



University of Natural Resources
and Applied Life Sciences, Vienna
Department of Economic and Social
Sciences



INNOFORCE
EFI Project Centre

Innovation and entrepreneurship - Introductory lecture

IP INNO-FOREST, 4 September 2006, Zvolen
Anja Bauer

EFI PC INNOFORCE



- u Project Centre of the European Forest Institute (EFI)
- u 25 research organisations from 18 European countries
- u 2nd Phase 2004 – 2008
- u Research on Innovation and Entrepreneurship in Forest Sector



Research Agenda

- u Innoforce (2001-2003): Research on:
 - u Actual situation of innovation and entrepreneurship in forestry in CE
 - u Actors and institutions of SIS and RIS
 - u Best practices from case-studies

- u Innoforce (2004-2008): Research on:
 - u I & E policies and policy co-ordination
 - u I & E in forest related services
 - u I & E in wood and non-wood forest products
 - u Process innovations in small-scale forestry and forestry-wood chains

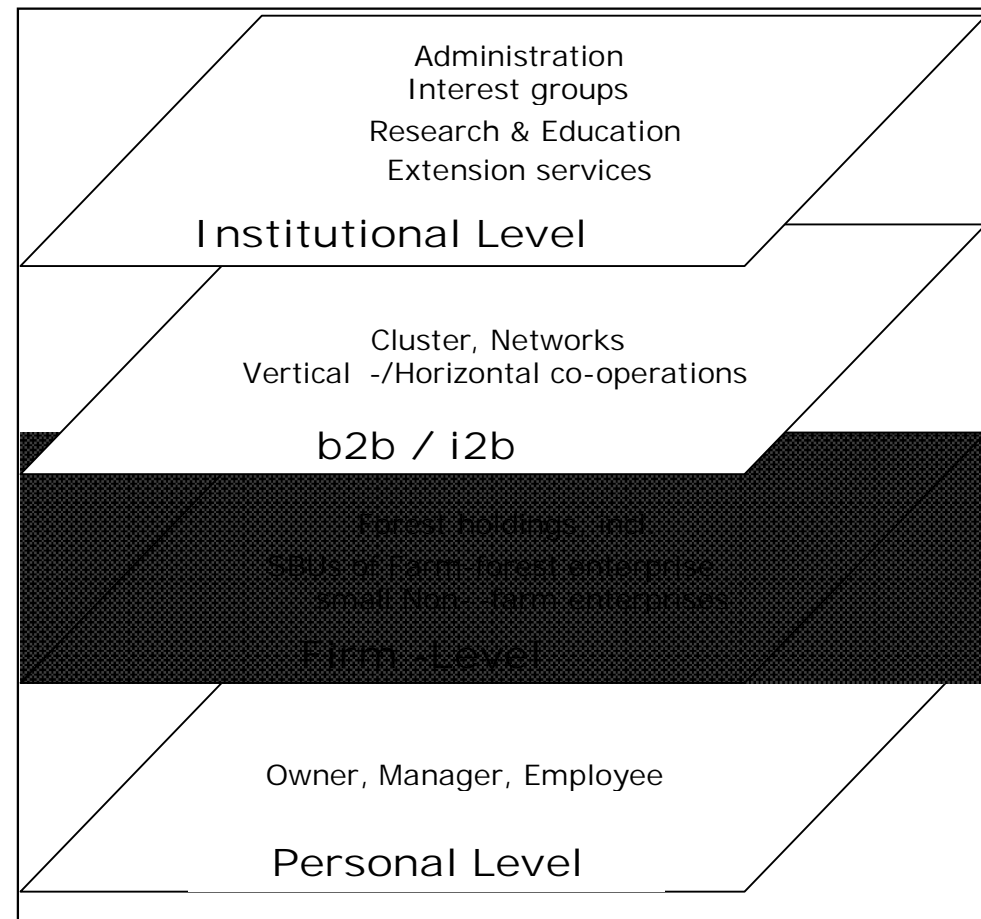


Course objective

Better understanding of theoretical
aspects of innovation and
entrepreneurship



Levels of Innovation Studies



Overview over Lecture

- u Objectives:
 - u Introduction to the key concepts and
 - u The question: Why bothering about innovation?

- u Structure:
 - u Key concepts
 - u Importance of innovation
 - u For society
 - u For firm
 - u Innovation and Forestry
 - u Discussion





First, think about

An innovation in the last 10 years:

- u You liked most
- u You disliked most
- u Had most impact on your life



Key Concepts

- u Invention
- u Innovation
- u Diffusion
- u Entrepreneurship



Invention

- u Creation of something that has not existed before
- u An 'invention' is an idea, a sketch or model for a new or improved device, product, process or system. **It has not yet entered to economic system.**
- u Element of novelty



Innovation

- u „*Innovation is the doing of new things or the doing of things that are already being done in a new way... Innovation is a process by which new products and techniques are introduced into the economic system.*“ (Schumpeter 1947)
- u “*the first commercialization of an idea*” (Fagerberg 2004)
- u *An innovation is the implementation of a new or significantly improved product, or process, a new marketing method, or a new organisational method in business practice, workplace organisation or external relations* (OECD)
- u Innovation is an invention that has been successfully implemented and introduced in the market



Features of Innovation

- u **Novelty:** Innovation is something new
 - u Function
 - u Technic
 - u Design (?)
- u **Implementation:** Innovation is introduced into market
- u **Modification:** A innovation should cause a change/improvement



Innovator

- u To be able to turn an invention into an innovation, a firm normally needs to combine several types of knowledge, capabilities, skills and resources
- u An innovator is the person or organizational unit responsible for combining the factors necessary



And this is not innovation

- u Ceasing to use a process, a marketing method or an organisation method, or to market a product
- u Simple capital replacement or extension
- u Changes resulting purely from factor prices
- u Customisation
- u Regular seasonal and other cyclical changes



Innovation Categories I

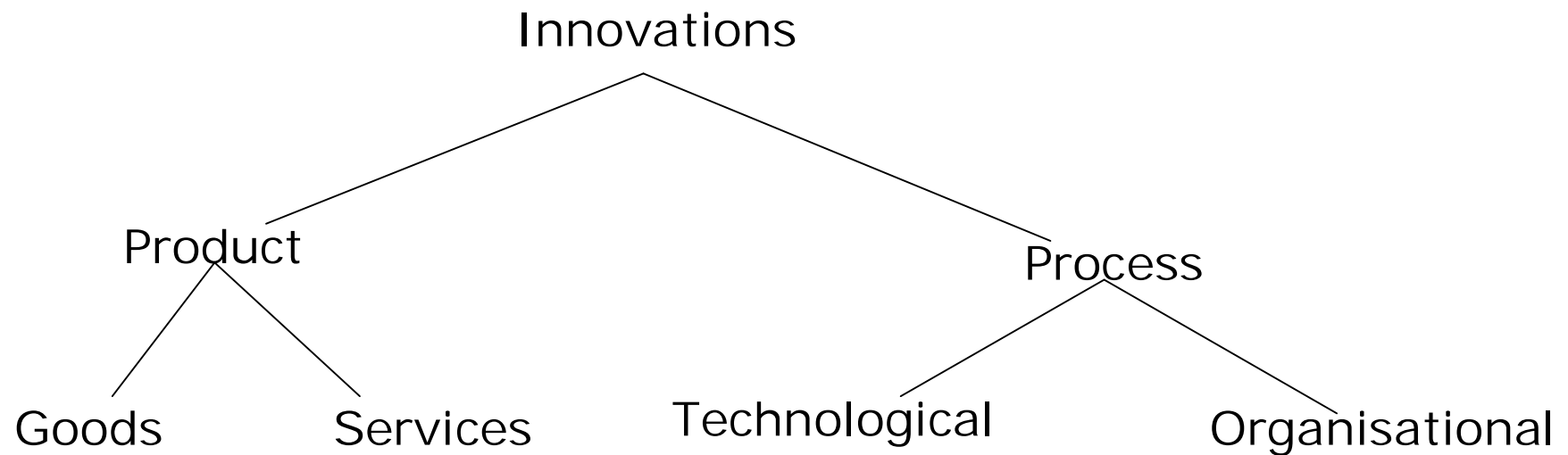
u Joseph Schumpeter

u Five types of innovation:

- (1) new products,
- (2) new methods of production,
- (3) new sources of supply,
- (4) the exploitation of new markets ,
- (5) new ways to organize business



Innovation Categories II



Innovation Categories III

- u Three concepts of novelty:
 - u New to the firm (minimum requirement)
 - u New to the market/sector
 - u New to the world
- u Radical: Creative destruction, new technology substituting the old
- u Incremental: Development along technological paths
- u Continuous: interrelated innovations
- u Discontinuous - Basis innovations: *„ ... the most important ... innovations, which may typically require a new textbook to describe them, may give rise to a change of technique in one or more branches of industry, or may themselves give rise to one or more branches of industry.“* (Freeman)



Diffusion

- u The spread of a new product or process throughout society or markets
- u Important process that enables an innovation to contribute to economic growth and welfare
- u Focus on adoption of innovations
- u Macro perspective

- u From a micro perspective any adopter of a new product/technology is an innovator



Entrepreneurship

- u “Entrepreneurial spirit” to innovate (Schumpeter)
- u Entrepreneurship as risk taking (Knight, Drucker, Hart, Stevenson and Dial)
- u An entrepreneur is a person who undertakes and operates a new enterprise or venture, and assumes some accountability for the inherent risks
- u Entrepreneurship = starting a new businesses



Entrepreneur

- u Entrepreneur as a risk bearer
- u Entrepreneur as an organiser (function of coordination, organization and supervision)
- u Entrepreneur as a person willing to engage uncertainty
- u Entrepreneur as a leader (leadership, management ability and team building)
- u Entrepreneur as agent of change

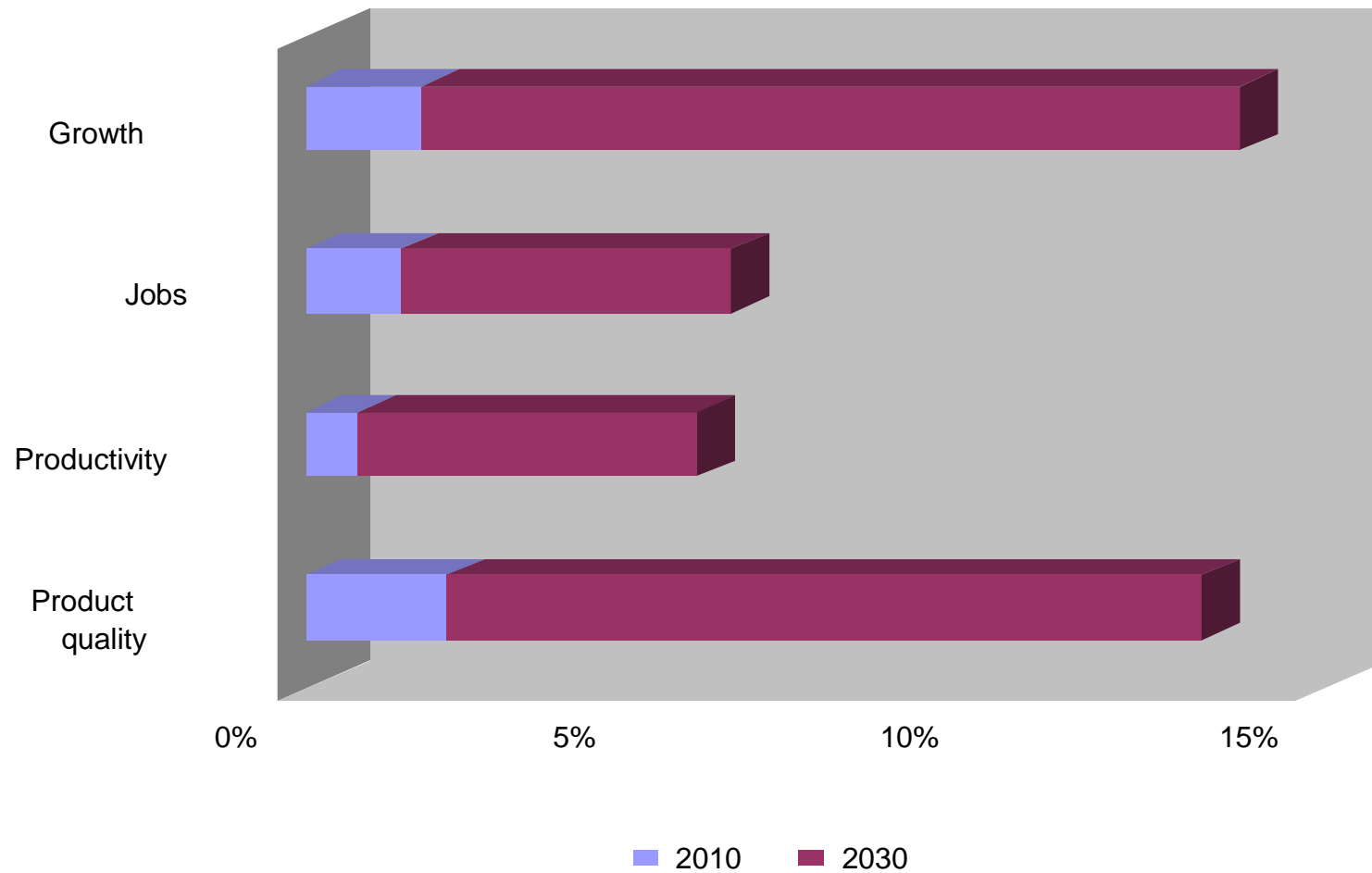


Innovation– Why is it important?

- ▶ Innovation contribute to various societal goals:
 - economic growth,
 - competitiveness,
 - employment creation
 - rural and regional development
 - environmental improvement and sustainable development



EU: Expected gains from reaching 3% R&D by 2010 compared to status quo



Innovation and economic growth

- u Innovation has gradually become a more powerful factor in explaining differences across countries in economic growth
- u Economic growth as the result of new combinations of products, processes, markets, sources of supply, and organizations (Schumpeter)
- u Empirical results:
 - u Fagerberg: superior innovative activity as prime factor behind the huge difference in performance between Asian and Latin American NIC countries

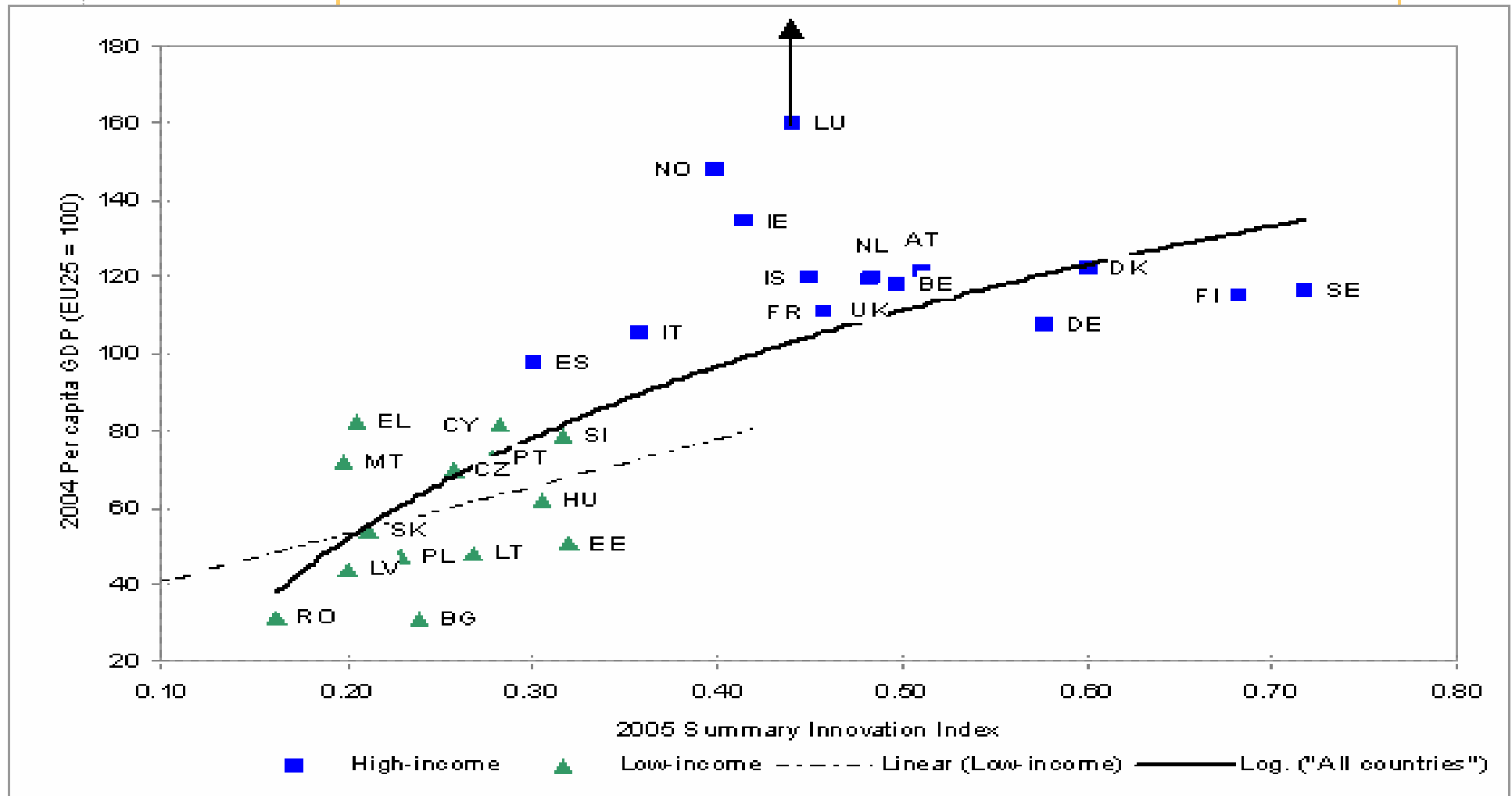


Basis Innovations

- u Changes in techno-economic paradigm
- u Industrial revolutions, long waves
- u 1780-1840 - early mechanization, power loom
- u 1840-1890 - steam power and railways, steel industry
- u 1890-1940 - electrical and heavy engineering, chemistry industry
- u 1940-1980 - fordist mass production, oil, electronics
- u 1980-? - information and communication



Innovation and Income

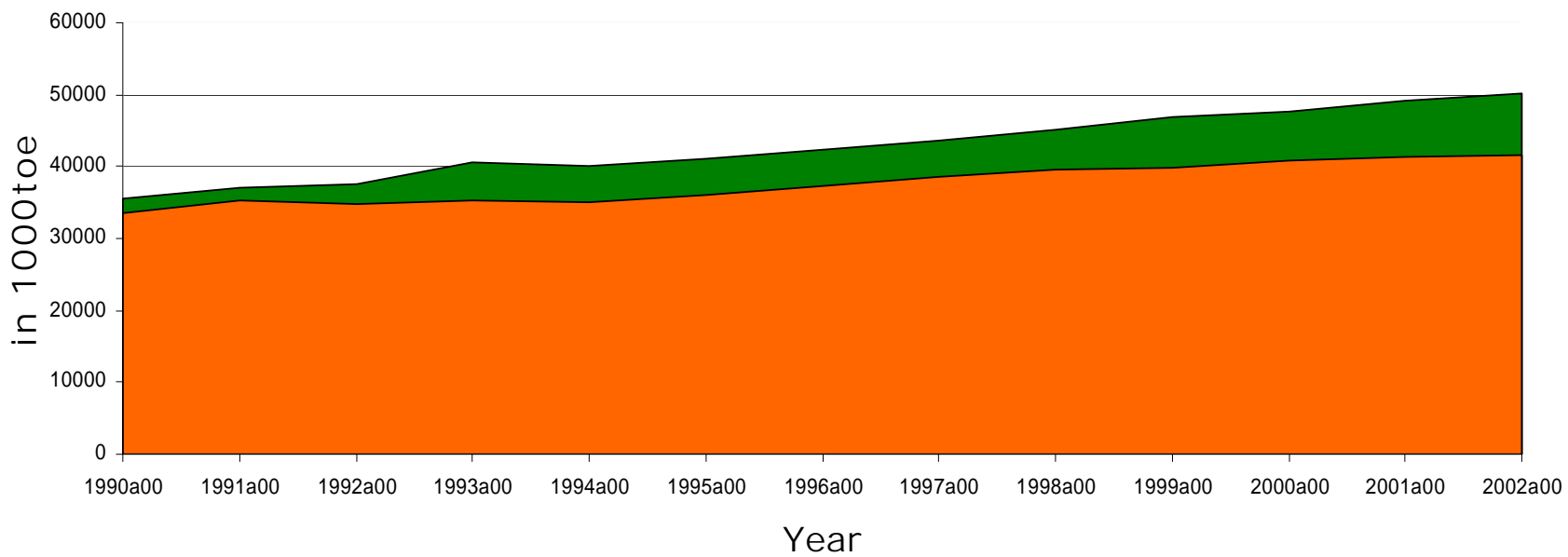


Innovation and competitiveness

- u *"The degree to which a country can, under free and fair market conditions, produce goods and services which meet the test of international markets, while simultaneously maintaining and expanding the real incomes of its people over the long-term," (OECD)*
- u Technological competition is the major form of competition under capitalism
- u Overall competitiveness, is a result of many factors: macroeconomic environment, ICT, innovation, public institutions – these all have a strong influence on increased productivity.
- u International competitiveness is seen as an important component of economic growth



New markets: Wood for bioenergy
Primary energy production from wood and wood residues in
EU 15 and EU 25 from 1990-2002



■ eu25 ■ eu15

Source: Eurostat

Innovation & Employment

- u Product and process innovations tend to have diverging effects on the patterns of labor creation:
 - u Positive effects for product innovations
 - u Negative effects for process innovations
- u Positive effects for high-skilled labour force
- u Negative effects for least skilled
- u Mostly positive effects on firm level

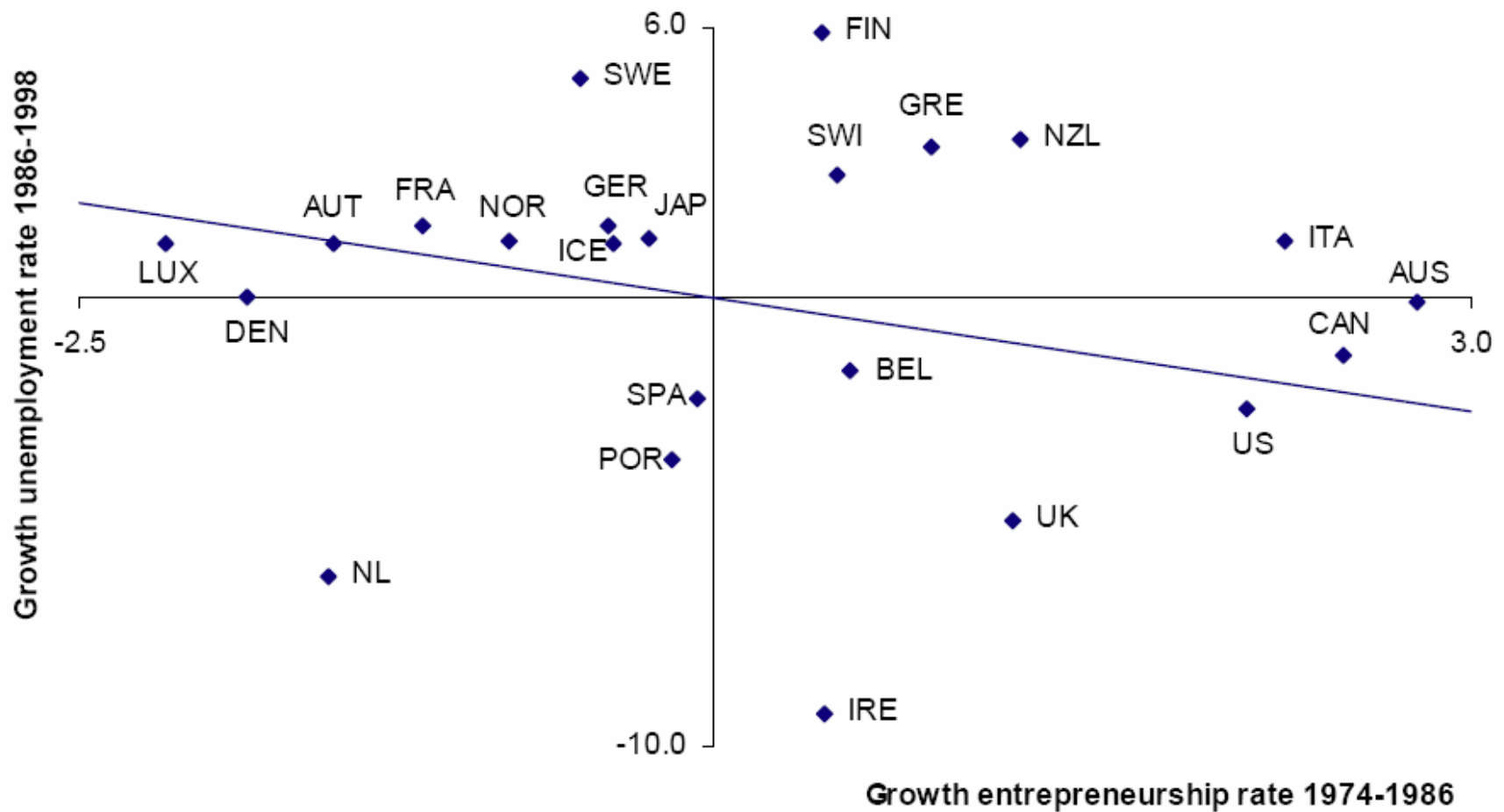


Entrepreneurship & Employment

- u Small enterprises generate most of the jobs
- u Small and new enterprises serve as an engine of employment creation (firm level)
- u Long-term, cross country studies showed:
increases in entrepreneurial activity tend to result in higher subsequent growth rates and a reduction of unemployment



Figure 1: Changes in entrepreneurship and unemployment rates in OECD countries



Source: Audretsch et al., 2002a

Innovation and Rural Development

- u Restructuring of agricultural sector
- u Diversification of local economies
- u Builds on local networks and interactions, bottom-up processes
- u Based on specific assets and challenges of the area
- u New interactions between the local context and the global context
- u Innovation a key concept in Leader



Innovation and Sustainable Development

- u Innovations as one key strategy to reach environmental improvement:
 - u New technologies:
 - u End of pipe technologies
 - u Cleaner production technologies
 - u Increased efficiency
- u Increased living standard for people (social dimension)
- u Economic growth, employment (economic dimension)



Innovation and Other Societal Goals

- u Health
- u Mobility
- u Recreation
- u Demographics
- u Changing Consumer Needs
- u ...



Effects on Firm Level

Firms' view:

- u Improving product quality
 - u Diversification of products
 - u Increasing production capacity
 - u New Markets or increasing market share
 - u Flexibilisation of production
 - u Lowering costs per production unit
 - u Improving environment, health and safety aspects
 - u Lowering input of material and energy
-
- u Existing studies find:
 - u a positive but modest influence on profitability
 - u a positive correlation to market share and profit margins



Are innovations always good?

u Think about:

- u Weapons
- u Gene technology
- u Ecstasy
- u ...

- u Innovations may have adverse effects
- u Often controversial debates (safety, health, environment, ethics)
- u Negotiation process (society, policy)



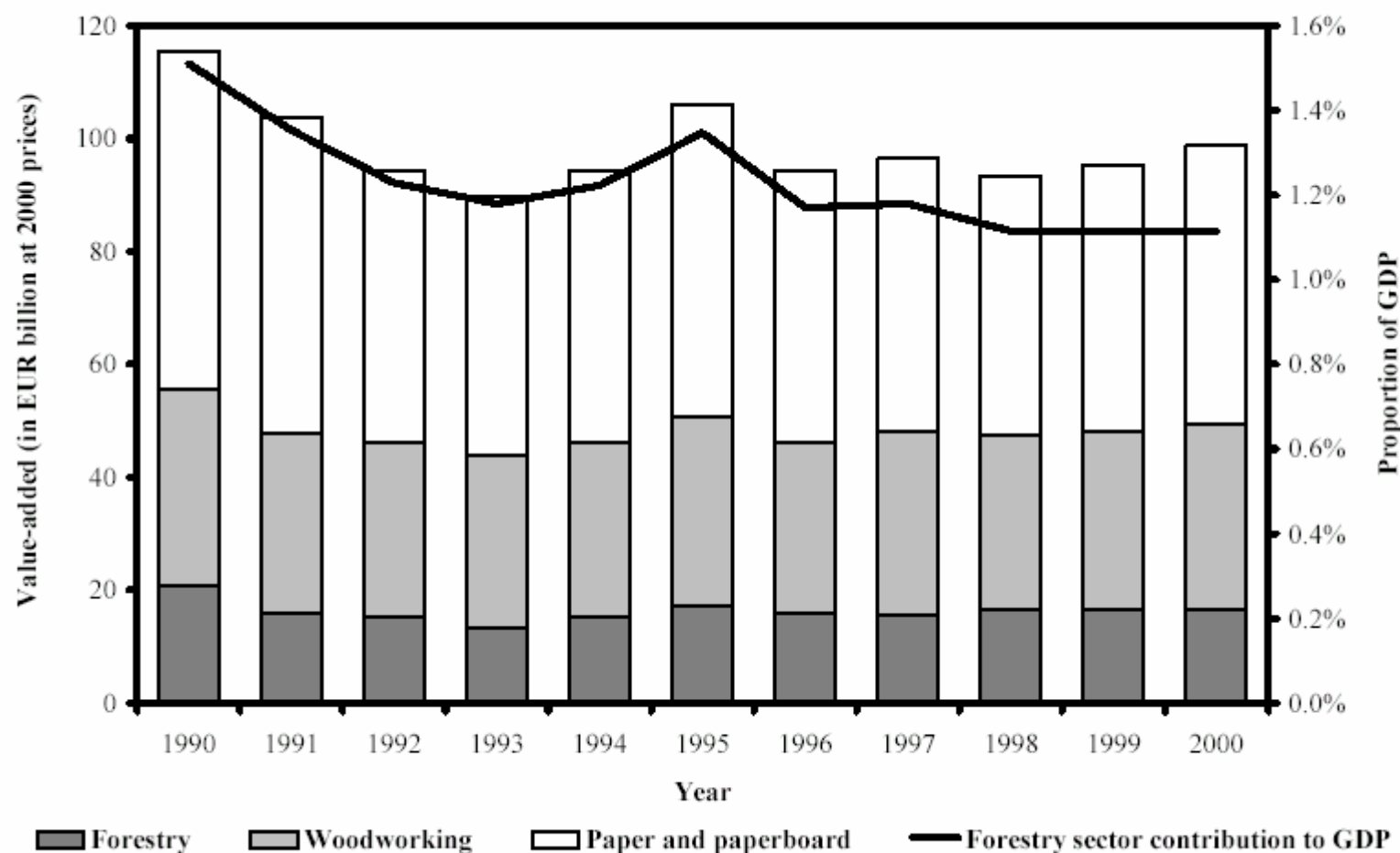
Why is it an issue in forestry?

- u Demands on forests are growing and shifting
 - u more demand from more corners, more diverse
 - u more globalized markets = more pressure on costs
- u The sector keeps disappearing (economically)
 - u a rapidly changing world does not spare forestry,
 - u increasingly sophisticated integrated production systems require adequately functioning forestry



Decreasing Economic Importance

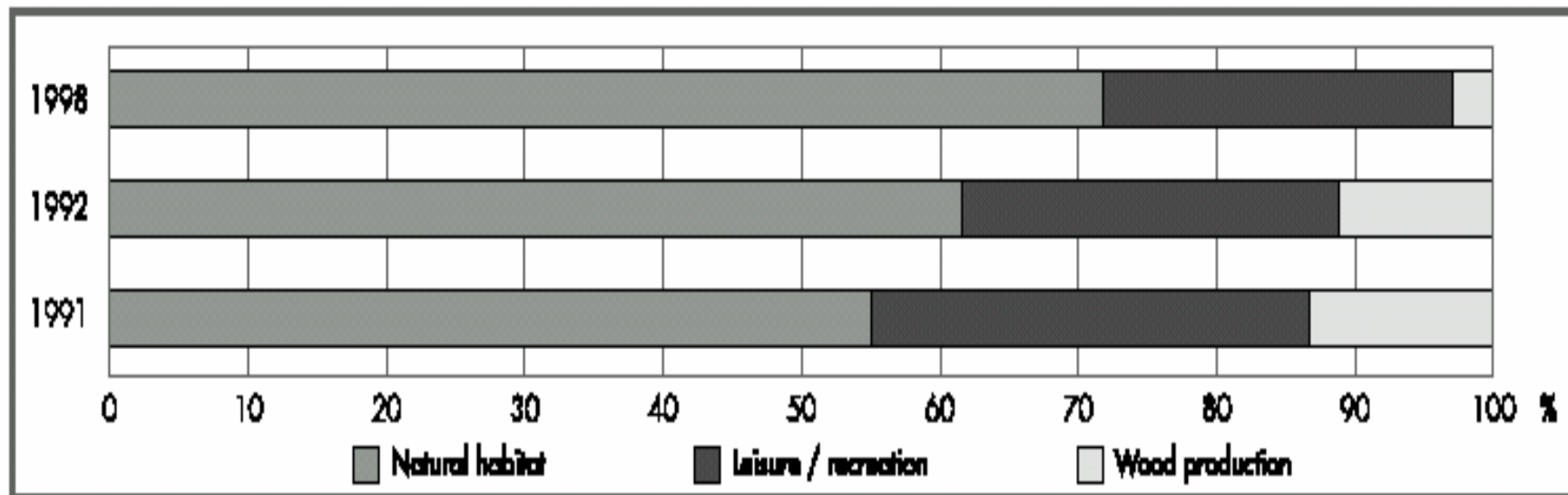
Figure 80 Trends in value-added in the European forest sector from 1990 to 2000



Source: Lebedys (in prep).

Changing consumer attitudes

Figure 2: Change in forest roles in France over the years: main role of forests (Source: modified after ODIS, 1998; BVA, 1991, 1992)

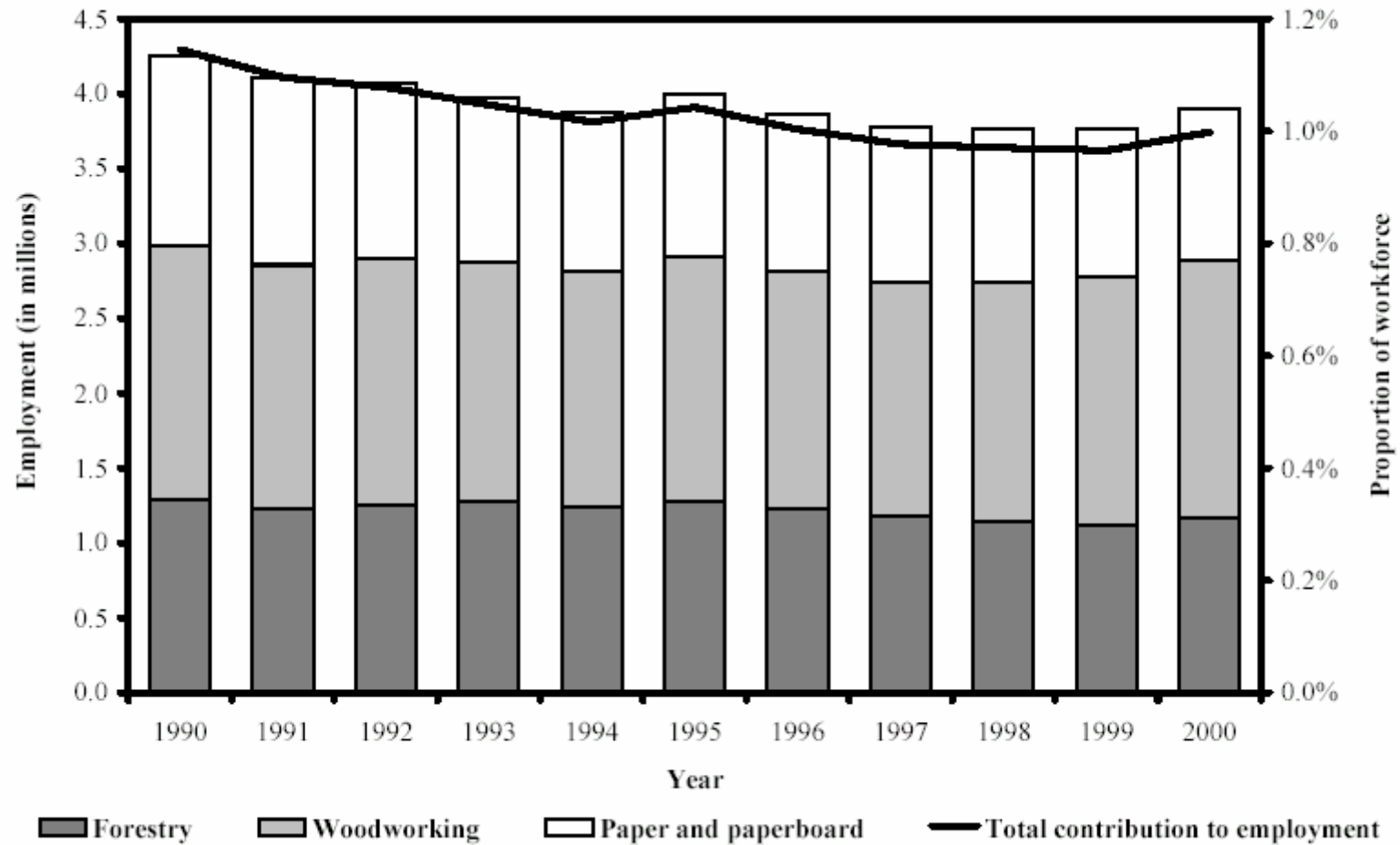


source: MCPFE 2003



Decreasing Employment

Figure 76 Trends in employment in the European forest sector from 1990 to 2000



Source: Lebedys (in prep).

Sectoral aspects of innovation

- u Innovation processes differ from sector to sector in terms of development, rate of technological change, linkages and access to knowledge as well as in terms of organisational structures and institutional factors
- u Some sectors are characterised by rapid change and radical innovations, other by smaller, incremental changes
- u Traditional sectors – innovation by technology adoption, incremental innovations
- u Innovation activities often focused on production efficiency, product differentiation and marketing
- u Often involves the incorporation of high-technology products and technologies



Summary

- u Innovation differs from invention
- u Various categorisation of innovations
- u Innovations contribute to a range of societal goals but are not always uncontested
- u The forestry sector is no exemption in the need for innovations
- u But innovation processes in traditional sectors differ from innovations in high tech sectors





And Now:

Your questions

- u And to return to the beginning:
 - u What innovation do you wait for most eagerly?





Thank you

www.efi-innoforce.org



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