



International Workshop "Forest Policy and Economics in Support of Good Governance" - Dubrovnik, 3-4 April 2009

## Forest fires: from economic assessment to governance



Laura Secco, Davide Pettenella  
and Mauro Masiero  
DITESAF - University of Padova

## Outline

- Background
- The logical framework (in the workshop context)
- Contribute of ongoing research (A model to quantify forest fires costs)
- Proposal for future research (An ACF approach to stakeholders analysis)
- Final remarks

## Background

### Background - 1

- Forest fires have been defined by the European Environmental Agency (2007) the most serious problem of governance of the forest environment in Europe

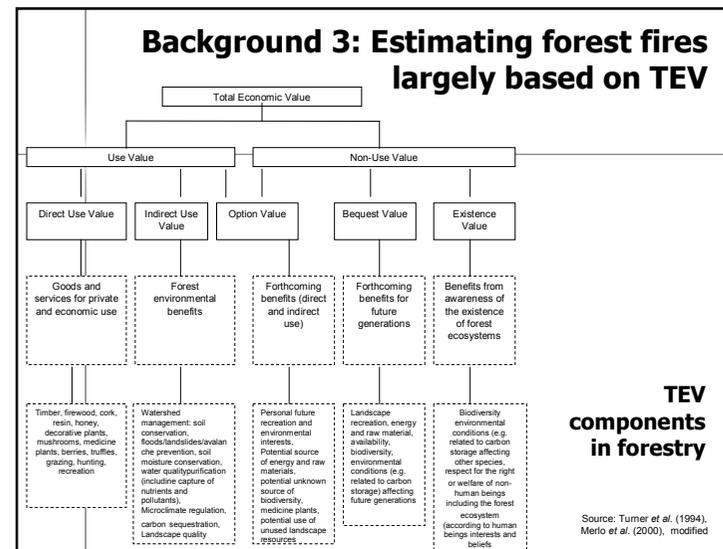
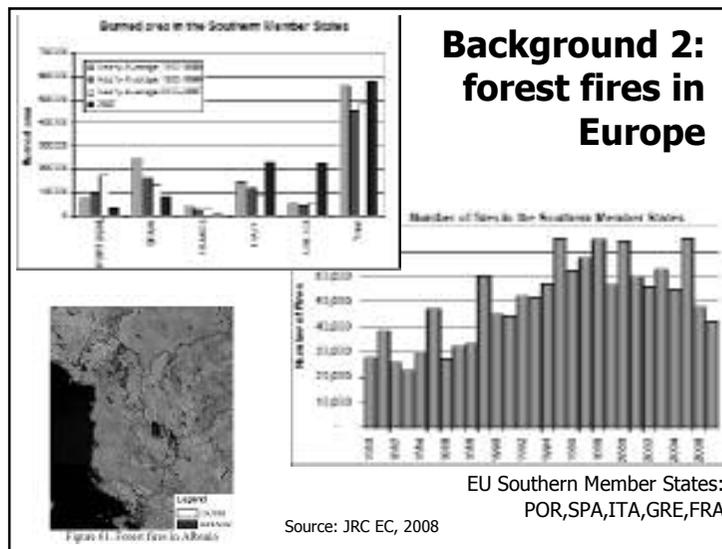


Weak governance means risks of:

- social conflicts
- economic losses
- environmental damages



Source: McDonald, 2007



### Background 4: Estimating TEV

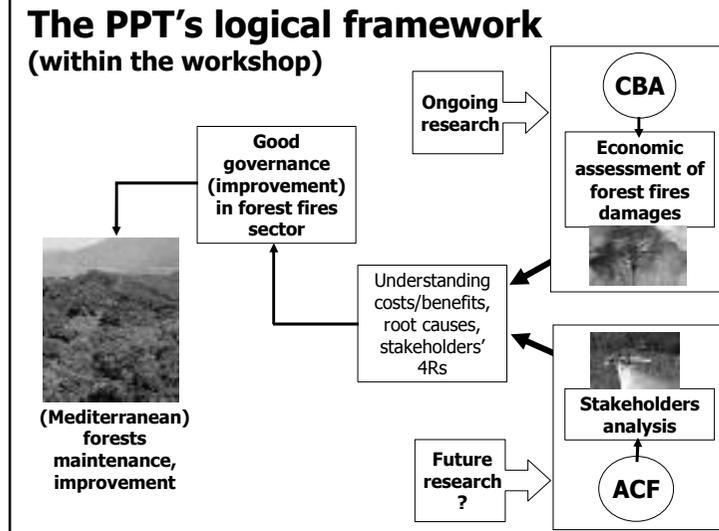
<b>940 ~ 1,005 US\$ ha<sup>-1</sup> year<sup>-1</sup></b> (appr. 713 ~ 762 € ha <sup>-1</sup> year <sup>-1</sup> )	Costanza <i>et al.</i> , 1997 - Nature 387: 253-60. Bonnie <i>et al.</i> , 2000 - Science 288: 1763-4
<b>133 € ha<sup>-1</sup></b> (overall average value in 18 Mediterranean countries; national averages weighted by forest area; varying from 8 € ha <sup>-1</sup> in Albania up to 344 € ha <sup>-1</sup> in Portugal)	Croitoru and Merlo, 2005 - Mediterranean Forest Values:37-68

**...and forest fires damages**

<b>5.4 - 7.2 millions of lire ha<sup>-1</sup></b> (appr. 2,790 ~ 3,720 € ha <sup>-1</sup> average cumulated value of damages; discount rate 5%)	Pettenella, 1997 - Forest resources environmental accounting (case-studies in Italy). IUFRO
--	---

- ### Background 5
- Challenging and complex problem for 3 reasons:**
- many root causes (e.g. abandonment of marginal land with ageing stands and increasing deadwood, increasing recreation activities in forests, climate change, ... )  
→ need for multi-sectoral and long-term policies
  - many stakeholders involved, with open or latent conflicting interests, different beliefs and advocacy coalition resources, ...  
→ need for a broaden and long-term analysis of stakeholders and their interdependencies/influences in decision-making
  - trade-off among investments in fire prevention and fighting not clear (the "forest fire prevention paradox") and social cost minimization strategies difficult to be defined  
→ need for innovative methodologies (accuracy, transparency, simplicity, ...) and data on fire damage costs at broad scale

## The logical framework (in the workshop context)



## Ongoing research: A model to quantify forest fires costs

### A recent Italian approach (in 2007 and 2008): a model to quantify forest fires costs

A methodology for estimating economic damage from forest fires proposed in Italy, by the Italian Academy of Forestry Sciences (commissioned by the National Forest Service), which is considering 3 components:

1. costs of extinguishment (machinery, equipment and personnel used in fighting against fires) ←
2. environmental damage (goods and services => TEV) ←
3. special external costs (personnel injuries, infrastructure damage, general organizational costs associated to fight and eventual post – fire restoration) ←

## The Italian model: a modular approach adopted by MASSIF, a JRC research coordinated by EFIMED

- **Rapid: reconstruction costs**
- **Intermediate: M.I.L.VA. - *Mean Indicative Land Values***
  - From standardized (regional) mean values to site-specific value
- **Analytical: S.A.F.E. - *Semi-Automatic Fire costs Evaluation***
  - + *Contingent Valuation*
  - A protocol to carry out a CV based on best practices (with the long term objective of building a DB for benefit transfer)

## Proposal for future research: An ACF approach to stakeholders analysis

### Stakeholders Analysis: traditional vs. ACF approach

(based on Weible, 2007)

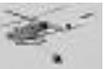
	Traditional approach	ACF approach
<b>Substantive scope</b>	Single alternative or venue (= institutional arena within which stakeholders may influence policymaking)	<b>A policy subsystem</b> (= a set of policy participants and territorial and substantive scopes)
<b>(Main) drivers of public policy controversies</b>	(Often) Technical deficiencies	(Usually) Value differences
<b>Utility over time</b>	Short (easily outdated for rapidly changes in stakeholders,...)	Long-term perspective
<b>Interdependencies among stakeholders key variables</b>	Not explored	Explored
<b>Structure of individual beliefs and motivations (to change policy)</b>	Not clear categories ???	<b>Deep core and policy core beliefs</b> (likely to remain stable for long time), <b>secondary beliefs</b> (most susceptible to change in response to new information and events)

### Main stakeholders in forest fires (Italy) - 1

Stakeholder	Utility function	Attributes
<b>State Forest Corp (Corpo Forestale dello Stato)</b>	Maintaining the centralised, traditional, <b>strong role in forest protection</b>	8,400 employees A <b>military organization</b> with a strong internal hierarchy, a long history and tradition, very good links with the right wing political parties
<b>Local forest authorities</b>	Maintaining their competencies in fire control at local level (responsibility for coordinating all relevant actors in case of fire)	<b>21 Regional administrations with 21 different policies</b> due to: local environmental conditions, role in direct employment of forest workers, involvement of volunteers

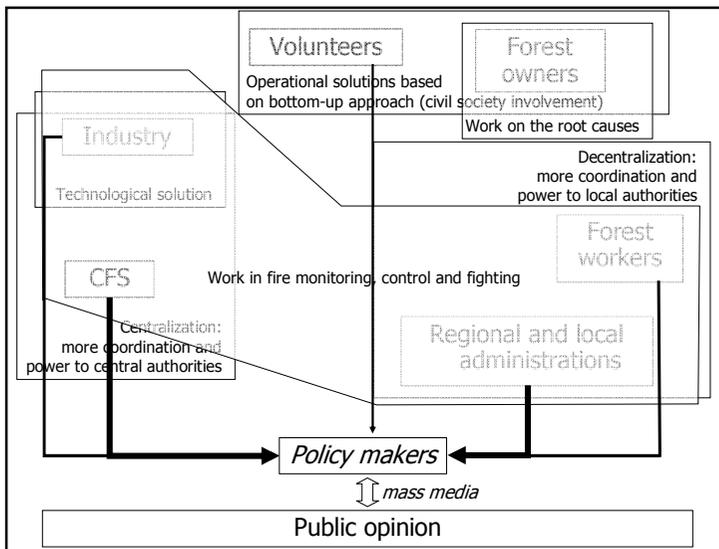


## Main stakeholders in forest fires (Italy) - 2

Stakeholder	Utility function	Attributes
<b>Forest owners</b>	Maintain the main production function. Some interest in fire spreading (grazing, land development, hunting, ...)	<b>600,000 private owners; 7.5 ha forest/unit</b> 45% of the units: <5ha Problems of <b>land abandonment</b> : 4-5 M ha (→ fires) <b>No strong representation</b> : the only country in the EU15 with no representative among the CEFP members
<b>Fire industry</b>	<b>Maintaining business</b> , selling equipments and technology 	<b>Strong links with the military industry</b> (helicopters, trucks, retardants, IR technology, SW to attack forest fires, ...) Well established contacts with the potential buyers Many semi-public companies   

## Main stakeholders in forest fires (Italy) - 3

Stakeholder	Utility function	Attributes
<b>Forest workers</b>	(Seasonal) <b>employment opportunities</b> in forest maintenance, fire monitoring and fighting	<b>65-75,000 forest workers</b> (mainly seasonal) <b>employed by public authorities</b> There are evidences that some forest fires have been voluntarily caused by forest workers to keep their employment position
<b>Volunteers</b>	<b>Participation of local communities</b> in forest fires control. 	<b>Appr. 3,900 small local NGOs</b> organised under the Civil Protection <b>Equipped and compensated by public administration</b> (i.e. they are not at zero costs for the public sector!) An alternative to forest workers employed by local public authorities 



## Final remarks

### **Contributions to governance improvement in forest fires policy from ongoing research**

- Facilitating policy change based on learning by accumulating information:
  - developing environmental accounting systems with fire damages cost evaluation (growing stock, NAI, NWFPs values, ...)
- Facilitating policy change based on European cooperation (*multilevel decision, intersectoral links, interactivity, sound expertise => basic element of governance*):
  - Guidelines for defining a common methodological approach; costs components, methods for single damage evaluation, valuation protocols (→ costs standardisation and benefit transfer)

### **Contribute to governance improvement in forest fires policy from future research**

ACF approach functional for understanding complex contexts. In general, stakeholders participation/consultation can be useful in:

- focusing on forest values which can be different from those traditionally identified by experts and officials
  - => *revised information and data to be collected for assessing monetary value of damages, different priorities*
  - => *public policy controversies are driven more by value differences than by technical deficiencies (Weible, 2007)*
- in defining planning and management priorities and local measures against forest fires
- in properly using the economic-environmental assessment results and identifying real causes!



**Thank you  
for attention!**