

WORKSHOP REPORT

COST Strategic Workshop “Foresight on Future Demand for Forest-based Products and Services – scenario building”

The second workshop of the COST Strategic Workshop series “Foresight on Future Demand for Forest-based Products and Services” was held in Barcelona 22-23 February 2011. This report compiles together the workshop materials and group session outcomes.

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Strategic Workshop

Preliminary Programme

Foresight on Future Demand for Forest-based Products and Services: Scenario Building

22-23 February 2011 – Barcelona/Spain

Objective of this workshop is to continue the work started in the Workshop in Vienna September 2010 about trends, drivers, change factors and emerging issues, and based on this to:

- build scenarios to explore different futures concerning the forest-based products and services, and
- learn about scenario workshop methods and tools, as well as exercises carried out.

The Vienna Workshop materials (incl. interactive group work sessions) are available together with the data and information collected in the eDelphi Internet Survey at

<http://www.edelphi.fi/en/groups/costforesight/documents/d2>

DAY 1 – Tuesday 22 February 2011

08.30 *Registration and practicalities*

09.30 **Dr. Yves Birot** Workshop Chair; EFIMED

Opening of the workshop

09.45 **Introduction of the participants and their experience in scenario work (round table)**

10.30 **Ms. Päivi Pelli** EFI

COST strategic workshop series: WS1 and the Internet Survey

10.45 **Dr. Anita Rubin** Finland Futures Research Centre, FI

Futures – the methods

11.30 *Coffee break*

12.00 **Dr. Anita Rubin** Finland Futures Research Centre, FI

Instructions to the group work on scenarios: working method with the futures table

13.00 *Lunch break*

14.00 **Interactive session / group work**

15.30 *Coffee break*

16.00 **Interactive session / group work**

17.00 **Results of the Day 1 group work**

18.00 *End of the workshop day*

19.30 *Networking dinner*

DAY 2 – Wednesday 23 February 2011

9.00		Interactive session / group work
<i>10.30</i>	<i>Coffee break</i>	
11.00		Results of the Day 2 group work
12.00		Participants' reflections and next steps: how to use this exercise; recommendations, research priorities, foresight exercises; topics for more investigations (round table)
<i>13.00</i>	<i>End of Workshop & Lunch break</i>	
<i>14.00</i>	<i>Departure</i>	


Foresight on Future Demand for Forest-based Products and Services: Scenario building

22-23 February 2011 – Barcelona, Spain

Participants

Name	Organisation	Country
Angelidis, Angel	European Parliament, Counsellor Agrifood and Forest	Belgium
Baardsen, Sjur	DC FPS / Norwegian University of Life Sciences	Norway
Biro, Yves	EFIMED	France
Bobu, Elena	DC FPS - "Gheorghe Asachi" Technical University of Iasi	Romania
Boglio, Denis	Mediterranean Forestry Arc (ARCMED)	Spain, int.
Briens, Marion	UNEP Plan Bleu	France
de Galember, Bernard	Confederation of European Paper Industries CEPI	Belgium
Donner-Amnell, Jakob	University of Eastern Finland, Forest Foresight Unit	Finland
Förster Werner	DC FPS - Technology Platform, PTS Paper	Germany
Greimel, Martin	DC FPS - Technology Platform, Lebensministerium Österreich	Austria
Herkendell, Josef	European Environment Agency EEA	Denmark
Ingram, Verina	Center for International Forestry Research CIFOR	NL, int.
Jandl, Robert	Federal Research and Training Centre for Forests, Natural Hazards and Landscape	Austria
Jonsson, Ragnar	Swedish University of Agricultural Sciences, Faculty of Forestry	Sweden
Langbein, Melae	COST Office	Belgium
Linturi, Jenni	Otavan opisto	Finland
MacRae, Elspeth	GM Bioproduct Development, Scion	New Zealand
Mangos, Anaï	UNEP Plan Bleu	France
Martinez de Arano, Inazio	USSE - Unión de Selvicultores del Sur de Europa	Spain
Mavsar, Robert	EFIMED	Spain
Moen, Jon	Umeå University	Sweden
Nuutinen, Tuula	Finnish Forest Research Institute (Metla)	Finland
Palahi, Marc	EFIMED	Spain
Pelli, Päivi	European Forest Institute EFI	Finland
Perez Campos, Mariano J.	AIDIMA / Innovawood	Spain
Pirc Velkavrh, Anita	European Environment Agency EEA	Denmark
Rubin, Anita	University of Turku, Finland Futures Research Centre	Finland
Scarascia Mugnozza, Giuseppe	DC FPS – CRA, DAF	Italy
Seisto, Anu	VTT Technical Research Centre of Finland, Mediatechnologies	Finland
Sturges, Michael	Innventia Edge	UK
Teegler, Antje	COST Office	Belgium
van Leemput, Marc	DC FPS -The Belgian Institute for Wood Technology CTIB-TCHN	Belgium
Weimar, Holger	von Thünen Institute vTI	Germany
Wilson, Peter	Wood Studio, Forest Products Research Institute, Edinburgh Napier University	UK
Zawila-Niedzwiecki, Tomasz	IBLES Forest Research Institute	Poland

DC FPS refers to COST Domain Committee "Forests, their Products and Services"



Foresight on Future Demand for Forest-based Products and Services

COST Strategic Workshop series 2010-2011

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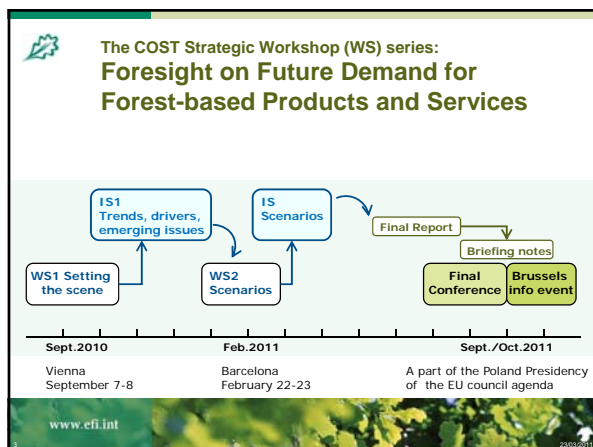


COST Strategic Workshop series 2010-2011: Foresight on Future Demand for Forest-based Products and Services

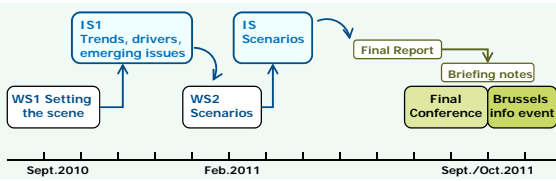
A wide-angle foresight exercise to:

- investigate the role that forests play **in the future societies**, the **new needs and demand** for forest-based products and services, as well as the **drivers** behind these developments (up to year 2050)
- build **capacities** in foresight and **networks** enabling new foresight exercises in / for the forest sector

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The COST Strategic Workshop (WS) series: Foresight on Future Demand for Forest-based Products and Services

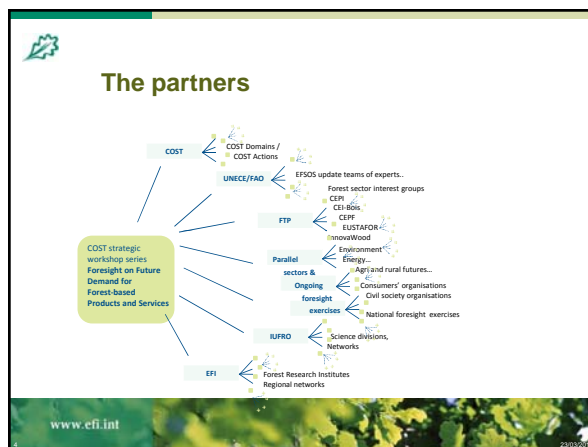


The timeline shows the following stages:

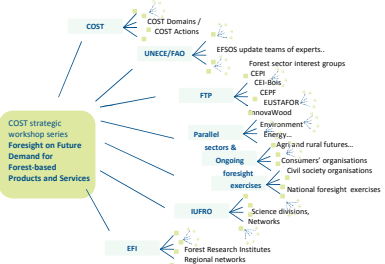
- Sept. 2010**: WS1 Setting the scene (Vienna, September 7-8)
- Feb. 2011**: WS2 Scenarios (Barcelona, February 22-23)
- Sept./Oct. 2011**: Final Report, Briefing notes, Final Conference, Brussels info event (A part of the Poland Presidency of the EU council agenda)

Intermediate steps include IS1 Trends, drivers, emerging issues and IS Scenarios.

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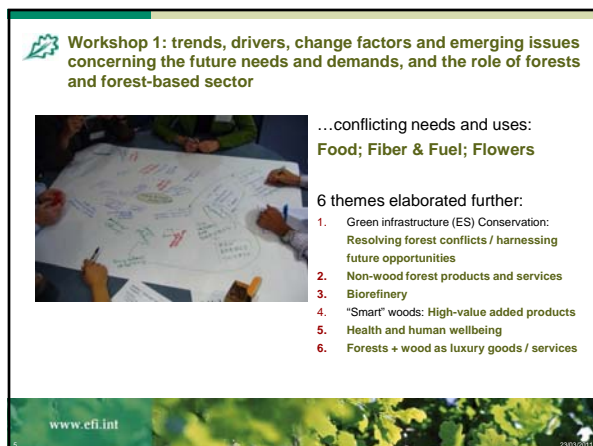
The partners




The network diagram shows the following partners and their connections:

- COST** (Central node)
- UNEP/FAO** (Connected to COST)
- EFOS update teams of experts** (Connected to UNEP/FAO)
- Forest sector interest groups** (Connected to EFOS update teams)
- CEP** (Connected to Forest sector interest groups)
- CEI-Bios** (Connected to CEP)
- CEFP** (Connected to CEI-Bios)
- EUSTAFOR** (Connected to CEFP)
- InnovaWood** (Connected to EUSTAFOR)
- Environment** (Connected to InnovaWood)
- Energy** (Connected to Environment)
- Agri and rural futures...** (Connected to Energy)
- Consumers' organisations** (Connected to Agri and rural futures)
- Civil society organisations** (Connected to Consumers' organisations)
- National foresight exercises** (Connected to Civil society organisations)
- Science divisions, Networks** (Connected to National foresight exercises)
- Forest Research Institutes** (Connected to Science divisions)
- Regional networks** (Connected to Forest Research Institutes)
- EFPI** (Connected to Regional networks)
- Parallel sectors & Ongoing foresight exercises** (Connected to EFPI)
- COST strategic workshop series Foresight on Future Demand for Forest-based Products and Services** (Central node, connected to all other partners)

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Workshop 1: trends, drivers, change factors and emerging issues concerning the future needs and demands, and the role of forests and forest-based sector



...conflicting needs and uses:
Food; Fiber & Fuel; Flowers


6 themes elaborated further:

- Green infrastructure (ES) Conservation: Resolving forest conflicts / harnessing future opportunities
- Non-wood forest products and services
- Biorefinery
- "Smart" woods: High-value added products
- Health and human wellbeing
- Forests + wood as luxury goods / services

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Internet survey 1 on trends, drivers, change factors (eDelphi for collecting expert perceptions)



Three sections:

- Query on Global trends and their influence on the forest-based sector by 2050
- Six thematic queries about the forest-based products and services in 2050:
 - Biobased economy;
 - Energy security;
 - Green infrastructure;
 - Public health and wellbeing;
 - Food and water security;
 - Conflict resolution.
- Final query for adding any additional remarks.

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Internet survey 1 on trends, drivers, change factors
Global trends and their influence on the forest-based sector by 2050

Key findings – where more agreement:

- Strong belief in **technology solutions**
- Increasing globalisation is expected to develop towards **free trade and global markets**
- differences in economic development** are expected to increase between regions
- financial markets are expected to be dominated by **crises and uncertainty**

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Internet survey 1 on trends, drivers, change factors
Global trends and their influence on the forest-based sector by 2050

Respondents' perceptions divide more or less 50/50:

- Governance of natural resources** based on global – local solutions
- Customers and users** differentiated preferences – a “global consumer”
- Forest management/planning** zoning (segregation of functions) – multiple (integrated) functions of forests
- Access to forests** open access – more restrictions

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Forest-based industries in 2050

Question 1: Below there is a list of factors for different development paths at global level. Indicate your perception about the direction of the development of these factors by 2050 (3 = “no changes”).

Forest-based industries' product portfolio in 2050
N=124

Direction of change	Number of respondents	Percentage
-3	1	0.8%
-2	7	5.6%
-1	15	12.1%
0	11	8.9%
1	41	33.0%
2	37	29.8%
3	7	5.6%

Mainly present (2010) products and services

Mainly new products and services

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Forest-based industry in Europe in 2050

• Wood processing industries concentrate in forest production areas with fast growing species...
...forest-based industry in Europe focuses on high-quality, high-tech commodities (products and services).

n=121, A=60.00, M=60.00, Q1=30.00, Q3=90.00

Direction of change	Number of respondents	Percentage
-2	3	2.48%
-1	16	13.22%
0	21	17.36%
1	42	34.71%
2	57	47.11%
3	3	2.48%

Scale:
-2 = very improbable
-1 = somewhat improbable
0 = somewhat probable
1 = very probable
2 = very probable
3 = don't know

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Forests and national wealth in 2050

• Increased urbanisation change societies, new metrics for wealth are invented...
...forests' contribution to public health and human wellbeing is valued as a part of national wealth.

n=122, A=60.50, M=60.00, Q1=30.00, Q3=90.00

Direction of change	Number of respondents	Percentage
-2	3	2.46%
-1	16	13.11%
0	21	17.21%
1	44	36.07%
2	47	38.52%
3	2	1.64%

Scale:
-2 = very improbable
-1 = somewhat improbable
0 = somewhat probable
1 = very probable
2 = very probable
3 = don't know

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Wood and other materials in 2050

• Natural resources become scarce resources and new raw materials are produced artificially...
...instead of wood, substitute materials are used.

n=123, A=61.00, M=61.00, Q1=30.00, Q3=91.00

Direction of change	Number of respondents	Percentage
-2	20	16.26%
-1	49	39.84%
0	21	17.07%
1	34	27.64%
2	16	13.01%
3	4	3.25%

Scale:
-2 = very improbable
-1 = somewhat improbable
0 = somewhat probable
1 = very probable
2 = very probable
3 = don't know


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 **"Urban forests"**



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 **For more information**

To learn about the Workshops, see

- <http://www.cost.esf.org/events/Forestry-Foresight-Setting-the-Scene>
- <http://www.cost.eu/events/Forestry-Foresight-Scenario-Building>

...and the internet survey at

- <http://www.edelphi.fi/en/groups/costforesight/>

For further information, contact

- paivi.pelli@efi.int

www.efi.int

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SCENARIO WORKING Morphological Futures Studies



Anita Rubin
Finland Futures Research Centre, University of Turku
www.tse.fi/tutu



Turun yliopisto
University of Turku

Scenarios are stories

A futures scenario is a free-form and insightful story about a possible future situation.

It is strongly grounded on information available at present.

This story is composed of

- the analysis of the present situation;
- the description of the logical sequence of events and processes which lead, phase by phase, from the present to the future situation (predictive scenarios), or from the future situation backwards to the present situation (normative scenarios, backcasting).



23.3.2011

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Definitions of scenarios

Scenarios are attempts to set up a logical sequence of events in order to show how, starting from the present situation, they may evolve step by step.

(Eric Jantsch 1967)

A scenario is a hypothetical sequence of events constructed for the purpose of focusing attention on causal processes and decision points.

(Herman Kahn 1967)

Scenarios can be described as instruments which aid decision-makers by providing a context for planning and programming, lowering the level of uncertainty and raising the level of knowledge.

(Eleonora Masini 1993)

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A scenario is

- a description of a future situation together with the progression of events leading from the base situation to the future situation.
- series of plausible assumptions, which are based on explanatory variable

(Michel Godet 1994, 1995)

A futures scenario as a sequence of processes or events whereby the present state of the world, or the nation, institution, or whatever is the focus of attention develops into some future state of affairs.

(Ian Miles 1986)

The method was developed after the 2nd World War both in the U.S.A. and in France. The concept was brought into wider use by Herman Kahn in 1967.

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SCENARIOS ARE NOT

- Forecasts;
- Mere utopias or dystopias;
- Unclear, ambiguous;
- Illogical;
- Variations around a trend;
- Focusing on irrelevant details;
- Indifferent to strategic questions;
- Science fiction without a clear continuity from today's situation.

INSTEAD, THEY ARE

- Well-grounded stories about the future;
- Clear and consequential;
- With in-built logic;
- Different from each other;
- Focusing on relevant aspects;
- Concerning strategic basic questions;
- Challenging and meaningful images about the future.

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Judging scenarios

One should never assess a scenario as good or bad based on whether the future, when it finally happens, proves to be as it indicated. The only criterion for the quality of a scenario is, how good and useful it is as a tool in decision-making here and now.



A good scenario can influence the future by the mere fact that it has been created.

It reveals the existing alternatives. It can also make itself impossible by merely being put into words.

(See e.g. the Report "Limits to Growth" in 1972)

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Qualifications of good scenarios

POSSIBLE

- objectively so that the development of things and sequence of actions and events are plausible and based on knowledge available at present;
- psychologically so that actors' choices are understandable and can be explained by both their personal history and by general theories on behaviour.

Good scenarios do not include phenomena or elements which

- are not within reach from today's point of view (step by step);
- depend on events which are irrelevant or too imaginable from the point of view of the reason why they are created (eg. the landing alien spaceships...)

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SOCIALLY BELIEVABLE

Include descriptions of essential actors activities, choices, back-ground and context, connections, time, and resources. The presumptions on human behaviour and choices can also be explained with the help of cultural factors, such as values, attitudes, traditions and history.

LOGICAL

Assumptions on the future can also be explained on the ground of previous knowledge, rational, realistic and reasonable understanding of cause and effect.

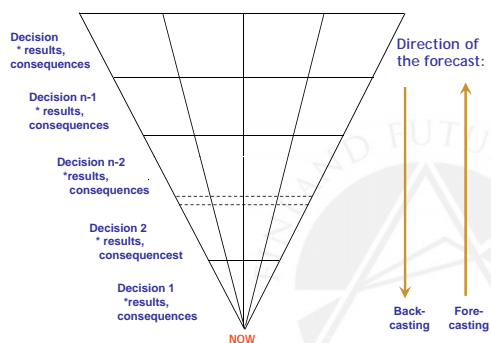
INTERESTING

- include something totally new;
- are an effective tool for decision-making.

23.3.2011

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Futures pyramid



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9

A successful scenario process

EMPOWERING

- Growth of working motivation.
- Commitment to goals chosen together.
- Learning process to the group of participants.
- Growth of futures knowledge and readiness.
- New and fresh ideas and initiatives (also from those who usually never say anything).

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- Growing ability to see forward, perseverance, understanding of the logic link of cause and effect;
- Increasing futures orientation in decision-making and goal-setting
- Intensification of planning, interaction, allocation of resources and new models of action.
- New arenas for action become visible; perhaps also earlier unidentified resources are found.
- General confidence in cooperation grows.

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The focus points in scenario working

- Grade of normativity (possible, probable, desirable futures);
- Outlining the study object (certain topic, geographic region, some limited field of expert interest, different combinations, etc.)
- Time perspective;
- Spatial approaches (global, national, regional, local level);
- Point of departure (backcasting or forecasting);
- Feedback and raw material (quantitative, qualitative, combination; micro/macro level);
- The way of collecting data (participatory workshops, desktop working, modeling and simulations, etc.)

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- Utilisation of resources (limited /wide possibilities);
- Limiting factors (e.g. political correctness);
- Use of IOF or futures paths;
- Sufficient dissimilarity (are the scenarios really different or is it a question of the sensitivity analysis of the same variables?);
- Choice of variables (independent from each other or dependent variables);
- How the central issues are approached?
- Sufficient opening up of the background issues.

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Scenario typology

	Scenario types	Objectives	Background assumptions	Ways of action
Explorative scenarios	Tendency scenarios	Definition of possible future states	The central trends of development continue	Explores trends and their mechanisms
	Framework scenarios	Limits the amount of possible futures	The central trends of development continue	Varies the trends and/or hypotheses about them to the max
Predictive scenarios	Normative scenarios	Defines the images of possible and desirable futures and the paths to them	The group of goals can be defined from the beginning.	A synthesis of goals. Combines the images of the future to the present
	Contrast scenarios	Describes the desirable future by the limits of plausibility.	Goals defined from the beginning; implementation	A synthesis of goals. Combines the images of the

Morphological scenario working

- The other name for scenario working with futures tables.
- A futures table is
 - A sectorically organised, tabulated collection of possible futures states;
 - Usually represents a defined time in the future.
- The meaning of the method of futures table is to recognise the most adequate variables (phenomena, actors) and their possible alternative futures states from the point of view of the problem in question.

The nature of a futures table...

- A futures table defines and outlines the field of the problem in question.
- The lines are seen as variables and the boxes or cells as the alternative values given to the variables.
- A futures table includes all the values of variables necessary for the study task in question.
- Based on the futures table, different images of the future, and further, futures paths can be drawn (= "backcasting").

Starting from values

- Start from the present: it either remains as it is, or improves, grows, becomes worse, or diminishes according to the value conception you choose. Choose the value for the starting variable/variables.
- Then choose from the following line a suitable (logical, compatible) variable – this is locking of the values – and continue this way line by line until the end. Tick the locked values you chose (i.e. boxes) with e.g. a green mark and draw lines between the marked boxes.
- Choose again a first value, but now based on a different value conception, and repeat the process. Mark the boxes and draw the lines with a different colour.
- Continue the process until you feel that you have brought out the most relevant and important images of the future.

Futures Table

Finnish universities in 2020				
variables	A	B	C	C+n
1. System of control	State-controlled	Economy-controlled	EU-controlled	...
2. Organisational structure	Centralised bureaucratic	Network-like	Assimilation to other organisations	...
3. University's mission	Scientific research and education	Applied research	Education	Social
4. Meaning in educational system	unchanged	grows	decreases	...

Choosing the variables

The choice of variables depends on

- The quality of the research object;
- The choice of viewpoint
(backcasting/forecasting; normative/objective; technical, critical or hermeneutic knowledge interest; basic research/applied research, etc.);
- What the futures perspective is;
- What the IOF are meant for;
(building scenarios based on them, increasing expert information, growth of imagination and intuition, education, material for innovations, etc.

In the choice of the variables also other methods and tools can be used, such as the futures wheel or tools created to spot weak signals, etc.

Impossible pairs 1

- FAR, i.e. Field Anomaly Relaxation = to systematically cut down such value variables which are made of incompatible elements.
- Working with the FAR is carried out in seven phases.
- A FAR table can also be analysed by cross-tabulating the values of the futures table and then ticking out the combinations which include phenomena or things which cannot simultaneously exist in the same reality. Here we speak of the table of the impossible pairs.

Impossible pairs 2



- One can separately cut down the states which exclude each other, i.e., cannot happen simultaneously, even though they both/all might be possible as such (or perhaps follow, or result from one another)
- This usually means that it is not practical to give several states for the same variable at the same time. Therefore one has to carefully hold to the idea that each separate value for each variable on the same line is clearly and unambiguously mutually exclusive.
- In the table of impossible pairs, one can also mark for instance interdependences of different strength between different variables, or lock different values and then analyse their effects on the final IOF's.

An example of the table of impossible pairs

		Values of variables													
		1A	1B	1C	2A	2B	2C	3A	3B	3C	4A	4B	4C		
1A															
1B															
1C															
2A															
2B															
2C															
3A															
3B															
3C															
4A															
4B															
4C															

Scenario working in decision-making

1. Choose a probable (believable) scenario as the basis of the strategy formation (the decision-maker acts as a "fortune teller")
2. Choose the best scenario as the basis of the strategy formation (the decision-maker acts as a "risk-taker")
3. Choose a strategy which functions in all the different scenario alternatives (the decision-maker acts as "risk-taker")
4. Choose a scenario according to which the strategy is created, but at the same time, flexibility for other alternatives is created (the decision-maker acts as a "realist")
5. Action: the decision-maker acts so that the desirable alternative becomes true (the decision-maker as a "maker of the future")



Rob Gonsalves

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Participant's introduction to the workshop interactive sessions

Objective of this workshop is to continue the work started in the Workshop in Vienna September 2010 about trends, drivers, change factors and emerging issues, and based on this to:

- build scenarios to explore different futures concerning the forest-based products and services, and
- learn about scenario workshop methods and tools, as well as to connect the experts and exercises in this field.

In the beginning of the workshop there will be a short round table of the participants, please be prepared to introduce yourself and your experience in scenario work.

The workshop is based on an explorative approach – thus, instead of defining a specific vision or a strategy, the aim is to introduce working methods and to illustrate different development pathways for the forest-based sector. The workshop will build on using collaborative brainstorming and learning, and on further elaboration of uncertainties, potential changing factors and their links with forest-related responsibilities, rights, market potential and interests.

The aim is to develop 4-5 scenarios, different enough to illustrate alternative futures. The key question for the scenario building exercise is:

What is the role of forests, forestry, forest-based sector in Europe in 2050, and... ...what is the role of Europe in a global context?

Under this heading, also the following questions will be addressed:

- What changes **in the demand side, in a wider societal perspective and in structures** are relevant to the forest-based sector development?
- What are the **interlinkages** between forest-based sector developments and the **developments in other related sectors** (e.g. environment, agri/rural, energy, technology)?
- What are **key stakeholders** for forest-based sector development (in Europe, other parts of globe; in different sectors and interest groups)? Where are the **needs** for the forest-based sector defined (at global level, at regional / European level)?

The 1.5 day workshop will not allow us to make complete scenario descriptions, but the goal is to elaborate a futures table (futures matrix) for scenario building and use this tool to draft preliminary scenario storylines.

The futures table is a tool to define the topic under investigation and to elaborate change factors which will affect the scenarios (incl. weak signals and wild cards). There is an empty futures table template as an annex to the participants' materials. In the workshop we will work out the futures table step-by-step in small groups, but please feel free to prepare for the workshop in advance, and start to fill in the table with factors you see most important for defining the role of forests, forestry, forest-based sector in Europe in 2050 (see step 1 in the below figure).

What are the factors affecting the role of forests, forestry, forest-based sector in Europe in 2050 (incl. role of Europe in a global context)?					
Factors	factor values (alternatives)				
Societal changes; demand; Consumers / users; values for fbi products and services					
Economy; economic growth, economic power, markets for fbi products and services					
Technology; new technologies, new solutions...					
Environment: ecological issues, forest health and resilience; climate change etc. impacts					
Political: global power, int.agreements; policy coherence, governance structures...					

Figure: futures table (see also an empty template in doc.format)

The group work will be facilitated by Dr. Anita Rubin (Finland Futures Research Centre). Her presentation about the method is part of the participants' materials – if you want to contact her in advance, her contacts are: [anita.rubin\(at\)otavanopisto.fi](mailto:anita.rubin@otavanopisto.fi) / skype: arubin5.

After the workshop the scenario storylines will be opened for a wider audience for assessment and filling in additional information in an Internet Survey. The goal of the COST strategic workshop series is to define **research needs and topics for further investigation**. Furthermore the exercise will also identify themes and topics where further **foresight exercisers and new investigations, new forms of collaboration** would be needed. In order to facilitate the discussion about the follow-up, the results of the “foresight needs” survey will be presented in the workshop.

All information and data collected in the COST strategic workshop series will be available for further elaboration.

For further information about the COST strategic workshop series, see:
<http://www.cost.eu/events/Forestry-Foresight-Setting-the-Scene>
<http://www.cost.eu/events/Forestry-Foresight-Scenario-Building>
<http://www.edelphi.fi/en/groups/costforesight/>

Futures table – a template. In the workshop we will work out the futures table step-by-step in small groups, but please feel free to prepare for the workshop in advance by filling in the table with factors you see most important for defining the future in this field.

What are the factors affecting the role of forests, forestry, forest-based sector in Europe in 2050 (incl. role of Europe in a global context)?					
Factors	factor values (alternatives)				
Societal changes, demand; Consumers / users; values for fbi products and services					
Economy; economic growth, economic power, markets for fbi products and services					
Technology; new technologies, new solutions..					
Environment: ecological bases, forest health and resilience; climate change etc. impacts					
Political; global powers; int.agreements; policy coherence, governance structures...					

Futures table: GROUP No.1

What are the factors affecting the role of forests, forestry, forest-based sector in Europe in 2050 (incl. role of Europe in a global context)?						
Factors	factor values (alternatives)					
Societal changes, demand; Consumers / users; values for fbi products and services						
Environmental consciousness	EU increasing	Globally increasing	Low priority globally			
Changing media use habits and segregation	Printing paper as a specialist product only	Printing paper no longer a product	BAU (shifted geography)			
Changing population (number)	Increased population	decreased	BAU			
Migration of population	Inward migration to Europe	No migration	Moderate migration (BAU)	Outward migration		
Environmental communication	People perceive paper/wood use as "bad" for the environment	People favour paper/wood use as environmental friendly				
Demand for environmental services	Increasing	Decreasing	No change			
Public values are changing						
Information and education level						
Sceptic						
Rural/urban population						
Changing age structure						
Economy; economic growth, economic power, markets for fbi products and services						
Global economy	Strong	weak	BAU			
European economy	Strong	weak	BAU			
Global trade	Increasing	BAU	Decreasing			
Prices	Market driven	Mixed	Gov. Control			
Trade barriers	Free trade	Protectionism	Specific agreements			
Integration in forest supply chain	Further fragmentation	BAU	Fully integrated			
Food production						
National self-sufficiency						

Technology; new technologies, new solutions..						
Innovation in products	Replacement of other materials by forest raw material	Replacement forest raw material by other material	BAU			
Innovation in production (ICT/Wood)	BAU	Improved efficiency of production globally	Improved efficiency of production In the EU only	New production technologies (nanotechnology, biotech, biometrics, robotics, gene modification, ICT/Wood) globally but not in the EU	New production technologies (nanotechnology, biotech, biometrics, robotics, gene modification, ICT/Wood) only in the EU	New production technologies (nanotechnology, biotech, biometrics, robotics, gene modification, ICT/Wood) globally
Production scale efficiency	Improved efficiency at small scale production	Improved efficiency at big scale production				
Biomass production	Increased	Decreased	BAU			
Environment: ecological bases, forest health and resilience; climate change etc. impacts						
Pests and diseases	Increased spread pests and diseases spread	BAU	Decrease of pests and diseases			
Climate	BAU	+ 2°C	+ 5°C			
Natural disasters	BAU	Increased	Decreased			
Forest management	Multi use	Segregation				
Sustainable resource utilisation/efficient use – within forest products	BAU	Factor 4 improvement in resource use efficiency	Factor 10 improvement in resource use efficiency			
Sustainable resource utilisation/efficient use – wider economy	BAU	Use less wood	Use more wood (substitution)			
Fast growing species, GEM - biodiversity						

Political; global powers; int. agreements; policy coherence, governance structures...						
Planned resource management	Increased central planning	Market led	Middle road			
Investment in R+D	Increased	Unchanged	Decreased			
R+D investors	private	Private Public Partnership	Public			
Environmental regulation	Equal (global) implementation	Regional implementation				
Biodiversity protection	Less/no specific action	More and improved central legislation	More and improved market mechanisms			
EU	expanding	fragmentation	BAU			
EU strenght	Stronger central function	Weaker EU central function	BAU			
Forest policy	Global	Common EU level	National/regional level			
Global powers	Balance of powers	China dominates	No dominance	UN or other central function		
Policy drivers	Market	Governments	BAU			
Political turbulences	Local impacts	Regional impact	Global impact			
New resource exploitation (e.g. arctic)	Free market	Agreed and managed (governments)	No exploitation			

Scenario storylines:

Yellow big road	Another BRIC in the wall	This could be heaven	Scenario 4
Environmental consciousness in EU increasing		Global forest policy	Inward migration to Europe
Increased population in EU	Decreased population in EU	Climate change - +2°C	Decreasing demand for ES
Inward migration to Europe	Outward migration	Factor 10 improvement in resource use efficiency	Globally low environmental consciousness
Weak global economy	Strong global economy	Global trade increasing	Decreasing global trade
Strong European economy	Weak European economy	UN or other central function is dominating	Global economy weak
Trade barriers - Protectionism	Trade barriers – Specific agreements (w BRIC)	EU strength – BAU	EU economy weak
New production technologies (nanotechnology, biotech, biometrics, robotics, gene modification, ICT/Wood) only in the EU	New production technologies (nanotechnology, biotech, biometrics, robotics, gene modification, ICT/Wood) globally	Environmental regulation – Equal (global) implementation	Trade barriers – protectionism
Increased investment in R+D	Improved efficiency at small scale production	Increased central planning	Climate change - +5°C
Increased central planning of forest management	Private R+D investors	Use more wood (substitution)	Global powers – no dominance
Common EU forest policy	Local political turbulences	Trade barriers – specific agreements	Political turbulences – global impact
Factor 4 improvement in resource use efficiency	EU fragmentation	Replacement of other materials by forest raw material	
Pests and diseases - Increased	Weaker EU central function	Fully integrated forest supply chain	
Natural disasters – Increased	China dominates global economy	Increasing demand for environmental services	
Climate change - +5°C	Regional/national forest policies	Environmental consciousness globally increasing	
	Pests and diseases - Increased	People favour paper/wood use as environmentally friendly	
	Natural disasters – Increased		
	Climate change - +5°C		
	Less/no specific action biodiversity protection		

Futures table: GROUP No.2

What are the factors affecting the role of forests, forestry, forest-based sector in Europe in 2050 (incl. role of Europe in a global context)?					
Factors	factor values (alternatives)				
Societal changes, demand; Consumers / users; values for fbi products and services					
Population in developed/developing countries					
Immigration from developing countries (where environmental resources are exhausted)	very high to rural areas	very high on urban areas 4 3	low immigration		
Urbanization/Ruralization	megacities 5	ruralization			
Changes in consumer attitudes, eco-labelling	more green	more price conscious	more demand for luxury products (design and furniture)		
Demand for ecosystems services (bd, soil, water, recreation)	high 5	low			
Availability and global flow of information and use of new IT	increasing	decreasing			
Ownership structures	fragmenting	concentration	vertical integration		
Economy; economic growth, economic power, markets for fbi products and services					
Integration of markets	global 1	national 8	regional	local	
Scale of forest business/companies in Europe	multinational integrated 2	multinational not integrated	SME	micro	
Substitute markets	increasing oil prices make wood- and pulp-based products competitive	wood substituting other materials 3 7 5	wood is replaced by other materials 7		
Technology; new technologies, new solutions...					
Innovation of products, processes and systems are in place	increasing use of nano- and biotechnology and GMO 6 1	slowing down development due to lack of investment in new technologies	rejection of new technologies (GMO)		
Education, training & technology transfer	increasing resources 6	decreasing resources			
Efficiency	product by product	forest -> user	User -> Forest		
Bio refineries	full functioning (large scale) biorefineries 2	technology & economic problems			
Environment: ecological bases, forest health and resilience; climate change etc. impacts					
Water	extensive drought and water crisis 2	better management of water resources 7			
Land productivity (degradation, lack of fertilizers)	increasing forest resources	decreasing forest resources			
Sustainable use of natural resources	depleting	sustainable management of renewable resources 3			
Climate change impacts	high negative 1	no	high positive		

Political; global powers; int.agreements; policy coherence, governance structures...					
China	China buys Europe	China in crisis 5	China is our partner		
Environmental, Energy, Agricultural, Forest, Land-use and Climate policies affecting wood resources	integrating policies with stronger environmental emphasis 4 4	separated sectoral policies, conflicts with environment			
Health, Safety, Construction, public procurement regulation	harmonized international standards 8	national standards			
Global markets regulation	no control	WTO control	only bilateral agreements		
Correcting market failures (internalising externalities)					

Scenario storylines:

Trantor

- Markets are integrated at global level via multinational integrated companies and supported by internationally harmonized regulation.
- European population is growing due to immigration, concentrated in megacities. More resources are needed in education, training and technology transfer.
- Demand for ecosystem services is increasing and met by better water management.

An inconvenient truth

- Climate change impacts Europe negatively via extensive droughts and water crisis, and hitting urban areas with immigrants.
- Consequences are minimized by integrated policies with environmental emphasis and innovations in new technology. Wood substitutes other materials.
- China is in crisis. Markets work at national level.

Heureka

- Innovations drive the implementation of fully functioning refineries.
- SFM is supported by integrated policies with environmental emphasis.
- Wood substitutes other materials.

Futures table: GROUP No.3

What are the factors affecting the role of forests, forestry, forest-based sector in Europe in 2050 (incl. role of Europe in a global context)?					
Factors	factor values (alternatives)				
Societal changes, demand; Consumers / users; values for fbi products and services					
Forest ownership structure	Consolidation (decreased fragmentation)	Increased fragmentation	Increasingly private ownership	Increasingly public ownership	New actors (eg oil companies)
Societal demands from forests	Non-wood products emphasised (eg energy)	Commodity demand emphasis	Non-market services from forests (eg landscape benefits) emphasised	Production outside Europe, European forests kept "beautiful"	Global demand for cheap raw materials with less care for environmental values
Availability of workforce for forestry (due to aging and immigration and education)	Shrinking workforce	Expanding workforce	Sufficiently skilled workforce	Insufficiently skilled workforce	
Economy; economic growth, economic power, markets for fbi products and services					
Bio-Energy	Two tier development within Europe	Synergies create value in integrated value chains	Destruction of value if incentives badly applied		
Competition for natural resources	Increased land use conflicts	Increased competition for forest biomass	Land use for food production and energy security is prioritised over forestry	Demand and price of forest based products leads to prioritisation of land use for forestry	World shortages of key resources
Profitability	Profitability increases due to increased prices and leads to increased investment in forestry	Profitability decreases leads to less investment in forestry	Profitability complemented by valuation of non-wood products and services	Value capture unequal at different points of value chain	
Shifts in production/ manufacturing Manufacturing goes east production of wood goes south (South America and Africa)	Europe becomes raw material supplier	Europe becomes a specialised niche producer of high value added materials	Europe becomes a "garden" that imports products produced elsewhere	Local/ short range production chains develop in Europe	
Technology; new technologies, new solutions..					
Quality versus quantity	Massive production of low quality wood is more profitable	Production of lower volumes of high quality wood is more profitable			
Innovation in forest management	Intensively managed plantations	Multifunctionality emphasised	Productivity increases due to technology in forest management	GMOs	
Innovation in new products (more important than innovation in forestry or bringing wood to processing or in processing)	composites	Biorefinery (replacement of plastic)	Forest-product nanotechnology		
Environment: ecological bases, forest health and resilience; climate change etc. impacts					
Climate change impact on forest productivity - Changing patterns of productivity	Net result is positive	Net result is negative			

Calamities (storms and forest fires) – impact can be offset by better monitoring and management	Do nothing and cope with the impact	Have active monitoring and management and better planning at landscape scale	insurance		
Ecosystem services	Tax-based	Market-based	Regulation approach	Mixture of market and regulation approaches	
Political; global powers; int.agreements; policy coherence, governance structures...					
Conservation policies	Strong European policies	National policies only	Policy to increase segregation between production and conservation forests	Policy to integrate production and conservation activities	
International Forest regulation	Improves forest management at the global scale	Increases expansion of plantation forestry	Protects EU market with non tariff trade barriers but no impact on forests outside of Europe		
Coherence of European policies	coherent	Not coherent			
European policies	Policies maximise measurement and valuation of non wood products and services	Policies do not maximise measurement and valuation of non wood products and services			

Scenario storylines:

Forests energising Europe

The emphasis is on the production of non-wood products (especially energy) from forests. In this context there is increased competition for forest biomass, increased intensively managed plantations that are actively monitored and managed and carefully planned at the landscape scale. Policies increase segregation between production and conservation forests and international forest regulations increase the expansion of plantation forestry.

The European garden

Policies maximise measurement and valuation of non-wood products and services, there are tax-based policies in support of ecosystem services and multifunctionality is emphasised. There are increased land use conflicts within Europe and Europe becomes a beautiful "garden" that imports products produced elsewhere. New actors such as NGOs, foundations and rich people begin to buy or rent forests.

Worth its weight in wood

Production of lower quantities of high quality wood is the most profitable approach. Thus producers have insurance to protect their investment. Europe becomes a specialised niche producer of high value added materials, working in these industries becomes attractive and eventually there is a sufficiently skilled workforce (although this can take time to develop). Non-tariff trade barriers will develop ("made from hand-harvested mountain wood") and regional trade marks ("Champagne wood").

Business as Usual

A shrinking workforce leads to decreased profitability in the forest sector which in turn leads to decreased investment in the sector. Technologies to increase productivity in forest management will be needed to enable a smaller and possibly more remote workforce to do more. Climate change induced calamities (storms, fires, pest incursions etc) are dealt with passively (do nothing and cope with the impact). Policies seek to integrate production and conservation activities.

Futures table: GROUP No.4

What are the factors affecting the role of forests, forestry, forest-based sector in Europe in 2050 (incl. role of Europe in a global context)?					
Factors	factor values (alternatives)				
Societal changes, demand; Consumers / users; values for fbi products and services					
Demography changes, growth of world population	decrease 1	same as now (stable)	natural increase	radical increase	
Movement of people, distribution of world population					
Urbanisation					
Food demand global	decrease	Increase, moderate	Increase, twofold	Increase, threefold 1	
Energy demands	decrease	Increase, moderate	Increase, strong		
Demand (global perspective; China demand);					
Citizen, consumer values and preferences (in Europe, in world "ruling economies")	Increased recycling, reuse – less natural fibre				
Societies' needs – most appreciated forest goods/services	Increased demand for services: recreation, public health, fresh water etc. most valuable	Timber most valuable	Bioenergy most appreciated	Carbon sink most valuable Ecol.services	Food production most valuable
Economy; economic growth, economic power, markets for fbi products and services					
Globalisation, liberalisation of markets patents & trade, services					
Relative prices; income (global)					
Forest industry structure in Europe		Energy intensive FBI growing capacity in Europe	Energy intensive FBI remaining in Europe	Energy intensive FBI moving out from Europe; Europe developing towards service-dominated area (Europe selling services to other regions)	
Industry structure in Europe (small-medium-large-scale)	Decreasing SMEs in Europe (craftsmanship)	Increasing SMEs in Europe			
Forest ownership in Europe	stable	Increasing small-scale private forest ownership in Europe	Increasing company forest ownership	Increasing local and municipal	Increasing State forest ownership
Key sectors in Europe	Bioeconomy/nanotechnol.	Service economy	Industrial economy	Ubi-economy (ict)	Techno-driven economy
Economic growth	Fast growth	Stable, continuous	discontinued	Degrowth	
Wealth in world – new metrics? Environmental account; "value of forest"					
Payment for ecosystem services (carbon, protection...)	No markets	Small increase in payments	Strong increase in payment		
Russia					
Technology; new technologies, new solutions..					
Agricultural production					

Energy production	Dominated by renewables	Nuclear energy supported by renewable energy	Nuclear energy supporting renewable, but phasing out	Fossil dominated scenario	Radical technology breakthrough
Role of forest-based biomass for energy production	No role			Dominant role	
Production solutions				Integrated systems (distribution systems)	
Environment: ecological bases, forest health and resilience; climate change etc. impacts					
Climate change	Manageable (+0)	Manageable (+1-2)	(Un)manageable (+2-1)	Unmanageable (+4-6)	Ice Age in Europe
Risks / adapting & mitigating Forest resilience	Continuous increased risks (fire, storm, flood, drought); decreased resilience	Adaptation of forests to new conditions; forest resilience (incl. new species, afforestation)			
land degradation; Land use impact	Pressures handled both for agri, energy a.s.o. needs	Landuse conflicts: energy / food production needs prior to forest lands	High price of land; forest land converted to agri production	Modest increase in price of land	
Land area / forest land area in Europe	More forest area consisting of plantation forests	Modest decrease of forest area	Large decrease of forest area		
Investments in / per forest hectare					
Political; global powers; int.agreements; policy coherence, governance structures...					
Political challenge, changes in politics					
Europe – definition of Europe in 40 yr.	Political stability	instability			
Politics, CAP, energy targets					
Policy / politics for CC adaptation & mitigation measures	Policy implemented (binding agreement, KP)	Voluntary protocol	No protocol		
Ruling factor (for forest governance)	market	National government	Civil society	military	Int.government
Coverage of global governance (with regard to forests)	Only acute needs (e.g. hazards)	Some sort of int.governance for cc, energy, food, trade	Strong int.governance		
Global governance SFM	international	national	Regional (e.g. stronger EU) state blocks	No institutional bases	
Institutions Different institutions: increase in no.of inst.s (more plural int. gov.); more governance; less governance...	Minim. / needed bases for legal actions / regulation	No institutions	Strong regulative SFM		
FBI					
FBI: Paper, board, pulp (present and new products)	FBI outside from Europe	Increase in Europe			
FBI: wood products	Huge increase in Europe	Huge decrease			
FBI: energy	Less forest-based	More forest-based			

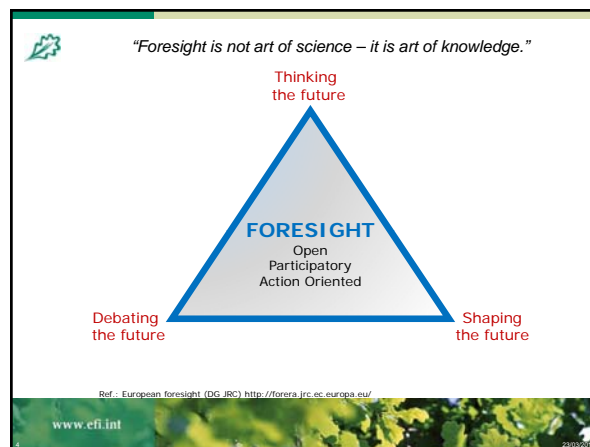
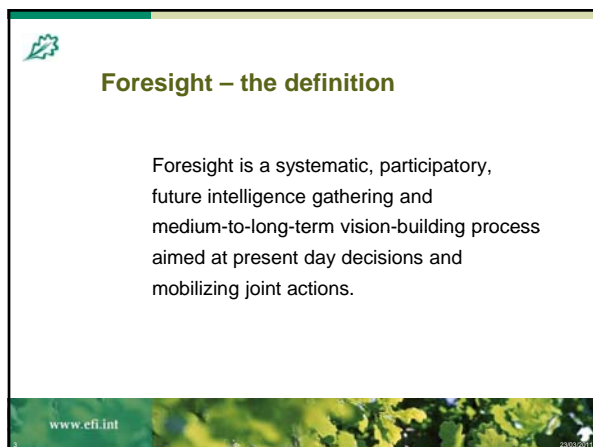
	bioenergy	bioenergy			
FBI: Non-timber products and services	Increased demand for services (recreation, public health, ES)	Decreased demand			

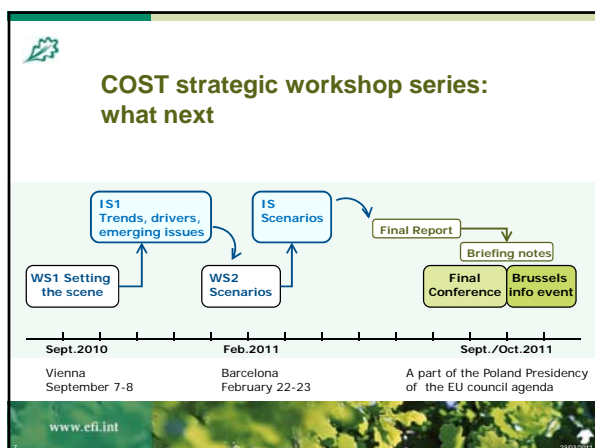
Scenario storylines:

No.1 (green): "re-local world"

No.2 (red): "climate change driven"

No.3 (blue) "blame Asia"





**COST strategic workshop series:
what next?**

- how the WS1/IS1 + WS2/IS2 results will be utilized?
- can we already identify new research needs based on the WS2 exercise?
- results from the foresight needs survey – ideas for new foresight exercises to be elaborated?

Steering Group in May – final conference and Brussels info event in the autumn

www.efi.int

SUMMARY of the responses to the foresight needs survey¹

by Päivi Pelli, European Forest Institute (paivi.pelli@efi.int)

Setting the scene for forest-based sector foresight in Europe

Definition of foresight:

Foresight is a systematic, participatory, future intelligence gathering and medium-to-long-term vision-building process aimed at present day decisions and mobilizing joint actions.

Foresight and related work in / for the forest sector in Europe

- long tradition in futures orientation (forest growth trends, market analysis, impact assessments).
- less experience in using a fully fledged foresight and methods/tools from *futures research*.
- raising in importance: cross-sectoral issues, uncertainties, long-term perspective (e.g. climate change, grand societal challenges)

→ Foresight is gaining importance: call for embedding foresight in everyday work and development.

Foresight is needed:

1. to improve foresight capacities in the forest-based sector in Europe

The concept and methods of "foresight": what new can *futures research* bring to forest sector?
E.g. new approaches to prepare for the challenges ahead, more flexibility in responding to increasing uncertainties and complexities:

- for individual organizations in research or e.g. in forest sector administration
- for forest-based companies and business organizations, industry associations etc.
- for forest policy and governance at local, regional, national , pan-European, international levels

2. to support the European Research Area ERA

Forest-based sector and ERA: The role and structure for forest research in Europe in a long-term (incl. disciplines, institutes, resources...)

3. to support research infrastructure and agenda building in the forest-based sector

Forest sector in a long time-horizon and in wider social, economic, etc. developments, and the knowledge and capacities needed in the future.

¹ The foresight needs survey was carried out by EFI for the University of Eastern Finland, Forest Foresight Unit and the results will be discussed within the framework of the COST strategic workshop series on "Foresight on Future Demand for Forest-based Products and Services". The survey was carried out as an internet survey at www.surveymonkey.com/s/foresight_needs and with additional interviews. By 7.2.2011 total of 36 responses were received including EFI internal investigation (all EFI units) and responses from the Forest Foresight Unit, University of Eastern Finland (FI); UNECE/FAO Forestry and Timber section (CH); FTP/COST/Austrian Ministry (AT); Treteknisk (NO); private consultant (UK); US Government, Dept. Agriculture, Forest Service (US); USSE (SP); ECOFOR (FR); National Laboratory of Civil Engineering (PT); Wald-Zentrum, University of Münster (DE); Confederation of European Paper Industries (BE); Forest Europe Liaison Unit Oslo (NO); FTP; EC DG RTD; EC DG AGRI; EC JRC-IPTS; EC JRC-Ispra; IUFRO; InnovaWood/AIDIMA.

Foresight is needed (cont.)

4. to identify research needs, e.g. the following research needs were mentioned in the survey:

4.1 methodology development, scenario models and tools, as well as prospective methods

- Methodology development in order to improve combination of quantitative and qualitative methods as well as multidisciplinary approach to forests / forest-based sector investigations
- New tools, new ways to utilise the tools and methods, generate and disseminate information, e.g. horizon scanning tools, webinary and other similar methods, internet-based / global collection of information (incl. perceptions, weak signals, emerging issues, emerging research needs), data mining, multi-criteria tools and approaches
- Data and information needs: improving data access, quality and coherence.
- Sharing experience and practices in foresight and sharing existing methods and tools – also sharing the forest sector solutions with other sectors e.g. sustainability impact assessments of natural resources

4.2 forest sector developments in wider societal developments' perspective

- Interfaces of existing disciplines and sectors: more social science to forest sector and forest science, e.g. sociology, anthropology to understand perceptions on forests, changing consumer/user preferences and e.g. demand for innovative products; forest owners' attitudes and actions; technology developments; future strategies of forest-based industries, e.g. impacts of energy revolution to the forest-based activities
- Impact of the grand societal challenges on forests and the forest-based sector, and impact of forests and the forest-based sector impact on grand challenges
- Research topics: bioeconomy; rethinking sustainability (natural sciences, forest sciences, markets, socio-economics, civil society); new forms of governance (incl. international / global aspects e.g. FLEGT/REDD, governance and trade issues, poverty reduction)

4.3 forest-based industries, innovation and competitiveness

- wider societal developments, international / global perspective, incl. economy, markets
- support for corporate foresight in mapping needs, scanning trends and emerging issues (e.g. global expert panel); improving long-term thinking and demand-based solutions
- Innovation networks: connecting research institutes to business, administration and customers; regional clusters, regional economics (incl. rural development), networks, new business models, innovation management
- Technology development with social / qualitative aspects; user and consumer needs
- Wood constructions; home, urban environments; buildings and materials

4.4 science and policy making, governance – better reach from research to policy making

- Research topics: ex ante policy assessments; forestry in a wider perspective together with other natural resources (whole processing chain and wider society developments); land use and resource availability/competition; social, policy, economic and institutional aspects related to forest; forest policy and governance in the EU / a pan-European process
- Stakeholder involvement in research (e.g. backcasting exercises to define concrete steps towards the preferred future), incl. regional cooperation in Europe and beyond Europe
- Inclusion of a "foresight package" in research projects in order to support better use of research results, to target the research to the needs in the field, to improve impact and long-term thinking.

Table 1: Table summarizing the “foresight needs” – a *simplified overview* based on the survey responses and interviews (7.2.2011, N=36). The landscape of foresight needs is diverse: embedding foresight in the forest-based sector requires activities by research organisations, by forest-based industries and by forest administration and governance.

	“most wanted”	Examples of prioritized exercises as pictured in the survey/interview responses			
		“hard science”	“business mainly”	“policy mainly”	Capacities building
Thematic scope	Emphases on societal changes, and looking into the whole processing chain and with other natural resources	Whole forest chain, possibly together with other natural resources	Whole processing chain, taking into account the social aspects (also in-depth sectoral exercises needed)	Whole forest chain and related sectors, linking with societal demands and developments, grand challenges	All themes
Geographical scope	International – in global perspective	Europe/global	Europe/global	Europe (int./regional but also int./global)	Global with regional emphasis
Time horizon	20 yr. (more operational ones app. 10 yr. and more “creative” ones with longer perspective)	5, or 10-15 yr. Max.20 yr.	Max. 5-10 yr. for SMEs (max. 20 for wider exercises and for large-scale companies)	10-15 yr. for operational recommendations + 20-40 yr. for wider, long-term approach	Max. 20 yr.
Approach	Combined dialogue btw research/science and practice	Methodology development, tools, info sources, data access	Data and facts; bringing the research results to decision making; the info on trends / markets to business making	Mainly “soft”; bringing the research results to decision making arena	Combination of quantitative and qualitative
Target audiences, final beneficiaries	Several groups, but mainly to policy makers	Research community (and stakeholders and policy making)	Research + stakeholders (industry players)	Step by step: Research and stakeholders first, then administration, and finally policy/decision-makers and the general audience	Policy/decision making and stakeholders Through research community
Outputs and results expected	Policy recommendations, research priorities (concrete studies, information; improved understanding)	Methods, tools for improving data and info utilization	Studies, reports; research priorities; corporate foresight; technology foresight → improving competitiveness	Policy recommendations, better understanding, vision building → science-based policies and decisions; better governance	Studies; policy recommendations; RD priorities → improved capacities and processes
Resources and financing	Mobilizing additional resources (such as COST) – important that also participants contribute	Existing (incl. national and EU R&D funding), mobilizing also additional resources (e.g. COST)	Participants, e.g. technology platforms, companies, European federations etc. stakeholders...	Mainly existing; participants need to contribute resources (time expertise; but additional meeting etc. costs to be covered from external sources)	Mainly external
Other viewpoints		Multidisciplinary exercises (e.g. social sciences, economics)	Different needs by SME and large-scale companies, but there is a call for foresight approach in both fields	Connection to EU-level policy making, Forest Europe process; int./global perspective in forest governance (e.g. FLEGT / REDD..)	Incl. assisting the less-advanced areas

Workshop 2 (WS2) Barcelona, February 2011

Report and materials (incl. group works, interactive session reports, presentations, sources of further information for WS1 Vienna Sept.2010) see <http://www.edelphi.fi/en/groups/costforesight/documents/d2>

Links to materials and information sources about scenarios

There are abundance of materials about the futures and the approaches to develop and use scenarios – the below links give just few *examples* about the work already done and ongoing in scenario building:

- **Intergovernmental Panel on Climate Change (IPCC)** scenarios
<http://sedac.ciesin.columbia.edu/ddc/sres/> in the Special Report on Emissions Scenarios (2000)
http://www.grida.no/publications/other/ipcc_sr/?src=/climate/ipcc/emission/index.htm and the work on new scenarios is underway <http://www.ipcc.ch/activities/activities.shtml#tabs-5> The SRES scenarios have also been elaborated **for the forest sector in the EFORWOOD project**: "Reference futures and Scenarios for the European FWC" by Alterra, EFORWOOD Report D1.4.7 (update) available at www.eforwood.org
- **UNECE-FAO European forest sector outlook** <http://timber.unece.org/index.php?id=55> was published in 2005 with the time horizon 2020. The EFSOS 2 is under preparation at the moment, and the above mentioned two SRES scenarios are utilised in the work as reference scenarios together with four policy scenarios.
- **INRA "Prospective: la forêt. sa filière et leurs liens au territoire"** elaborated in a wide stakeholder involvement four scenarios for the forest sector in France
<http://www.inra.fr/dpenv/pdf/SaviniD20.pdf> (in French) see the following pages and the ppt summary in English / Y.Birot
- **UNEP – Global Environmental Outlook** presents four scenarios for 2050 (GEO4 report Chapter 9: The Future Today) http://www.unep.org/geo/geo4/report/09_The_Future_Today.pdf
- **UNEP Plan Blue** is a regional activity for environment and development in the Mediterranean, incl. the aim of shaping future scenarios to guide decision-taking processes <http://www.planbleu.org/>
- UNEP has also been active in other regional processes, e.g. the **Carpathian Convention**, see the three scenarios in the Carpathian Environmental Outlook (KEO) report (2007)
http://www.carpathianconvention.org/NR/rdonlyres/40A843F4-5525-447F-82FA-4EB7F9B68BFB/0/04CH_4.pdf
- **Millennium Ecosystem Assessment (MEA)** defines four scenarios looking at global economic and political developments and their biodiversity implications
<http://www.maweb.org/documents/document.332.aspx.pdf>
- **PRELUDE project (2005-2006) by the European Environment Agency (EEA)** presents five land-use scenarios for Europe <http://www.eea.europa.eu/multimedia/interactive/prelude-scenarios/prelude>
- **Royal Dutch Shell – Shell Energy Scenarios to 2050** are available
http://www.shell.com/home/content/aboutshell/our_strategy/shell_global_scenarios/
- **World Economic Forum (WEF)** has produced both regional scenarios (e.g. for China, India, Russia, the Gulf Co-operation Council Countries) and scenarios for the future of global financial system (2009) <http://www.weforum.org/pdf/scenarios/TheFutureoftheGlobalFinancialSystem.pdf>
- **Standing Committee on Agricultural Research SCAR foresight** report no.2 illustrated three scenarios <ftp://ftp.cordis.europa.eu/pub/fp7/kbbe/docs/scar.pdf> and the work for foresight no. 3 is underway http://ec.europa.eu/research/agriculture/scar/foresight_en.htm
Another scenario study on agri and rural world (SCENAR 2020 and its update) was carried out for EC http://ec.europa.eu/agriculture/analysis/external/scenar2020ii/index_en.htm
- About the world of surprises, see e.g. the **International Institute for Applied Systems Analysis (IIASA)** and its Xevents in human system project
<http://www.iiasa.ac.at/xevents/index.html>

A foresight scenario analysis for the « Forest Cluster » in France: the forest/wood chain and its links to the local context

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Structure

- **Raison d'être**
- Foresight: definition and objective
- Modus operandi
- Stakes identification
- Assumptions on trends and evolutions
- The 4 scenarios matrix
- Consequences for research
- Conclusions



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Raison d'être

- Forest and Forest Industries = important components of Sustainable Development but exposed to markedly evolving and complex driving forces:
 - a) political: Rio, IPF, IFF, UNFF, MCPFE, NFP
 - b) diversification of goods and services expected from forests (societal, environmental, certification)
 - c) steady increase in global wood based products consumption
- A joint initiative of INRA and Ministry of Agriculture aimed at developing:
 - a) a conceptual framework relevant for all stakeholders and policymakers related to the forest cluster
 - b) the rationale for future research orientations for INRA (or any institution)



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Foresight study: definitions and objectives

- > It is not a prediction or consensus exercise, but rather a light helping decision makers to get prepared to a wide range of contingencies, by focusing on socio-economic issues and assumptions on their evolution
- > Foresight methods are diverse (extrapolation, Delphi, community visioning) combining scientific and technical expertise, interaction between social demand and experts, and vision
- > The selected method: the **scenarios analysis** allows to:
 - a) construct alternative possible futures,
 - b) explore the "uncertainty" (with contrasted scenarios)
 - c) support the decision without prediction
 - d) develop interactions between stakeholders
- > The selected parameters: limited number of scenarios, focus on internal factors of the forest wood-chain (possibility to act on), time horizon: 2020



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Modus operandi

- A coordinated approach;**
 - a) steering committee (30 people from all activity sectors)
 - b) a core group for overall coordination, drafting of syntheses
- A process of participation and concertation** between 100 people representing the full spectrum of the forest cluster: a vast consultation
- A structured work**
 - a) Task 1: 1 WG: the context, facts and figures
 - b) Task 2: the foresight study: 4 WGS: industries and markets, institutions, wood and timber, other functions
 - c) Task 3: research, 1WG: identification of technological breakthroughs, and priority topics arising from the foresight study
- A 2 year process**



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Identification of issues at stake at national level (1/2)

Increasing forest resources in area (mainly related to rural decline) and **standing volume** (silviculture, increased productivity, under-exploitation)

A recurrent deficit of the forest cluster resulting from import of pulp and conifer sawn timber, and of products with high added value (furniture), non balanced by exports of other products. > is the forest inadequate to industrial requirements or the other way around?

A lack of competitiveness: competition from other materials (market share losses in relative value), competition from other regions, high exploitation and transaction costs (weak integration of the wood chain), scattered offer (small size of properties, sawmills, atomisation of wood mobilisation), lack of homogeneity/quantity, regularity and security of wood supply



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Identification of issues at stake at national level (2/2)

Diversification of expectations regarding forest functions due to: growing urbanized society eager for recreation and wilderness, concerns for forest areas supposed to be threatened, growing demand for non marketable functions, and conflicting demands.... but wood still main income for forest owners

The increasing weight of environmental issues: ecocertification, biodiversity, Natura 2000, protected forest areas, Kyoto protocol, conflicting uses, environmental constraints on wood based products (gluing, preservation), fears of forest owners of accumulating imposed constraints with no compensation, fears of economic actors related to shift to new silviculture (close to nature, regression of spruce)

The European context: EU 15 = 15% of world production of industrial wood, first consumption market, increasing forest resources, a EU Forest strategy (no common policy), the driving role of Scandinavia, the case of CIT and Russia



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Assumption on trends and evolutions

2 structuring questions have been identified as main synthetic outcome from the 4 working groups (task 2):

- Will wood be remaining the main production from the forest?
- Will the French forest resources and their mobilisation be compatible with industrial requirements in particular the second transformation?

The formalisation of these 2 questions has led to propose 2 axes as bases for formulating the scenarios



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The axis 1 wood/non wood policy orientation for forest and forest areas utilization

This axis focuses on what the policy makers, society, and stakeholders want regarding the forest and its use

The wood option: wood production remains the main organizing and orientating function, together with other secondary functions

The non-wood option: environment, land use planning, recreation, become primary objectives without necessary stopping wood harvest

The axis wood/non wood has a policy connotation: what is the target for forest and forest areas (and not: is this target met or not)
Although wood is almost the only income source which pays for the rest, the non-wood option has to be seriously considered as becoming increasingly supported (urbanized population, demand for wilderness, fears of real or supposed threats)



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The axis 2: no integration/no x no integration economic relationships between forest and industries

This axis focuses on the functioning and organization of the wood chain, and its economic and technical evolutions

No integration: industrial requirements (price, quality, quantity, homogeneity, regularity) are not satisfied > risk of increased import or industry relocation; can the French forest find outlets for its wood and non wood products (including tourism). The « no integration » situation is assessed from the angle of industry's needs. There is no integration if industry lacks adequate raw material supply (and not if there are no buyers for the wood offered). No integration or decoupling is the normal trend as the structural aspects of the French forests evolve slowly compared to the concentration observed in capitalistic industries

No x No integration: industrial requirements are met, industry is retained in the country (with jobs and added value). This target can be reached through a pro-active and concerted approach of stakeholders in the forest/wood chain



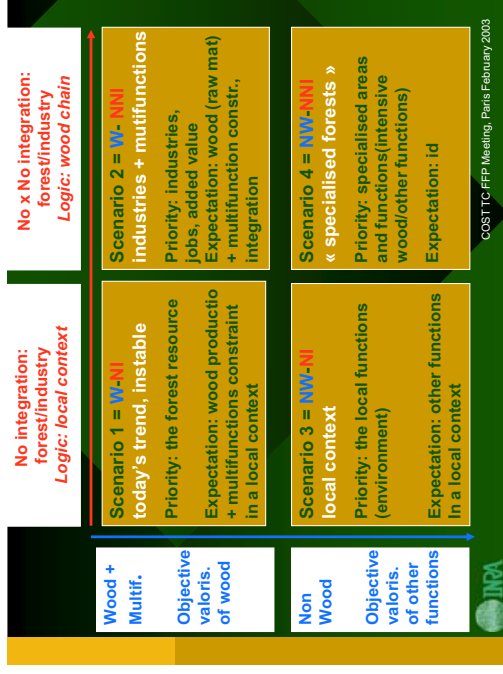
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Scenario 2 = industries and multifunctions

- most forests targeted to wood production (raw material) while fulfilling other functions
- increased planting of fast growing species for timber (poplar, conifers)
- small logs exploited for pulp and particleboard
- multipurpose management possible with adapted regulations (income) if purposes not too much conflicting
- this scenario requires efficient counteracting of “no integration”
- job maintenance or development

INRA

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Scenario 3 = the local context

- The non-wood option contributes to strengthening the no integration situation
- Significant regression of industries
- Tourism, amenities, quality of life enhanced
- Difficulty to finance « non tradable » goods and services leading to risks of landscape degradation (closure), wildfires.
- No more plantations
- Forest tending becomes difficult (lack of financial resources) without public funding

INRA

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Scenario 1 = the today's trend but instable

- extensive and intensive silviculture (good sites)
- forest: timber production, log export (noble hardwoods)
- industry: import of cheap and adequate wood
- potential risk: outlet losses for industrial (pulp, panels) wood and relocation of some industries
- contradiction between wood/no integration > instability

INRA

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Scenario 4 = « specialised » forests

- integration forest x industry for one part of forest areas (the high yielding ones), ligniculture orientated towards industry needs (New Zealand)
- The majority of forest areas is left to other functions: biodiversity, water, recreation, etc
- proper regulations still allow forest tending

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Consequences for research (1/5) Common research topics to all scenarios:

- ecosystems functioning (basis of ecosystem management), process based models
- genetic resources: knowledge on diversity, management and conservation
- silviculture (decision support modelling) dynamics of heterogeneous stands (unevenaged and mixed), risk management
- wood science and technology: wood cell formation, wood chemistry, wood processing
- environment and wood-chain economics
- forest externalities

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Consequences for research (2/5)

Scenario 1 = the forest, present but instable

- close to nature and multiple use forest management, wood and other functions
- management and conservation of genetic resources
- forest products and markets analysis
- wood quality (high value species) related to extensive silviculture
- forest, forest based industries and land use planning
- forest policy analysis

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Consequences for research (3/5)

Scenario 2 = industry and multifunctions

- ecological durability of exploited forest ecosystems
- wood properties and processes for engineered wood products
- genetics and breeding of fast growing species for timber (poplar, conifers) including GMOs
- LCA
- ecofriendly wood preservation
- improved ecofriendly processes (biological and chemical) in chemical pulping (red wood)
- improvement of forest operations equipments
- economic competitiveness (wood mobilisation, sale procedures, etc.)

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Consequences for research (5/5)

Scenario 4 = « specialised » forests

- intensive forest management (plantations) adapted to industrial requirements
 - > genetics/breeding tree varieties for specific use including genetic engineering
 - > control of pest and disease
 - > management of soil fertility (sustainability)
 - > improvement of wood and fiber properties
 - > economics of forest management
- extensive forest management
 - > biodiversity, water, internalisation of « externalities », landscape value

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Consequences for research (4/5)

Scenario 3 = the local spatial functions

- biodiversity, hydrology
- forest and land-use planning
- environmental economics
- valuation of forest externalities (« non tradable » goods and services) and mechanisms for their internalisation
- “minimum” forest management
- wildfires

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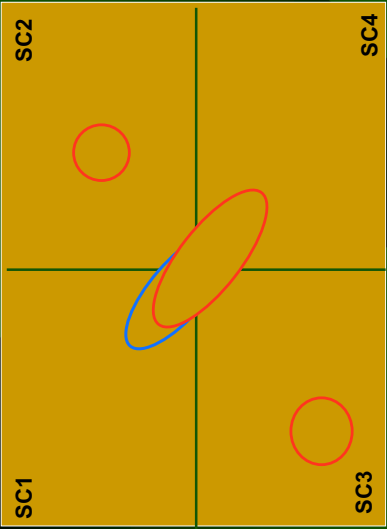
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Conclusions


- a useful exercise just preceding major developments in the forest cluster: the “Bianco report”, the national forest strategy, the forest gales of Dec.1999, the Forestry Act (2001)
- a support to a strengthening of forest related research within INRA and its implementation
- A subject for a new COST action?



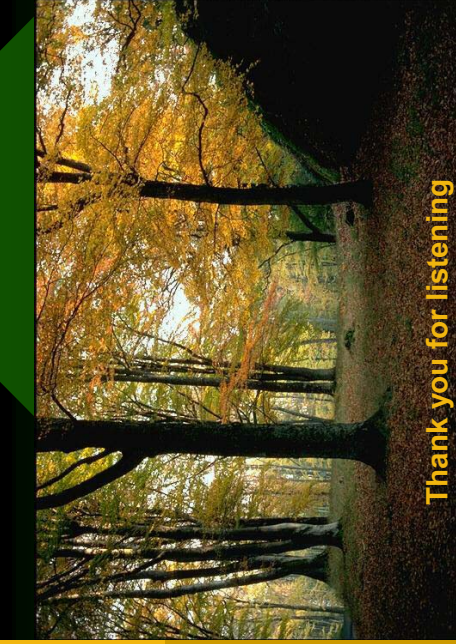
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Consequences for research: the INRA example



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Thank you for listening



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