ANNEX

WORKSHOP REPORT

COST Strategic Workshop "Foresight on Future Demand for Forest-based Products and Services – setting the scene"

List of annexes:

0. Workshop programme
1. List of participants and sum-up of conclusions
2. Presentation: introduction by M.Kleine
3. Presentation: key note by M.Aaltonen
4. Presentation: COST 2030 by M.Radwanska
5. Presentation: Xevents by L.Ilmola
6. Presentation: Foresight by S.Giesecke
7. Presentation: SCAR foresight by L.O'Brian
8. Presentation: EEA strategic futures by A.Pirc Velkavrh
9. Presentation: IEA by A.Brown
10. Presentation: USDA by D.Wear
11. Presentation: EFSOS by R.Jonsson
12. Introduction to interactive sessions (participants' pre-materials)
13. Presentation: Introduction to world café session
    and the future forest cafés table hosts' source list
14. Presentation: Preliminary results from the future forest café session
    and mindmaps and reports from the future forest cafés
15. Presentation: Introduction to the interactive session no.2 "time machining"
    and reports from the interactive sessions no.2
16. Presentation: Conclusions and next steps by T.Nuutinen
17. List of information sources and further reading (participants' pre-materials)

Strategic Workshop

Preliminary Programme

Foresight on Future Demand for Forest-based Products and Services: Setting the Scene

7-8 September 2010 – Vienna, Austria

DAY 1 – Tuesday 7 September 2010

09.00	*Registration and practicalities*	
10.00	**Dr. Michael Kleine**	Workshop Chairman, IUFRO **Opening of the workshop**
10:15	**Dr. Mika Aaltonen**	Aalto University, School of Science and Technology, Helsinki **Robustness – Anticipatory and adaptive human systems**
11.00	*Coffee break*	
11.30	**Dr. Magdalena Radwanska**	COST European Cooperation in Science and Technology, BE **COST Foresight 2030 – Understanding of trends, signals, drivers and scenarios**
12.00	**Prof. John L. Casti & Dr. Leena Ilmola**	International Institute for Applied Systems Analysis IIASA **Game changers and the forest industry in the complex world of 2030**
12.30	**Dr. Susanne Giesecke**	Austrian Institute of Technology AIT / European Foresight Platform **Foresight as a new form of political participation and deliberate democracy?**
13.00	*Lunch break*	
14.00	**Insights from foresight exercises in different sectors**	
	Dr. Lance O'Brien	Teagasc / SCAR team **SCAR Foresight: Global food security in 2050 and the implications for EU research policy**
	Ms. Anita Pirc-Velkavrh	EEA **Environment sector: EEA work on strategic futures**
	Dr. Adam Brown	IEA Bioenergy **Energy sector: IEA energy outlook, and it's links to bioenergy and biofuels**
	Dr. David Wear	USDA Forest Service, Forestry Sciences Laboratory **Forest sector outlook North America (NAFSOS) and the Southern Forest Futures Project**
	Dr. Ragnar Jonsson	SLU Swedish University of Agricultural Sciences / EFSOS team **Forest sector outlook Europe (EFSOS)**
15.30	*Coffee break*	
16.00	**Interactive session 1 "The Future Forest Cafés"**	
18.00	*End of the workshop day*	
19.30	*Networking dinner*	

DAY 2 – Wednesday 8 September 2010

8.30	**Sum up of "The Future Forest Cafés" and feedback**
9.30	**Interactive session 2 elaborating further the "The Future Forest Cafés" results**
10.30	*Coffee break*
11.00	**Reporting of the results from the Interactive session 2**
	Recommendations, research and development priorities
	Discussion and feedback

12.30	**Dr. Tuula Nuutinen &**	European Forest Institute
	Dr. Michael Kleine	Workshop Chairman, IUFRO
		Next steps in the COST strategic workshop series
		Closing of the workshop

13.00	*Lunch break*
14.00	*Departure*

This is the programme as of 1 September 2010. The final program may differ from the one listed above in terms of speakers and content of the presentations. All sessions will be held in English.

Foresight on Future Demand for Forest-based Products and Services: Setting the Scene
7-8 September 2010 – Vienna, Austria

Participants

Name	Organisation	Country
Aaltonen, Mika	Aalto University, School of Science and Technology	Finland
Aggestam, Filip	EFI Central-East European Regional Office EFICEEC	Austria
Baardsen, Sjur	DC FPS / Norwegian University of Life Sciences	Norway
Beck, Roland	European Commission, DG Agriculture and Rural Development	Belgium
Brown, Adam	International Energy Agency IEA	France
Casti, John	International Institute for Applied Systems Analysis IIASA	Austria
de Galembert, Bernard	Confederation of European Paper Industries CEPI	Belgium
Despot, Radovan	DC FPS - University of Zagreb	Croatia
Elers Koch, Niels	DC FPS - IUFRO President /University of Copenhagen	Denmark
Förster Werner	DC FPS - Technology Platform, PTS Paper	Germany
Giesecke, Susanne	Austrian Institute of Technology AIT	Austria
Greimel, Martin	DC FPS - Technology Platform, Lebensministerium Österreich	Austria
Ilmola, Leena	International Institute for Applied Systems Analysis IIASA	Austria
Ingram, Verina	Center for International Forestry Research CIFOR	Cameroon
Järvinen, Erno	Central Union of Agricultural Producers and Forest Owners MTK	Finland
Jodlowski, Krzysztof	IBLES Forest Research Institute	Poland
Jonsson, Ragnar	Swedish University of Agricultural Sciences, Faculty of Forestry	Sweden
Julian Saint Amand, Francois	DC FPS - Centre Technique du Papier, France	France
Kleine, Michael	International Union of Forest Research Organizations IUFRO	Austria
Langbein, Melae	COST Office	Belgium
Lehtonen, Olli	International Institute for Applied Systems Analysis IIASA	Austria
Marghescu, Tamas	CIC International Council for Game and Wildlife Conservation	Hungary
Miina, Saija	University of Eastern Finland, Forest Foresight Unit	Finland
Moen, Jon	Umeå University	Sweden
Niemelä, Klaus	DC FPS - VTT Technical Research Centre of Finland	Finland
Nuutinen, Tuula	European Forest Institute EFI	Finland
O'Brien, Lance	TEAGASC The Irish Agriculture and Food Development Authority	Ireland
Oszako, Tomasz	DC FPS - Forest Research Institute	Poland
Pelli, Päivi	European Forest Institute EFI	Finland
Perez Campos, Mariano J.	AIDIMA / Innovawood	Spain
Pirc Velkavrh, Anita	European Environment Agency EEA	Denmark
Radwanska, Magdalena	COST Office	Belgium
Schadauer, Klemens	Federal Research and Training Centre for Forests, Natural Hazards and Landscape	Austria
Teegler, Antje	COST Office	Belgium
Torniainen, Esa	VTT Technical Research Centre of Finland	Finland
Tykkä, Saana	EFI Central-East European Regional Office EFICEEC	Austria
van Leemput, Marc	DC FPS -The Belgian Institute for Wood Technology CTIB-TCHN	Belgium
von Teuffel, Konstantin	Forest Research Institute Baden-Württemberg	Germany
Wear, David	US Forest Service	United States
Weimar, Holger	von Thünen Institute vTI	Germany
Wolfslehner, Bernhard	EFI Central-East European Regional Office EFICEEC	Austria
Zhelev, Petar	DC FPS - University of Forestry	Bulgaria
Zlatic, Miodrag	DC FPS - Belgrade University	Serbia

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

COST Strategic Workshop

Foresight on Future Demand for Forest-based Products and Services

7-8 September 2010, Vienna

www.efi.int

COST Strategic Workshop series 2010-2011:
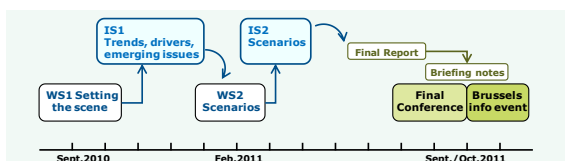## Foresight on Future Demand for Forest-based Products and Services
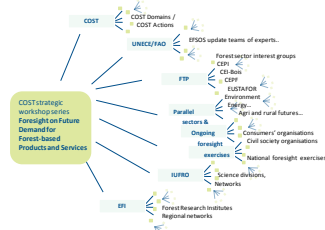
A wide-angle foresight exercise to:
- investigate the role that forests play **in the future societies**, the **new needs and demand** for forest-based products and services, as well as the **drivers** behind these developments (up to year 2050)
- build **capacities** in foresight and **networks** enabling new foresight exercises in / for the forest sector

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

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Foresight on Future Demand for Forest-based Products and Services

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Workshop 1 / Vienna: Setting the Scene
Foresight on Future Demand for Forest-based Products and Services

Objective of this workshop is "to set the scene" together with actors and networks, using foresight methods and tools to identify trends and drivers:

- How to explore the Future Demand for Forest-based Products and Services?
- What affects the future demand, what kind of new products and services will be needed?

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DAY 1 Tuesday 7 September 2010
Forenoon: key notes

10.00 Opening of the workshop. **Dr. Michael Kleine** Workshop Chairman, IUFRO

10:15 **Dr. Mika Aaltonen**: Robustness – Anticipatory and adaptive human systems

11.00 Coffee break

11.30 **Dr. Magdalena Radwanska**: COST Foresight 2030 – Understanding of trends, signals, drivers and scenarios

12.00 **Prof. John L. Casti & Dr. Leena Ilmola**: Game changers and the forest industry in the complex world of 2030

12.30 **Dr. Susanne Giesecke**: Foresight as a new form of political participation and deliberate democracy?

13.00 Lunch break

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DAY 1 Tuesday 7 September 2010
Afternoon: Insights from foresight exercises

14.00 Participants Presentations:
- SCAR Foresight: Global Food Security in 2050 and the Implications for EU Research Policy, **Dr. Lance O'Brien**, Teagasc / SCAR team
- EEA work on strategic futures, **Ms. Anita Pirc-Velkavrh**, EEA
- IEA energy outlook, and it's links to bioenergy and biofuels. **Dr. Adam Brown**, IEA Bioenergy
- Forest sector outlook North America (NAFSOS) and the Southern Forest Futures Project, **Dr. David Wear**, USDA Forest Service
- Forest sector outlook Europe (EFSOS), **Dr. Ragnar Jonsson**, SLU Swedish University of Agricultural Sciences / EFSOS team

15.30 Coffee break

16.00 Interactive session 1 "The Future Forest Cafés"
18.00 End of the workshop day

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DAY 2 Wednesday 8 September 2010

8.30 Sum up of "The Future Forest Cafés" and feedback
9.30 Interactive session 2 elaborating further the "The Future Forest Cafés" results

10.30 Coffee break

11.00 Reporting of the results from the Interactive session 2: Recommendations, research and development priorities. Discussion and feedback
12.30 Next steps in the COST strategic workshop series. Closing of the workshop

13.00 Lunch

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2

Robustness – Anticipatory and Adaptive Human Systems

Vienna
September 7, 2010
Mika Aaltonen

Programme

- Reasons of Dissatisfaction
  - Systems & Contexts
- Futures Mental Landscape
  - Discussion

Reasons of Dissatisfaction

The First Reason of Dissatisfaction

The **legacy of Western tradition**, efficient cause being the primary focus of science and economics, can be considered **erroneous and misleading**. Its dominance of our thinking is also **one of the reasons why many real-world problems appear intracable and are difficult to resolve**. The difficulty arises when only single causes are sought, even though such problems arise from the interaction of multiple, underlying and interrelated causes.

The Second Reason of Dissatisfaction

Our sense-making and decision-making **practices are set against an unchanging landscape** where only a single element or few elements, if any, are extrapolated. Thus, it is no wonder that there is an inherent **inability to deal with complex chains of causality and to take into consideration both top-down and bottom-up causes**.

The Third Reason of Dissatisfaction

We live our lives in spatio-temporal contexts, yet we hold on to the classical idea of fixed, permanent and absolute, and simultaneously, **an acontextual truth**, should be replaced with spatio-temporal approach. The explicit consideration of a spatio-temporal context will necessitate **new ways of understanding epistemology, methodology, and leadership**.
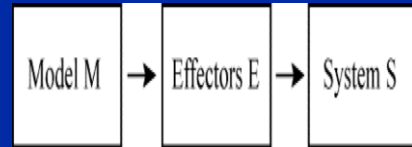
Systems

Newtonian Systems

Model M → Effectors E → System S

Consequences (I)

- The traditional scientific and industrial strategies project, predict and program the future by using our knowledge of the past as the basis on which the innovation can be justified and safety established.

- An organization that priviliges the present to the detriment of the past and future privileges risks and accidents.
- New approaches better equipped to deal with the unknown and uncertainty are desperately needed.

Consequences (II)

- Manage the bottom line (as if you make money by managing money).
- Make a plan for every action: no spontaneity please, no learning.
- Move managers around to be certain they never get to know anything but management well (and kick the boss upstairs as much it is better to manage a portfolio than a real business).
- Always be objective, which means to treat people as objects (in particular, hire and fire employees the way you buy and sell machines because everything is a "portfolio").
- Do everything in five easy steps.

(C.f. Mintzberg 1996)

Consequences (III)

- Terrestrial. Geopolitical domains of air, sea, undersea and land, as well as physical concentrations of wealth.
- Space. The world of satellites and future space platforms.
- Spectral. Electromagnetic spectrum, frequency management, and sensing.
- Virtual. The global world of networks and connectivity.
- Psychological. Media and conduits used to influence the hearts and minds of people.

(Read more Loescher 2010)

Anticipatory and Adaptive Human Systems

1 & 3

Model M → Effectors E → System S

2 & 4
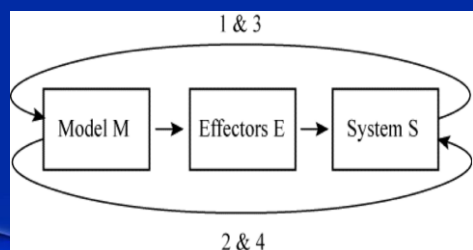
(Rosen 1985)

Anticipation (I)

- Feedback controllers (1) perceive a system´s environment. They are selective, and only some aspects of an environment are relevant for them.
- A feedforward controller (2) perceives the controlled system, not the environment. We could think of it as a model of the system.
- Feedback controllers (3) with memory are able to leave a trace of a system´s experience that can be used to tune the system´s behaviour, and the system can learn from its past experience.
- Feedforward controllers with memory (4) can also learn from the past experiences. These kinds of controllers must be able to work on deviations.
- General purpose controllers (5) can include all the above discussed controllers (in which 1 and 3 perceive the environment and 2 and 4 the system).

Anticipation (II)

1. As a cognitive capacity.
2. As a coupling between the system and its environment.

Time-Space Contexts

Multi-ontology Sense-making

1. The explicit recognition that there are differing types of systems in which different causal assumptions apply, offers a new way of approaching leadership in an uncertain world.
2. Time is a key element of social life and must therefore be equally central to any social theory.
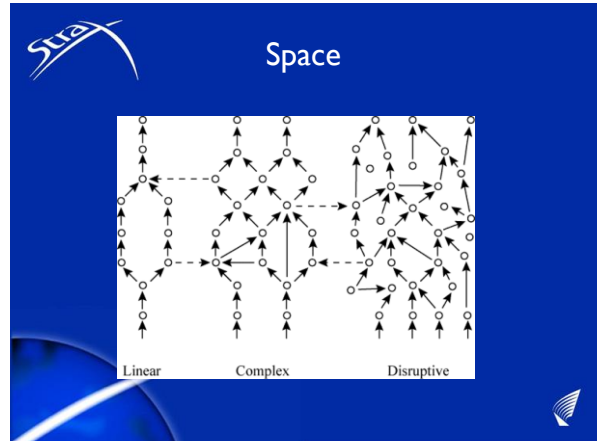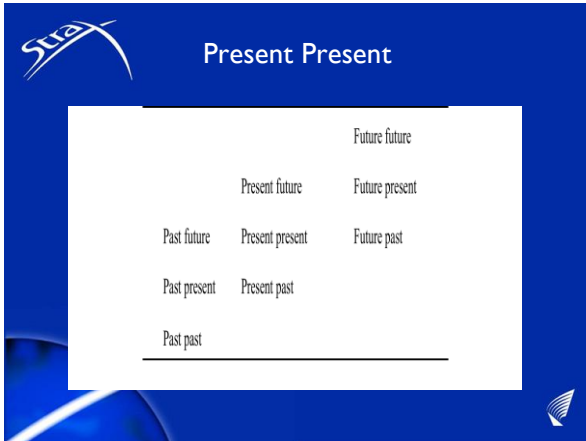
Where Is the Future?

FUTURE

FUTURE

strax.tkk.fi

Time Is Multileveled

Here, the approach taken to *time is multileveled*, we understand time as "dendrochronology", literarily the dating of annual tree rings, according to which the levels of history and the different conceptions of futures are to be seen in the presence, and whether we refer to individuals, organizations or even nations our ideas of pasts as well as our conceptions of futures influence our ability to adapt with changing situations.
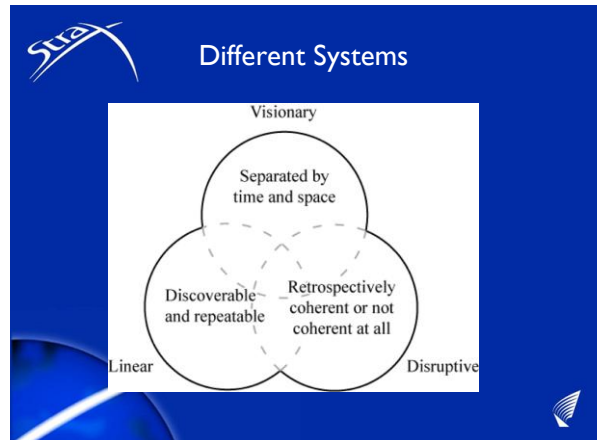
Present Present

		Future future
	Present future	Future present
Past future	Present present	Future past
Past present	Present past	
Past past		

Space

Linear   Complex   Disruptive

In Organizations

Linear	Disruptive
Intended, selected, planned	Evoked, emerging
Goal, target, vision	Exploring, searching
Detecting, correcting	Amplifying
Forming	Being formed
Known	Unknown
Predictable, stable	Unpredictable, uncertain
Order, consensus	Disorder, irregular
Clarity	Confusion
Conscious	Unconscious

strax.tkk.fi

Different Systems

Visionary

Separated by time and space

Discoverable and repeatable

Retrospectively coherent or not coherent at all

Linear   Disruptive

Polynomial Understanding

- I would like to argue that people use and are aware of various ontological, i.e. spatio-temporal, contexts and they have created specific terms, knowledge and approaches within them implicitly.
- My approach is *polynomial,* but it is not organized according to professions, fields or sciences like in Aristotle´s approach, but according to spatio-temporal contexts.
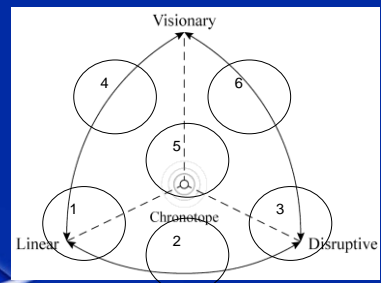
Futures Mental Landscape

Concluding

- Our employment of time and space reveals opportunities for changes, where we previously had detected none.
- "There are always opportunities for an opportunist".
- When our ontological framework becomes richer, it becomes more robust, and more anticipatory and adaptive.
- A richer framework enables us to see what we did not see before, and helps us to attain our hidden and latent potentialities, and benefit from the changes that take place in our environment.

The Framework

Leadership

Visionary	Evaluates forthcoming changes and prepares the system with new skills, abilities and business frames to face them	Creates visions and missions, builds value-based leadership	Manages perceptions, reframes existing contracts and boundaries, introduces new attractors, sets and removes constrains
Strategic	Ensures adherence to vision, reallocates existing resources, emphasizes problem-solving	Focuses on and enables interactions between actors, groups and organizations	Creates environments and experiments that allow new patterns to emerge
Tactical	Exploits the existing opportunities; e.g. process re-engineering, best practice	Opens up strategic dialogues, builds factual richness and cognitive diversity	Acts and makes fast decisions, looks for what works; e.g. authorative leadership, crisis management
	Linear	**Complex**	**Disruptive**

Implications

- Discusses the relevance and accuracy of leadership interventions.
- Enriches our understanding of how leadership theories are enacted in different systems.
- Provides a foundation for explaining the boundaries for influencial leadership.

Discussion

- What did you like about?
- What do you not agree on?
- What thoughts came to your mind?

Discussion

What was the most important thought that came to your mind today?

6

COST Foresight 2030

Understanding of trends, signals, drivers and scenarios

Dr. Magdalena Radwanska
COST
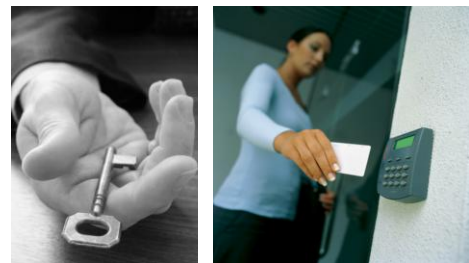

Predicting our future

- *I never think of the future - it comes soon enough* A. Einstein

- *The future is here. It's just not widely distributed yet* W. Robinson

- *The world is full of people whose notion of a satisfactory future is, in fact, a return to the idealised past* R. Davis

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COST Foresight 2030

Where will the digital revolution take us?

Digital revolution – role of communication and information technologies (ICT)

COST Foresight 2030 - multi- disciplinary activity
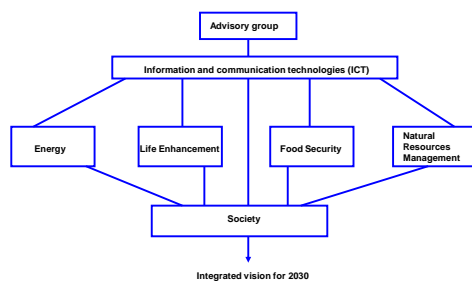
COST Foresight 2030

- Workshops:
  – Harnessing the Digital Revolution – April 2009
  – Benefitting form the Digital Revolution – 4 workshops, June/July 2009
  – Living Digital Revolution – October 2009
- Target Audience: academia, industry, policy makers (European, National)
- Desired Outputs: breakthrough technologies, trends, drivers, scenarios, roadmaps, recommendations
- Time Horizon: one year
- Resources: COST Office, international experts (academia, industry, policy makers)
- Dissemination: reports, web-based information, meetings

COST Foresight 2030

Expert panels

ICT

Energy, Life Enhancement, Food Security, Natural Resources Management

Society

Preparatory phase
- Breakthrough technologies/trends
- Drivers
- Challenges
- What's needed
- Vision 2030

Methodology
- Brainstorming
- SWAT
- Scenario building
- Roadmapping

Outputs
- Qualitative data
- Reports/trends
- Recommendations
- Dissemination conference

Evaluation of the exercise

The Foresight Diamond

R. Popper (2006)
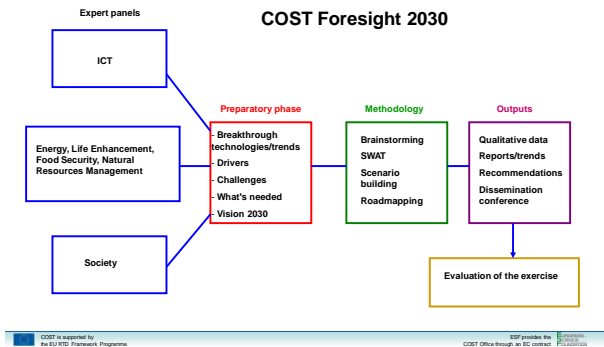
Definition – Technology Foresight

- A **Technology Foresight** is the process involved in systematically attempting to look into the longer-term future of science, technology, the economy and society with the aim of identifying the areas of strategic research and the emerging of generic technologies likely to yield the greatest economic and social benefits (Martin,1996)
- **Thinking the future, debating future, shaping future**
  – **Diagnosis , Prognosis, Prescription**
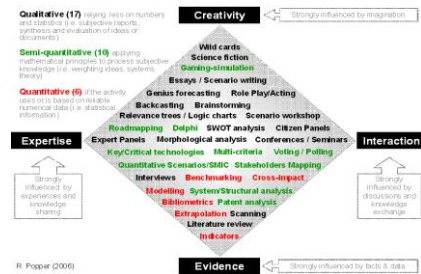
Exploratory vs. Normative methods

- **Exploratory methods** are "outward bound". They begin with the present as the starting point, and move forward to the future, either on the basis of extrapolating past trends or causal dynamics, or else by asking "what if?" questions about the implications of possible developments or events that may lie outside of these familiar trends.

Given what we understand about the present, what would we expect to happen if this event happened, this trend developed?

Alternative futures resulting from the different "histories"

Exploratory vs. Normative methods

- **Normative methods** are, by contrast, "inward bound". They start with a preliminary view of a possible (often a desirable) future or set of futures that are of particular interest. They then work backwards to see if and how these might or might not grow out of the present – how they might be achieved, or avoided, given the existing constraints, resources and technologies.

PRESENT

Desirable future

Other more realistic futures

Scenario building

A **Scenario** is a "story" illustrating visions of possible future or aspects of possible future

Scenarios are not predictions about the future but rather similar to **simulations** of some possible futures. They are used both as an exploratory method or a tool for decision-making, mainly to highlight the **discontinuities from the present** and to **reveal the choices available** and their **potential consequences**

High Impact

Low Uncertainty

High Uncertainty

Scenario 1

Scenario 2

Scenario 3

Scenario 4

Low Impact
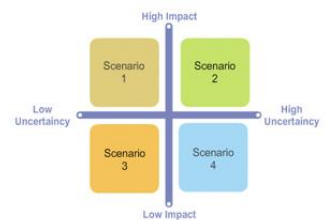
Europe Food Security in 2030

Europe Food System more integrated in the global system

Food availability: DOWN
Production, distribution, exchange: 0, -, -

Food availability: UP
Production, distribution, exchange: +,+,+

Food access: down
Affordability, allocation, preference: -, -, -

Food access: no change
Affordability, allocation, preference: -, 0, -

Food utilisation: down
Nutritional value, social value, safety: 0, -, -

Food utilisation: up
Nutritional value, social value, safety: +, -, +

Food secure (Europe): REDUCED

Food secure (Europe): ENHANCED

Low access to ICT — High access to ICT

Food availability: level
Production, distribution, exchange: 0, 0, -

Food availability: up
Production, distribution, exchange: +, +, -

Food access: down
Affordability, allocation, preference: -, -, -

Food access: down
Affordability, allocation, preference: -, 0, -

Food utilisation: level
Nutritional value, social value, safety: 0, 0, 0

Food safety: level
Nutritional value, social value, safety: 0, 0, +

Food secure (Europe): LEVEL

Food security (Europe): LEVEL but more vulnerable

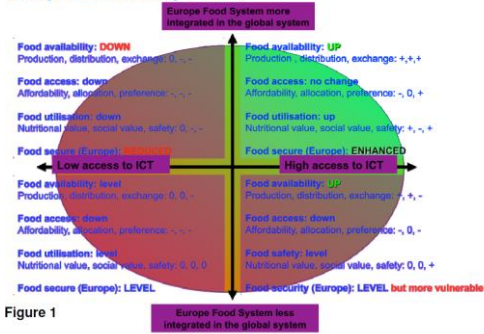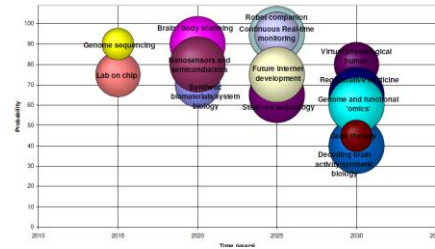Europe Food System less integrated in the global system

Figure 1

Roadmap building/horizon scanning

Technology **Roadmap Building** refers to various kinds of forecast or Foresight studies including visions and detailed projections of future possible technological developments, products or environments
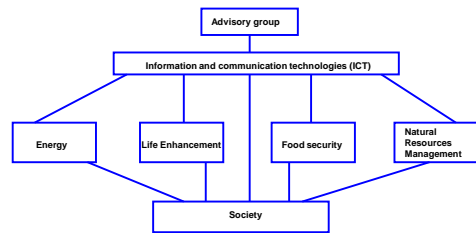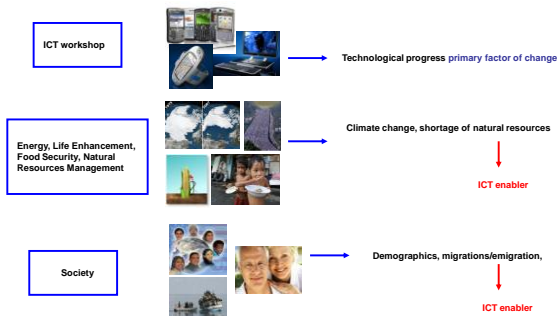

SWOT Analysis

SWOT Analysis is an analytical method which is used to identify and categorise significant **internal** (Strengths and Weaknesses) and **external** (Opportunities and Threats) factors
It provides helpful information for matching resources and capabilities to the (competitive) environment and is therefore an important contribution to the strategic planning process.

COST Foresight 2030 - multi- disciplinary activity

Advisory group

Information and communication technologies (ICT)

Energy | Life Enhancement | Food security | Natural Resources Management

Society

Highlights of our outcomes - factors of change

ICT workshop → Technological progress **primary factor of change**

Energy, Life Enhancement, Food Security, Natural Resources Management → Climate change, shortage of natural resources → **ICT enabler**

Society → Demographics, migrations/emigration, → **ICT enabler**
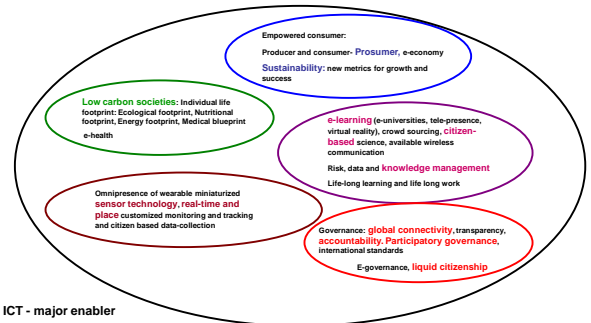

Digital revolution

Major political changes

in 1988, they said…

Czechoslovakia will split in the 1990's

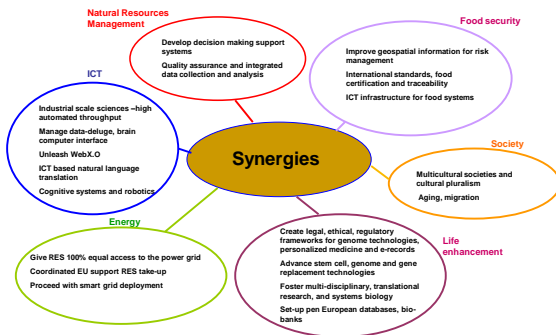The Czech Republic will become a member of the European Union

The Czech Republic will hold the Presidency of the European Union in no later than 2009
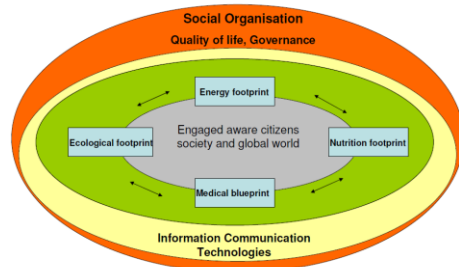

Highlights outcomes – synergies – 6 workshops

Empowered consumer:
Producer and consumer- **Prosumer**, e-economy
Sustainability: new metrics for growth and success

Low carbon societies: Individual life footprint: Ecological footprint, Nutritional footprint, Energy footprint, Medical blueprint e-health

e-learning (e-universities, tele-presence, virtual reality), crowd sourcing, **citizen-based** science, available wireless communication

Risk, data and **knowledge management**

Life-long learning and life long work

Omnipresence of wearable miniaturized **sensor technology, real-time and place** customized monitoring and tracking and citizen based data-collection

Governance: **global connectivity**, transparency, **accountability. Participatory governance**, international standards

E-governance, **liquid citizenship**

ICT - major enabler

Highlights – specific outcomes

Natural Resources Management
Develop decision making support systems
Quality assurance and integrated data collection and analysis

Food security
Improve geospatial information for risk management
International standards, food certification and traceability
ICT infrastructure for food systems

ICT
Industrial scale sciences –high automated throughput
Manage data-deluge, brain computer interface
Unleash WebX.O
ICT based natural language translation
Cognitive systems and robotics

Synergies

Society
Multicultural societies and cultural pluralism
Aging, migration

Energy
Give RES 100% equal access to the power grid
Coordinated EU support RES take-up
Proceed with smart grid deployment

Life enhancement
Create legal, ethical, regulatory frameworks for genome technologies, personalized medicine and e-records
Advance stem cell, genome and gene replacement technologies
Foster multi-disciplinary, translational research, and systems biology
Set-up pen European databases, bio-banks

Vision for 2030

Social Organisation
Quality of life, Governance

Energy footprint

Ecological footprint

Engaged aware citizens society and global world

Nutrition footprint

Medical blueprint

Information Communication Technologies

Recommendations

- Define target audiences/experts and involve them throughout your entire Foresight activity
  – Define precise goal and scope of your exercise
- Include a preparatory phase – state of the art – other activities of that kind performed before
- Produce qualitative and qualitative data
- Build-in intermediate steps evaluating your outcomes
  – final evaluation: added value, reaching goals
- Recommendations: Avoid situation e.g.– *we need better education/new models for education*….instead - what education (providing solution).
  – Involve relevant experts throughout your exercise
- Define precisely ways for dissemination of the output

The COST Foresight team

4

Slide 1

Game Changers and Forest Industry

September 7 2010
John Casti, Leena Ilmola, Olli Lehtonen
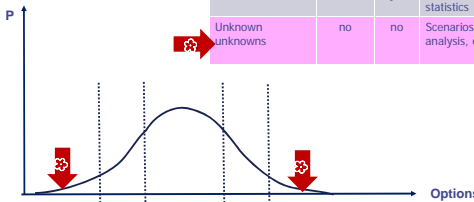
Extreme Events in Human System –
Xevents Project

www.iiasa.ac.at

Slide 2

Xevents Focus

Class	Model	Data	Methods
Known knowns	yes	yes	Dynamical system theory; network analysis
Unknown knowns	yes	no	Simulation, Agent based models etc.
Known unknowns	no	yes	Extreme value statistics
Unknown unknowns	no	no	Scenarios, attractor analysis, equifinality

P

Options

2

Slide 3

GC - Research question

Research Areas	Questions	Substance specific questions	A proposal for a research	Method
Anticipation	How to collect weak signs of change?	What kind of signs of change would indicate a paradigm shift in economy financial system? How to collect the weak signs of change in the investment market? Are any early signs of change of social tensions caused by the paradigm shift of EF?	EconFinance Observatory for a small economy (Finland) - a set of qualitative and quantitative signs to follow, - an application of social mood measurement.	Crawler - statistical analysis of anomalies
Turning Points of Trends	How to identify key uncertainties? How to identify turning point of a trend?	What kind of drivers are driving a paradigm change of economy-finance? We know the trend, but we do not know when it will turn to fast growth?	Game changers analysis from macro (EF Finland) and from micro (business) perspective?	Game Changers - Space of Uncertainty analysis Crawler statistical pattern recognition
Modelling	What kind of futures may be possible?	What may be typical for the future economic financial system? What are the potential sources of growth for Finland in a volatile environment? Public support is needed for regional development, but will this only delay the creative destruction required? What kind on imbalances climate change is causing into our economy and financial system?	Phase I World after the EF paradigm change. Success or destruction. Five alternative scenario methods and their outcomes. Phase II Simulation of sources of disruption in these scenarios. Regional policy perspective as a special case.	Structural Scenarios - network topology - structure specific dynamics Agent Based Simulation - Global Treade network - up to household level Innovation network /agent/attribution theory, social mood) - what happens just before the ramp-up – digitalization Ecosystem analysis - sensitivity to external shocks - simulation, Schumpeter - roles of public and private sector Evolutionary analysis - tipping points/structural sensitivity to external shocks - simulation, expert delfoi - forest industry

Slide 4

From themes to behavior patterns

8 themes

1. Public and private sector – new division of roles?
2. Resource scarcity – energy wars or tech-salvation?
3. Power – centralized or distributed?
4. Financial system – regulated disaster or endogenous collapse?
5. Asymmetry – rich and poor or western secularism and eastern fundamentalism?
6. Growth – global zero sum play
7. Social stress – identity loss of privileged or emerging unfairness?
8. Avalon - Unlimited knowledge and energy

5 potential structures

1. *Blocs of hierarchies - Giants*
2. *One hierarchy – New World Order*
3. *The broken world – no direction*
4. *Small world of bilateral optimization*
5. *The world of layers*

3 dynamics

1. **World of high volatility**
2. **Stable world with turbulence**
3. **World of multidynamiccs**

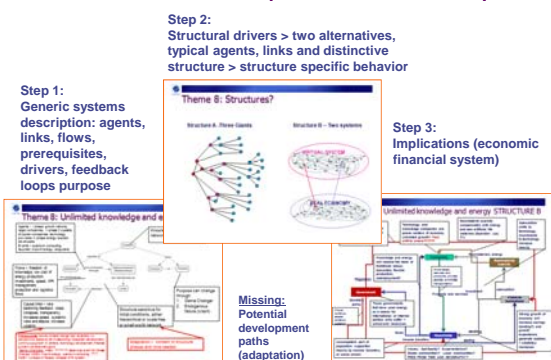*Substance independent means of success*

Slide 5

Thematic structures process - an example

Step 1:
Generic systems description: agents, links, flows, prerequisites, drivers, feedback loops purpose

Step 2:
Structural drivers > two alternatives, typical agents, links and distinctive structure > structure specific behavior

Theme 8: Structures?

Step 3:
Implications (economic financial system)

Missing:
Potential development paths (adaptation)

Slide 6

### Drivers for the three alternative dynamics

World of Volatility

Nations (or industries) are not able to create global rules > optimization (local fitness)
Financial system is centralized, giant banks are closely linked
IPR and patent regulation diversifies > concentration of technology development into large corporations that are closely connected and/or emerging innovations
Knowledge structures are decentralized, but some dominating hubs either because of their superior resources (Intel) or by their position in the network (Google)
Increase of computing power that leads to the fast and equal access to information in resources markets (raw material market, labor market, financial market).

Periods of Stability & Turbulence

Nations are forced to create global rules by global threat (climate change, collapse of biological environment, volcanic activity, nuclear war, antibiotics resistant diseases)
IPR regulation is supporting the concentration of technology development into a few large corporations that are launching competing technologies
Political and corporate power are integrated into one decision making system
Wealth generation is centralized, investment s in technology at the top of the hierarchy
Global financial system has collapsed and taken over by global gvt/blocs/groups

Multidynamics

Open source and free self-organization in the virtual world and regulation in the real economy
Split of industries into areas, where the regulation/ rules of the game differ – such as government owned and free industries
External constraints (such as wars, political systems, ideological blocks, diseases) are separating some geographical areas or technology fields or societies from each another.
Strong supporting structures prevent development of a domain (agriculture).
Value systems block global interaction (such as religious fundamentalism).

Game Changers 2030 Sept 1

ENVIRONMENT
Climate Change caused migration
Ice Age
Plant diseases
Bio-system of seas will collapse
Weather pattern changes
Volcanic activity
Antibiotic resistant diseases

ECONOMY
Growth decentralized/centralized
Efficient investment market
Development of virtual money/exchange
Who is investing?

POLITICAL SYSTEM
Major loss of faith on political decision making
IPR policies
Integration of commercial and political power
Global order
Public role in technology development
Strength of the public sector
Growth decentralized
Public driven technology development
Financial institutions are public
Global Order develops

Space of Uncertainty

Game changer
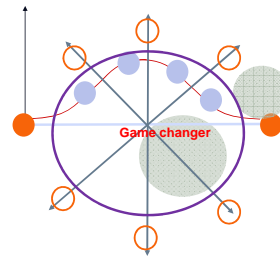
Project portfolio

New development projects. | Watch list.
Existing projects to be invested more in. | Existing projects to be reconsidered.
Core areas | Contingent areas

March 2011

THEORY OF SURPRISE HANDBOOK: PLANNING FOR UNCERTAINTY
NEW INSIGHT FOR POSITIONING OF FOREST INDUSTRY

COST — EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

AIT AUSTRIAN INSTITUTE OF TECHNOLOGY

Strategic Workshop
Foresight on Future Demand for Forest-based
Products and Services: Setting the Scene
7-8 September 2010 – Vienna, Austria

Foresight as a an Instrument
for Societal Coordination

by Susanne Giesecke, Austrian Institute of Technology

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Structure

- What is FS?
- What FS is not
- FS as a response to the crisis of government
- FS as an approach for societal coordination
- FS as a legitimate form of governance
- Building Blocks of FS set-ups
- EFP informs about the Building Blocks
- Building socially robust knowledge
- Pre-conditions for democratic contributions of FS

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What is FS? (some empirical evidence)

- Envisioning possible futures of science, technology and society
- Preparing long-term decisions
- Coping with future challenges
- Traditionally for research and innovation policies
- At local, regional, national, trans-national level
- Example topics: climate change, ageing, poverty, environmental hazards, security, or ecologic sustainability
- Providing impulses to discourses held by the public and private sectors

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What is FS? (normative definition)

- "A systematic, participatory, future intelligence gathering and medium-to long-term vision-building process aimed at present-day decisions and mobilizing joint actions" (HLEG-Report 2002)
- Tool for broad consultation, networking, development of common visions and pursuit of joint goals
- Tool for long-term planning and innovation; strategic instrument and process in bringing awareness of long-term challenges and opportunities into decision making
- Process oriented; marked by intense interactive periods of open reflection, leading to the joint refining of future visions and the common ownership of strategies

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What is FS NOT:

- Predicting the future or forecasting the future
- Foresight is not (necessarily) about anticipation but about alternative futures and tackling possible policy options, alternative views and a plurality of choices
- Foresight outcomes are not necessarily built on consensus
- Foresight is not necessarily about finding the optimum
- Participation is only one out of many elements of FS
- FS is not TA

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FS as a response to the crisis of government,
political decision-making and representation

- Increasing complexity and fragmentation of modern-day societies
- Complex patterns of interdependence
- Widespread diffusion of power and resources
- Decreasing coordinating capacity of the public sector
- Policy failure, structures and institutions marked by eroding legitimacy
- Inadequate in dealing with emerging challenges and opportunities
- Move toward broader societal coordination

Slide 1

Why do we choose FS as approach for societal coordination?
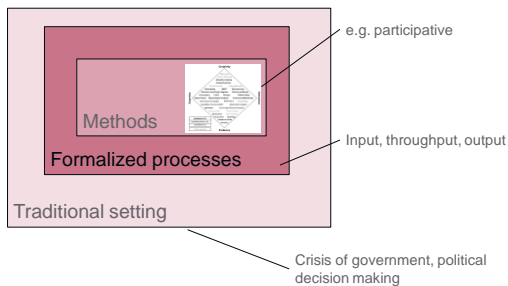**FS as a form of network governance**
- with the following key features:

- Combining top-down approaches and self-regulation
- Non-hierarchical relationships between participants
- Blurring of distinction between different spheres of society
- Informality is a strategy to encounter the cumbersome and time-consuming tendencies of coordination through formal institutions
- Actors from all sectors operate in a similar manner in this context

Slide 2

But is FS also a legitimate form of governance?
- Open issues: **inclusiveness, transparency, accountability of governance networks**
- "one person, one vote" guarantee of representative democracy does not apply the governance networks
- Governance networks are often found to be **opaque to outsiders**, hampering accountability
- Knowledge is being held by carriers and knowledge relations are constrained by **power relations** that exist between these carriers
- Network governance operates in the shadow of hierarchy
- Acceptance of political decisions on future (technological) developments by those who are bound by its outcome

Slide 3

Building Blocks of FS Set-up

- e.g. participative
- Input, throughput, output
- Methods
- Formalized processes
- Traditional setting
- Crisis of government, political decision making

Slide 4

EFP informs about the Building Blocks … and much more…

Supporting the network governance:
- MAPPING
- FORESIGHT BRIEFS
- INFORMATION ON GOOD PRACTICE
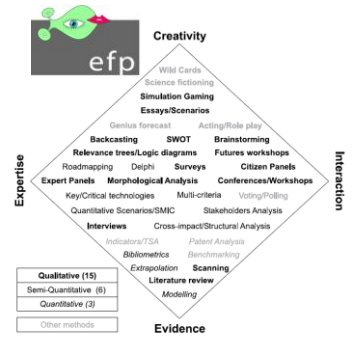- POLICY SUPPORT
- EFP WEBSITE
- COMMUNITY BUILDING AND NETWORKING

Slide 5

Mapping activities

- of foresight exercises in Europe and beyond
- of topics
- of actors (customers, countries, clients)
- of results etc.

Slide 6
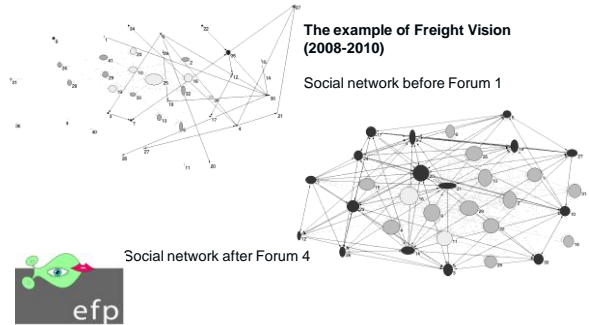
Inventory of methods

- Set of methods, not all are of participatory nature
- Which kinds of methods are used, depends also on the region

Source: Adapted from Popper (2008)

Slide 1

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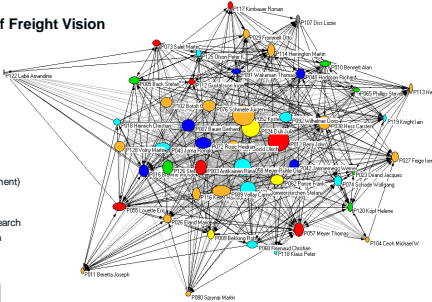**AIT** AUSTRIAN INSTITUTE OF TECHNOLOGY

Practical support: setting up policy workshops

- Foster the exchange of experiences and **good practice** models
- More information on methodologies: FOR-LEARN
  http://forlearn.jrc.ec.europa.eu/
- Establish FS as an arena where tacit knowledge of individuals is converted to **explicit group knowledge**
- Seeing the world from **another perspective**
- Help **broaden the spectrum** of political decision-making and acknowledgement of multiple visions, thereby tackling **new paths** of policy options
- Less an arena for immediate preparation of political decision making processes but rather the **stimulation of a public and transparent discourse** for future policy options
- The knowledge needed for long-term policy making in complex societies is **widely distributed** among a **broad spectrum of actors**
- Enhance **mutual understanding and trust** between actors, by creating common visions for future policy making

Slide 2

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The example of Freight Vision (2008-2010)

Social network before Forum 1

Social network after Forum 4

Slide 3

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The example of Freight Vision (2008-2010)

All types of organizations are interacting

- ○ Association
- ○ Company (government)
- ○ Company (private)
- ○ Government
- ○ Non-university research
- ○ University research

Slide 4

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Foresight Briefs

- Aiming to provide in a storyline an overview of the methodology, the results and the impacts of important foresight initiatives as well as the most important forward looking studies.

European Foresight Platform
supporting forward looking decision making
www.foresightplatform.eu

- 'Overview Briefs' will summarize foresight activities on grand challenges.

- 'Follow-up Briefs' will assess the impact of past foresight activities

Roadmap Environmental Technologies 2020
Integrated Water Management
Foresight Brief No. 161

Slide 5

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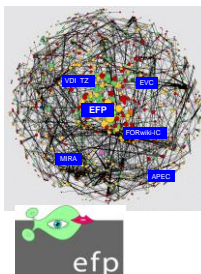**AIT** AUSTRIAN INSTITUTE OF TECHNOLOGY

EFP-website

- Will be a central tool to connect network partners to each other and to create the EFP community.

- We invite foresight practitioners to become a correspondent and to present your profile on the EFP website so others can profit from your expertise and your publications.

Slide 6

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EFP Community Building

- Eurasian Virtual Centre of Technology Foresight (EVC) in cooperation with UNIDO (http://www.unido.org/index.php?id=5681)
- FORwiki-IC in Romania (www.q-edu2025.ro) VDI-Technology Centre in Germany (http://www.vditz.de)
- MIRA Inconet in the Mediterranean (www.miraproject.eu)
- APEC Centre for Technology Foresight in Asia (http://www.nstda.or.th/apectf)
- Australian Centre for Innovation (http://www.aciic.org.au/)
- iKnow (http://community.iknowfutures.eu/)
- Chinese Agency of Science, Technology and Economic Development http://www.casted.org.cn/
- ForWIKI http://forwiki.eu/wiki/FORwiki:The_Foresight_Wiki

Building socially robust knowledge

- FS serves as an arenas fostering the exchange of knowledge from different perspectives usually not heard in representative democracies
- FS helps to build socially robust knowledge to come to better informed political decision-making
- FS is an enrichment of political culture
- FS enhancing organizational learning

Pre-conditions for democratic contributions of FS

- In order to be of political relevance, the process of the FS has to be **formalized, transparent and open**…
- …and conducted by **skilled and independent organizations**…
- ... and commissioned by visible and **committed program owners**.
- The societal and political relevance of FS is dependent on the **acknowledgement** of such formats by decision makers and the noticeable **resonance** they evoke in the (political) decision making system
- **Experiment**
- **Search** for an institutional response to the crisis of legitimate political decision making, government, representation

For questions & comments:

Susanne.Giesecke@ait.ac.at

SCAR3 FORESIGHT

Sustainable Food Consumption and Production in a Resource-Constrained World

Presentation to COST Workshop
Vienna
7th September 2010

Purpose of Study

- SCAR Foresight is ongoing process since 2006 to develop innovative solutions to challenges facing agriculture and food security
- Provide long-term assessment and analysis of expected environmental and resource issues and their meaning for future agricultural research
- Prepare the ground for a smooth transition towards a world with resource constraints and environmental limits
- Consider the role the Knowledge-Based Bioeconomy (KBBE) can play in addressing these challenges
- Assemble basic building blocks for a long-term vision of more resilient and sustainable agriculture systems able to feed nine billion people by 2050

Methods

- Expert Group selected to conduct scanning and monitoring exercise
- Input from SCAR Foresight Group, Workshop with representatives from Technology Platforms, KBBE-ERA-Nets, other FP7 projects
- Focus is on environmental and resource issues (e.g. land, water, energy, biodiversity) that may impede the further use of current technologies
- Focus is on new insights to identify potential risks, opportunities and likely future developments and challenges for agricultural research in the EU
- Preparation of report suggesting new research priorities and current research areas to be stopped
- Outline elements for building long-term vision for resilient, sustainable and equitable agricultural systems

What's New?

- Focus is on analysis of Scarcities and necessary Transitions to address them
- A new quality of Change: feedback amplifies change, uncertainty and risks
  - New and more complex challenges lie ahead
  - Above all, greater uncertainty
- A new speed of Change
  - Climate change
  - Loss of Biodiversity
- Crises in Global Governance
  - Global Co-operation is declining
    - Failure of COP15
    - Land Grabbing
    - Growth of new Economic Nationalism
- New responses required

European Environment Agency Strategic futures Activities

COST Strategic workshop: Foresight on Future Demand for
Forest-based Products and Services: Setting the scene
7-8 September 2010/Vienna Austria
Anita Pirc Velkavrh

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1. Knowladge base for forward-looking information and assessment/ FIA /
   ◊ Information system with forward-looking components
2. Coopeartion with countires and other institutions
   ◊ Scenario-buidling workshops
3. Forward-looking assessments
   ◊ European scenarios
   ◊ Environmental integrated assessments – reports

State of environment and outlook report
2010: Part A, Global megatrends

Knowladge base for forward looking information and assessment

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Cooperation with countries and other institutions

1. Scenario-building workshops in countries

   • Slovenia, Turkey, Austria
   • Network of heads of EU EPAs

   • Downscaling existing global scenarios to country level
   • Windtunelling existing strategies through scenarios
   • Building new scenarios

2. Cooepration with other institutions:
   • UNEP/GEO-4 (update of global, developing regional component)
   • ASEF (3 times, pre-conference mind opener)
   • ENVSEC (Eastern Europe, Central Asia forthcoming)
   • OSCE (6 scenario-buidling workshops forthcoming: EE, CA, WB, Med, Arctic, global)

Aims: for awerness raising, capacity building, enhancing stakeholders participation, regional recomendations, mind opener

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Forward-looking assessments

1. EU Land use scenarios – PRELUDE (2005)
2. Pan European Environment: Glimpses into an uncertain future (2007)
3. Environmental trends and perspectives in the Western Balkans: future production and consumption patterns (2010)
4. Contributions to EEA major reports: Pan European report 2007 (Belgrade), SOER 2010 :
   • Part A: explorative LT (2050) analyses of global megatrends
   • Part B: thematic assessments (outlook 2020)
   • Part C: country profiles (include Forward-looking component)
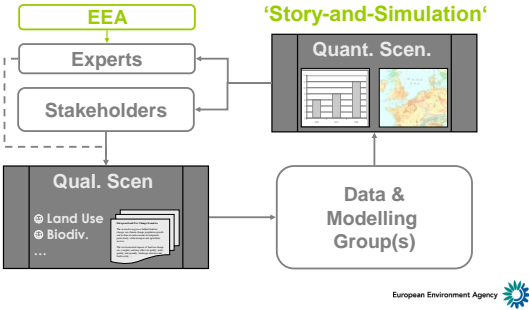

PRELUDE
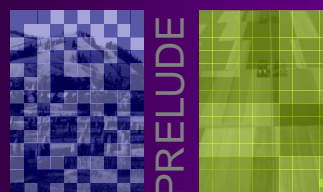
PRospective Environmental analysis of Land Use Development in Europe

Interactive web tool available on the EEA web site: Theme Environmental scenarios
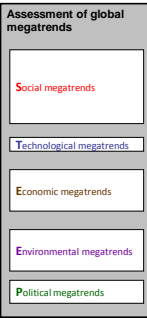
Scenario development

'Story-and-Simulation'

European Environment Agency

Environmental trends and perspectives in the Western Balkans: future production and consumption pattern
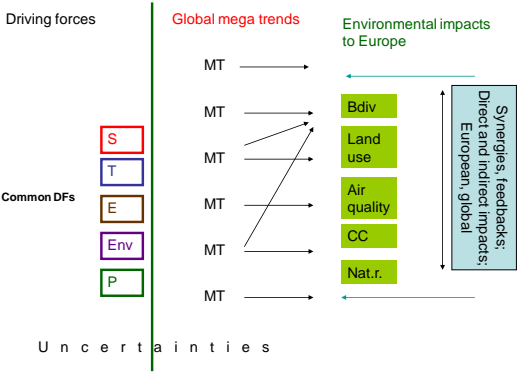### Framwork of analyses

Assessment of assessments approach
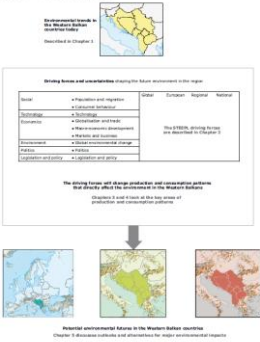
European Environment Agency

The European Environment:
State and Outlook Report 2010 (SOER 2010)
Part A

European Environment Agency

SOER 2010: Assessment of global megatrends

Assessment of global megatrends
Social megatrends
Technological megatrends
Economic megatrends
Environmental megatrends
Political megatrends

An exploratory assessment of global megatrends relevant for the European environment.

- Increasing global divergence in population trends: populations aging, growing and migrating
- Changing patterns of disease burden globally and the risk of new pandemics
- Living in an urban world: spreading cities and consumption choices

- Technology developments: speed, opportunities and risks on the rise

- Continued economic growth
- Global power shift – from a uni-polar to a multi-polar world
- Intensified global competition for resources

- Decreasing stocks of natural resources
- Increasing severity of the consequences of climate change
- Increasing unsustainable environmental pollution load

- Governance and regulation: more global, more diverse

European Environment Agency

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1. **Identification and description of global megatrends of importance to Europe**
   call for evidence
   advisory group
   assessment of assessments approach
   exploratory assessment
   50 years back and 50 years forward

2. **Analyses of impacts of global megatrends to European environment of global megatrends**
   - forthcoming

3. **Analyses of impacts to EU policy making**
   -forthcoming

European Environment Agency

Driving forces — Global mega trends — Environmental impacts to Europe

Common DFs: S, T, E, Env, P

MT → Bdiv, Land use, Air quality, CC, Nat.r.

Synergies, feedbacks; Direct and indirect impacts; European, global

U n c e r t a i n t i e s

European Environment Agency 13

An EEA Forestry project:
The role of land use/cover in ecosytem services in a changing climate

The impact of climate change on mountaines river discharge properties (Au, Fr, UK, Pt, S):

- Do catchments sharing same discharge properties have the same response to climate change if their land use is different?

Result: The presence of forest and precipitation have a positive impact on water discharge properties, more over it mitigates climate effects.
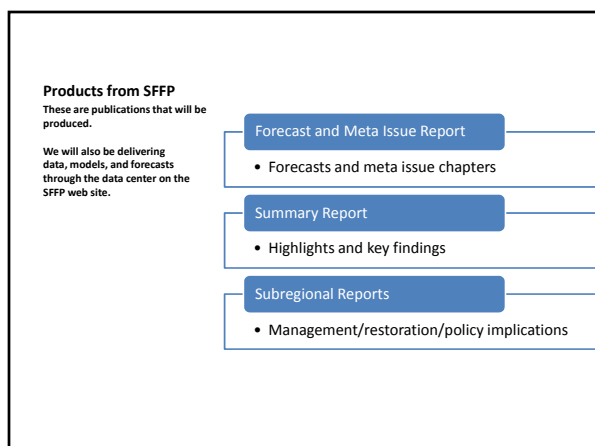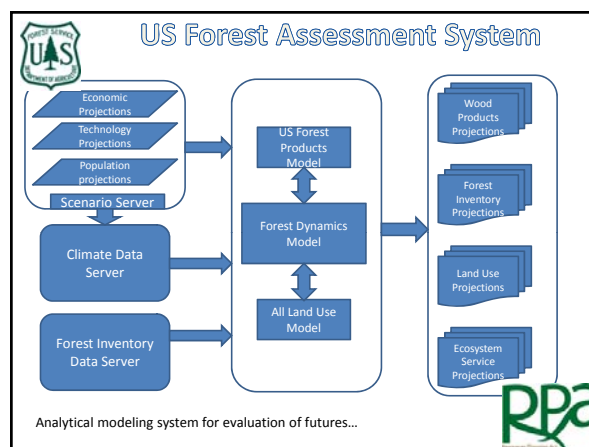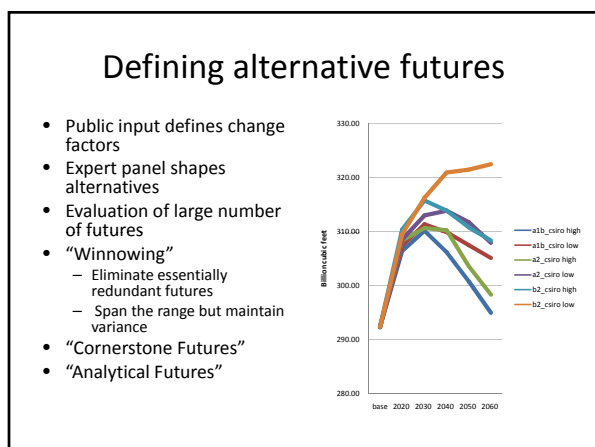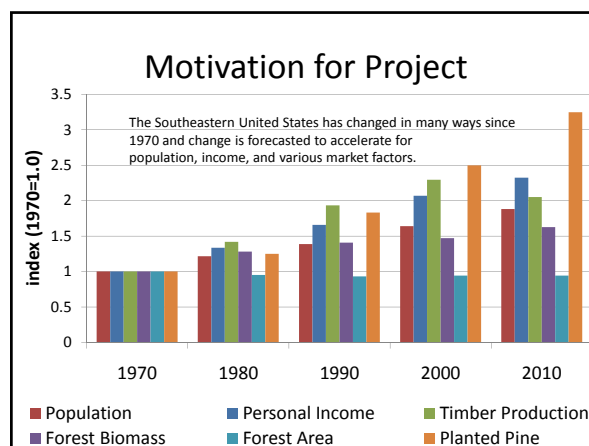
EEA contact point: Josef Herkendell

European Environment Agency

COST Strategic Workshop
"Future Demand for Forest Based Products and Services: Setting the Scene"
Vienna
7 – 8 September 2010

Adam Brown
Renewable Energy Division

© OECD/IEA 2010

IEA Member Countries

- IEA Members
- Countries with MoU for co-operation

© OECD/IEA 2010

IEA Energy Technology Network & Implementing Agreements

RENEWABLE ENERGY: 10 out of over 40 Agreements

- ☐ Bioenergy   (www.bioenergy.com)
- ☐ Geothermal Energy
- ☐ Hydrogen
- ☐ Hydropower
- ☐ Ocean Energy Systems
- ☐ Photovoltaic Power Systems (PVPS)
- ☐ Solar Heating and Cooling
- ☐ Solar Power and Chemical Energy Systems
- ☐ Wind Energy
- ☐ RE Technology Deployment

© OECD/IEA 2010

Energy Technology Perspectives 2010

- CCS 19%
- Renewables 17%
- Nuclear 6%
- Power generation efficiency and fuel switching 5%
- End-use fuel switching 15%
- End-use fuel and electricity efficiency 38%

- We need a global 50% CO_2 cut by 2050 to try and maintain temperature within 2°C
- A wide range of technologies will be necessary to reduce energy-related CO_2 emissions substantially.

© OECD/IEA 2010

World TPES in ETP 2010

- Other
- Biomass and waste
- Hydro
- Nuclear
- Natural gas
- Oil
- Coal

Source: ETP 2010

- Use of biomass increases 3-fold in the BLUE Map scenario.

© OECD/IEA 2010

Biomass use in ETP 2010

- Biomass currently provides around 1100 Mtoe (50 EJ) of primary energy per year
  - 190 Mtoe (8 EJ)/yr of commercial heat and power and 40 Mtoe (1.7 EJ)/yr of liquid transport fuels
  - Traditional biomass accounts for over 800 Mtoe (35 EJ) /yr

- In BLUE Map scenario biomass use increases to around 3400 Mtoe (140 EJ)/yr in 2050.
  - This will require roughly 7 000 Mt dry biomass
    → This would require between 375-750 Mha, if 50% come from crop and forest residues and the rest from purpose grown energy crops
  - About 40% will be used to produce 700 Mtoe (32 EJ/yr) of transport fuels

© OECD/IEA 2010

Biomass use in ETP 2010

Note: The chart includes transformation losses in the production of liquid biofuels from solid biomass.

Source: ETP 2010

- 40% of biomass demand in the BLUE Map scenario is for production of biofuels for transport
- Modern bioenergy production increases significantly in Blue Map, whereas traditional biomass use is reduced considerably by 2050

Biofuels Use in ETP BLUE Map
25% of Transport Fuel Use in 2050

- In the Blue Map Scenario, biofuels provide 25% of total transport fuel by 2050; by 2050, roughly 90% is 2nd-generation biofuel
- After 2020 most growth in the BLUE Map Scenario is for biodiesel to decarbonise aviation, shipping, and trucking

IEA Bioenergy – "Bioenergy – A Sustainable and Reliable Energy Source"

Southern Forest Futures Project

Southern Region
Southern Research Station
Southern Group of State Foresters

- Addressing multiple vectors of change in the southeastern United States
- Public scoping to define issues
  - Public meetings/world café/webinars
- Expert panel to develop scenarios
  - Climate, economic growth, population, forest products
- Scenario based forecast modeling (50 years)
  - Wood products, land use, forest dynamics, ecosystem services
- Science teams to address "meta-issues"
  - Water, fire, bioenergy, invasive plants…

For more information: http://www.srs.fs.usda.gov/futures/

Motivation for Project

The Southeastern United States has changed in many ways since 1970 and change is forecasted to accelerate for population, income, and various market factors.

Legend: Population, Personal Income, Timber Production, Forest Biomass, Forest Area, Planted Pine

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Defining alternative futures

- Public input defines change factors
- Expert panel shapes alternatives
- Evaluation of large number of futures
- "Winnowing"
  - Eliminate essentially redundant futures
  - Span the range but maintain variance
- "Cornerstone Futures"
- "Analytical Futures"

US Forest Assessment System

Analytical modeling system for evaluation of futures…

Products from SFFP
These are publications that will be produced.

We will also be delivering data, models, and forecasts through the data center on the SFFP web site.

Forecast and Meta Issue Report
- Forecasts and meta issue chapters

Summary Report
- Highlights and key findings

Subregional Reports
- Management/restoration/policy implications

The 2011 North American Forest Sector Outlook Study

- Lead Analyst: Jeff Prestemon
- NAFSOS Countries
  - Canada
  - USA
- Projections of wood and forest products markets based off the 2010 RPA Forest Assessment
  - RPA Scenarios are downscaled IPCC Scenarios (A1, A2, B2)
  - Three Storylines X Three GCMs
- Common IPCC Scenarios with the 2011 EFSOS
  - A1, B2

Focal Points of the 2010 RPA Assessment

- Climate change
- Changing forest ownership
- Climate/energy policies
  - Carbon / biofuels
- New product technologies
  - Especially biofuels
- Urbanization/Growth of Wildland-Urban Interface
- Disturbances

- Uses the US Forest Assessment System

RPA Scenarios

Scenario:	A1B	A2	B2
U.S. GDP Growth (2010-2060)	High (2.8X)	Medium (2.4X)	Medium (1.8X)
U.S. Population Growth (2010-2060)	Medium (1.44X)	High (1.6X)	Medium (1.3X)
U.S Housing Growth (2010-2060)	Modest (1.3X)	High (1.5X)	No net growth
U.S. Wood Energy Expansion (2010-2060)	~6X	~5X	~2X
General Description	Globalization, Economic Convergence	Heterogenic Regionalism, Less Trade	Localized Solutions, Slow Change
General Development Themes	Introduction of New & More Efficient Technologies; Capacity Building	Self-reliance, Preservation of Local Identities	Sustainable Development, Diversified Technology

NAFSOS Elements

- Accounting for historical conditions
  - Forests
  - Forest products
- Description of projections to 2030 (or later)
- Separate assessments of the US and Canada, modeled jointly in the GFPM
- Report completed in 2011

Slide 1

European Forest Sector Outlook Study (*EFSOS*)

http://timber.unece.org/index.php?id=55

Ragnar Jonsson

The Future Forests Program,

Swedish University of Agricultural Sciences (SLU),

Faculty of forestry

Foresight on Future Demand for
Forest-based Products and Services
Vienna 7-8 September 2010

Slide 2

Objective of EFSOS:	*"…generating detailed quantitative scenarios, differentiated by policy choices or external circumstances, to help decision makers in the European forest sector explore the possible long term consequences of the various options open to them"*
Time horizon:	2030
Finished:	by the end of 2011

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Vienna 7-8 September 2010

Slide 3

Two reference futures, IPCC A1 & B2, provide the basic drivers: GDP growth, demographics, oil prices, climate variables, etc

A1: rapid economic growth & introduction of more efficient technologies, highly developed global trade, low public awareness concerning environmental issues, regional convergence.

A consumer oriented, globalised world with diluted national governance.

B2: less rapid economic development & more diverse technological change than in the A1, local & regional solutions, within Europe, to economic, social, & environmental sustainability

International institutions decline in importance, solutions are found locally

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Slide 4

In addition, four policy driven scenarios, supposedly taking place in one or both of the reference futures, using the basic drivers + scenario specific driver

"Maximizing carbon sequestration in European forests" (*B2 only*)

"Prioritizing wood energy" (*input from EUwood, for both A1 and B2*)

"Priority to Biodiversity" (*B2 only*)

"Technology Scenario - Improved Competitiveness of European forest industry" (*Qualitative*)

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Slide 5

Uses & sources of wood - a central theme in EFSOS

1 + 2 = total wood use

3 + 4 + 5 = total wood supply

Slide 6
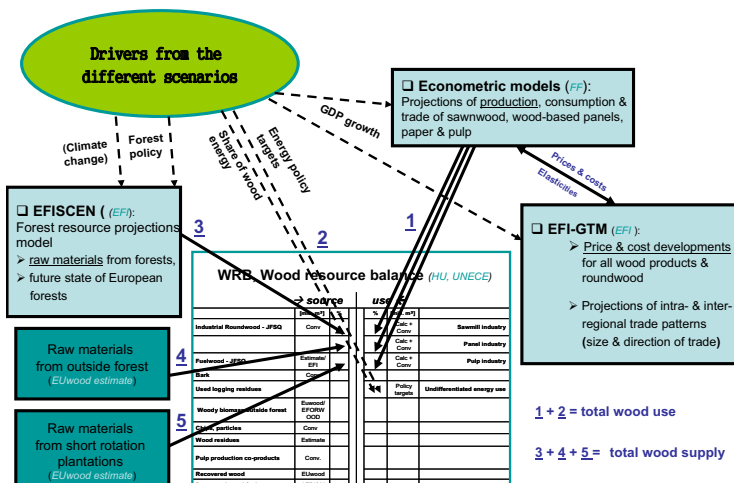
Examples of questions addressed

➢ Is import demand in general more income and/or price sensitive than demand for domestically produced forest products in Europe?

➢ How will global trade in forest products evolve, under different policy assumptions (i.e., in the different scenarios)?

➢ Which regions could satisfy a potential gap between wood raw material supply (sources) and demand (uses), should present EU bio-energy targets be maintained?

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Some modelling problems

➢ Forest resource projection model, EFISCEN, assumes even-aged stands, less applicable in countries with continuous cover forestry

➢ Econometric models, basically trend extrapolations (elasticities unchanged over time): how to deal with trend breaks (e.g., ICT & paper consumption)?

➢ How to deal with competition between wood for material use and energy respectively?

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Forest-based Products and Services
Vienna 7-8 September 2010

Participants' introduction to the Workshop interactive sessions

7 September 2010 at 16:00 – 18:00
"The Future Forest Café"

Purpose of this session is to investigate the role that forests and the forest-based sector play in the future societies and consumer markets, especially the new needs and demand for forest-based products and services, and the drivers behind these developments towards a long-time horizon.

We will be using the *World Café method* (see e.g. http://www.theworldcafe.com/), which is generally used for developing collective insights through conversations on a given topic.

In this workshop session, the participants will be divided into two Cafés with three tables (i.e. topics) in both of them. In both Cafés a *Café Keeper* will give a short introduction to the session and the three rounds in the café on the given topics. Each table will have a fixed *Host*, who will give a brief introduction to the topic, facilitate the brainstorming with pre-defined questions, and ensure documentation of the discussions. Switching between the tables will offer the participants a chance to engage in various topics and to reflect the viewpoints from different fields and from different backgrounds of the workshop participants. In the end of the session, the table Hosts will give a short summary of the discussions.

The both cafés will explore the **role of forests in fulfilling the needs and demands of future societies and consumer markets**. The following questions will be addressed:

-   What are the **major trends outside the forest-based sector**, which affect the demand for future forests and forest-based products and services? What are the major **drivers** behind these trends?
-   What are **critical factors** for the trends (e.g. enabling factors / structures / relationships or obstacles for the developments)?
-   What factors may **change** the development (e.g. emerging issues, abrupt changes or unexpected events)?
-   How these developments affect the role which *forests* play in the future societies and consumer markets?

8 September 2010 at 8:30 – 12:30
"Time machining" the results from "The Future Forest Café"

In the plenary session of the Day 2 morning, the Café Keepers will summarize the main findings (trends, drivers, change factors) from both Cafés, and the workshop participants have possibility to give feedback and comments.

After the feedback discussion, the findings will be further elaborated in groups. This interactive session aims at bringing the ideas and viewpoints collected in the brainstorming of "The Future Forest Café" session towards concrete recommendations, e.g. those on research and development priorities.

The results of the two interactive sessions will be utilised in the next steps of the COST Strategic Workshop – that is the Internet Survey and the scenario workshop taking place in Barcelona (tentatively in February 2011).

COST Strategic Workshop
Foresight on Future Demand for Forest-based Products and Services

The Future Forest Café 2030

7 September 2010, Vienna

Task of the café:
explore the role of forests in fulfilling the demands / needs of future societies and consumer markets in 2030

The future forest café

- Brainstorming in small groups and open atmosphere to collect new ideas

- Complementing by switching tables to explore new perspectives

---

Three tables – three topics
defined from the perspective of needs, demands and values

- Food
  - basic needs and pressures for land, NWFP, ecosystem services
  - the role of forest and wood in the chain of food
  - ...
- Fibre & fuel
  - Demand for wood as raw material and energy source
  - Value chains of various end products
  - ...
- Flowers
  - Needs and values related to recreation, aesthetics, cultural, spiritual values...

Three rounds, i.e. each team visits each table, timing by the Café keeper

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Three tables – three topics
two questions repeated in each table and for each topic

- What are major the trends and drivers, change factors and emerging issues towards 2030?

- How these developments affect directly or indirectly the role which forests play in 2030?

Reporting in a mind-map:

Critical factors for the development

Drivers

Trends

f

Changes / future trends?

emerging issues, abrupt changes, unexpected events
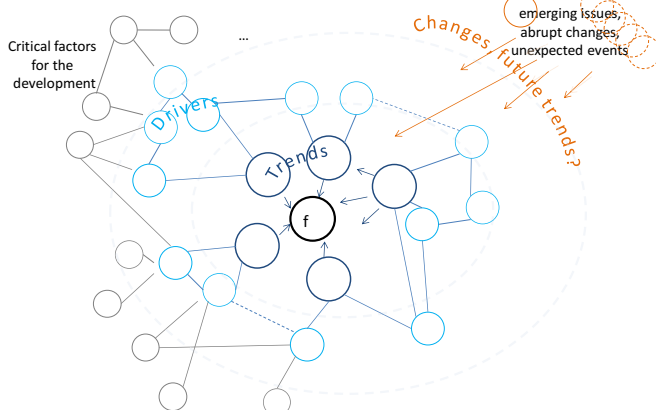
First round: step 1

Introduction to the table topic

Mind map on trends, drivers, change factors and emerging issues

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Question 1:
What are major the trends and drivers, change factors and emerging issues towards 2030:

Produce a mind-map:

- What are the **major trends** outside the forest-based sector both within and outside Europe which affect the demand for future forests and forest-based products and services? What are the **major drivers** behind these trends?
- What are **critical factors** for the trends (e.g. enabling factors / structures / relationships or obstacles for the developments)?
- What **factors may change** the development (e.g. emerging issues, abrupt changes, unexpected events)?

First round: step 2

List of topics
(a bullet point list)

- role of forests and the forest sector?
- what kind of products and services?

How these developments affect directly or indirectly the role which forests play in 2030?

Report as a list of items on:

- What is the **role of forests** as providing products and services for the table topic?
- What **products and services** forests/forest-based sector will provide for societies and markets in 2030 with respect to the table topic?

Switch to next table and to a new topic

Second round: step 1

Introduction to the table topic

Brainstorm
(a list of items):

- Role of forests
- What kind of products and services

Second round: step 2

Mind map:
- Are there some developments or factors missing?
- What kind of linkages / dependencies there are between the factors?

List of items – something to add on:
- Role of forests
- What kind of products and services

Switch to next table and to a new topic

Third round: step 1

Introduction to the table topic

Brainstorm (a list of items):
- Role of forests
- What kind of products and services

Third round: step 2

Mind map:
- Are there some developments or factors missing?
- What kind of linkages / dependencies there are between the factors?

List of items – something to add on:
- Role of forests
- What kind of products and services

Sum-up by table hosts

1. mind-map on major the trends and drivers, change factors and emerging issues towards 2030

2. lists of items (example-wise): How these developments affect the role which forests play in 2030? What products and services forests/forest-based sector will provide for societies and markets in 2030 with respect to the topic?

Table host's "source book"
This page is to help the table hosts to orientate to his/her task in the World Cafe

There will be an introduction in the beginning of the *"The Future Forest Café"* session
- The aim of the session is **to brainstorm, and throw ideas and new perspectives:** there are no right or wrong answers in this session, no too dull or too crazy ideas
- **Open dialogue and supporting atmosphere** is the key: all ideas and viewpoints are allowed and all ideas are recorded
- There are time limitations, thus keep **a brisk pace** – rather than adding many details in the description / responses to the questions, concentrate on variety of alternatives and possible development paths.

Role of the table host is to support open, participatory and allowing atmosphere – in this session the group is not to worry about whether the ideas expressed are the most relevant, or even how likely or probable they are within the given time horizon.

If it seems that the group gets *stuck with one very strong viewpoint only*, the host's task is to try to **direct the group more on the "open seas" of thoughts** – e.g. with "what if" questions; "there can be abrupt changes, unexpected events that change the situation totally, what these might be? where would this lead to?" The project Steering group (April 2010) listed up e.g. the following themes:
- Globalisation / nationalisation
- Future consumers: values and needs of future generations as consumers
- Socio-economic vs. ecologic / environmental parameters: change in values? What we measure as "progress" "growth" "sustainability"?
- "War on wood fibre" ← pulp, paper, wood products, bioenergy, biomaterials, bio-chemicals; recycling…
- Carbon: "carbon services and products"
- Automatisation / technology development
- Education / new generations
- Mass customization
- Oil industry +impact of the Gulf of Mexico hazard on the industry and the energy sector?
- Unexpected events, e.g. Iceland volcano and its impact on movement of people and goods? + ???
- Forestry is "adapting" – foresight in other sectors/disciplines? Compare scenarios with trends!
- OECD Outlook study on bio-economy
- Population scenarios
- Future watch activities

If it seems that somebody in the group is *silent and not participating* in the discussion, the host's task is to try **to involve** these members by addressing them with e.g. questions "what do you think?" "what would you add in this picture?"

The idea is to use a mind-map for reporting. There will be a large paper sheet on the table, the successive rounds – i.e. the three groups visiting all tables – will allow groups to complement the mind-map drawn by another group.

Limited time and a quick pace for the rounds limit possibility to go very much in details in each of the topics and the questions → the aim is to raise creativeness, and also more unconventional thinking. The participants of the workshop have different experiences and backgrounds; they have viewpoints on existing trends and probable development paths – this session should awake the **"what if" questions**, and collect viewpoints and ideas which the trend exploration and studying of the past developments does not reveal.

COST Strategic Workshop
Foresight on Future Demand for Forest-based Products and Services

Preliminary results from the Futures Cafés 2030 and 2050

8 September 2010, Vienna

www.efi.int

1

What trends, drivers and factors are visible in both Futures Café sessions (2030 and 2050)

- analysis of MindMaps

www.efi.int

2

"food"

- Conservation of forests
- Forest providing food (incl. berries etc.) and components of food, e.g. biorefinery
- Forests and land use needs
  - Conflicting needs/uses e.g. forest land argi land
- Protective function of forests ("green infrastructure", water)
- Population trend, migration… - global diet?
- Regionalised agendas
- Certification – land use – securing food supply
- *Conflicts between different uses, demands for biomass*
- Greening trend vs. exploitation of resources

www.efi.int

3

"fibre and fuel"

- chemicals //biorefinery
- Energy demand continuing to grow – increasing (energy) efficiency
- Changing consumption/ consumer values – emerging economies, BRIC
- Composites, cascading use – different uses of wood (interior design..)
- Small-scale high-tech vs. bulk / low quality wood…
  - new techn.s gmo, ict, nano, bio…
  - Narrow product lines, specialisation
- Plantation forests – wood quality; different uses
- *power structure – land scarcity / conflicting demands*

www.efi.int

4

"flowers"

- Value / price of nature – PES
- Health:
  - medicine, "biorefinery"
  - spiritual, therapeutic value
- Recreation & related various activities
- Virtual forest // forest natural environment / virtual environment
- Urbanisation, green spaces, holistic architecture,
- Niche activities, different uses / users
- carbon trade
- *Power – control over resources*
- *different countries / regions, different uses*

www.efi.int

5

Are there any major trends or factors missing?

- Nature conservation
- Zoning of forest functions (production / protection)
- Costs of production → income (PES)
- Lack of markets for forest products + services
- Cultivation of NWFP
- Wildlife management → contributions to economy
- Innovation
- More visible role of forests in global, regional, EU arena and political landscape and institutions

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6

Demand for forest-based products and services

- based on the lists of products and services

External developments

2030
- Locally and regionally self-sufficient systems
- Urbanization => changes in the patterns of energy use, loosing touch with forest
- Multiple values and functions of forests
- Efficiency

2050
- Land-use pressure in tropical countries: land used for basic needs (e.g. food)
- Pressure for ecosystem services, biodiversity preservation
- The role of forests for health and well-being
- Increased consumption in emerging countries
- Increased demand for packaging and hygienic products, decreasing demand for newsprint
- Demand for biomass (energy), raw material for high-tech use
- Increased income and capability to pay: taxation vs. user pays?

Internal development

2030
- Plantations/short-rotation forestry/agroforestry
- Urban forests/Green cities & Green architecture
- Decreasing availability of large-size timber
- Decreasing role of wood production globally
- Regional diversification of forestry – increase in Nordic/Boreal/Russia areas, decrease in CEE
- Regionalisation/localisation and specialisation in wood processing: high-quality products in EU, mass production elsewhere
- Systems in systems (more integrated industries)
- Recycling & better use of waste (refinery)
- Fibers for durability, wood for luxury
- Forest as a commodity

2050
- Segregation of forests: monocultural plantations, biodiversity hotspots
- Efficiency: GMO
- Optimal use of resources based on their value
- Utilization of fibers
- Increasing price of real estates

Fiber and fuel

2030
- Products with services (for construction) and more technologies (nano, molecule, GMO, ICT,…)
- Intelligent packaging, smart labeling
- More compact packages (falling to each other), cascaded products
- Composites (wood, concrete)
- Substitute to oil (refineries), second generation bio-fuels
- Decreasing use of fuel wood for heating (other substitutes, for urban areas gas)
- Textiles, other fibers
- Medicals and chemicals
- Small-scale high quality products
- Less massive timbers, more use of small-sized saw-logs with better quality

2050
- Products integrated with ICT (smart paper)
- Packaging, not newspaper
- Composites, wood cascading
- Increasing/Decreasing (!?) use for energy: regional differences
- Pharmaseuticals and chemicals
- Use of wood in indoor design

Food

2030
- Green infrastructure: Increasing protection function of forests (climate change mitigation (& impacts mitigation, clean water, soil from erosion/landslides & flooding, deforestation, people from wind, from noise) & protecting forests, storage of carbon
- Biodiversity
- Agro-sylvopastroal function & products
- Non-wood forest products: game (bushmeat for protein), mushrooms, berries
- Food additives, medicals, cosmetics

2050
- Agroforestry for erosion management
- Fertilisers (wood ash)
- Commercialised protection functions (carbon sequestration, water management, microclimate)
- Public health in pre-urban areas
- Anti-oxidants, vitamins
- Wood chemicals
- Food additives/ingredients
- Anti-microbial substances (e.g. salix)
- Synthetic food, GMO
- Industrialized bush products
- Hunting => game for meat
- High-quality organic products

Flowers

2030
- More visible and luxurious wood: indoor decoration, construction
- Forest as a commodity, service provider for mental and physical health (healing center); recreation, sports; escape from virtual reality

2050
- Forest as an investment (forest, biodiversity, genetic resource), in stock market
- Balancing different functions/commercial uses: ecosystem services, non-wood and soft services, agroforestry
- Ecotourism: bird watching, photographing, traditions, spiritual
- Cost of access to (urban) forests
- Virtual forests (ICT)

Topics for further elaboration in interactive session no.2 ("time machining")

- Green infrastructure
- NWFP

- Biorefinery
- "Smart" products (high-value-added)

- Health and human wellbeing
- Wood + forests as luxurious goods

Key words collected from the mindmaps:

Food 2030

Forest reorganised as green infrastructure (…!)
← Air
← Scarcity
      < Pop.growth
      < Climate change
← Noise
← climate change politics

Increased forest conservation
- Urbanisation
- Loss of biodiversity
← climate change
→ forest protection functions

Segregation of forest functions
← population growth
← consumerism
← conflicts of interest (ex. env/prod)
← scarcity of land - more efficient use
Vs. future integration, multiple use

Biodiversity loss – slow down of
Different land use patterns (< urbanisation ; < scarcity of land)
> >
Non-wood products markets
→ market for forest externalities

Incr. focus on local sustainable development "meaningful living"
< < <
- Peace of mind
- Emotional needs
- Getting reconnected to ones roots
← energy availability
← economics of food production
← security
← deglobalisation - increased localisation
← protectionism

Food 2050

Competition for landuse
← increasing demand for biomass
Scarcity of land
Income / capita

← desertification leads to loss of productive land < > water quality quantity

← Lack of synthetic fertilisers

> ashes, charcoal
> crop protectors
← greening trend

Food additives;
Synthetic food (based on wood biomass)
← technological development
    - vitamins, antioxidants -
Food security – wellbeing – health
→ Smart packaging

← role of forests for water quality and quantity

Food farms
Use / loss of knowledge / culture

Volatility of global governance

Increasing volatility of economy
<- -> energy prices   - - transport cost - - - > local production
← lack of oil

** new energy source – less demand for biomass for energy
← innovation

Global trade pattern, WTO
< - - > demand for food increased

Less forest / inc. conversion to agriculture
Increased demand for protein < economic development → more meat

*global vegan diet

Demographic changes
Overpopulation → migration ← climate change

Game
Alternative cattle production / agroforestry

List of products and services produced in the Future Forest Café groups visiting
The future forest cafe 2030

table topic "Food"

Group 1

1. Role of forests:
- more protected area
- higher level biodiversity
- clean water
- animals / game /hunting
- protection against soil erosion (wind) (shelter belts)
- berries / mushrooms
2. products and services

Group 2
- protective function → water / soil protection
- berries / mushrooms / game NWFP
- carbon sequestration
  ← →climate change impact mitigation (regulating)
- biodiversity conservation V hold deforestation
- agro – sylvo pastoral function
- protection against extreme events (floods , landslides, desertification)
- *?*
- increased demand for forest + agriculture products
- provision of food additives/ medicines / cosmetics

Group 3
- Protective functions of forests (increased)
- Provision of green infrastructure
- Provision of biodiversity
  o Fauna, bush meat, protein
  o Flora
- Air quality – (fire management)
- Noise protection
- Carbon sequestration

**List of products and services produced in the Future Forest Café groups visiting
The future forest cafe 2050**

table topic "Food"

Group no.1
- *Char* coal for food production
- Fuel wood
- Public health in peri-urban areas
- Synthetic food
- GMO?
- More plantation forests
- Decreasing importance of *food securing* livelihood in developing countries (?)

Group 2
- Only slight increases of NWG
- Increasing land use pressure, in tropics in particular
- Delivery portfolio of wood chemicals
  →Optimal use ?
- Only some basic products left → conversion to farming land (also due to CC)
- Responding to demographic change
- Industrialised forest products
- Fighting desertification
- A few high-quality products (e.g. organic)
- Hunting will have a role
- Water production
- Anti-oxidants, vitamins

Group 3
- Agroforestry → extensive management in rural areas
- More f.land for food production
- Source of health
-
- Products from game (meat) (increase)
- Food products from plants (..., berries)
- Securing water quantity and quality
- Micro-climate for food production
- Food additives from forests   / ingredients
  o Bio-actives
- Anti-microbiol. Substances to be applied in agriculture (e.g. salix)

Fibre & Fuel 2030

Fibre & Fuel 2050

Key words collected from the mindmaps:

Fibre & fuel 2030

Move (EU) into cities
~~Illegal logging~~
← increase globally consumer clas in emerging economies
< > regional differences

New uses of fibre and fuel (biorefinery)
← small-scale high tech products
      ← volatility
      ← mass production and shift to tropic
      ← nanofibres of cellulose NFC
Clothing industry

Increase of efficiencies (passive houses etc.)
← self-sufficient systems
"systems of systems" approach
"fragmented" + cascade production

Increasing demand for wood products (all) ← policy (energy supply)
< P&P production levels in EU
< - - > chemicals → emerging technologies for energy production

More wood composites ← innovation and R&D
< < lower wood quality, smaller-sized logs

Tissues are in / decrease in newspaper

Changing consumer habits ← changing consumer values
      > print on demand
      > 3d printing
< < ageing society (Western)
more energy demand
< < availability of oil

Drivers   < < competition for resources (also land)
< > increasing / decreasing ? fragmentation in forest ownership (central EU?)
Public money allocation

Trend to narrow product lines < > resilience requires networks → increased volatility

Drivers – drivers   Substitutes for biorefinery
                    Deforestation
                    Illegal logging
                    Disasters
        CC impacts, invasive species <- - climate change politics
        Lower material quality < - - > different material quality
        Russia's choices
        Transformation in transportation

Land and raw material scarcity → protectionism increasing for energy production
(changes in "world power" structure)

Strong impact on business - -
environment benefits as industry moves from EU → destruct somewhere else
Increase of forest plantation

Short rotation coppice
Need for ecosystem serv.
Small ownership management
Combination of different production styles

Fibre & fuel 2050
+ chemicals

trends

Cont. increase fuelwood tropical (urban) areas
Inc. plantations + fast-growing / maro species
Pressure to use biomass for energy and chemicals
Specialisation paper / fibre products & less newsprint
Changing consumer demands for fibre, fuel and chemicals
        - - increasing competition

Wood + wood composites as construction materials
Interior use, industrial + clothing textiles

Cascading usage

Drivers
Shortage of oil resources
Population growth + demographics
Competition with food + recreation
Climate change
Changing subsidy regulations
Economic development; emerging economies (esp. China)
Material efficiency
Energy efficiency ← quantum computing → ICT enables new products
Less demand for biofuels ← new energy source
New energy + biorefinery technologies → o wastes
0-energy singularity
New technologies: IT, nano (nanopulping), biotechn, recycling (smarter)

List of products and services produced in the Future Forest Café groups visiting
The future forest cafe 2030

table topic "Fibre and fuel"

Group 1
- Intelligent packaging, smart labelling, textiles and fibre, etc (food packaging)
- Most of the products will include a service features (e.g. building → building the reuse instead of prov.)
- More active role as a service provider
- Durability of products
- Better use of waste (biorefineries using recycled paper)
- Visibility of wood products will *be* improving
- Genetically modified wood → improved quality
- New uses of fibre
- Use of technologies in wood products
- Packages talking to each other
- New products

Group 2
- Central Europe (availability of massive timber)
  →Production of timber is decreasing
- Wood composites & concrete composites
- Small-sized timber
- New products (biorefinery)
  →Many new products that were done from/of oil
- More "cascaded" products
- Medicals & chemicals
- Diminishing role of oil
- Use of food as fuel (burning) decreasing
- Urbanisation → use gas
- Increasing role in fibre and timber production
  →Shortage will lead to intensified use (CEE) ← → climate change
- Diversification of forestry (climate change) → increase in Nor*th* → in CEE decreasing
- Globally production of forestry will decrease
- Self-sufficient systems (locally, regionally)
- Share of boreal forest will increase
- Role of Russia ? amount of production (increase) / depends on policies
- Industries will work in a more integrated way (systems in systems)

Group 3
- Certain quality products will be done in EU, for mass products are produced elsewhere
- Localized production of wood; instead of producing P&P in Finland, Finland will produce biodiversity
- Short rotation forest 8more productive)
- More important is the added value forest can provide (integrated systems)
- Specialization / localization of production
- Small-scale high-tech production of FPs
- New chemicals → oil industry (molecule bio-chemistry)
  →Wide panel of products

→P&P will create new products (are already having expertise)
- Recycling of paper will increase
- Use of fibres / wood in new products
- Clothes
- Nanofibre
- Second generation biofuels

List of products and services produced in the Future Forest Café groups visiting The future forest cafe 2050

table topic "Fibre and fuel"

Group 1
- Increased demand on biomass, for bio-fuels & material use (timber consumption)
- Biofuels will max around 2050
- Increased consumption from emerging countries → pot.export of new products
- Packaging / hygienic prod. will increase, news print will decline
- Competence / expertise at EU level ?
- No expansion at pulp/paper

- Ict enabling new prod. → e.g. smart paper
- GMO products

Group 2
- More types of products, e.g. chemicals
- Existing markets will grow, e.g. energy
- Clean water, carbon storage, other ecosystem services
- Value (€) will determine the most utilized resource
- Reservoir for biodiversity (if deforestation continues)
- Food
- Wood cellulose for textile
- Pharmaceutics

Group 3
- Energy vs. material needs
- Increased use of fibres, but use is not known
- Wood cascading
- Biomass for energy ? – efficiency increase ?
- No ethanol prod. → other utilisation, e.g. chemicals
- Newspaper reduced, inc. packaging
- Increased use of paper ? (e-books vs office envi. ?)
- New use of natural fibres → e.g. oil-based prod., composites Inc./
- monoplantations for resources (e.g. fibres, coal)
- Increased protection of biodiversity hotspots
  → multifunctionality
  → high-value timber prod.
- Wood.based industry design (wood composites)
- Clothing / upholstery / textile

Key words collected from the mindmaps:

Flowers 2030

Protection forest - - policy res. non-wood goods
Green funerals
< - mobility
< - urbanisation

Carbon forestry – "plant a tree" day
< - PES (market)
< < ecosystem services → education, awareness
< - - > nature as foundation of sustainability
         - - increase in "price" of nature < - - > commoditizing nature /NGOs
[turn upside down the Maslow hierarchy: self-fulfilment – social – physical]

Green architecture   – <u>ecological</u>
Dangerous [bugs]
< < climate change
< < < economic system collapses

Green space
        -organic
        -primitive
< < pressure to retain public good qualities

Abandoned sites → virtual forest ← scarcity – <u>entertainment</u>
Therapy

Forest as a mitigation factor for CC impacts (extreme events)
    → Urban forestry
        < < urbanisation
        < < artistic architecture

Recreation   – <u>health</u>
Sports
Emotional market place
Brain fitness ← brainwork
< < < health insurance companies

Forests are treated not assets

Loss of forest
Forest congestion

~~Green housing from wood increases~~

[SD building blocks scattered / disassembled – SD building blocks separate from each other – SD building blocks together and on a solid base]

Flowers 2050

Virtual forests / foresters / forest workers
  - " - activities
< > recreation
< > access < > space
          ← → payment – financing – restricted resources
          < > valuing forest ownership

< < IT development
< < IT generation
          Home office

Search for new frontiers

Forest spirituality

< > preserved, protected "fortress" forests

Country / culture differences + economic situation (Maslow)

< income growth
< alternative investment opportunity

Land resource for food
Conflict resolution
< < disparities in economic growth / power & control forests / resources

          - - conflict btw "flowers" + "food / fuel" and within "flowers"

< < trading carbon storage
Forests available for hunting (e.g. moose) (cl earnings)

Public purchase of forest areas for public health
          - - economic growth – "flowers" is 3rd level (after food and shelter)

Urban "forests"

More protected areas – biodiversity ← (pressure) bioenergy prod
          < > Open landscape
          < > Carbon capture (obligatory) ← public cost

genetic resource – patenting
medical resources / medicines / psychological wellbeing
          < < health not only nutrition
          < < ageing society
                    < > also outside Europe – Asia
Urbanisation
          > > rehabilitation in forest camps
Space – access – recreation
Increased value

Access (as a critical factor for the development)
"guerrilla" forestry

List of products and services produced in the Future Forest Café groups visiting The future forest cafe 2030

table topic "Flowers"

Group 1
- Loosing touch with forest
- Forest as emotional market place / commodity
- Forest for health / mental / physical
- Maslow (upside down)
- Urban forest
- Wood offices, ... (hotel construction)
- Recreational product: walking, paint-ball, biking
- Marketable *producible* products

Group 2
- Multifunctional forestry; recreation, energy
- Green cities, public *procurement*
- Changes in pattern management
- Changes in landuse, competition for land use

- Peri-urban forests – agroforestry, short rotation forestry
- Building material – first choice
- Luxury good
- Co2 carbon forestry
- Ecosystem lab – education model

Group 3
1. Role of forest
- As a foundation of sustainability that can be maintained through commoditization / pricing of nature
- As a source of human health (physical and emotional health) – even a "set" for developing virtual reality
2. Products and services
- "health centre" – human health
- Green architecture in the city
- Green space –

**List of products and services produced in the Future Forest Café groups visiting
The future forest cafe 2050**

table topic "Flowers"

Group 1
-   Steering water + preserving soil… taxation based
    Ecosystem services businesses based on this e.g. carbon sequestration
-   More efficient (e.g. GM) products and services
-   Natural areas + increasingly managed areas (dichotomy) … forests more specialised
-   Forestry + health – public health (recreat. Tourism)
-   Biodiversity preservation …. + creation … + restoration
-   Taxation based vs user pays
-   Service of making non-market goods marketable will increase
-   Decision making / conflict resolution
-   Increased urban forestry … more efficient exploitation .. targeting at different users to avoid conflicts

Group 2
-   Systems for decision making / conflict resolution
-   Health → exercising in forests
    o   Ecotourism – bird watching; historical experiences in local area
-   Urban forests → cost of access
-   National tourism marketing
-   Hunting, wildlife photography, protected areas – increased income due to economic growth
-   Carbon absorption, water… effects on forests … env.services
    …increased impact on real estate prices
    …trade / market in offsetting / intl trade in env.services
-   Markets for forest-based products that don-t exist now
-   Evolution not revolution
-   Driver from …value e.g. forest carbon services
    →increases forest area

Group 3
-   Health + wellness
-   Biorefined (increase) products *biomat*
-   Access / space / recreation
-   Guided recreation → jobs
-   Virtual product services – ict channels
-   Forest spirituality
-   Investment options
-   Product-based on genetic resources
-   Forest stock exchange (for forest soft values)
-   Carbon sequestration service (maybe not *voluntary* / paid)

Joint session 8 Sept on the results:

8 September sum-up of the cafes
missing themes / topics

nature conservation
segregation / zoning / different uses; more intensive forestry

forest economics
protection // pressure
additional income – but also pressure
primary costs of production of wood

more visible role of forests in global, regional, EU arena and political landscape

innovation

herbs/ cultivation of nwfp to be added to "flowers"
protein, wildlife management fees, hunters - economy

ownership – pricing of nature
developing of markets; lack of markets (landscape values)

more conservation to be added under "food"

trends: conflicting trends; key uncertainties to address
defining normative statements – what should be the goal (not for a researcher to state)

topics:
green infrastructure & nwfg   health and wellbeing & wood and forests as luxury
biorefinery & smart products (high-value-added)

Missing items (trends)
- Costs of production → income (PES)
- Greater visibility at political levels (institution)
- Cultivation of NWFP
- Zoning of forest functions (i.e. production / protection)
- Wildlife management → contributions to economy
- Lack of markets for forest products + services
- Nature conservation

Interactive session no.2
"Time machine"

8 September 2010, Vienna

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Six groups: topics for further elaboration

- Green infrastructure
- NWFG

- Biorefinery
- "Smart" products (high-value-added)

- Health and human wellbeing
- Wood + forests as luxurious goods

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Reporting template

Title / topic: what development is preferred with respect the future of forests and forest-based sector in Europe

Drivers (define the drivers that affect realisation of this 'vision', use the materials from the Café session and further elaborate statements in full sentences)

What? (the preferred future, vision statement for forest-based product / service)

To whom? ("clients", users, consumers)

By whom?

Obstacles (define the obstacles that hinder realisation of this 'vision', use the materials from the Café session and further elaborate statements in full sentences)

Values (values which enable and support the realisation of the preferred future)

Recommendations research & development priorities, skills/knowhow needed

– Use full sentences in reporting –

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TASK: Biorefinery

Title / topic: Biorefinery – (incl. biofuels) Meeting industrial requirements in balance with other development needs; ADJUSTING TO FUTURE DIFFERENT NEEDS OF CONSUMERS
(**the development which is elaborated with respect the future of forests and forest-based sector in Europe**)

Drivers (define the drivers that affect realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- oil price
- EU policies on energy security (20-20-20)
- EU policy on env.conservation, sustainability criteria for biofuels (Natura 2000, CBD…)
- Market competition (replacing plastics by wood), green procurement
- Consumer expectation
- Increase of population (6.5 → 8.3 billion people)
- Growth? Sustainability / prosperity without growth?
20 % comes from t…?
70% of biomass comes from forest

What? (define here the preferred future; vision statement forest-based product / service)
High added value products made out of wood, but affordable
New innovations needed (techn and end products)
Increase the awareness of consumers

To whom? ("clients", users, consumers)
Chemical industry (enzymes)
biotechnology

By whom?
Quality of wood material (forestry)? Breeders, genetically modified trees, Research (innovation), biotechnological companies

Obstacles (define the obstacles that hinder realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Conflicts and competition for resources (land use; food)
- Price of technology
- Environmental constraints (law)
- Market distortion (subsidies)
- Growth ? decrease ?

Values (values which enable and support the realisation of the preferred future)
Increase of efficiency of the process
Reduction of negative input to environment
Meeting the industrial and consumers demends
? The Europe should become self-sufficient with regard to its resource needs
Mitigation of climate change (GHG)

Recommendations, research and development priorities, skills and knowhow needed etc.
New generation of biofuels (research on technology development)
Research on the use of lignin
Devel.priority: env.impact assessment (risk of damage to env)
Developing and implementing marketing arguments
Research on impact on forest-based sector (competition)
Tailoring of wood products to customers
Maximising the use of "waste" & "wood resources from P&P production"

TASK: "smart" woods (+high-value products)

Title / topic: high-value added products
(**the development which is elaborated with respect the future of forests and forest-based sector in Europe**)

Drivers (define the drivers that affect realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Resource efficiency
- R&D&Technological dev. of substitutes / materials
- Low carbon economy
- Consumer demand / preferences
- Optimising economic value
- Demographic dev. in Europe / Int.
- Education / training in forest & wood product dev.

What? (define here the preferred future; vision statement forest-based product / service)
Optimised use of forest resources and species

To whom? ("clients", users, consumers)
The whole value added chain and stakeholders globally

By whom?
Governments, producers, industry associations, consumers, forest owners, R&D providers etc…

Obstacles (define the obstacles that hinder realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Multifunctionality – conflict btw sectors
- Logistics (linked to multifunct.)
- Int. lack of harmonisation
- Industrial protectionism (at domestic level)
- Funding for large-scale demonstrations
- Education / training in forest & wood-prod. dev. differ across regions

Values (values which enable and support the realisation of the preferred future)
Sustainability (economic, social, environmental) institutional

Recommendations, research and development priorities, skills and knowhow needed etc.
- Marketing – changing perceptions towards forests / forest prod.
- Proper public procurement in line with given values
- Harmonisation of Int & EU forest policy
- Education
- Increased cooperation / integration across/btw value chains
- Public / industrial support for R&D and demonstration

TASK: Health + Human wellbeing

Title / topic: Health and human wellbeing
(**the development which is elaborated with respect the future of forests and forest-based sector in Europe**)

Drivers (define the drivers that affect realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Protection of forests
- Maintain public access to forests
- Recreation industry contributing to conservation
- Health insurance contributing to conservation
- Define link btw health and nature
- Carbon trading contributes to conservation
- Increasing income leads to travel for recreation
- Decreasing income leads to local recreation

Obstacles (define the obstacles that hinder realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Loss of income
- Carbon trading contributes to conservation only outside Europe
- Consumerism leading to deforestation
- Climate change and effects on forest health
- Regulation to prevent access
- Compensation for forest land owners

What? (define here the preferred future; vision statement forest-based product / service)
Forests become an integral part of healthy lifestyle

To whom? ("clients", users, <u>consumers</u>)
General public

By whom?
Forest owners / health sector / education sector / insurance

Values (values which enable and support the realisation of the preferred future)
Healthy forests = healthy life

Recommendations, research and development priorities, skills and knowhow needed etc.
- Research links btw health and nature
- Evaluate costs and benefits
- Develop pilot projects
- Evaluate cross-sector finances / creative financial approaches
- Engage stakeholders
- Wellness education
- "channelling" recreation

TASK: wood + forests as luxurious goods

Title / topic: Forests + wood as luxury goods / services (the development which is elaborated with respect the future of forests and forest-based sector in Europe)

Drivers (define the drivers that affect realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Income increase, economic growth – different in different areas
- Population growth and urbanisation makes access to forests more difficult
- Belief that nature / natural = good (e.g. organic food)
- Interest in "traditional" products / techniques
- Examples of success in this area (incl. from other sectors)
- The desire to use more wood 8due to renewable resource + climate c / carbon capture)
- Drive towards localisation / stay caution (but must be "market pull")

What? (define here the preferred future; vision statement forest-based product / service)
- Market dependent (e.g. China → forest access is luxury; EU quality of services environment is the luxury) e.g. hunting, "forest spa"
- Must also have non-luxury forests – e.g. public health

To whom? ("clients", users, consumers)
Forests: in EU clients are specific groups e.g. hunters, spa goers, extreme sport enthusiasts
Wood: those that buy high cost products that could be made o wood

By whom?
- By niche providers – both forest owners and service providers
- Industry associations should raise awareness of opportunities
- Designers (but forest sector needs to engage them)

Obstacles (define the obstacles that hinder realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Conflicting uses (e.g. intensive production --- levels of protection)
- Everyman's rights
- Policy decisions + legal obstacles such as everyman's rights would have to be changed (+ standards e.g. AT restrictions building 3 stores in wood)
- Overcoming the belief that access to forests is a common good
- Affordability of differentiated luxury services
- Changing forest sector mentality from commodity (volume) to luxury (walue add + niche)
- Entrepreneurship of forest owners
- Developments needed in wood physics + chemistry to enable use of wood in luxury applications

Values (values which enable and support the realisation of the preferred future)
- Respect / passion for nature + natural things
- Wood positioned as an intelligent material → living / warm material

Recommendations, research and development priorities, skills and knowhow needed etc.
- Definition of protected areas … different levels of protection
- Costing / pricing + willingness to pay
- How to change "everyman's right"
- Wood needs to enter into modern / high tech / designer product sphere --- Wood positioned as an intelligent material
- Positioning of wood as high fashion brand + luxury e.g. forest berries differentiated
- Educate foresters in more entrepreneurial way
- Bringing diverse skill sets + mentalities together
- Testing and validating of these concepts – with intended markets → development of market testing methodology (e.g. as per food industry)
- Industrial design techniques for forest-based materials +more fundamental research regarding wood physics, chemistry

TASK: Green infrastructure (ES) Conservation

Title / topic: Resolving forest conflicts / harnessing future opportunities
(**the development which is elaborated with respect the future of forests and forest-based sector in Europe**)

Drivers (define the drivers that affect realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Develop and establish market mechanisms
  → Voluntary-based (contracts) forest conservation
  → Carbon trade mechanisms kind of matrix
- Legislation

What? (define here the preferred future; vision statement forest-based product / service)
Coherent strategy for dealing with the conflicts btw different forest uses

To whom? ("clients", users, consumers)
- Potential actors in different conflicts
- Beneficiaries: whole society

By whom?
- European forest policy makers motivated by public opinion

Obstacles (define the obstacles that hinder realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Sectorisation of different interests
- Lack of coherent European forest policy

Values (values which enable and support the realisation of the preferred future)
Multiple functions of forests for society
Appreciation of sustainability
¨

Recommendations, research and development priorities, skills and knowhow needed etc.

TASK: non-wood forest goods

Title / topic: non-wood forest products and services
(the development which is elaborated with respect the future of forests and forest-based sector in Europe)

Drivers (define the drivers that affect realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Demographic changes (life expectancy, wealth, spare-time)
- International legislation / politics (CBD, Forest Europe)
- Promotion of these goods
- Certification of nwfps
- Changed lifestyle paradigm

What? (define here the preferred future; vision statement forest-based product / service)
All production should be sustainable. Increased welfare due to increased supply of those services. Increased scope / range of services to be offered

To whom? ("clients", users, consumers)
Consumers and forest owners are the ones to benefit most. Also hunters, anglers, nature-oriented people

By whom?
Forest owners, entrepreneurs (rafter companies e.g.)
Chemical food industry

Obstacles (define the obstacles that hinder realisation of this "vision", use the materials from the Café session and further elaborate statements in full sentences)
- Need for biomass
- Need for food from agriculture
- Land use changes
  ➔ Need for land
- Forest protection
- Natural disasters
- Inappropriate forest management

Values (values which enable and support the realisation of the preferred future)
Demographic bargaining will enable sustainability, together with minority-protecting measures

Recommendations, research and development priorities, skills and knowhow needed etc.
Research on economic impacts and value added from production of these goods
More education and marketing is needed

Conclusions and next steps

8 September 2010, Vienna

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The role of this exercise?

In order to support – in uncertain and changing world
- forest-related policy making in different sectors
- decision making by stake-holders
- R&D sector.

The exercise aims at
- being explorative rather than normative
- using collaborative brainstorming and learning
  to identify potential changing factors (mega-trends, trends, drivers, weak signals, game changers,...) and their links with forest-related responsibilities, rights, market potential, interests,...

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The results from this workshop
http://www.cost.eu/events/Forestry-Foresight-Setting-the-Scene

- Presentations downloadable at the workshop web-site
- Report of the results
  - Review of exercises, tools and methods (survey)
  - Network of contact nodes (survey)
  - Summary of MindMaps
  - Summary of lists of products and services
  - Results of time machine
 - Appendices for original MindMaps?

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What we need from You
– and what you will gain from us

- **Complete the participants survey**: information on futures oriented exercises, and the tools and methods
- **Complete – and as needed add on – the contacts details for invitations to the Internet Survey**
  - → the Internet Survey results will be available for you, and you'll receive information on the next steps
  - → the wider network will receive information on the workshop results, the exercises ongoing and the expertise and networks available

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Next steps in the COST Strategic Workshop series:
Foresight on Future Demand for Forest-based Products and Services

EU Presidency in Poland
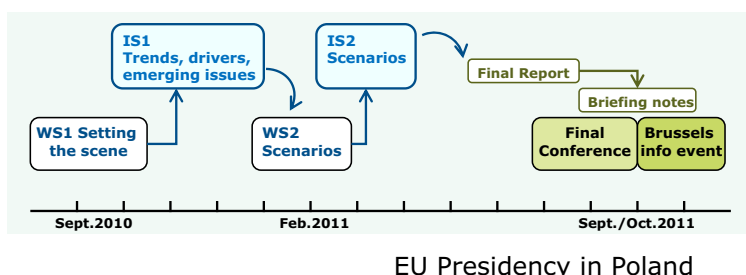
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Ideas for future foresight are welcome!

- Participating in the existing networks
  - European Foresight Platform and networks
- Information on, synchronizing with & synthesis based on foresight exercises
  - in different forest-related sectors
  - in different regions
  - in different countries
- Capacity building
- Workshop 2: applicable methods for multi-sectoral, multi-stakeholder, multi-regional collaboration

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Links to materials and information sources

There are abundance of materials about the futures and the approaches to envisage and study the futures – the below links give just a few examples about the work already done and ongoing:

Socio-economic developments, governance…
- The **Millennium Project** http://www.millennium-project.org/ is an independent non-profit futures research think tank with participants from all around the world – incl. "*State of the Future*" report and special studies, as well as guidance on futures research methods
- A recent study on Europe in a changing world is the *"The World in 2025 – Rising Asia and socio-ecological transition"* (2009) http://ec.europa.eu/research/social-sciences/pdf/the-world-in-2025-report_en.pdf by **EC DG RTD** including also the report of expert contributions http://ec.europa.eu/research/social-sciences/pdf/report-the-world-in-2025_en.pdf
- The **JRC Institute for Prospective Technological Studies (IPTS)** concludes futures perspectives "*Facing the future: time for the EU to meet global challenges – What is the state of the world in 2025 and what are the policy implications for the EU?*" (2010) http://ftp.jrc.es/EURdoc/JRC55981.pdf
- *Future Expectations for Europe* (2008) report by the **Stiftung für Zukunftsfragen** concludes results of a public opinion surveys carried out in 8(+1) countries http://www.wfs.org/April-May2010/Update/future%20expectations%20for%20europe_final.pdf and the futures horizon in this report is 2030.
- The *PRELUDE project* (2005-2006) by **EEA** presents 5 scenarios for Europe http://www.eea.europa.eu/multimedia/interactive/prelude-scenarios/prelude

Ways of life, life styles and consumption…
- To take a peek on the possible future lifestyles, for example browse through the presentation by Clive van Heerden, Senior Director **Philips Design** at the **European Futurists Conference Lucerne** 2009 http://www.european-futurists.org/wEnglisch/index.php
- Glimpses on the lifestyles as they might develop by 2050 can also be found in the *Fashion Futures* report by the **Forum for the Future (action for a sustainable world)** http://www.forumforthefuture.org/projects/fashion-futures
- *Possible New Careers Emerging from Advances in Science and Technology* (2010-2030) have been featured by **FastFuture** http://fastfuture.com/wp-content/uploads/2010/01/future_jobs_sheet.pdf

Technology, technological development…
- information on technology foresight is available for example from **UNIDO** http://www.unido.org/index.php?id=o5216, and **JRC/IPTS** http://ipts.jrc.ec.europa.eu/
- **OECD International futures** programme www.oecd.org/futures includes e.g. "*The Bioeconomy to 2030: Designing a Policy Agenda*" (2009), for example see the background report on "*Industrial Biotechnology to 2030*" http://www.oecd.org/dataoecd/12/9/40922929.pdf
- **MIT Technology Review** ranks every year the *10 Emerging Technologies* http://www.technologyreview.com/tr10/

Economy, economic development, businesses…
- **World economic forum (WEF)** has produced 2025 scenarios for China, India, Russia, and the Gulf Co-operation Council Countries (publ. 2005-2006) http://www.weforum.org/en/initiatives/Scenarios/index.htm
- For forest sector a *Study of the Effects of Globalization on the Economic Viability of EU Forestry* (2007) has been carried out for **EC DG AGRI** http://ec.europa.eu/agriculture/analysis/external/viability_forestry/index_en.htm 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 (upadate) available at www.eforwood.org
- For energy sector see, for example, the narratives from the *Roadmap 2050 for low carbon economy in Europe* (commissioned by the **ECF European Climate Foundation**) http://www.roadmap2050.eu/attachments/files/Volume3_FullBook.pdf
- **Z_punkt** has carried out a survey assessing *12 future markets 2020* i.e. which markets offer the best potential and which markets contribute to solving global problems http://www.z-punkt.de/fileadmin/be_user/englisch/D_Downloads/2010_future_markets_english.pdf

Agriculture and rural futures…
-   With regard to research priorities, in 2010 the **Standing Committee on Agricultural Research SCAR** is already carrying out the 3rd round in its foresight process http://ec.europa.eu/research/agriculture/scar/foresight_en.htm
-   **SCENAR 2020** project has been carried out for EC DG AGRI and the update of scenario study on agriculture and the rural world is available http://ec.europa.eu/agriculture/analysis/external/scenar2020ii/index_en.htm

Sectoral outlooks…
-   in the **forest sector** (e.g. UNECE-FAO European forest sector outlook http://timber.unece.org/index.php?id=55 which together with other regional forest sector outlooks are summarised for a global viewpoint in the biannual State of World's Forests reports http://www.fao.org/forestry/sofo/en/)
-   in **agriculture** (e.g. OECD-FAO Agricultural Outlook www.agri-outlook.org),
-   in **environment** (e.g. UNEP Global Environment Outlooks http://www.unep.org/GEO/ , OECD Environmental Outlook to 2030 www.oecd.org/environment/outlookto2030)
-   in **energy** sector (e.g. IEA annual World Energy Outlook http://www.worldenergyoutlook.org/)

Information on the foresight exercises and networks of experts:

-   **EFP European Foresight Platform** http://www.foresightplatform.eu/
-   EFMN European Foresight Monitoring Network (http://www.foresight-network.eu/) see the report "Mapping Foresight – Revealing how Europe and other world regions navigate into the future"(2009) http://ec.europa.eu/research/social-sciences/pdf/efmn-mapping-foresight_en.pdf
-   The European Foresight web site (EC JRC-IPTS) http://forera.jrc.ec.europa.eu/

Tools and methods:

-   *ForLearn* The Online Foresight Guide (http://forlearn.jrc.ec.europa.eu/index.htm)
-   Wild cards – weak signals tool in http://wiwe.iknowfutures.eu/ see also http://rafaelpopper.wordpress.com/foresight-methods/
-   Millennium project and the Real-time Delphi http://www.millennium-project.org/millennium/RTD-general.html and "*Futures Research Methodology*"
-   An example of using internet for workshops, see for example the two-part *Webinar The 12 Emerging Issues for the Next Twelve Years* (2009) by Social Technologies http://genslerweb3.intodit.com/page/12-emerging-issues-for-the-next-12-years-notes

Summarily information on trends and drivers:

-   Population trends http://www.un.org/esa/population/ see e.g. figures (2050 time horizon) http://esa.un.org/unpd/wpp2008/fig_1.htm
-   IPCC emission scenarios (special report, 2000: Chapter 3 on Scenario Driving Forces http://www.grida.no/climate/ipcc/emission/index.htm)
-   The above mentioned World 2025 reports include several expert papers (e.g. on demographics, macro economics, globalisation, innovation…)
-   Or see the presentations in the **AUGUR project** http://www.augurproject.eu/ (2007-2013) conference *Sharing Visions on Europe in 2030: Lessons from Comparative Approaches of Recent Foresight Exercises*, incl. presentations on
    o   Europe and the world – forward looking activities
    o   1) Demography and migrations
    o   2) Technological changes and research & development strategies
    o   3) Natural resources and climate threat
    o   4) Defence: new issues and impacts
    o   5) Well Being: its future and status in the political scene of the next decades