risks of wildland fires are generally underestimated by the public and researchers, and by the policy and decision makers of public and private organizations. Research has shown, however that it is quite probable that uncontrollable wildland fires occur in the country's largest forest and nature area, the Veluwe: 4 % a year on average, and up to 50 % in years with drought. These probability rates are much higher than those considered to be socially acceptable for other environmental risks like floods or the transport, storage and use of hazardous substances (Van Gulik 2008). Additionally, the latest National Risk Assessment shows that rapidly expanding wildland fire incidents can have a considerable disruptive impact, that transcends the regional capacity of disaster management in various ways. National involvement is required to reduce risks to a level acceptable to society (BZK 2009a,b). The elaborated incident scenario withstood a reality check only a few months after publication of this national review, as a dune fire occurred in Schoorl in north-western part of The Netherlands. Due to direct threats of fire and smoke about 550 civilians were quickly evacuated, including pensioners and hotel guests. They could not return to their homes and hotels until the next day. Fortunately there were no reports of personal accidents or major physical damages other than the affected dune area.

Recently a Dutch initiative was launched to start a national programme of intergovernmental cooperation in wildland fire risk management. The aim is to develop a strategy of public-private cooperation that leads to the prevention of wildland fire risks, as well as the improved performance of the multidisciplinary crisis organisation in situations of large wildland fires. Effective crisis communication and traffic measures are essential. Additional measures are needed, including research on:

- Issues of access, escape routes and evacuation strategies in natural areas which are visited by large numbers of tourists especially during dry seasons;
- The influence of the management of visitor flows on evacuation strategies in recreational and protected areas and vice versa;
- The possible use of data on visitor flows in fire behaviour and fire danger software, and its relevance for existing evacuation models;
- Situational factors that increase the capacity of self reliance in crisis situations of large wildland fires, such as do's and don'ts and visibility of escape routes;
- Effective strategies of risk and crisis communication that allow civilians, public and private organizations to be prepared for crisis situations;
- Decision making issues regarding the adequacy of measures and the necessary level of preparedness, including social parameters, cost-benefit analysis and the probability of casualties.

At present there are no models or data available which are adapted to the specific characteristics of the Dutch protected areas, and provide an effective and cost-efficient approach of addressing these issues in a satisfactory way. Recently held experiments to enhance self-reliance of visitors in case of evacuation in protected areas underline the necessity to find problem-solving methods that are more than an educated guess. There is an urgent need to learn from experiences and research abroad in order to develop effective evacuation strategies of green areas, or any other

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alternative, especially in a densely populated country such as The Netherlands. A multidisciplinary programme approach integrating scientific insights on land use, geo-spatial planning, management of (visitor flows in) protected areas as well as risk and disaster management, appears to be the most promising. The multi-level agenda setting achievements of the regional public safety organization VNOG provide a promising basis for such an innovative approach. It has been rewarded with the national Public Safety Award 2009 (www.veiligheidaward.nl). The challenge is to bring it into the next stage of development in an integral and sustainable manner.

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