



# Climate Change and Forest Mitigation and Adaptation in a Polluted Environment (MAFor) Action FP0903

Start date: 18/11/2009

End date: 31/12/2013

Year: 1

## Presenter's Name

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# Scientific context and objectives (1/2)

- **Background / Problem statement:** Climate change and air pollutant issues are closely linked and require more integrated research, monitoring and modelling approaches. This COST Action offers the opportunity for a significant new approach, which is the main reason of this Action, i.e. to link climate and pollution changes and impacts at forest sites. Meaningful predictions of forest adaptation to and mitigation of climate change can only be achieved when atmospheric dynamics are translated into biological effects.
- **Brief reminder of MoU objectives:** 1) to increase understanding on state and potential of forest mitigation and adaptation to climate change in a polluted environment; and 2) to reconcile process-oriented research, long-term monitoring and applied modelling at comprehensive forest research sites (Supersites)



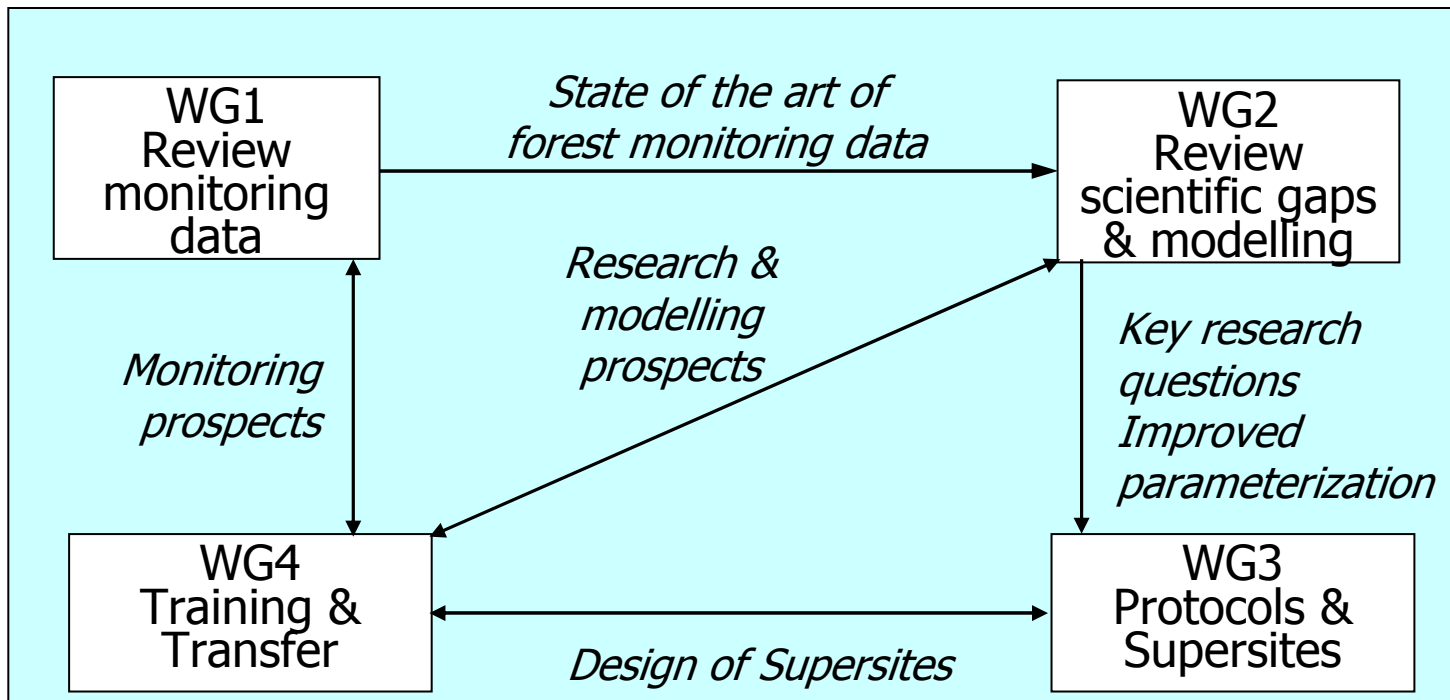
# Scientific context and objectives (2/2)

## Secondary aims

- to expand the evaluation of the presently available data;
- to identify current knowledge gaps and emerging research needs;
- to optimise the geographical distribution of Supersites and assure coverage of the most relevant ecosystems in Europe;
- to assess the value and ecological meaning of measurements and identify which measurements are a priority;
- to develop criteria and standardized protocols for data acquisition, processing, upscaling and storage;
- to promote and facilitate the use of the results beyond the initial targeted research communities.



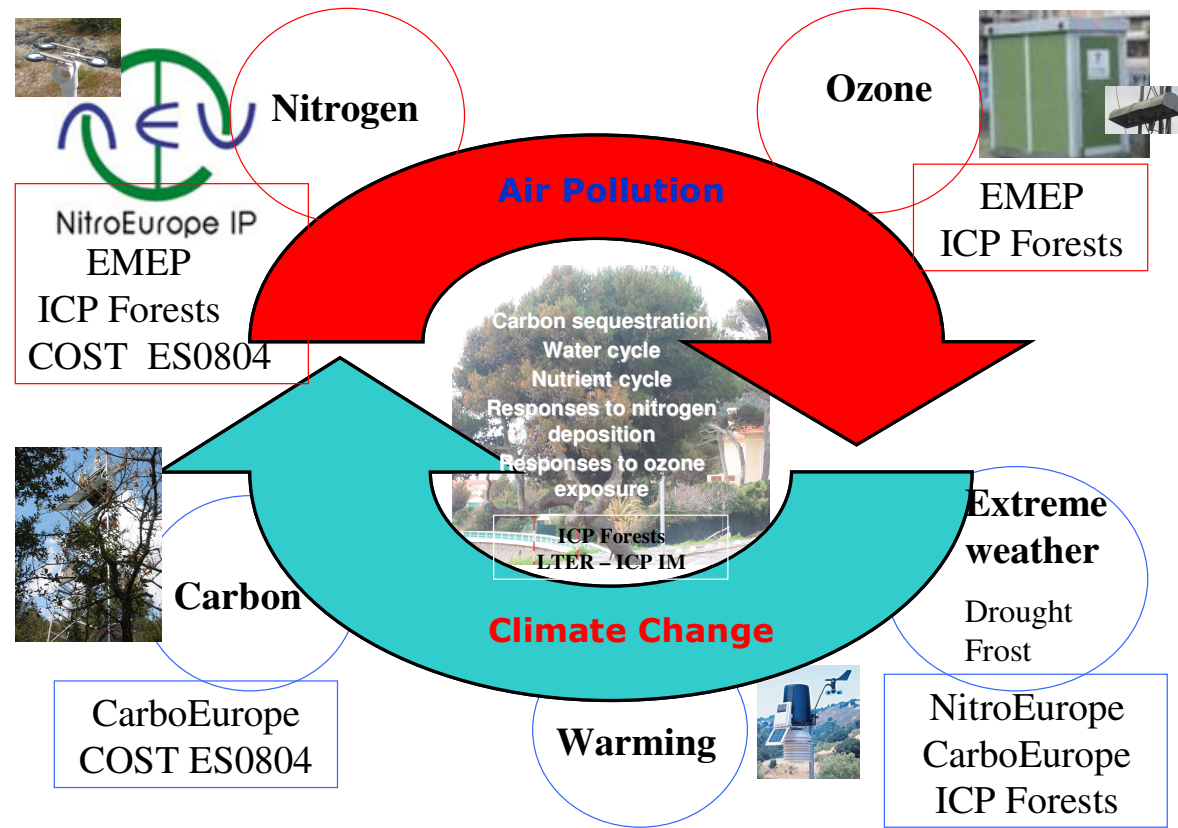
# Working groups





# Results vs. Objectives

- Networking.** The Action networked for the first time representatives of the main networks/institutions working with air pollution, climate change and forests in Europe (Action kick-off conference) and got a high number of signatory countries (29), WG members (164), participants to the kick-off conference (82), and website contacts (14,052).





# Results vs. Objectives

- **To collate monitoring data bases from different sources.** The Action collected information about accessibility of these databases; intellectual property rights; possibilities for databases harmonisation; quality assurance/quality control procedures.
- **To identify current knowledge gaps and emerging research needs.** The Action identified the following knowledge gaps and research needs: (i) interaction between changes in air quality (trace gas concentrations) and climatic factors on forest ecosystem response, (ii) significance of biotic processes in system response, (iii) tools for mechanistic and diagnostic understanding and (iv) the need for unifying modelling and empirical research.
- **To develop sites where integrated soil, plant and atmospheric research and monitoring will be carried out (Supersites).** A system for forest monitoring and research in Europe was suggested, based on a small number of highly instrumented “supersites” and a large number of lower intensity monitoring sites. The system needs to be based on existing infrastructures but requires more coordination, harmonisation and a joint medium to long term strategy.



# Significant highlights in Science or Networking

## Overview on transnational forest monitoring and research networks in Europe

### (1/2)

- The COST-STSM-FP0903-6501 explored possibilities for cooperation among research and monitoring initiatives. An overview on national and transnational forest monitoring and research networks and sites in Europe was provided, as a basis for identifying possible “supersites, and will be published in 2011.

Pro-gramme	Full name	webpage	legal basis/ financing	sites
ICP Forests	International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests	<a href="http://www.icp-forests.org">www.icp-forests.org</a>	UNECE, CLRTAP	6000 Level I 500 Level II intensive forest monitoring, from these approx 100 intensified FutMon sites
ICP Integrated Monitoring	International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems	<a href="http://www.environment.fi/default.asp?contentid=17110&amp;lan=en">www.environment.fi/default.asp?contentid=17110&amp;lan=en</a>	UNECE, CLRTAP,	50 catchment sites, mostly incl. forests
EMEP	European Monitoring and Evaluation Programme	<a href="http://www.emep.int">www.emep.int</a>	UNECE, CLRTAP	Depending on compounds, e.g. 130 sites for ozone, 100 sites for acidification 20 sites for POPs In general: 100 Level I 25 Level II
NitroEurope	European research into the nitrogen cycle.	<a href="http://www.nitroeuropa.eu">www.nitroeuropa.eu</a>	6 FP	Component 1 (Observational network) 4 forest sites Level III (Supersites, 500 parameters) 2 forest sites Level II (100 parameters) 24 forest sites Level I (low cost active sampler 100 parameters) Component 2 (Manipulation network) 7 forest sites (additional non-forest sites available)
CarboEurope	CarboEurope-IP Assessment of the European Terrestrial Carbon Balance	<a href="http://www.carboeurope.org">www.carboeurope.org</a>	6 FP	54 Atmospheric observation sites 106 Ecosystem observation sites
ICOS	Integrated Carbon Observation System	<a href="http://www.icos-infrastructure.eu">www.icos-infrastructure.eu</a>	7 FP/ESFRI	approx. 50 atmospheric sites 50 ecosystem sites with forests mostly included 10 ocean sites
LTER Europe	European Long-Term Ecosystem Research Network	<a href="http://www.lter-europe.net">www.lter-europe.net</a>	6 FP (ALTERNET) ILTER ESFRI (LIFEWATCH)	400 LTER sites (30 % forested) 25 LTSE platforms



# Significant highlights in Science or Networking

## Institutional responsibilities for different networks within participating countries

### (1/2)

- The COST-STSM-FP0903-6501 explored possibilities for cooperation among research and monitoring initiatives. An overview on national and transnational forest monitoring and research networks and sites in Europe was provided, as a basis for identifying possible “supersites, and will be published in 2011.

country	ICP Forests	ICP IM	LTER	ICOS	Carboeurope	NitroEurope	EMEP
Albania							
Andorra:							
Austria:							
Belarus							
Belgium					mult.		
Bosn. Herzegov.							
Bulgaria							
Croatia							
Cyprus							
Czech Rep.		mult.					
Denmark					mult.	mult.	
Estonia							
Finland				mult.	mult.	mult.	
France					mult.	mult.	
Germany					mult.,	mult.	
Greece							
Hungary						mult.	
Iceland							
Ireland					mult.	mult.	
Italy					mult	mult.	
Latvia							
Liechtenstein							
Lithuania							
Luxembourg							
FYR of Macedonia							
Malta							
Rep. of Moldova							
Montenegro							
The Netherlands					mult.	mult.	
Norway		mult.					
Poland					mult.	mult.	
Portugal					mult.		
Romania							
Russian Fed.							
Serbia							
Slovak Rep.							
Slovenia							
Spain					mult.	mult.	
Sweden	mult.	mult.			mult.	mult.	
Switzerland					mult.		
Turkey							
Ukraine							
United Kingdom					mult.	mult.	





# Significant highlights in Science or Networking

(1/2)

## Overview of existing large-scale databases relevant for forest monitoring and research, and data access rules

Programme/ project	Short name	Home page	Database	Data access rules	Manual
International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests	ICP Forests	<a href="http://www.icp-forests.org">www.icp-forests.org</a>	Central data base with raw data at vTI, Germany	Open after registration and information of countries, 2 years reserved for internal evaluation	<a href="http://www.icp-forests.org/Manual.htm">www.icp-forests.org/Manual.htm</a>
International Cooperative Programme on Integrated Monitoring of Air Pollution Effects on Ecosystems	ICP Integrated Monitoring	<a href="http://www.environment.fi/default.asp?contentid=17110&amp;lan=en">www.environment.fi/default.asp?contentid=17110&amp;lan=en</a>	Central data base with partly raw data, partly aggregated data at SYKE, Finland	Open after registration, large data sets are approved by Task Force	<a href="http://www.environment.fi/default.asp?node=6329&amp;lan=en">www.environment.fi/default.asp?node=6329&amp;lan=en</a>
The nitrogen cycle and its influence on the European greenhouse gas balance	NitroEurope	<a href="http://www.nitroeuropa.eu">www.nitroeuropa.eu</a>	Central data base with raw data at CEH, United Kingdom	Meta data: open access. raw data: open for partners and case by case decision for external users	?
Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe	EMEP	<a href="http://www.emep.int">www.emep.int</a>	Central data base with raw data at NILU, Norway: <a href="http://ebas.nilu.no">ebas.nilu.no</a>	All the data is open for web download	<a href="http://tarantula.nilu.no/projects/cce/manual/index.html">tarantula.nilu.no/projects/cce/manual/index.html</a>
Integrated Project CarboEurope-IP Assessment of the European Terrestrial Carbon Balance	CarboEurope (IMECC)	<a href="http://www.carboeuropa.org">www.carboeuropa.org</a> ( <a href="http://imecc.ipsl.jussieu.fr/">http://imecc.ipsl.jussieu.fr/</a> )	Central data base with meta data at MPI-BCG, Germany. raw data under responsibility of site managers	Metadata: open access. raw data: open for partners and case by case decision for external users	"Measurement protocols" under <a href="http://www.carboeuropa.org">www.carboeuropa.org</a>
Integrated Carbon Observation System	ICOS	<a href="http://www.icos-infrastructure.eu">www.icos-infrastructure.eu</a>	Aggregated data: * Ecosystem sites Univ. Viterbo, Italy * Atmospheric sites, LSCE, France. Raw data under responsibility of site managers	Metadata: open access. raw data: open for partners and case by case decision for external users	?
European Long-Term Ecosystem Research Network	LTER	<a href="http://www.lter-europe.net">www.lter-europe.net</a>	Central data base with meta data at UBA, Austria. Raw data under responsibility of site managers	Metadata: web-based, open. Raw data: links to other networks	?



## Significant highlights in Science or Networking (2/2)

- COST-STSM-FP0903-6120: Metabolomics of ozone detoxification in plant tissues.
- COST-STSM-FP0903-230410: Relationships between climate variation and response in tree-ring parameters.
- COST-STSM-FP0903-6486: Ecophysiological field techniques and meteorological monitoring at two potential supersites.
- Spin off of new EC RTD Framework Programme proposals/projects (5)
- Spin off of new National Programme proposals/projects (7)
- Activities with COST network colleagues (10)

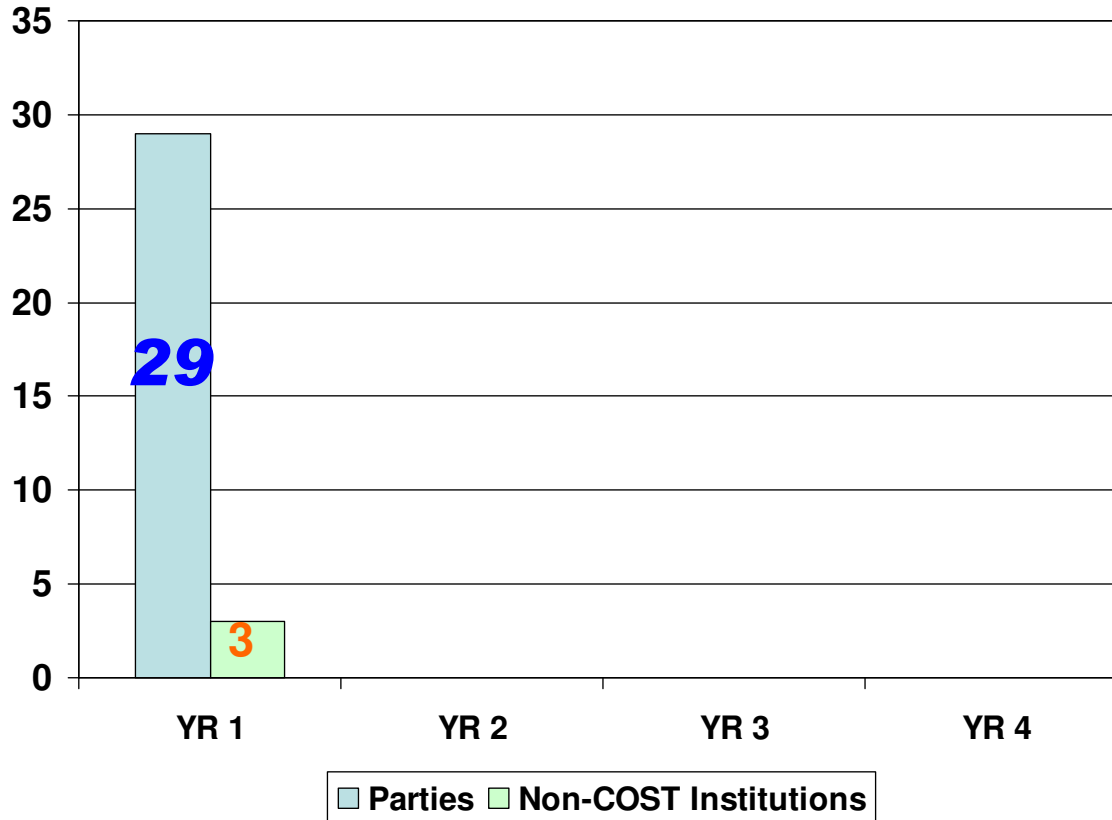


## Challenges

- No significant deviations from the work plan last year (but finance)
- What are critical phases to be implemented or topics to be addressed next year?
  - a summary of data availability and access;
  - a list of basic open research questions;
  - a documentation of criteria and protocols for supersite selection and measurements;
  - a collection of documents on present models of tree and forest functioning;
  - conference *Ozone, climate change and forests* 14-16 June 2011, Prague, Czech Republic <http://cost-fp0903.ipp.cnr.it/events/conferenceprague.html>
  - two training schools (*Ecophysiological Field Techniques in Climate Change and Pollution Research & Flux Measurements Techniques*) <http://cost-fp0903.ipp.cnr.it/training-school.html>



# Action Parties



## Grant Holder:

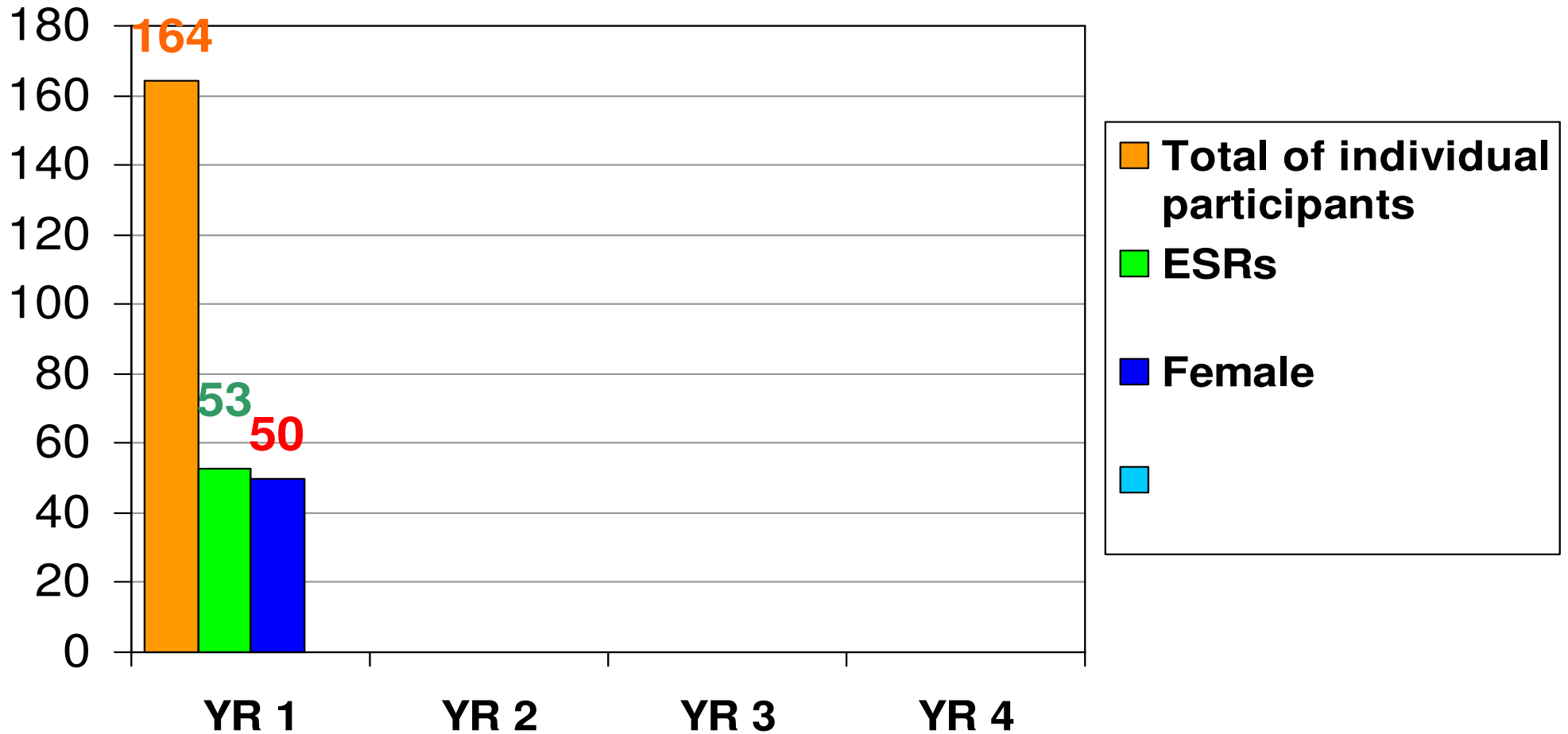
Institute of Plant Protection  
National Research Council  
(CNR)

Ms Clementina Falco

Sesto Fiorentino - ITALY



# Action participants





# Use of COST instruments

	YR 1	YR 2	YR 3	YR 4
<b>No. of MC / WG meetings</b>	<b>1+1/4</b>	<b>#</b>	<b>#</b>	<b>#</b>
<b>No. of STSMs</b>	<b>4</b>	<b>#</b>	<b>#</b>	<b>#</b>
<b>No. of workshops / conferences</b>	<b>1</b>	<b>#</b>	<b>#</b>	<b>#</b>
<b>No. of joint publications</b>	<b>1</b>	<b>#</b>	<b>#</b>	<b>#</b>
<b>No. of training schools</b>	<b>0</b>	<b>#</b>	<b>#</b>	<b>#</b>