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INNOFORCE
EFI Project Centre

Determinants of Innovation

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Overview

- u Determinants for innovation in general:
 - u Context
 - u Institutional environment
 - u Innovation impulses
 - u Sources of information
 - u Determining Factors
- u Innovations in Forestry – Empirical results
 - u Methodological Approach
 - u Frame Conditions for Innovations in Forestry
 - u Forest Owners/Managers as Innovators
 - u Information and Impulses for Innovations
 - u Fostering and Impeding Factors

Contextual Factors

- u Important contextual factors that have an impact on innovative opportunities:
 - u Type of sector
 - u Size of your firm
 - u The country and region where you are active
 - u The stage in the industry life cycle



Institutional Environment

- u The basic educational system
 - u The university system
 - u The science and research base
 - u Common pools of codified knowledge
 - u Innovation policy
 - u Legislative and macroeconomic settings
 - u Communications infrastructure
 - u Financial institutions
 - u Market accessibility
 - u Industry structure and competitive environment



Innovation – Impulses

- u **Demand pull:** Demand for new problem solutions – improvements of products and processes – often depending on technological paths (incremental innovations)
- u **Technology push:** scientific or technological breakthroughs - often radical innovations through new technologies
- u **Societal demands/political goals**, e.g. environmental consciousness, environmental regulations or funding, e.g. renewable energy



Sources of information I

- u Internal sources within the firm or business group:
 - u in-house R&D;
 - u marketing;
 - u production;
 - u other internal sources
- u External market/commercial sources:
 - u competitors;
 - u acquisition of technology;
 - u clients or customers;
 - u consultancy firms;
 - u suppliers of equipment, materials, components and software

Sources of Information II

- u Educational/research institutions:
 - u higher education institutions;
 - u government research institutes;
 - u private research institutes.

- u Generally available information:
 - u patent disclosures;
 - u professional conferences, meetings and journals;
 - u fairs and exhibitions.

Determining Factors

- u Economic Factors
- u Enterprise/Internal Factors
- u Market Factors
- u Institutional Factors
- u Societal Factors
- u Natural Factors



Economic Factors

- u Economic risks (real or perceived)
 - u Costs
 - u Availability of funds within the enterprise
 - u Availability of external funds
 - u Venture capital
 - u Public sources of funding
 - u Cost and availability of inputs to innovation
 - u Ability to capture the increased profit from innovation (appropriability)

Enterprise/Internal Factors

- u Innovation potential (R&D, design, etc.)
- u Availability of skilled personal (within firm or on market)
- u Availability of information
 - u on markets
 - u on technology
- u Availability of external services
- u Propensity to change in the firm
- u Opportunities for cooperation
- u Organisational structure
- u Business strategies



Market and Institutional Factors

Market Factors:

- u Demand for innovations
- u Potential market dominated by established enterprises

Institutional Factors:

- u Availability of infrastructure
- u Strengths of intellectual property rights
- u Legislation, norms, regulations, standards, taxation
- u Public demand
- u Public funding



Societal Factors

Societal Factors:

- u Stock of relevant and technological knowledge (technological opportunity) (e.g. cure for aids, beaming)
- u Acceptance for technologies
- u Propensity to change

Natural Factors:

- u Availability of resources
- u Climate



What are your experiences?

u What were fostering, what were hindering factors in your innovation case?

	Fostering	Hindering
Economic factors	Availability of funding	
Enterprise factors	Personal motivation and capabilities Possibility to cooperate Better products	Everyone wanted to do its own business
Market factors	Demand and willingness to pay more for quality Demand for products New firms in the market	Market dominated by cheap oil Few firms – few competition – no need to innovate New product, company not known
Institutional factors	Public funds for research Policy commitment Funding from EU	No funds for implementation
Societal factors	High education level Positive atmosphere Good infrastructure Availability of services	Sceptism Lack of communication inside society
Natural factors		



Innovations in Forestry

Empirical results

- u Methodological Approach
- u Frame Conditions for Innovations in Forestry
- u Forest Owners/Managers as Innovators
- u Information and Impulses for Innovations
- u Fostering and Impeding Factors
- u Conclusions



Methodical Approach

- u Forest holding surveys
 - 1417 forest holdings
 - 7 Central European countries: Austria, Germany, Czech Republic, Hungary, Italy, Slovakia and Slovenia

- u Interviews with institutional actors
 - Face to face interviews with actors of the national level
 - Actors of SIS: governance system, research and education, extension services

- u Case studies
 - 32 case studies in six countries

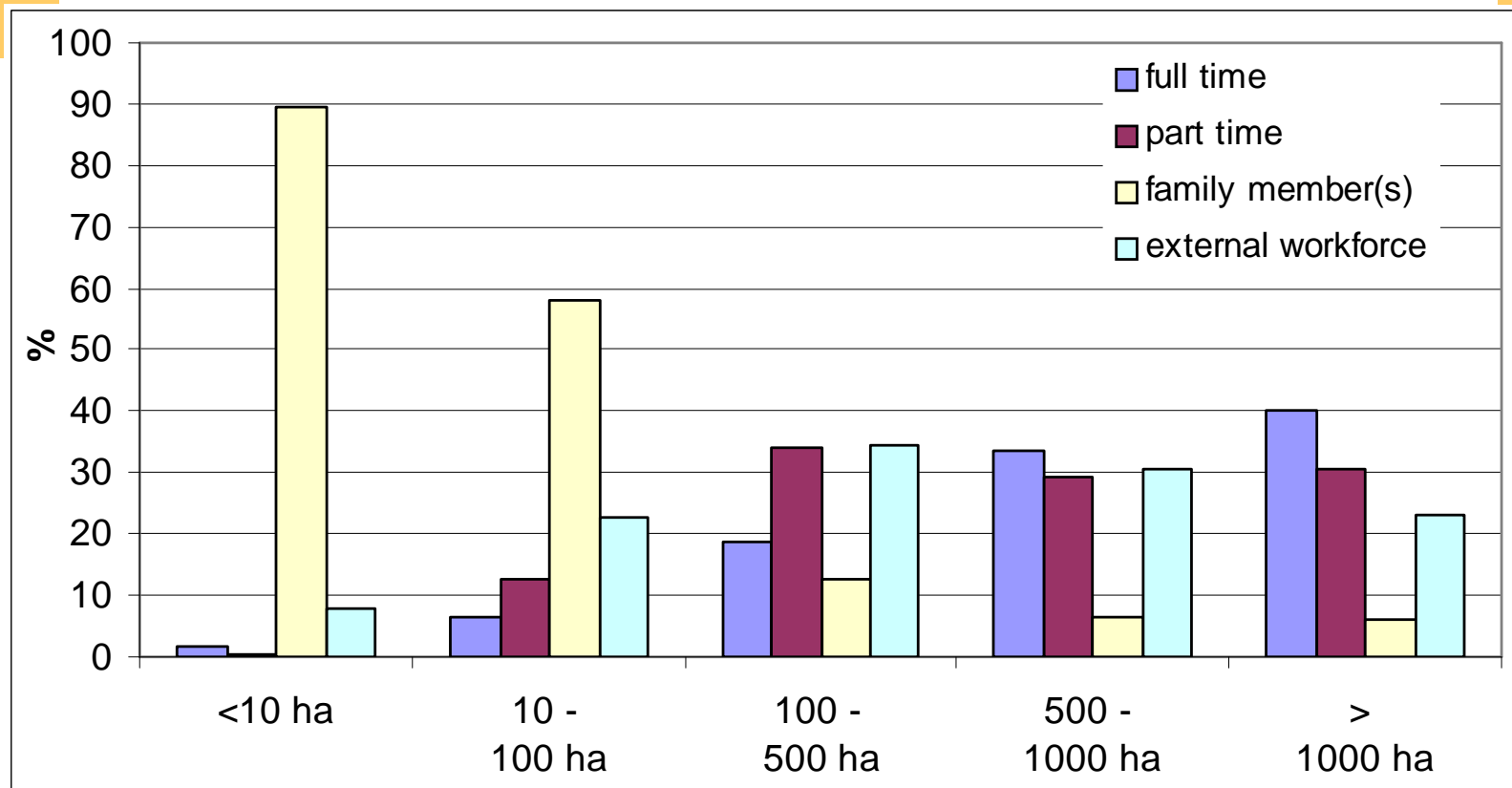


Frame Conditions for Innovations in Forestry

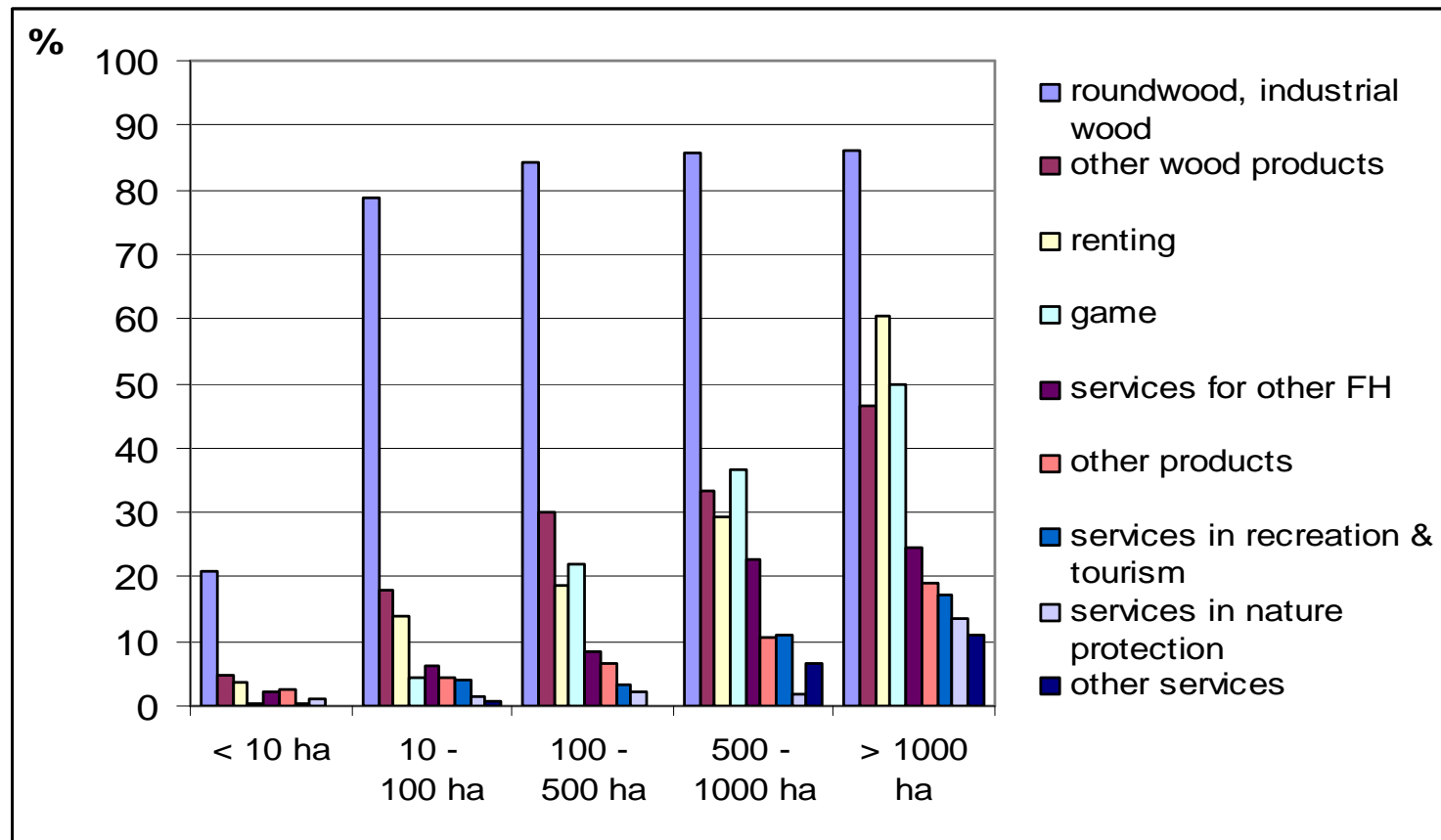
- u Small average size of forest holdings (~22 ha)
- u High fragmentation of forest ownership
- u Little full time engagement in forestry work
- u Little share of income from forestry
- u Product mix increases with forest holding size
- u Maintaining capital is prevailing goal
- u Main strategy – „business as usual“



Time Spent in Forest Management

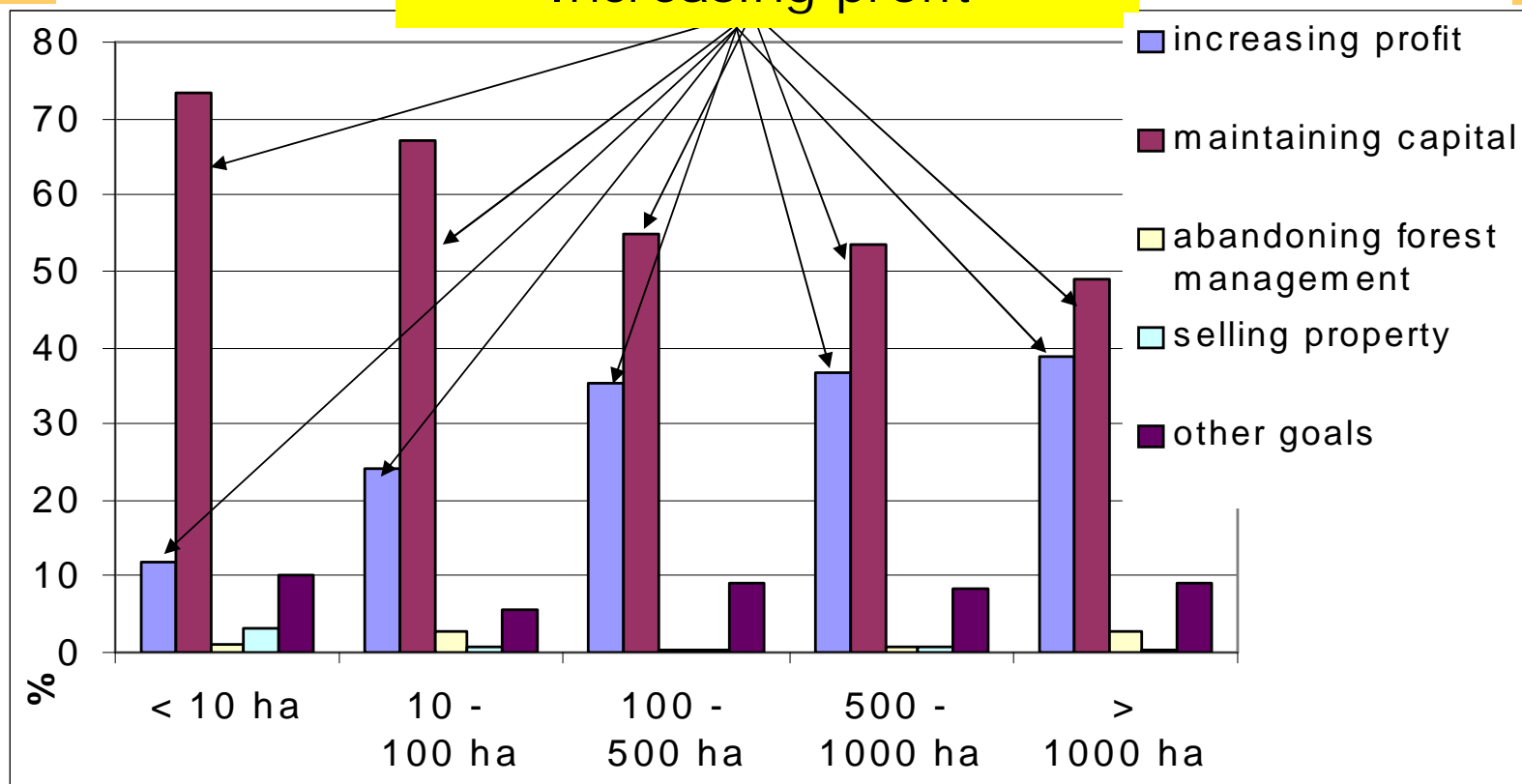


Product Mix

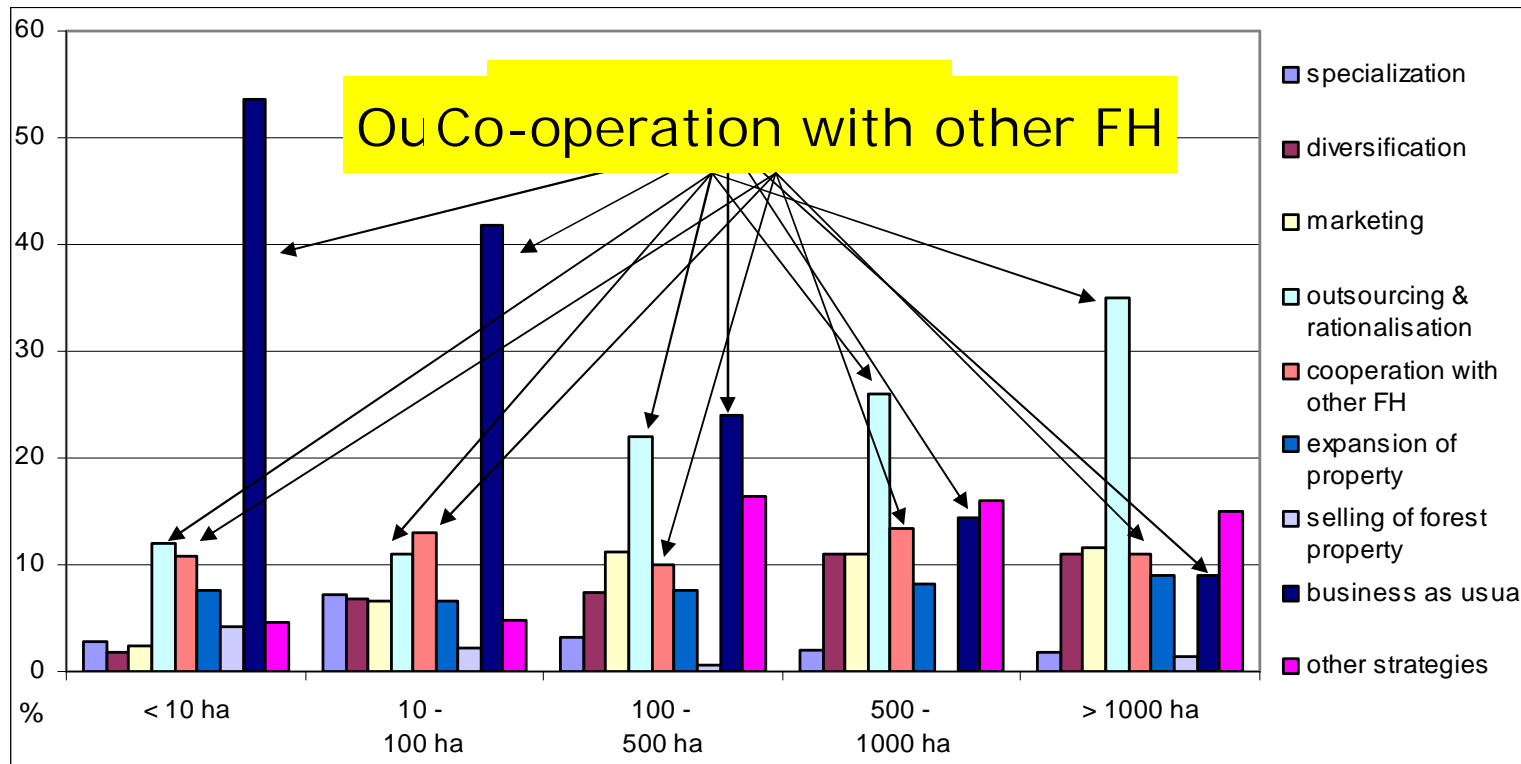


Goals of Forest Owners

Increasing profit



Strategies of Forest Owners

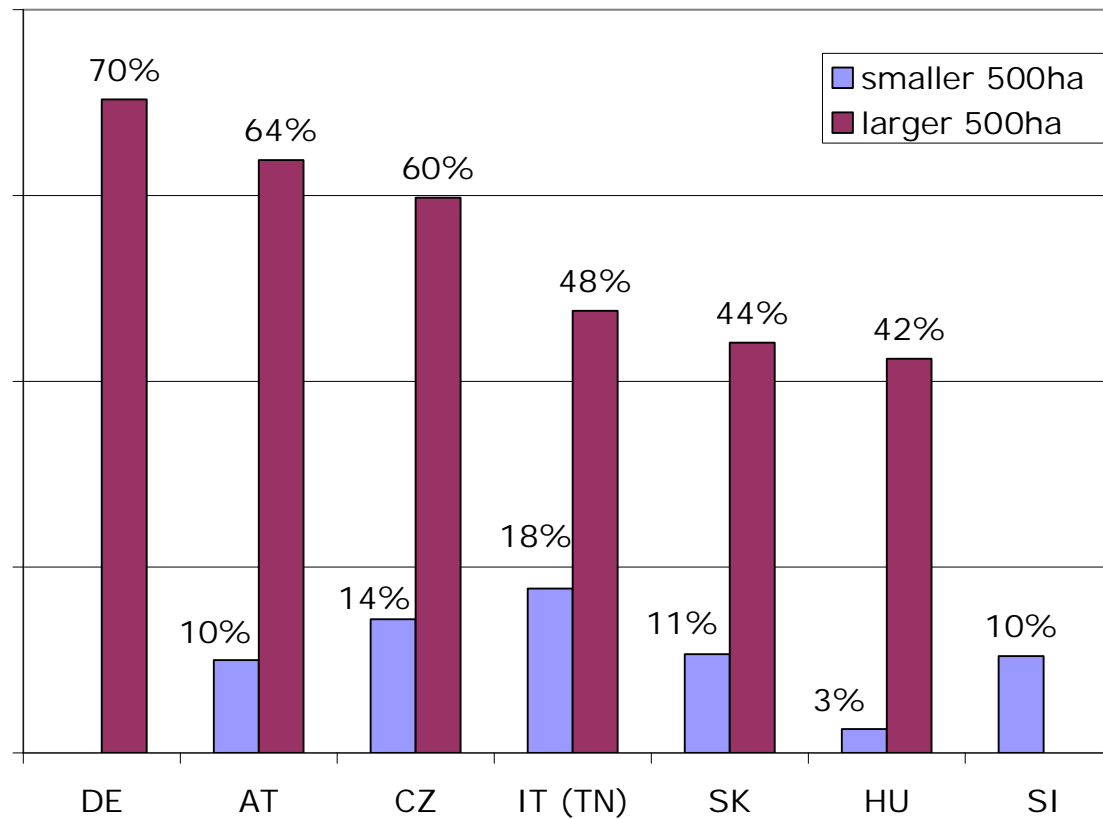


Forest Owners/Managers as Innovators

- u Little innovation activity, esp. in small forest holdings
- u Incremental innovations and no new to the sector innovations
- u Majority of innovations are organisational followed by service innovations
- u Hardly start-up activity
- u Forest owners see opportunities for new products and services

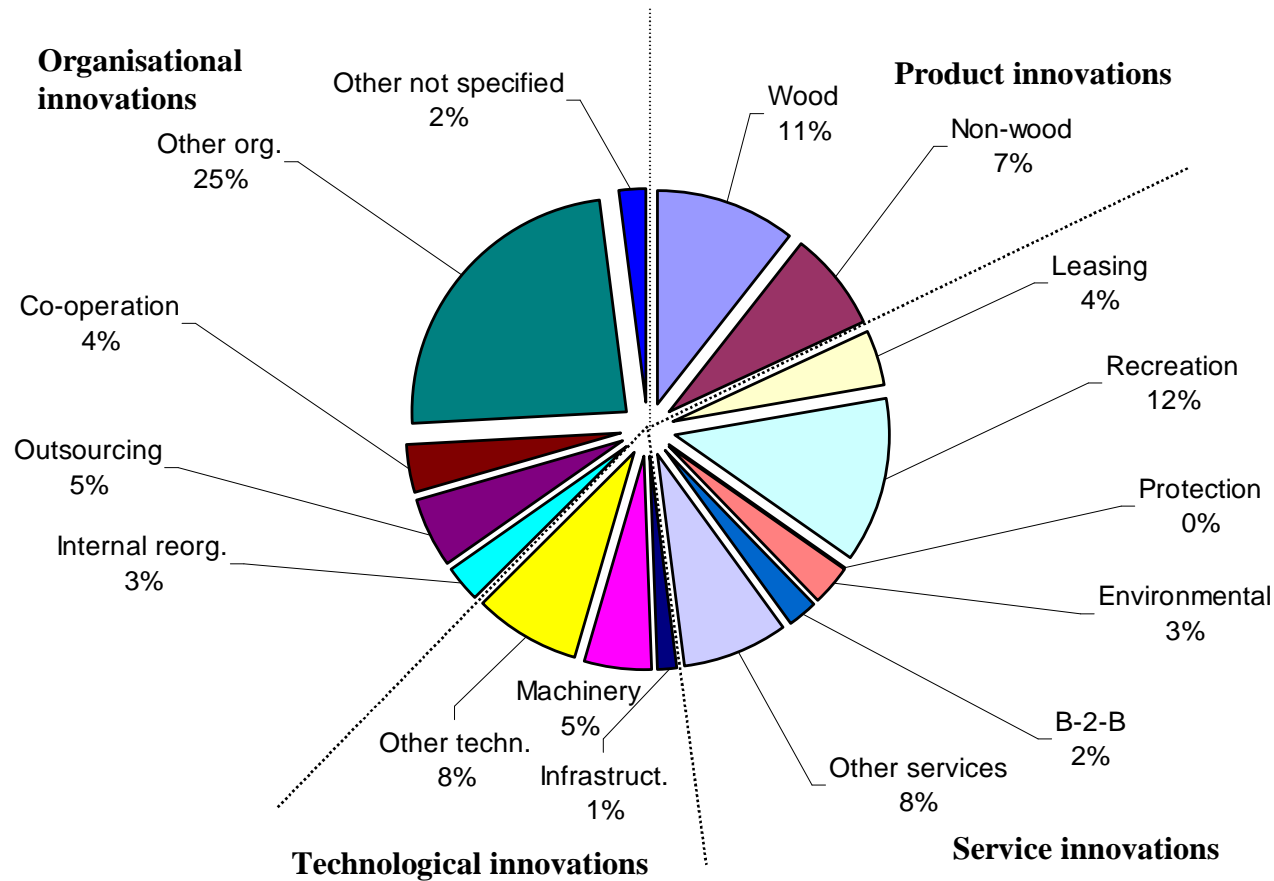


Innovative Forest Holdings



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Types of Innovations



Sources of Impulses and Information for Innovation

u Impulses for innovations:

§ Internal impulses dominate:

- Employee
- Owner/ co-owner
- Myself / own education

u Sources of information:

§ Institutional level information is by far dominating:

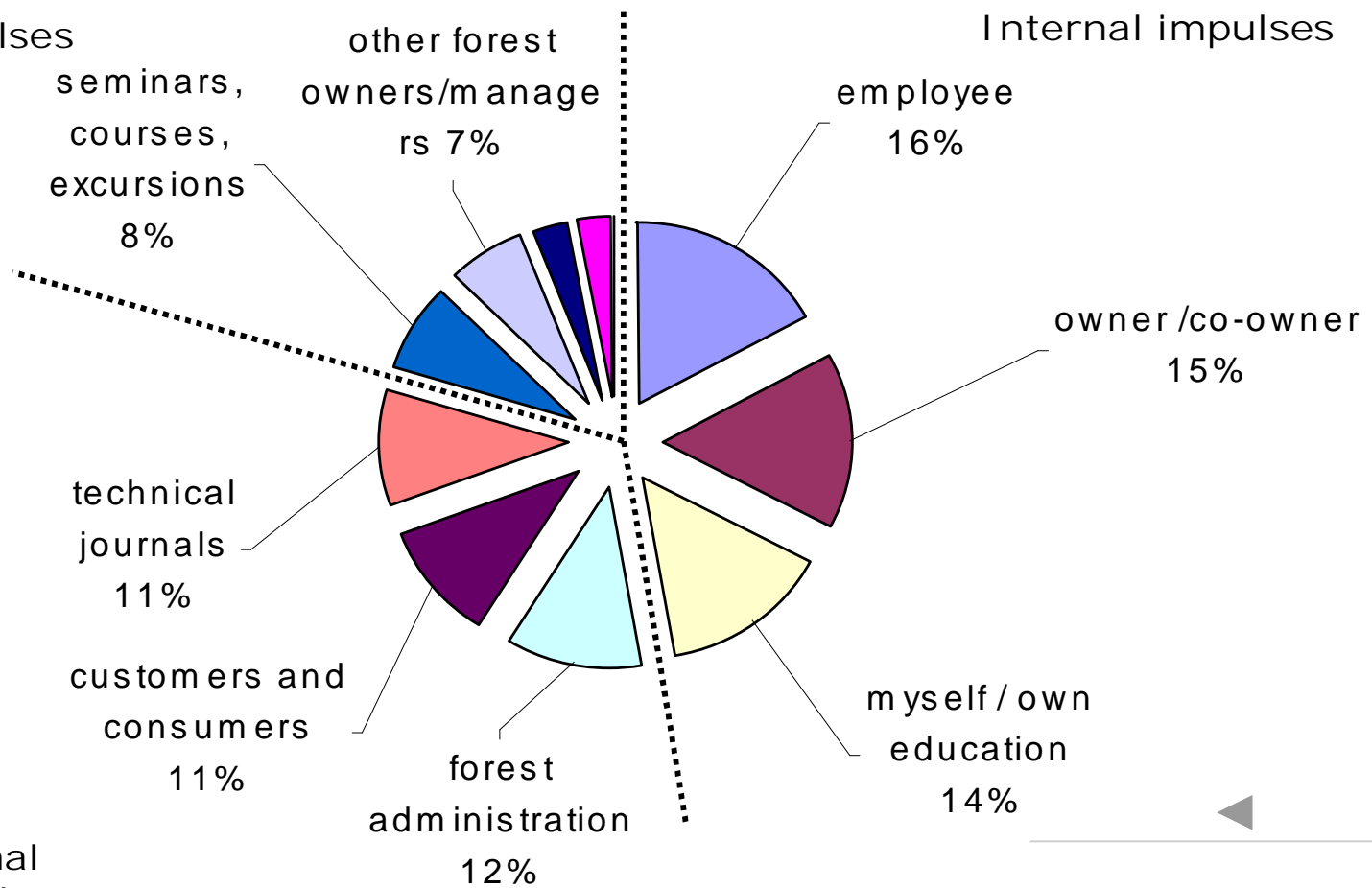
- Technical journals followed by forest administration are most important information sources



Impulses for Innovations

Business-to-business impulses

Internal impulses



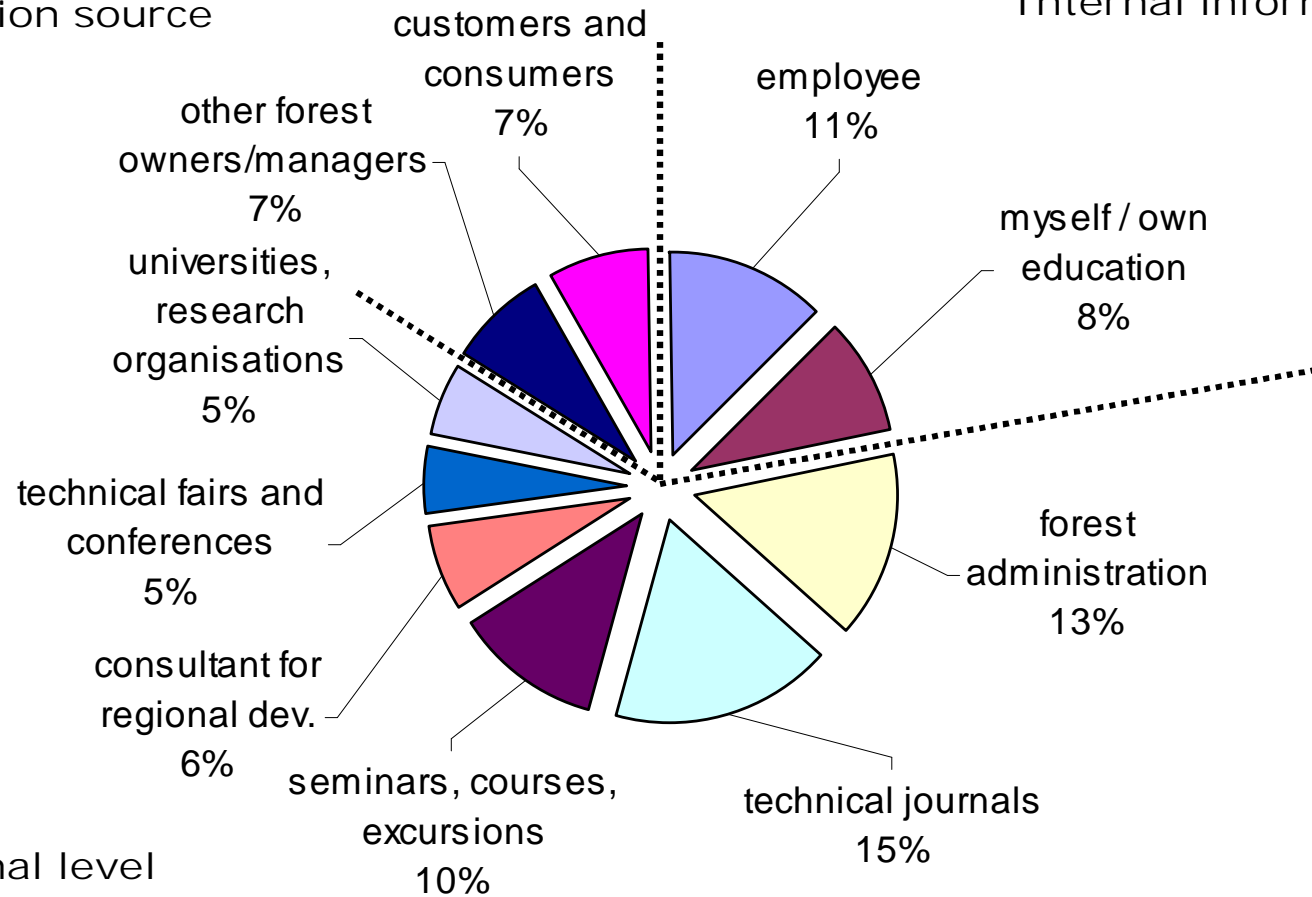
Institutional level impulses



Information for Innovation

Business-to-business
information source

Internal information



Institutional level
information



Fostering and Impeding Factors

u Fostering factors:

- § Co-operation
- § Information
- § Financial means

u Impeding factors - Innovators:

- § Risk
- § Lack of information
- § Lack of financial means

u Impeding factors - Non-innovators:

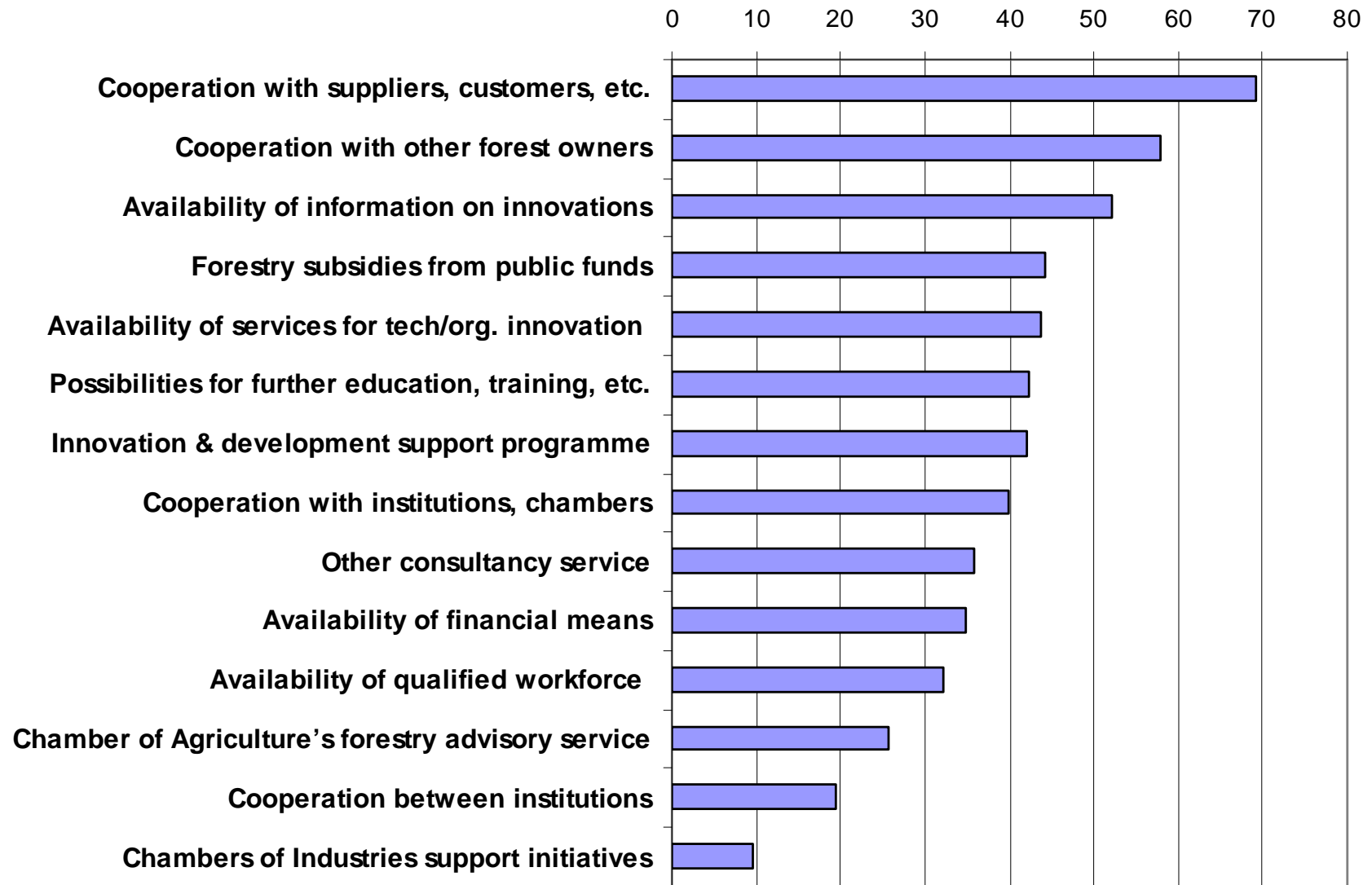
- § Lack of financial means /high costs
- § Lack of information
- § Risk

u Suggestions for improvements:

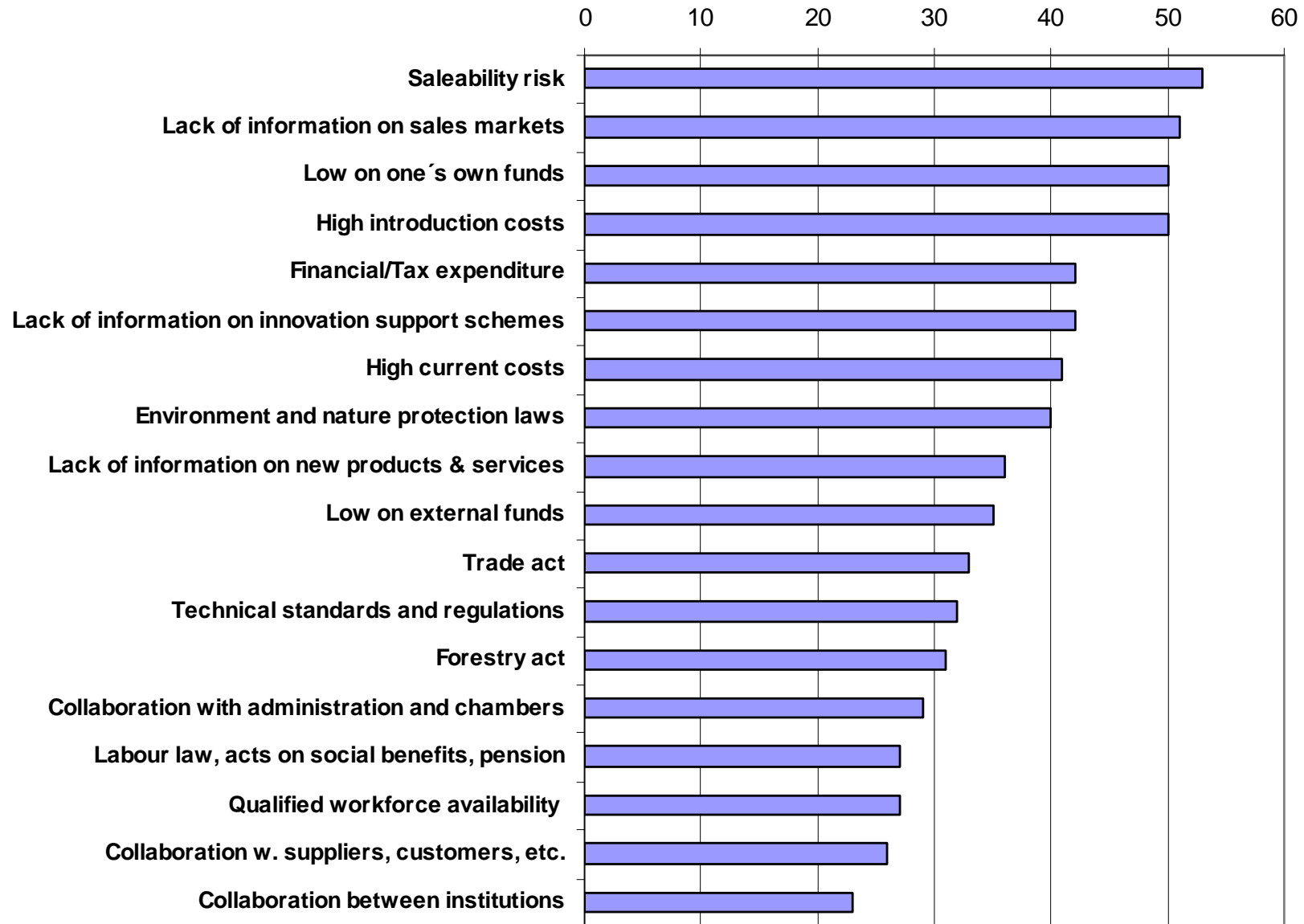
- § Forest subsidies
- § Market information



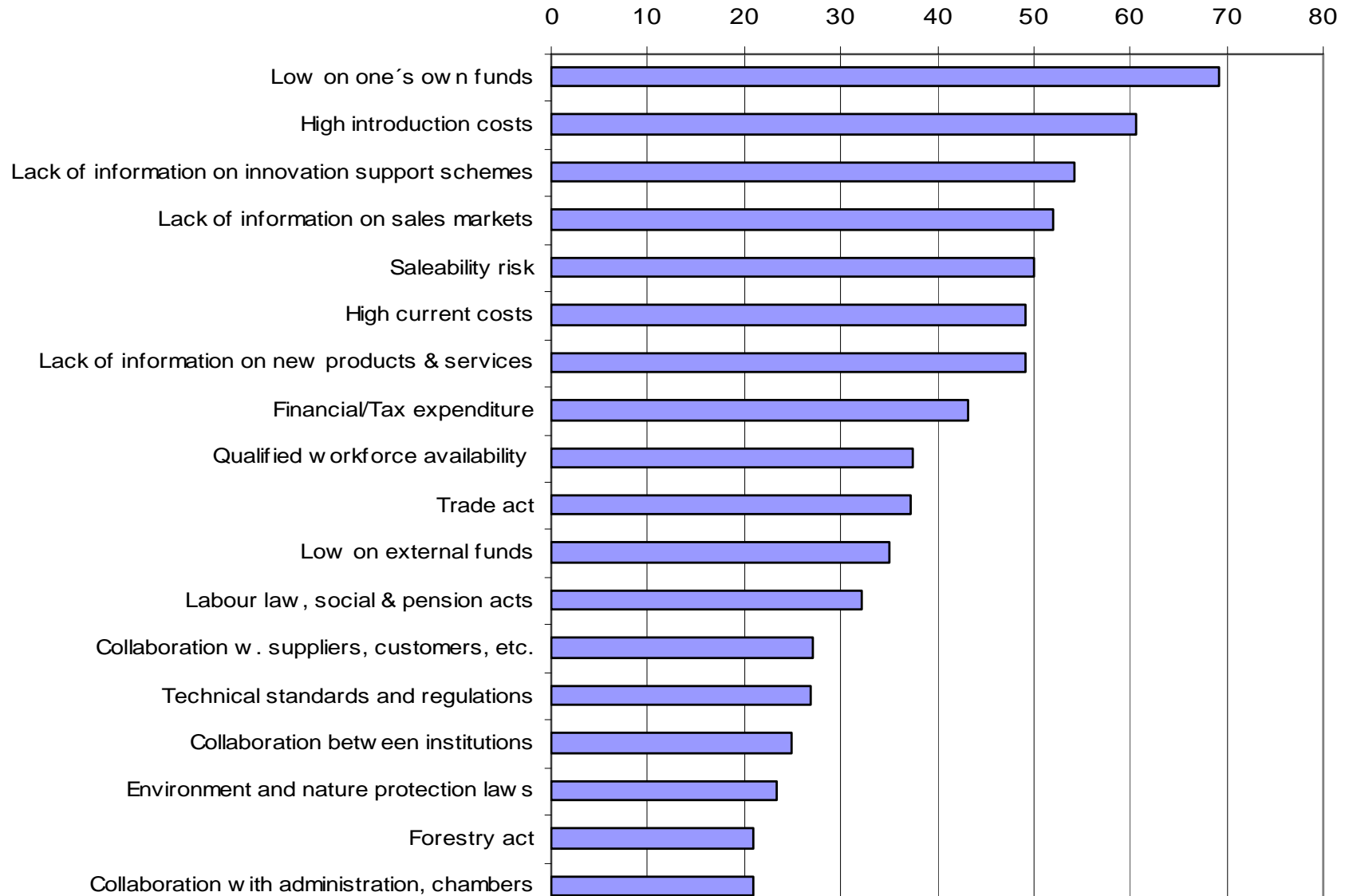
Fostering Factors: Innovators



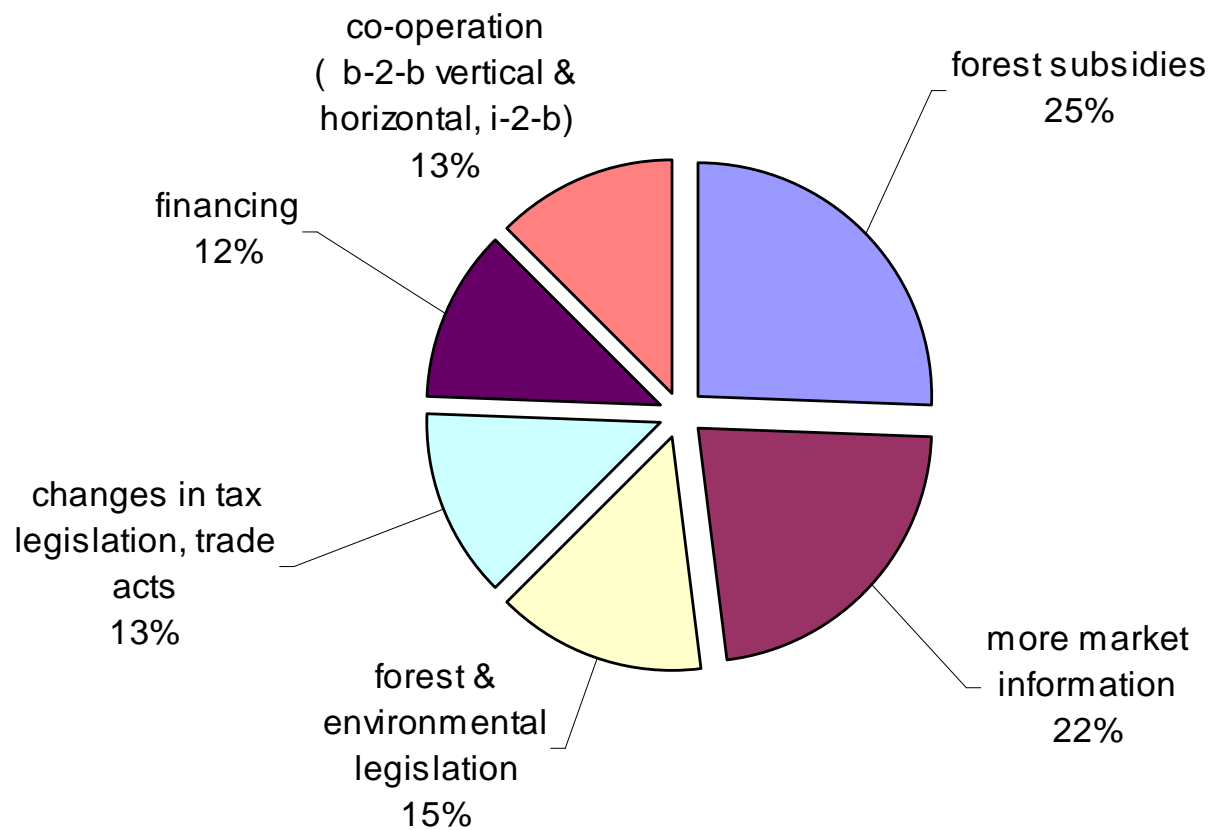
Impeding Factors: Innovators



Impeding Factors: Non-Innovators



Suggestions for Improvements



Summary

- u Various factors influence the innovation possibilities of firms
 - u Large number of small-scale forestry
 - u Low innovation activity in small forest holdings
 - u Service and organisational innovations dominating
 - u Impulses mainly internal information mainly institutional
 - u Risk, lack of information and lack of financial means is most impeding
 - u Co-operation is most important strategy to overcome size-related problems



Questions





Thank you

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