Priorities in Occupational Health and Safety

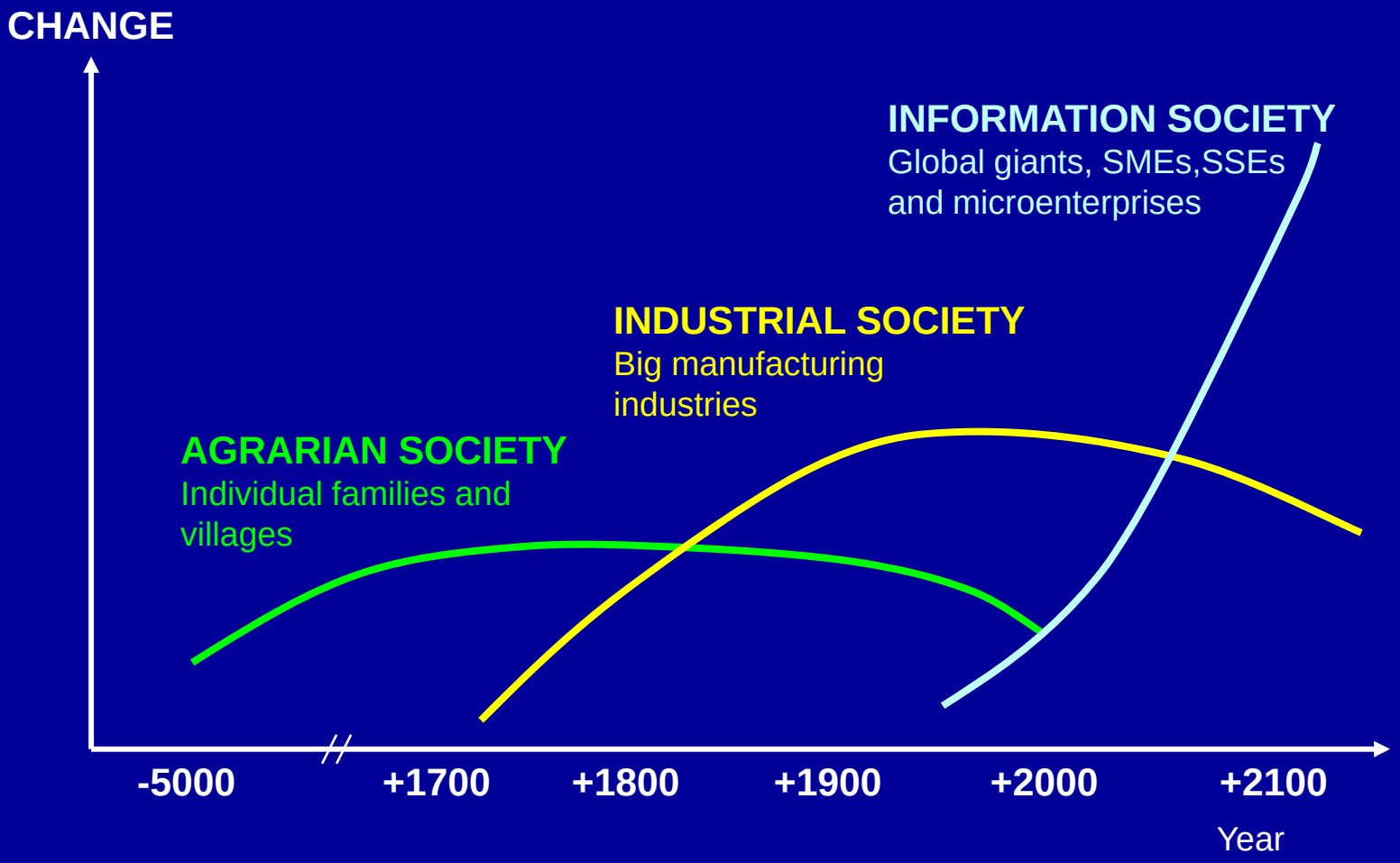
Centre for Public Health Research, Massey University

4 September 2002 Wellington, New Zealand

Occupational health and Safety in the 21st Century

Professor Jorma Rantanen, Finnish Institute of Occupational Health

Three phases of development of economic structures each with special type of enterprises



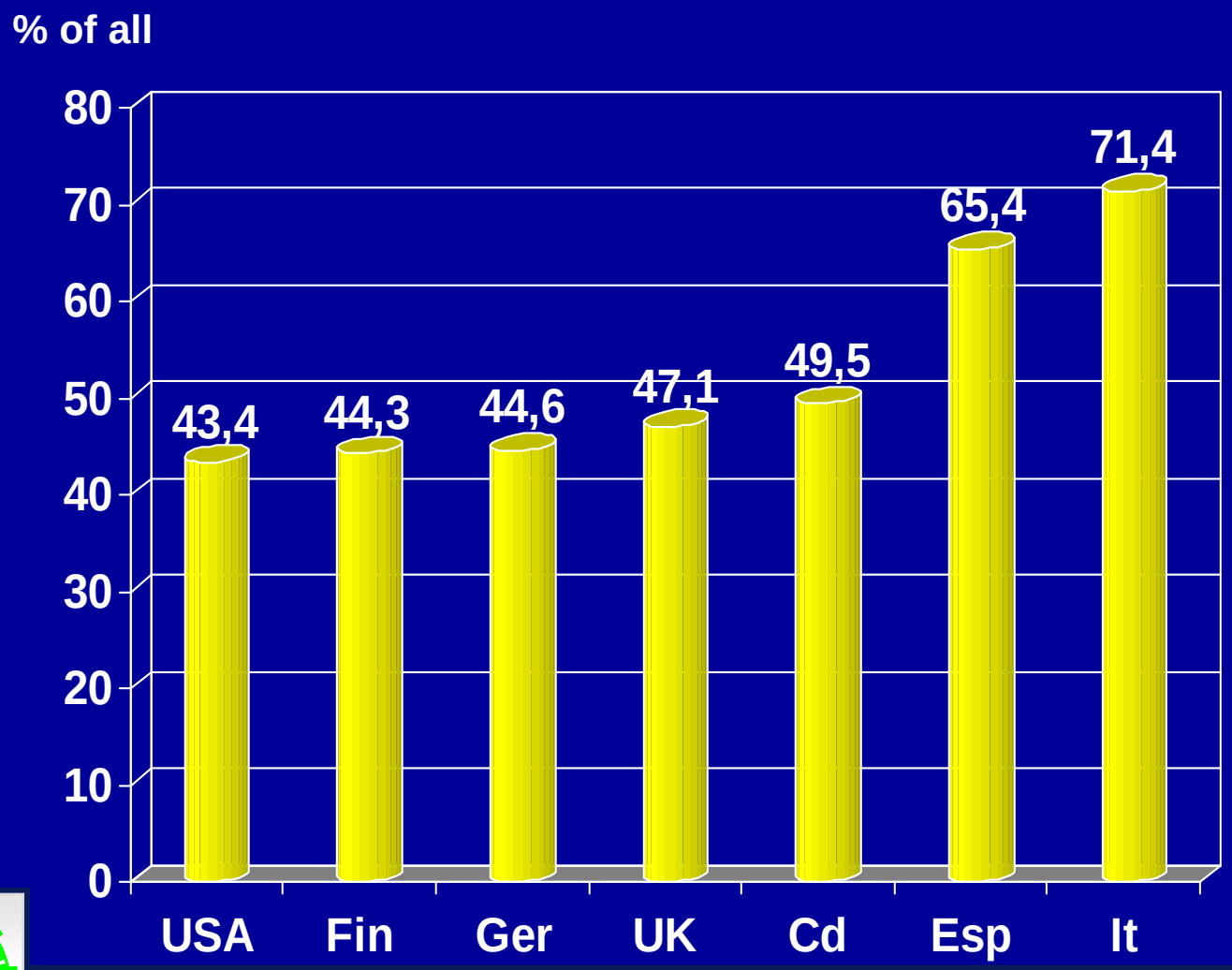
Ghange

State and corporate in the global system

(Source: World Economic Forum 1999)

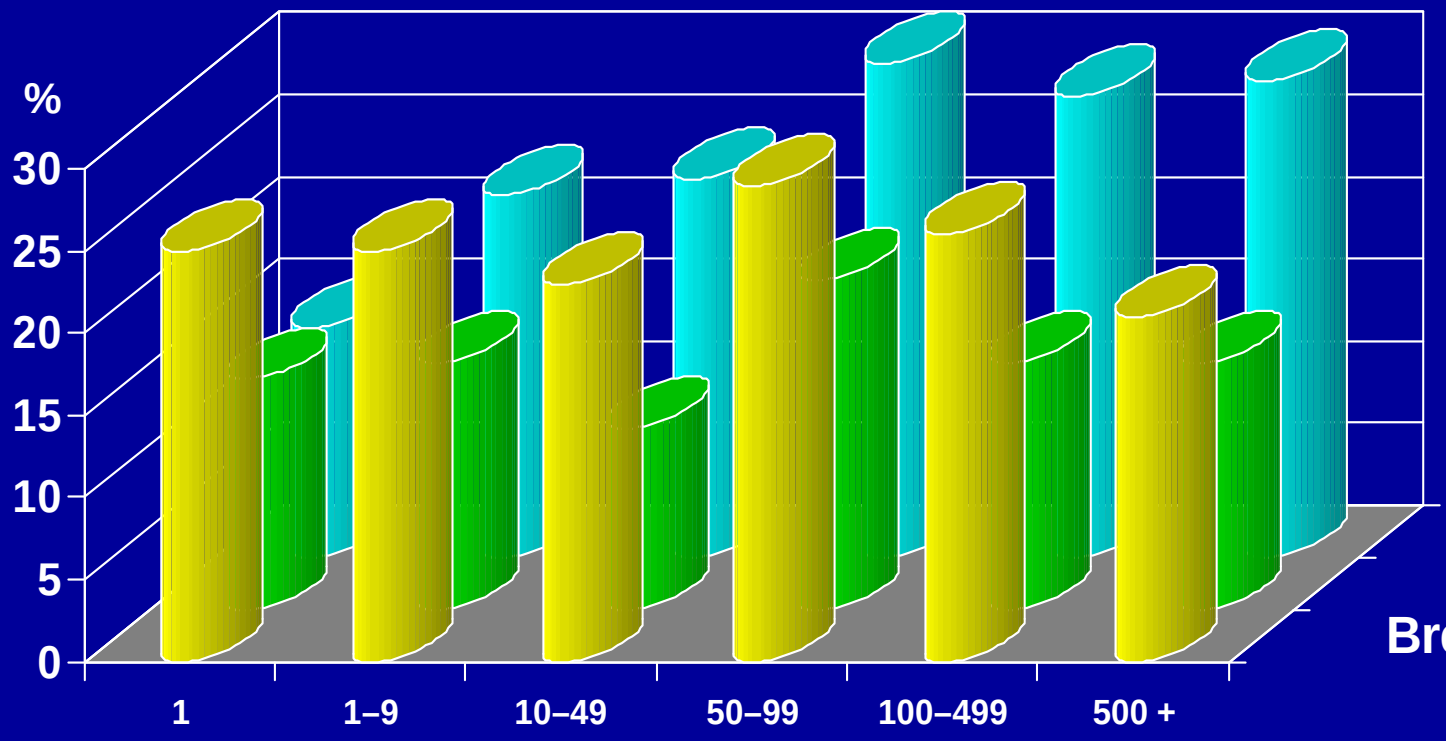
Country / Company	Total GDP or corporate sales
Indonesia	174.6
General Motors	168.8
Denmark	146.1
Ford	137.1
South Africa	123.3
Toyota	111.1
Shell	109.8
Norway	109.6
Poland	92.8
Portugal	91.6
IBM	72.0
Malaysia	68.5
Venezuela	59.0
Unilever	49.7
Egypt	43.9
Nigeria	

Proportion of employees of small enterprises (<100) out of total workforce (%)



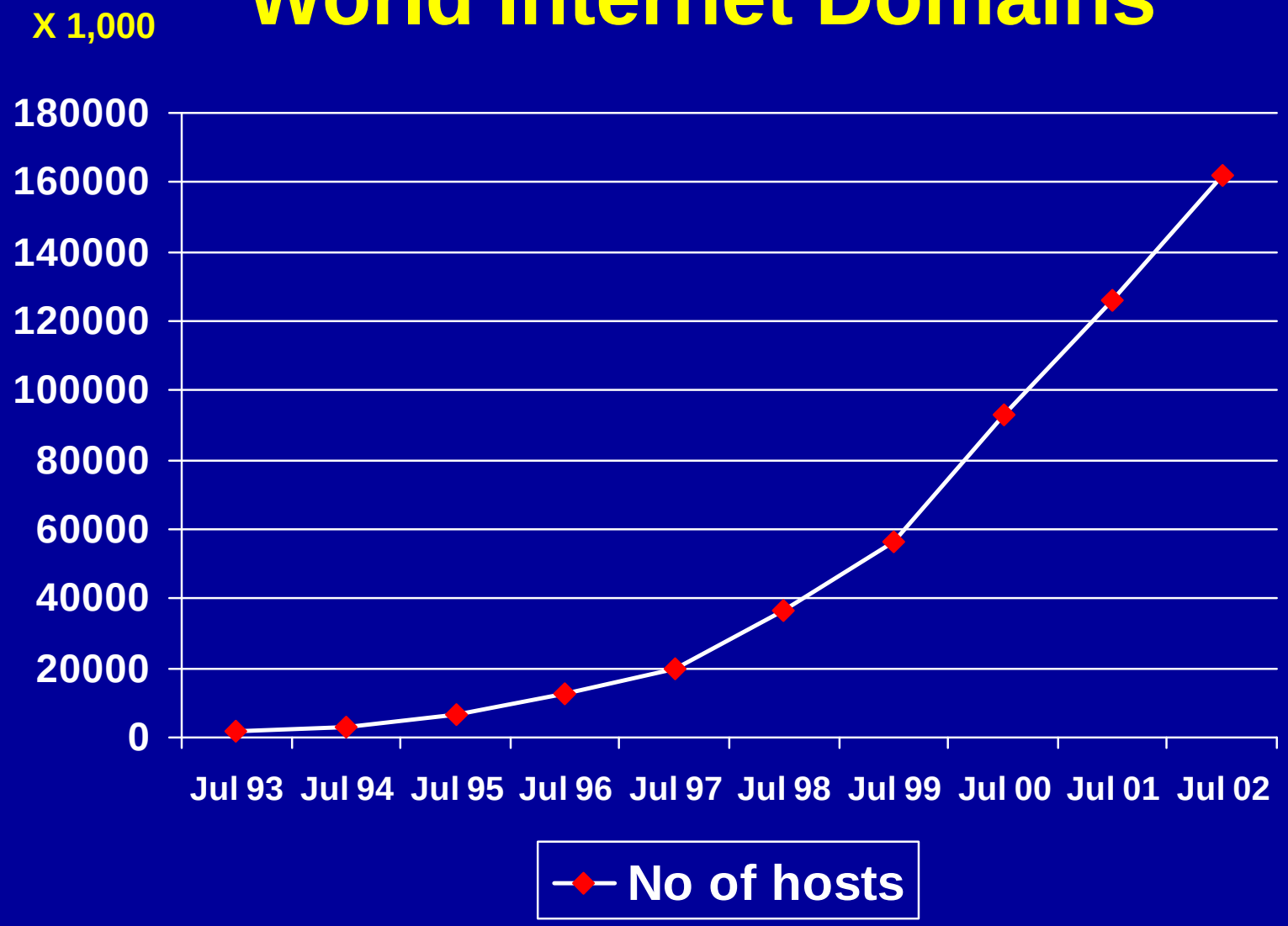
Company size and working conditions

(Source: European Foundation, 2000)



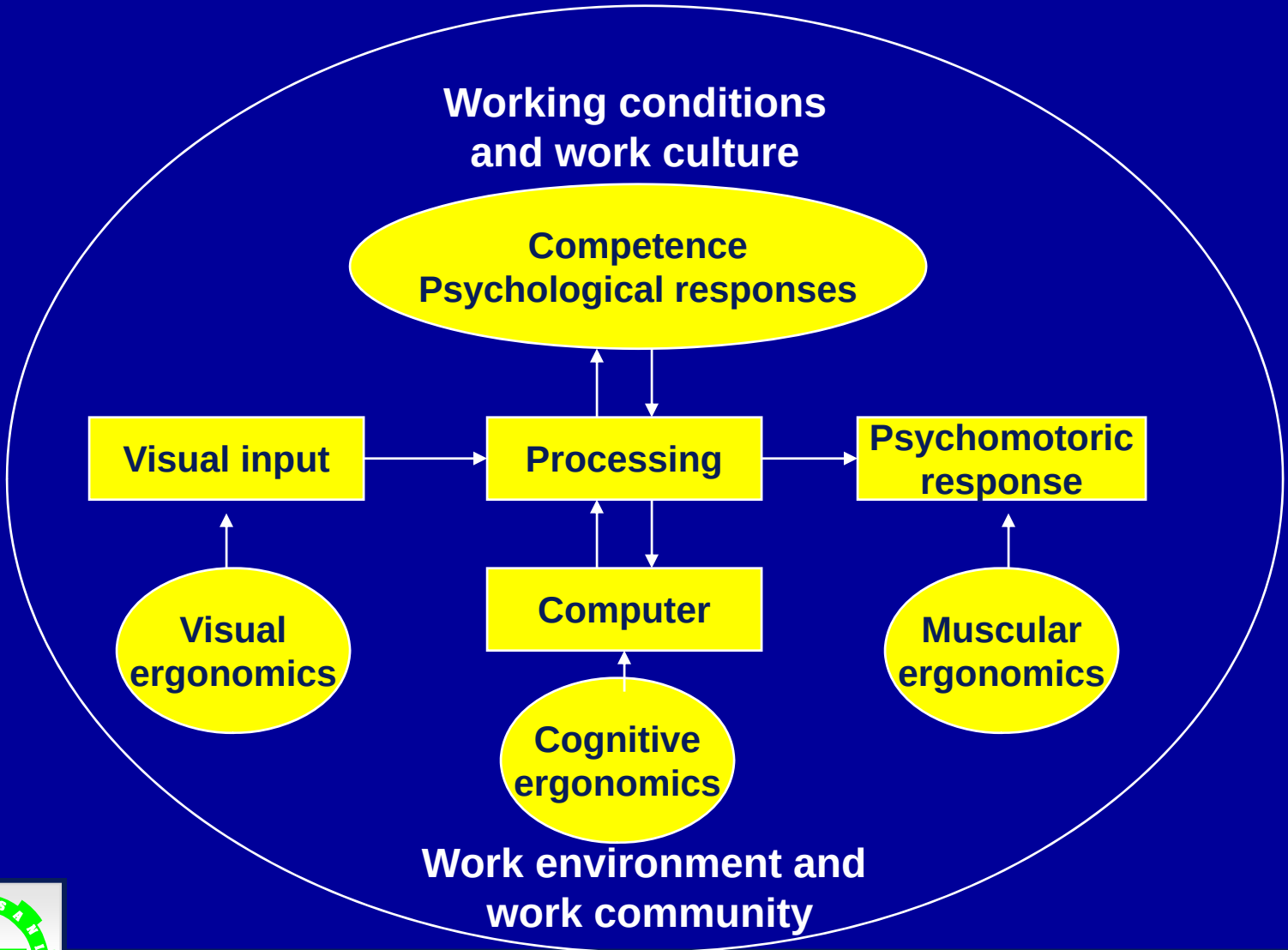
Number of personnel

World Internet Domains



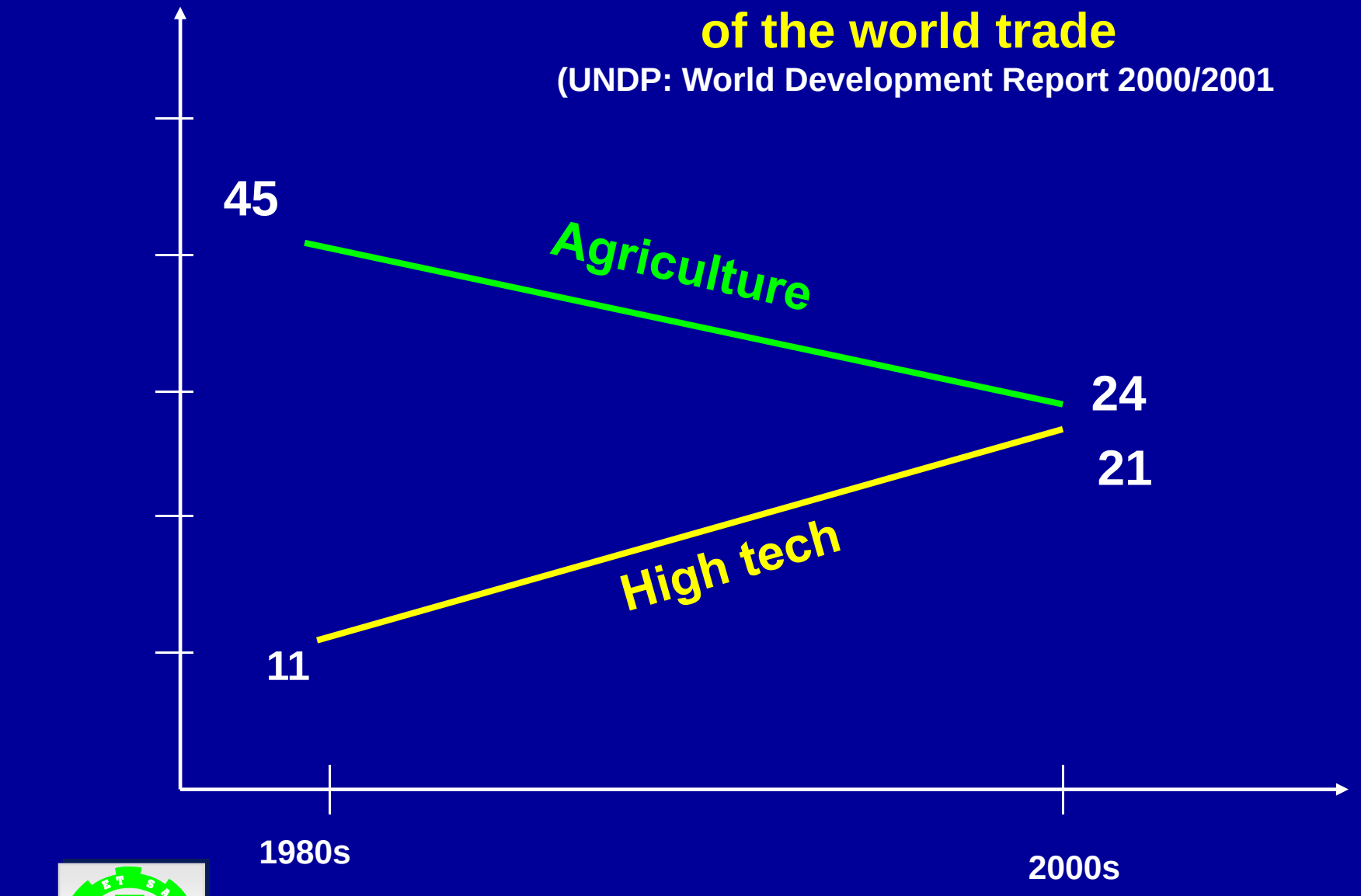
Source:Internet Software Consortium, Internet Domain Survey, www.isc.org

Human-technology interface in modern information work



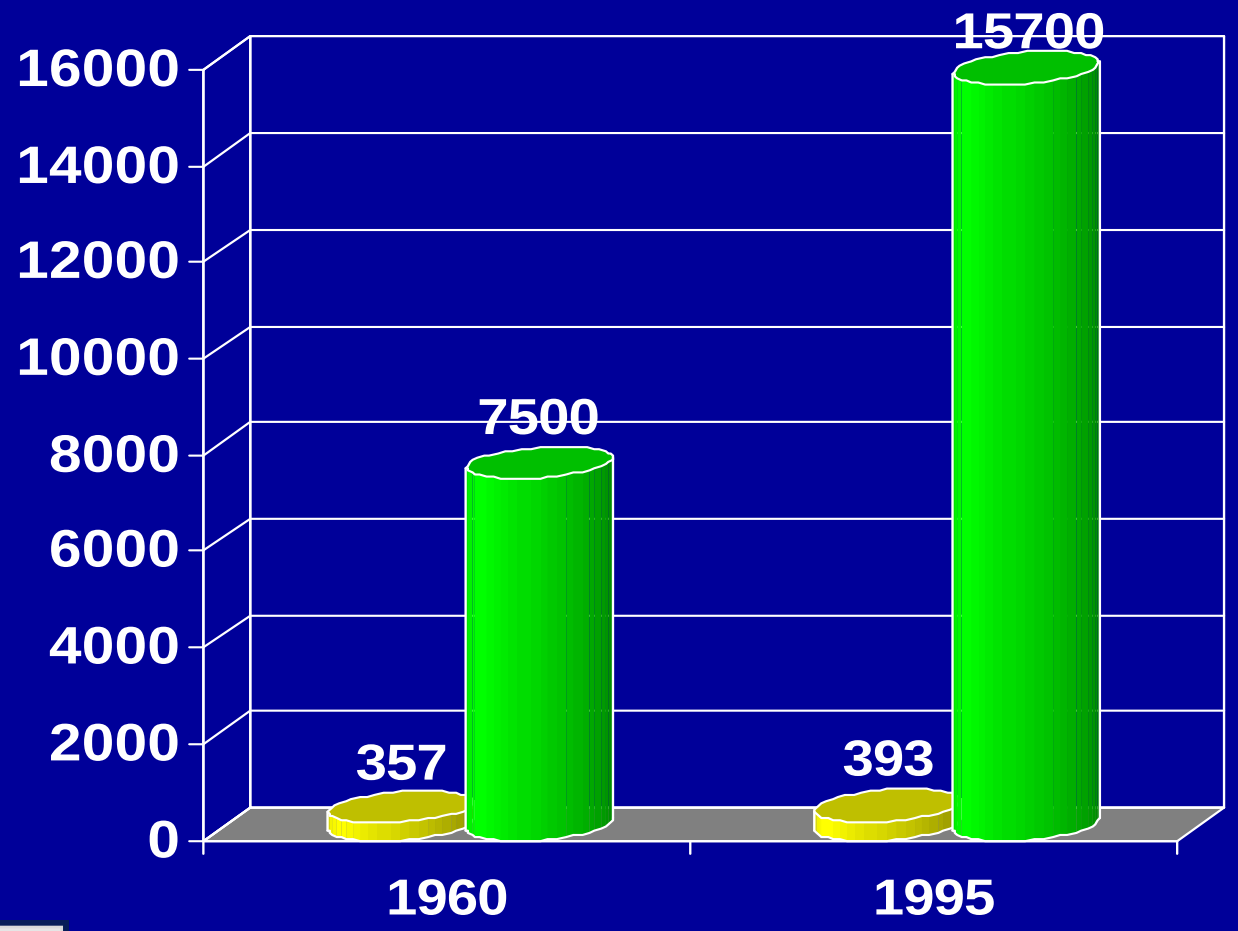
Share of agricultural and high tech products of the world trade

(UNDP: World Development Report 2000/2001

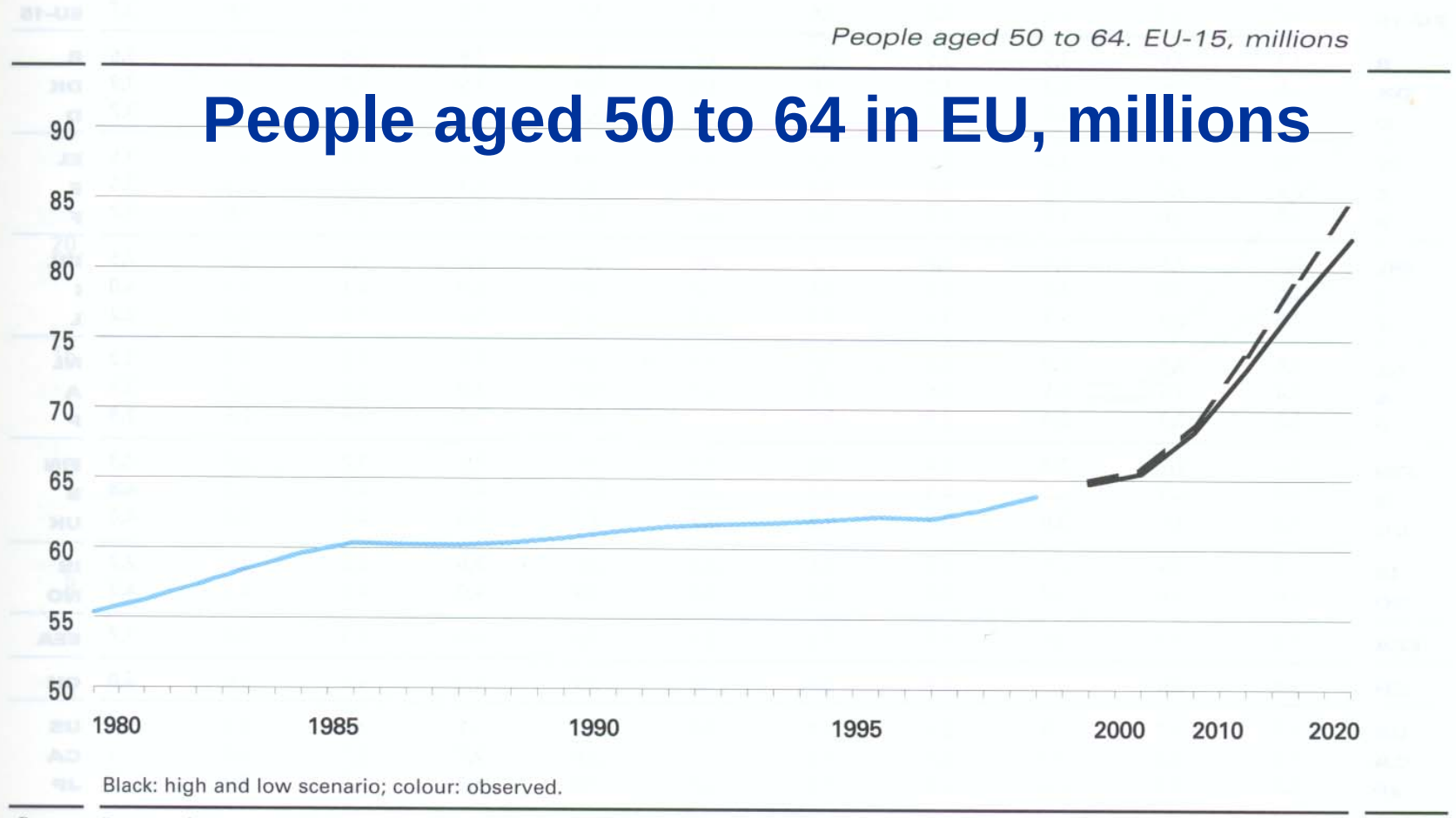


Widening rich – poor gap

(Source: World Development Report 2000/2001, World Bank 2001)



People aged 50 to 64 in EU, millions

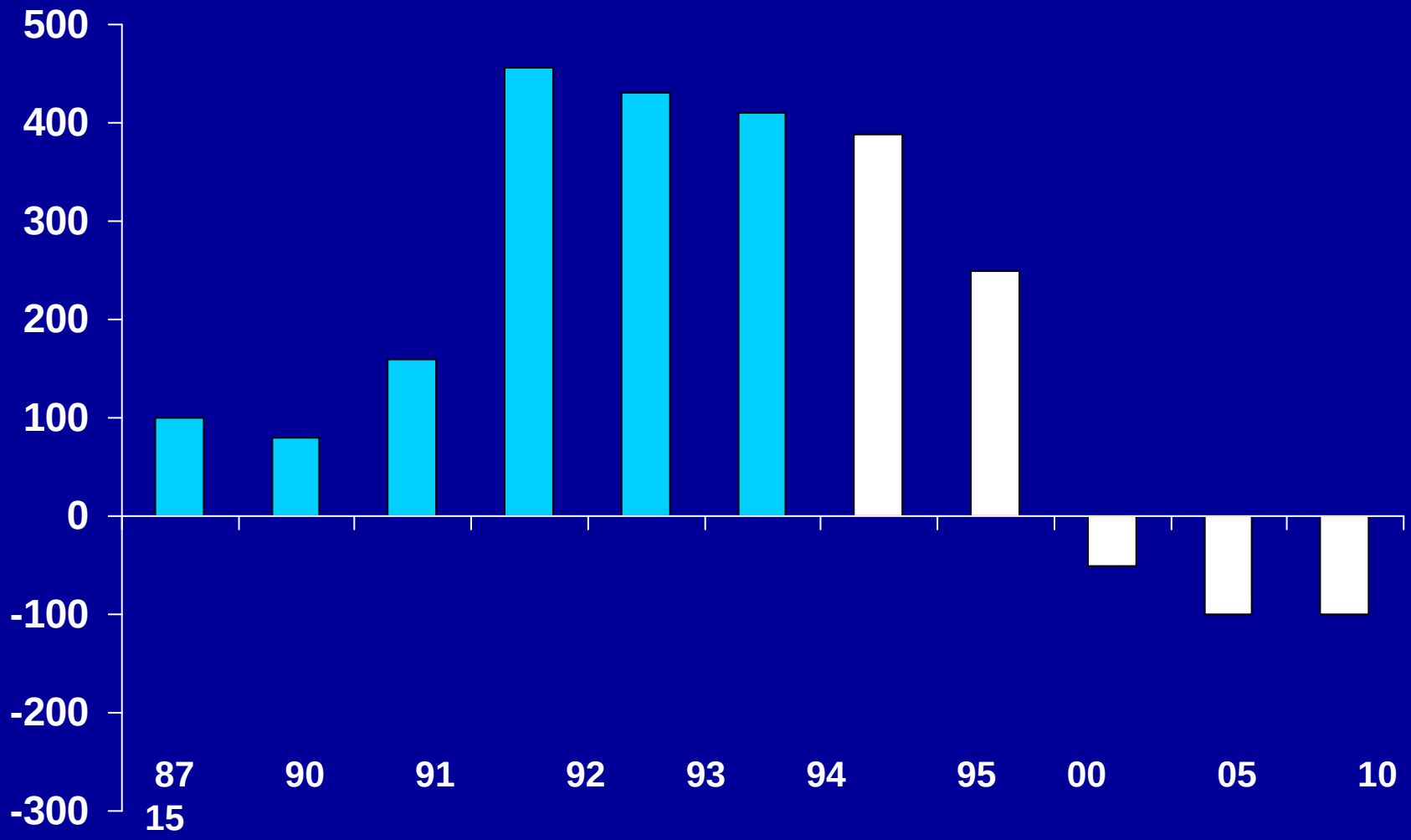


FURTHER READING

Demographic statistics, 1999. Eurostat. Beyond the predictable: demographic changes in the EU up to 2050; statistics in focus, population and social conditions, 1997/7. Eurostat.

Source: Eurostat yearbook – A statistical eye on Europe – Data 1988-98

Workforce balance

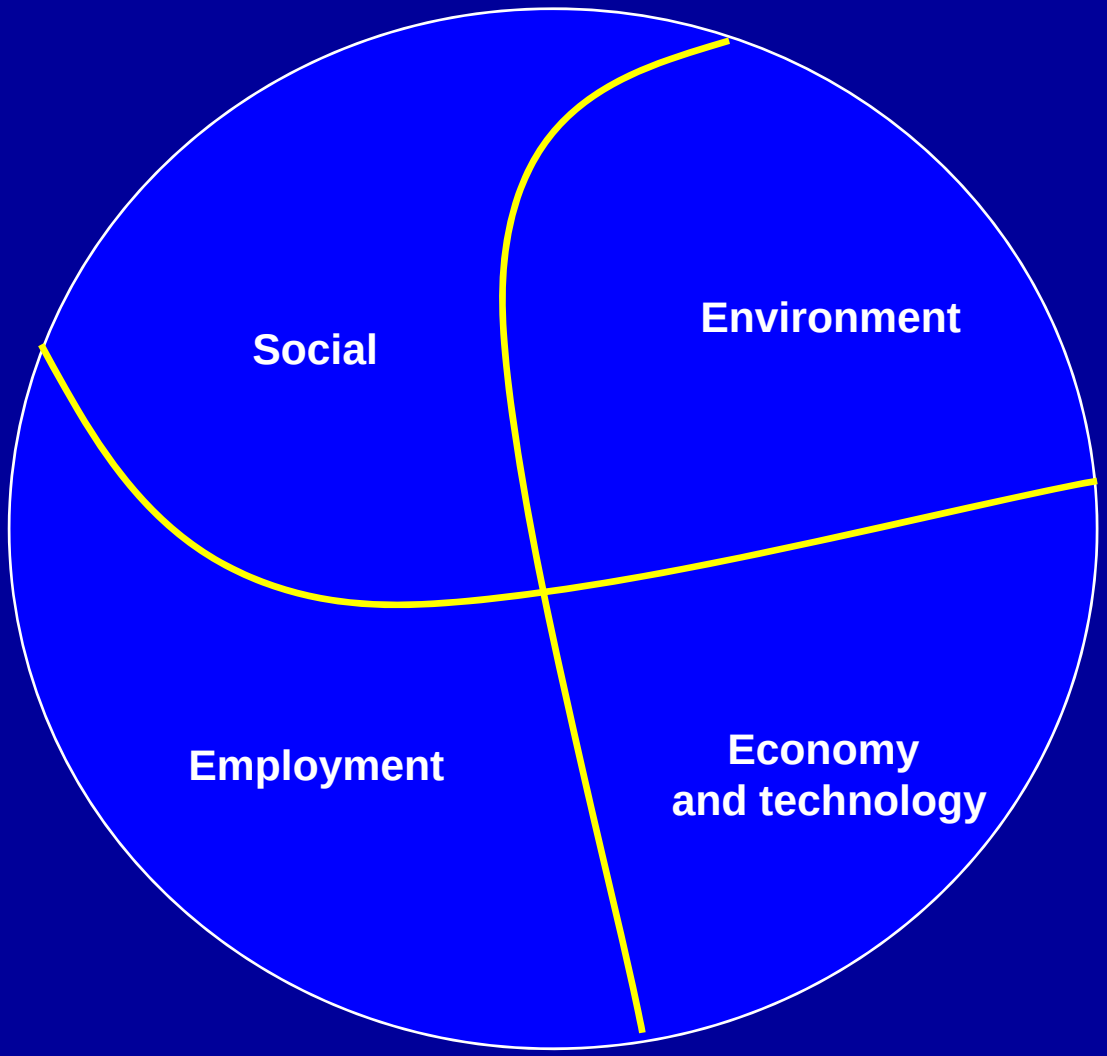


Global actions

Johannesburg, South Africa
August–September 2002
UN Sustainable Development

DOHA, Qatar
November 2001
WTO Fair Competition for DCs
in the Global Market

Monterrey, Mexico
March 2002
UN Financing Development


Social
Environment
Employment
Economy
and technology

Occupational accidents and diseases

- Occupational accidents 270 million
- Occupational diseases 160 million
- Fatalities, accidents 360000
- Fatalities, occup. 1.6 million

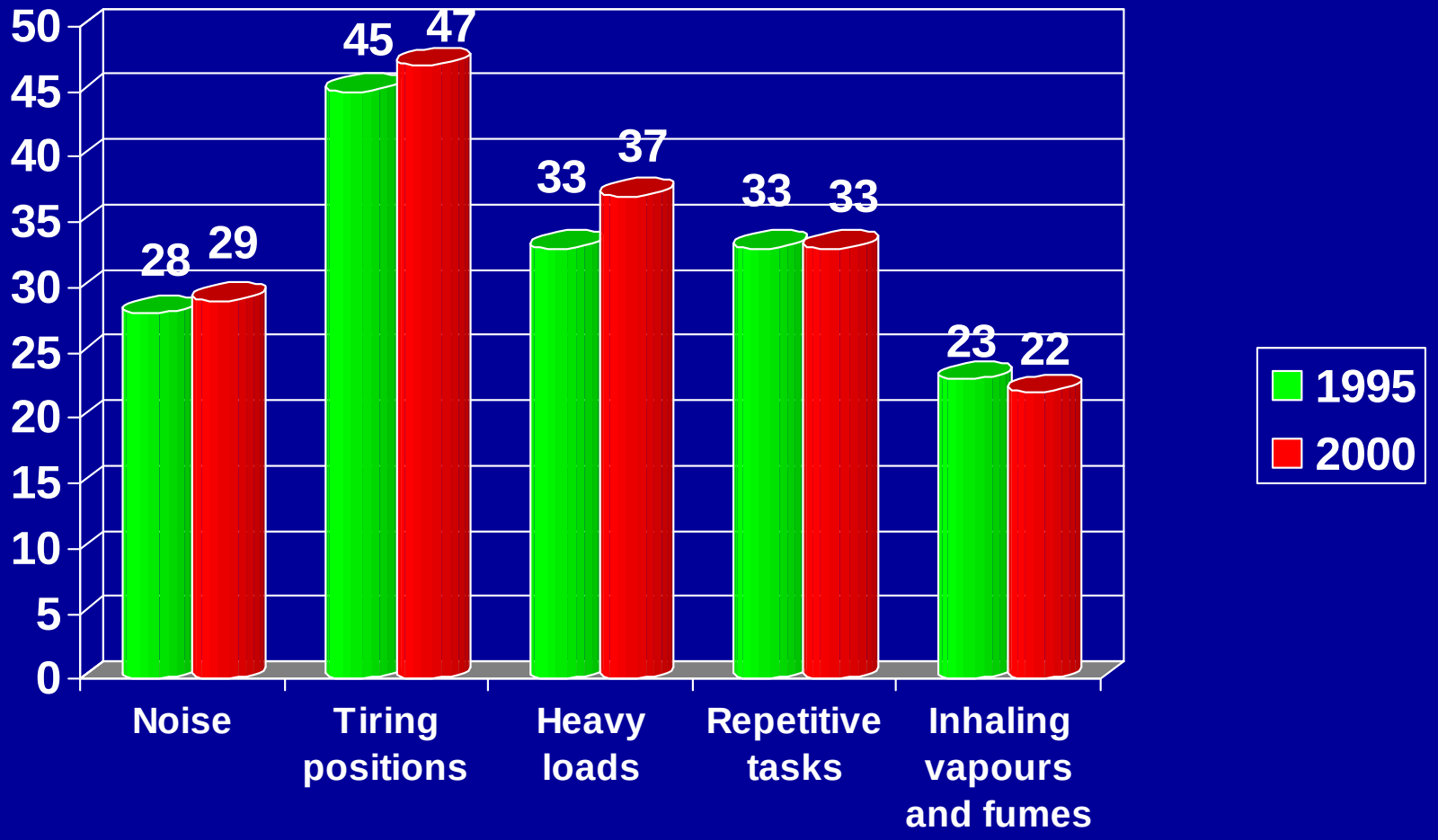
Source: Takala, ILO, InFocuses Programme SafeWork 2002

The highly complex work environment

- Physical factors ~50
- Ergonomic aspects >30
- Chemicals >50000
- Biological factors >200
- Allergens ~3000
- Carcinogens 500-700
- Safety factors n x 100
- Psychological factors ~30
- Social factors numerous

All they may act together!

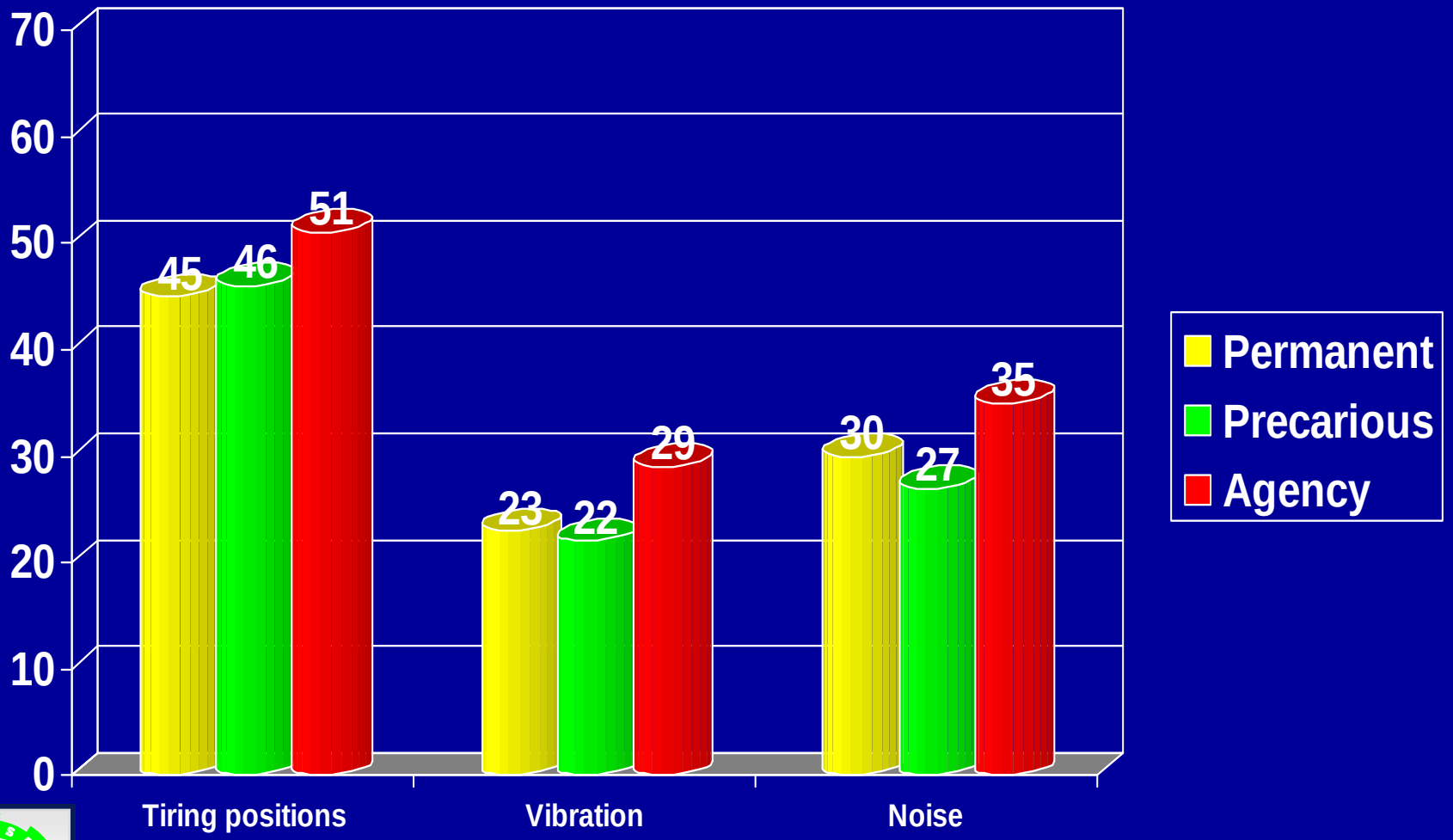
Exposure at work to various factors in the EU



Status and working conditions

(physical hazards)

(Source:Merllié and Paoli, European Foundation, Dublin 2001)



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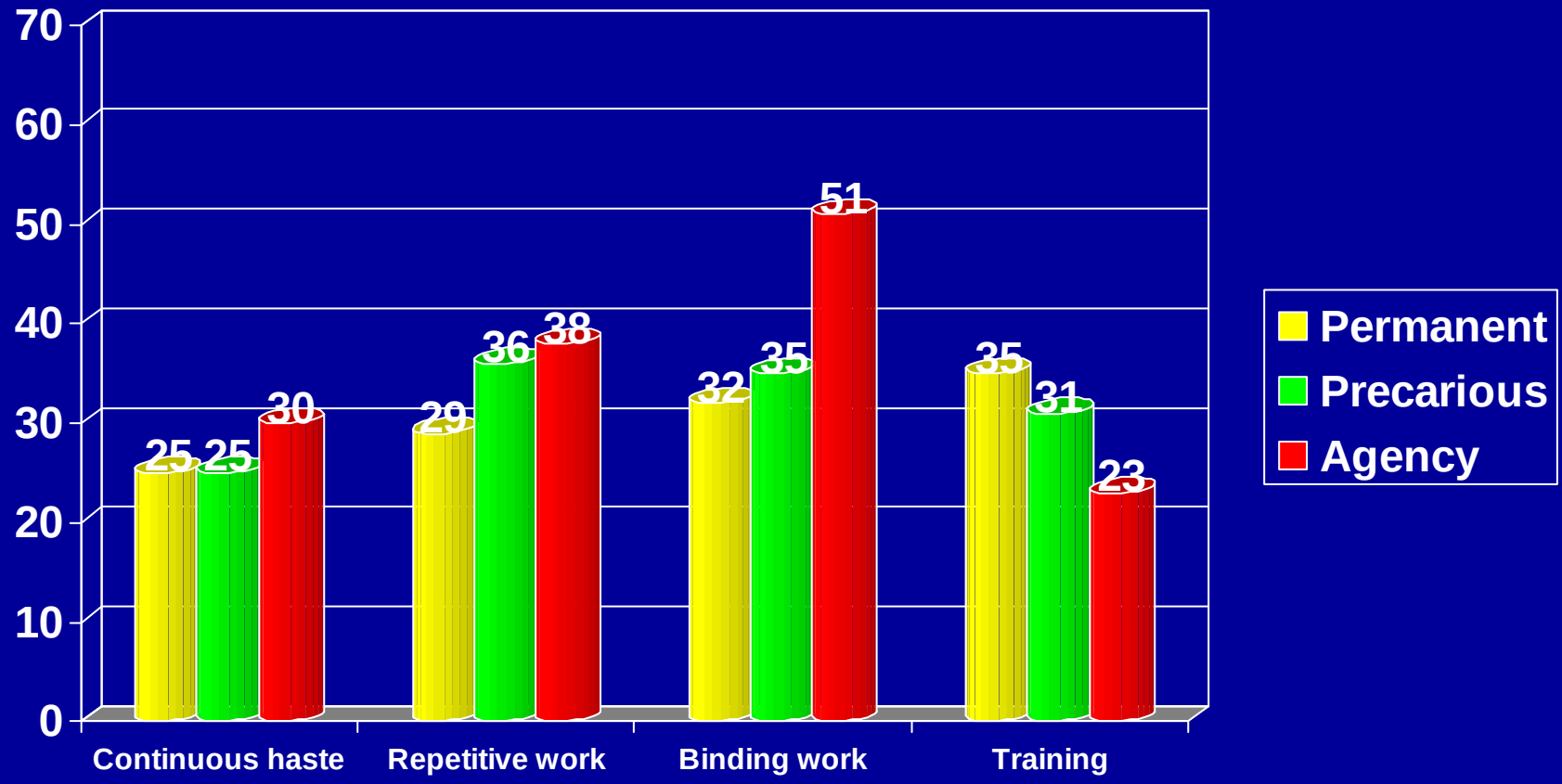
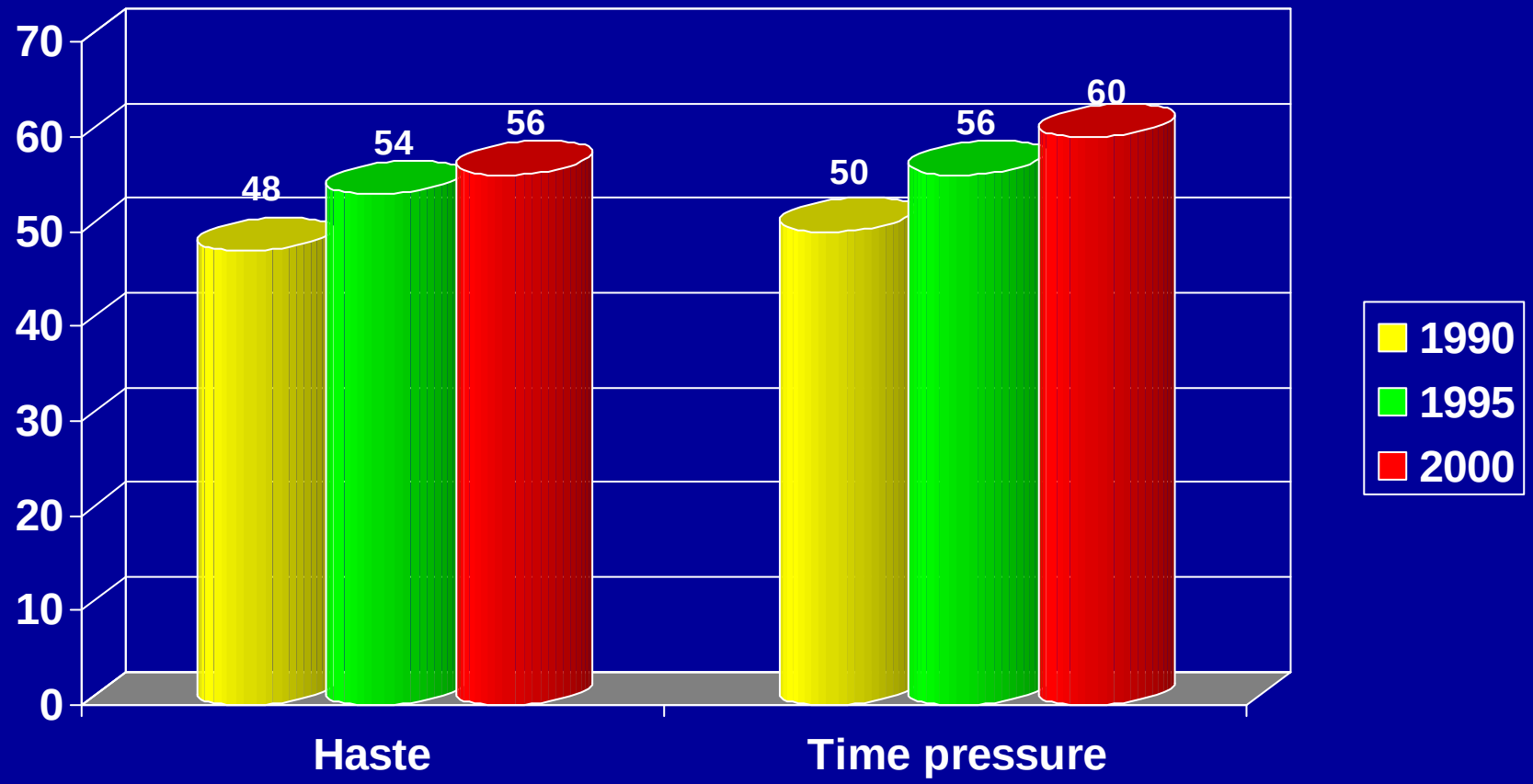


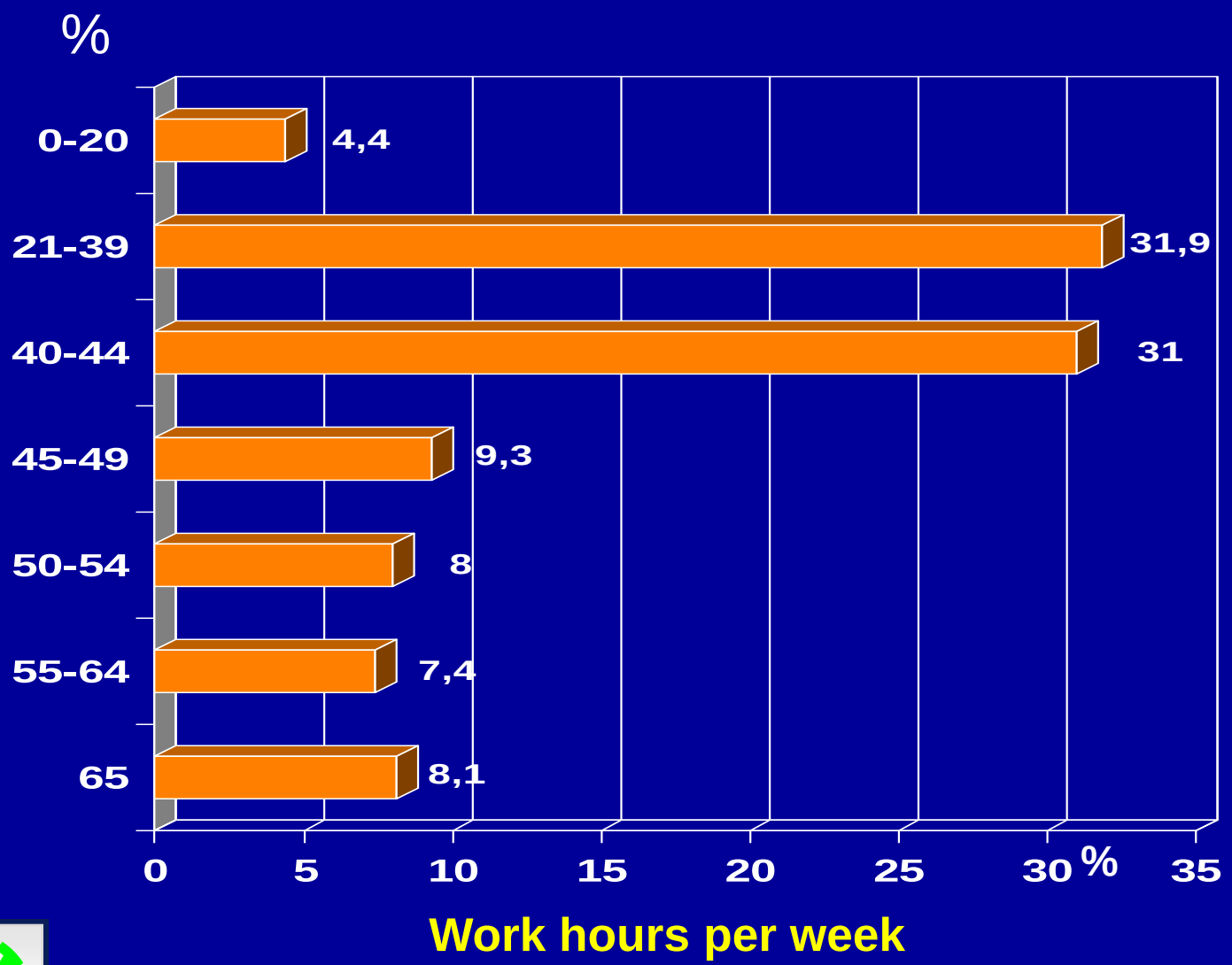
Haste and time pressure at work in the EU

(Lähde:Merllié and Paoli, European Foundation, Dublin 2001)

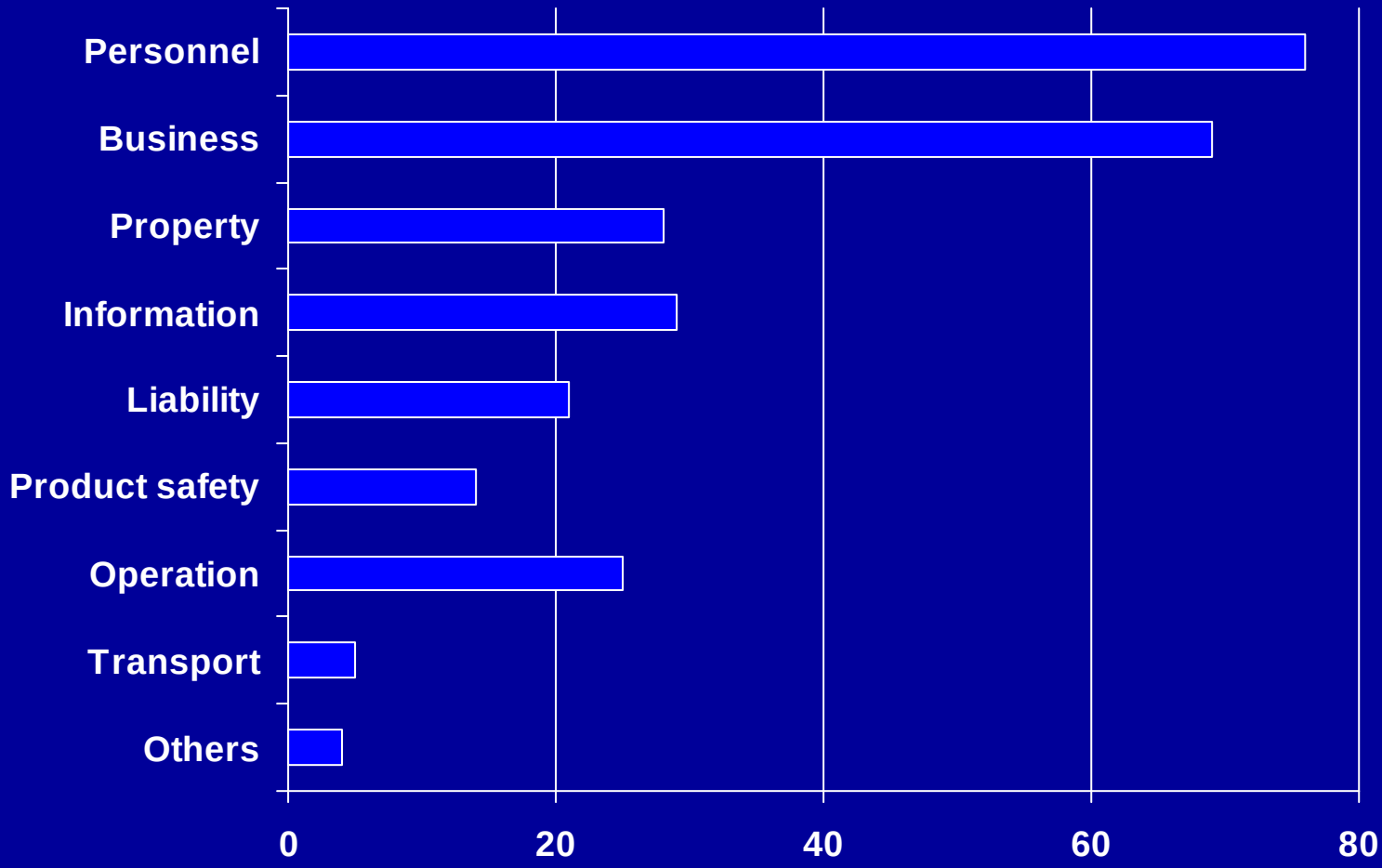


Working hours per week (n=2,295)

Source, Piirainen et al. 1997,2000



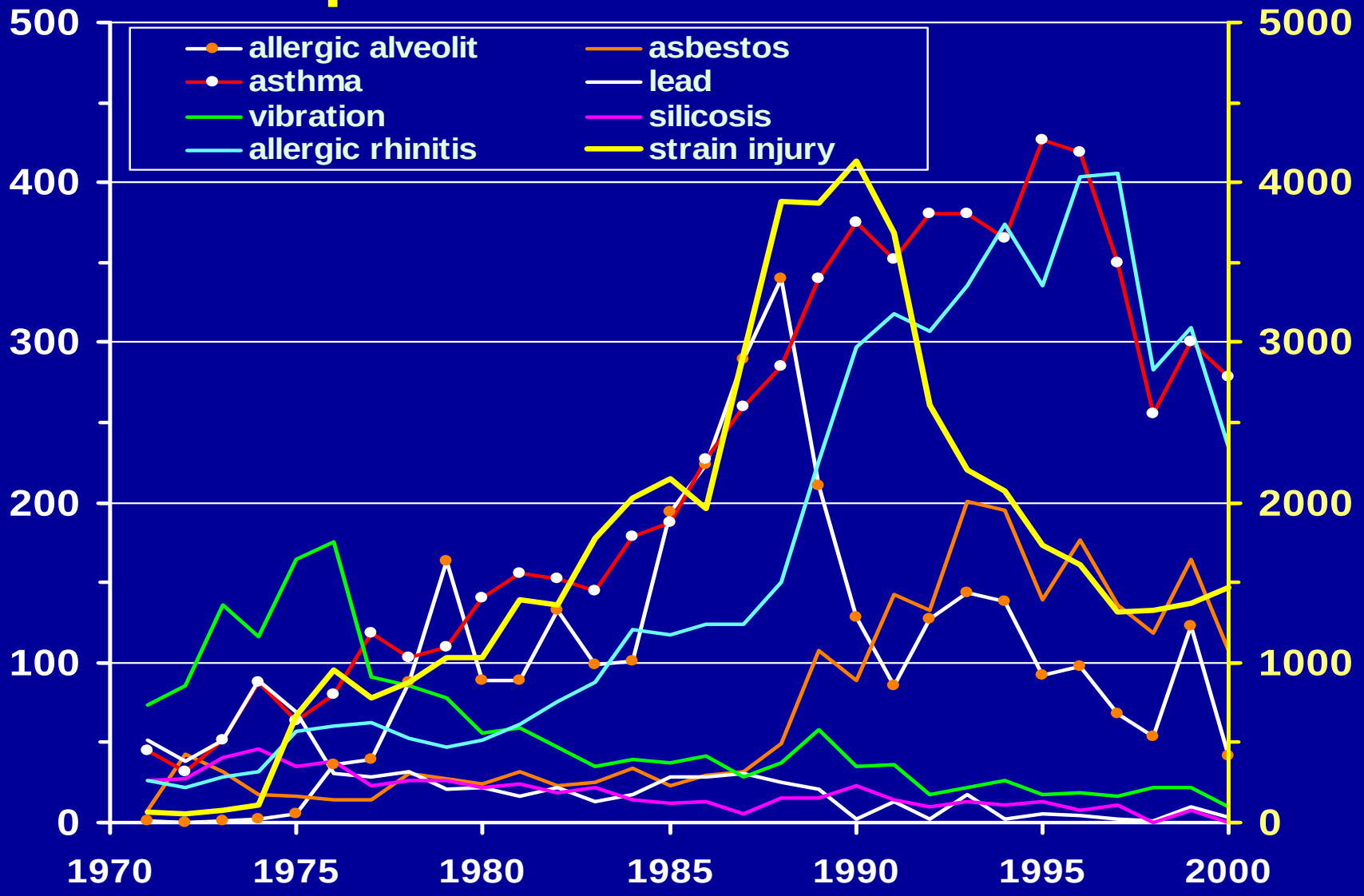
Risks threatening SSEs



%, (N=135)

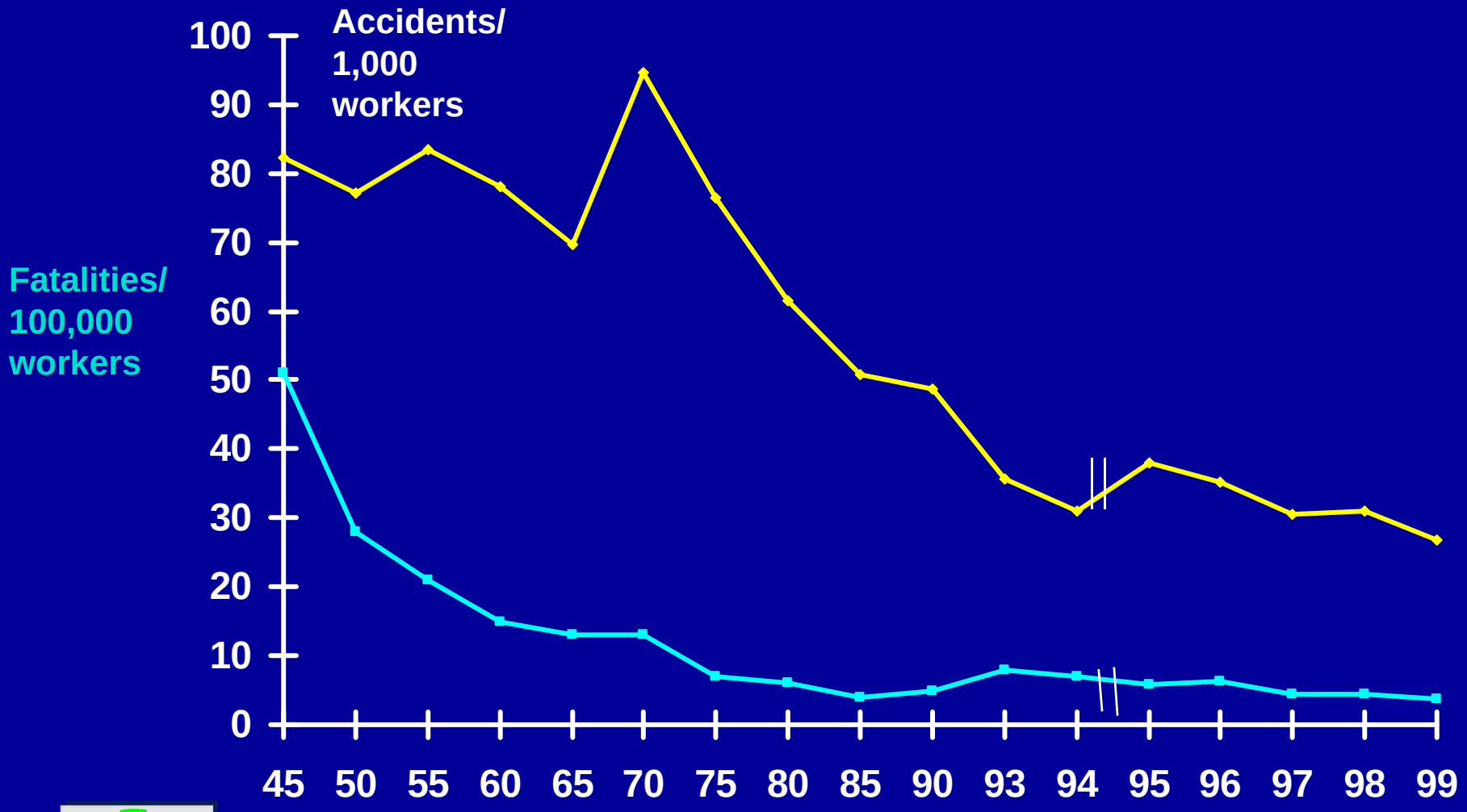
Health

Occupational diseases 1970 - 2000



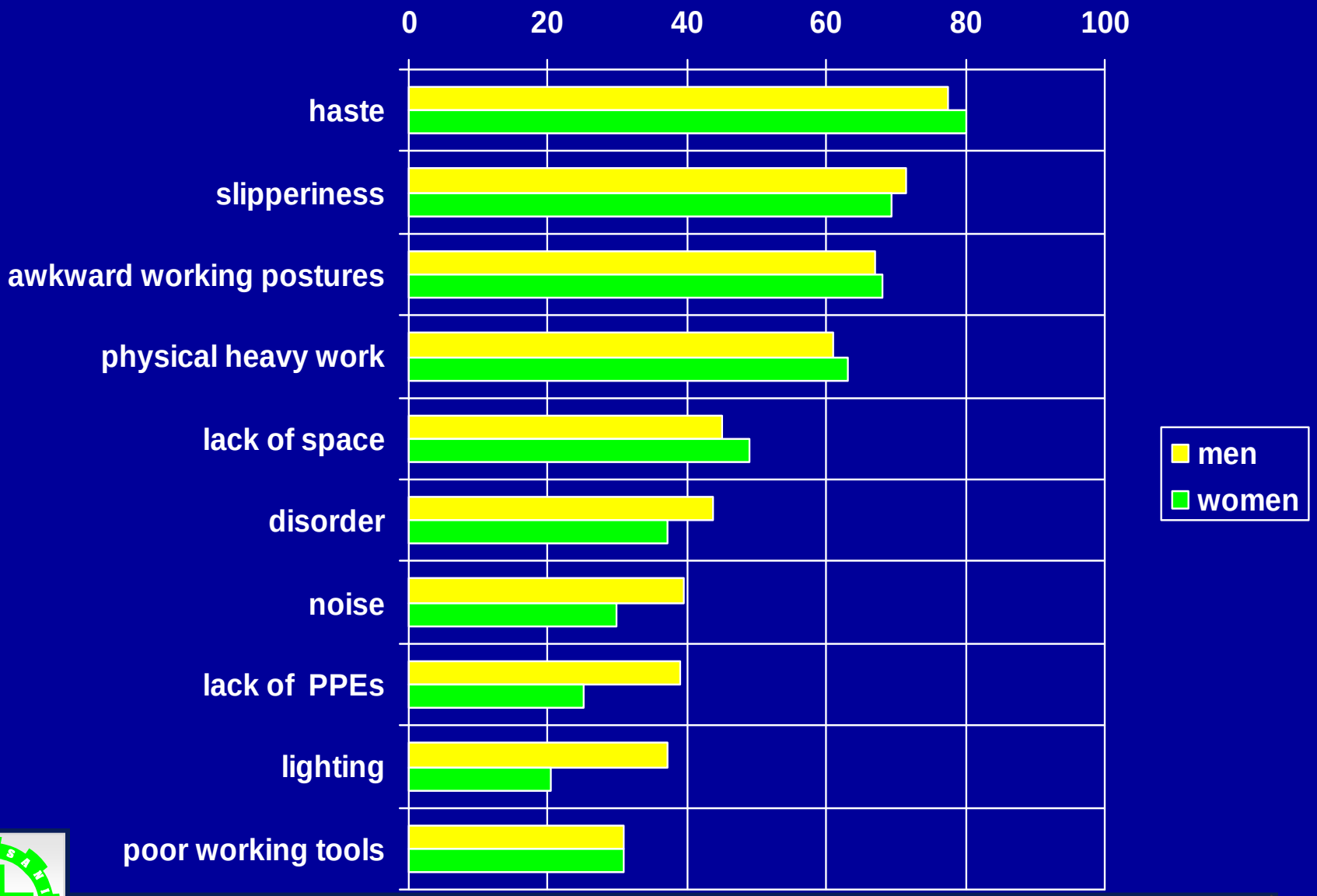
Accidents and fatal accidents at work 1945–99

(including workplace, commuting, ODs)

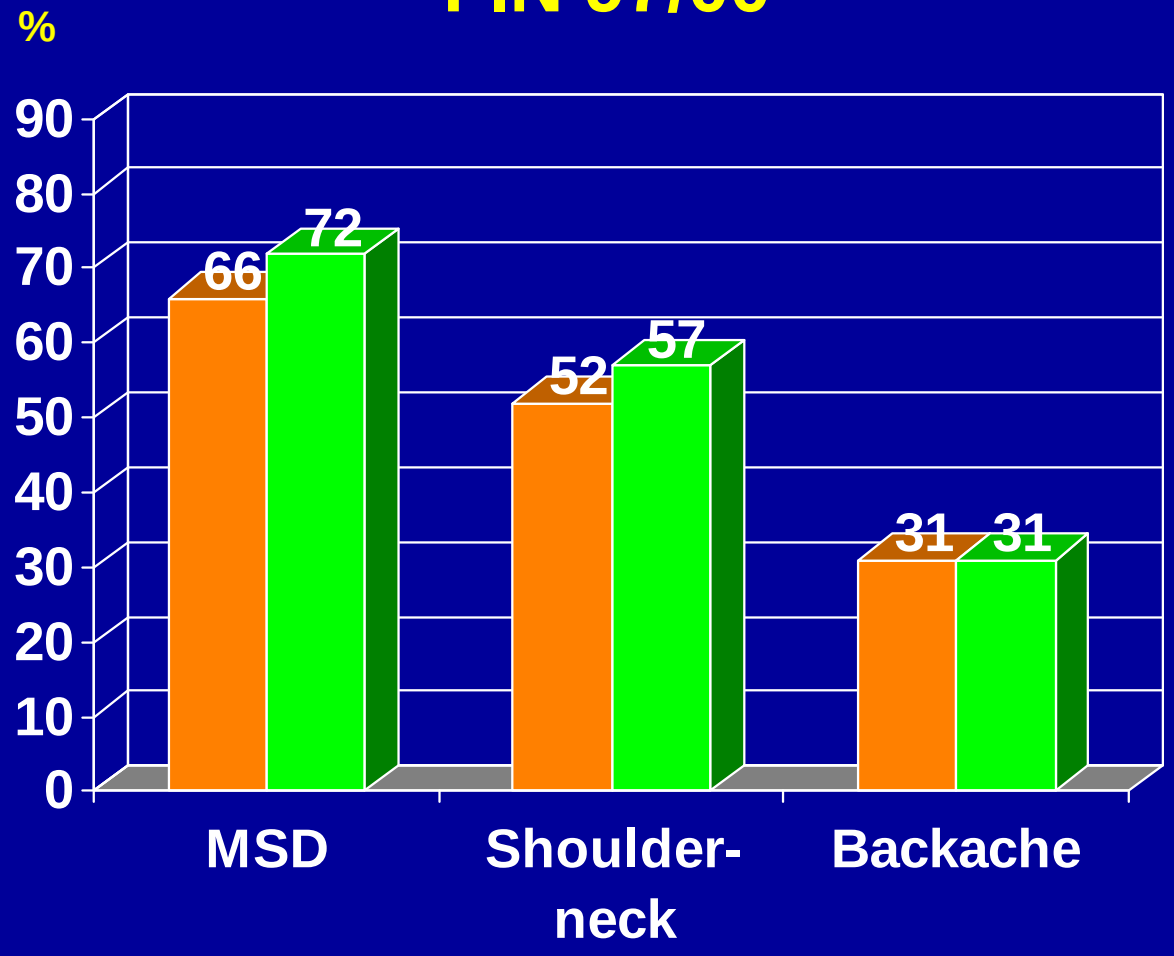


Risk of occupational accidents: those who reported the factor causing risk 'to some extent' or 'much', % of respondents

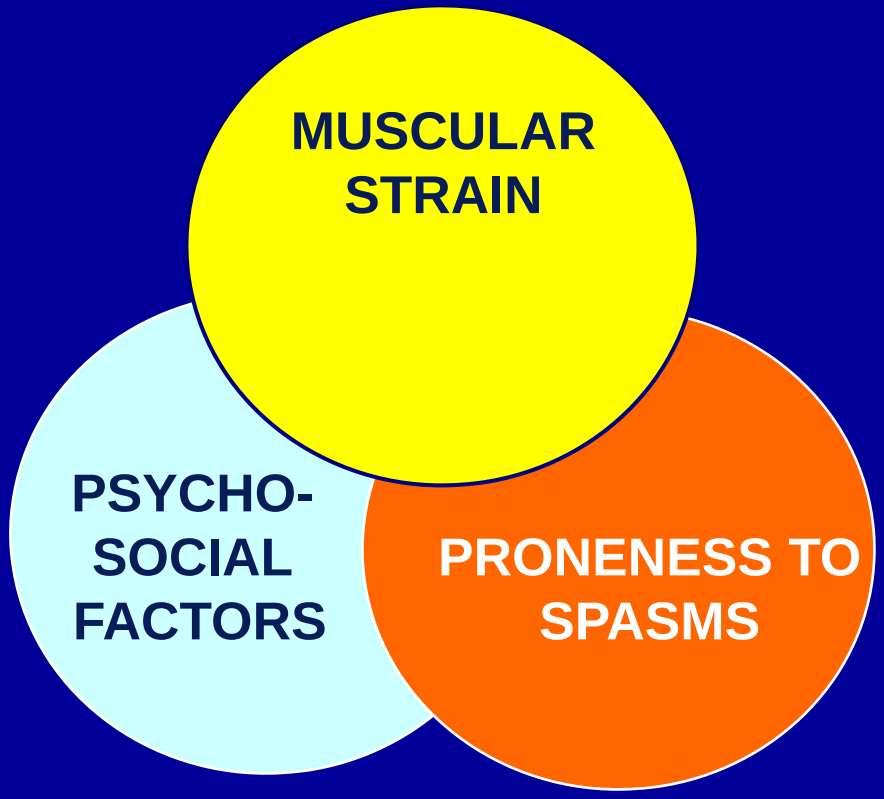
(Source: Piirainen et al. 2000)

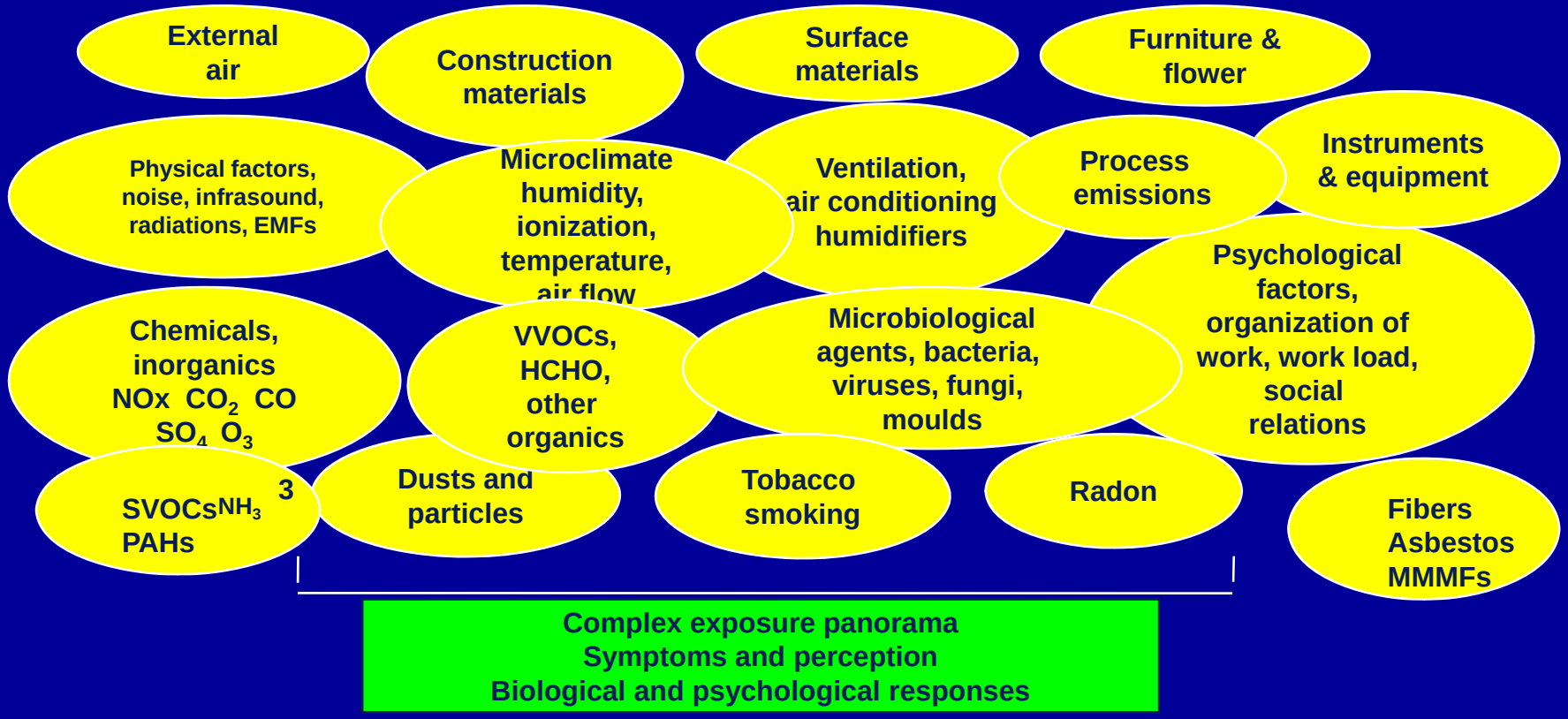


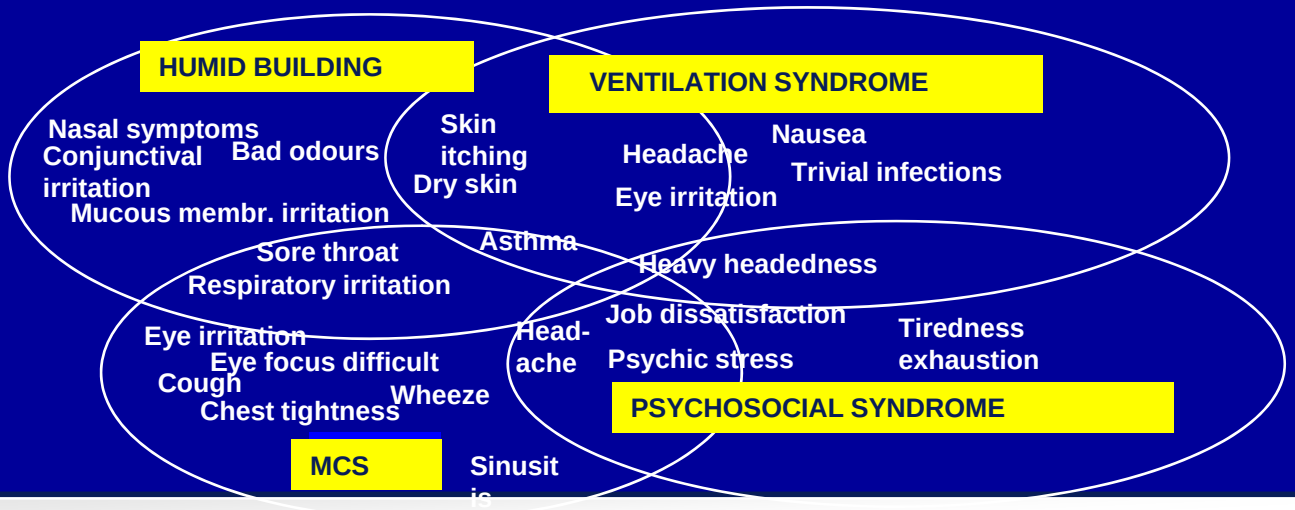
Musculoskeletal disorders (all)
FIN 97/00



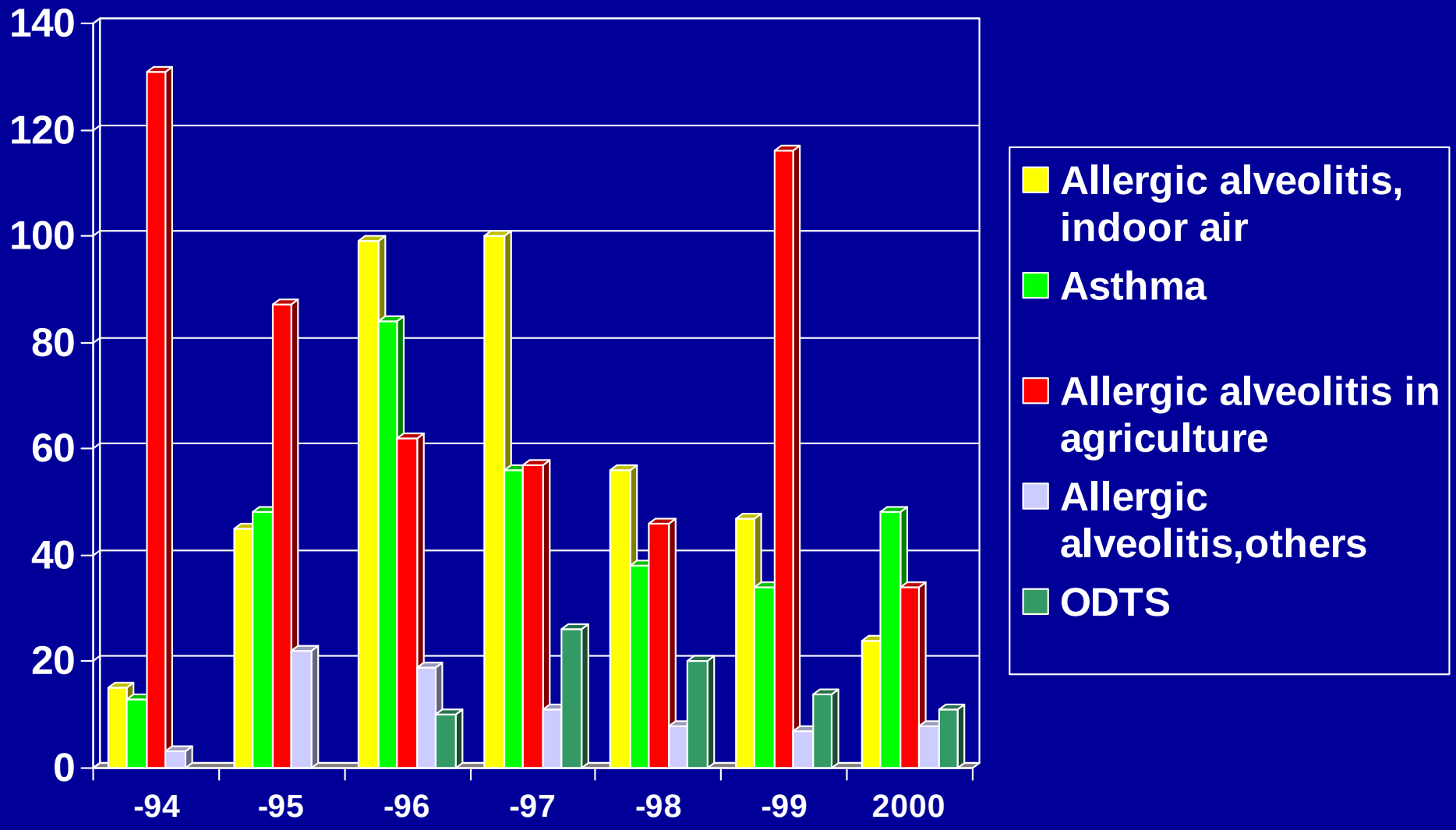
Westgaard (1999) model for physical and psychological background for shoulder-neck syndrome




External air
Construction materials
Surface materials
Furniture & flower
Physical factors, noise, infrasound, radiations, EMFs
Microclimate humidity, ionization, temperature, air flow
Ventilation, air conditioning humidifiers
Process emissions
Instruments & equipment
Chemicals, inorganics NOx CO_2 CO SO_4 O_3
VVOCs, HCHO, other organics
Microbiological agents, bacteria, viruses, fungi, moulds
Psychological factors, organization of work, work load, social relations
SVOCs NH_3 3 PAHs
Dusts and particles
Tobacco smoking
Radon
Fibers Asbestos MMMFs
Complex exposure panorama
Symptoms and perception
Biological and psychological responses


HUMID BUILDING
VENTILATION SYNDROME
PSYCHOSOCIAL SYNDROME
MCS
Nasal symptoms
Conjunctival irritation
Bad odours
Mucous membr. irritation
Skin itching
Dry skin
Headache
Nausea
Trivial infections
Eye irritation
Asthma
Sore throat
Respiratory irritation
Heavy headedness
Eye irritation
Eye focus difficult
Cough
Chest tightness
Wheeze
Head-ache
Job dissatisfaction
Psychic stress
Tiredness exhaustion
Sinusit is

Mould-related occupational diseases in Finland



Stress factors at work

(Dublin Foundation 2000)

Factor	%
Pace of work dictated by external demands	69
Monotonous work	40
Working at least 25 % of time at high speed	25
Machine dictated work pace	20
Bullying and victimization	9
Physical violence	4
[illegible]	2

Example:New health risks

- New allergies
- New MSDs
- HIV/AIDS
- Superviruses
- Resistant bacteria
- Prions
- NIR
- Narcotic drugs
- Destructive behaviour
- Criminal behaviour
- Terrorism
- Internet pathology

Substantive content - challenges

"Traditional" hazards (*often clinical*)

- Occupational **accidents** and major hazards
- **"Old" chemicals**, lead, solvents, mineral fibres, silica
- **Noise**
- **Heavy physical work**, heavy lifting

New hazards *(Often subclinical and multiple symptoms)*

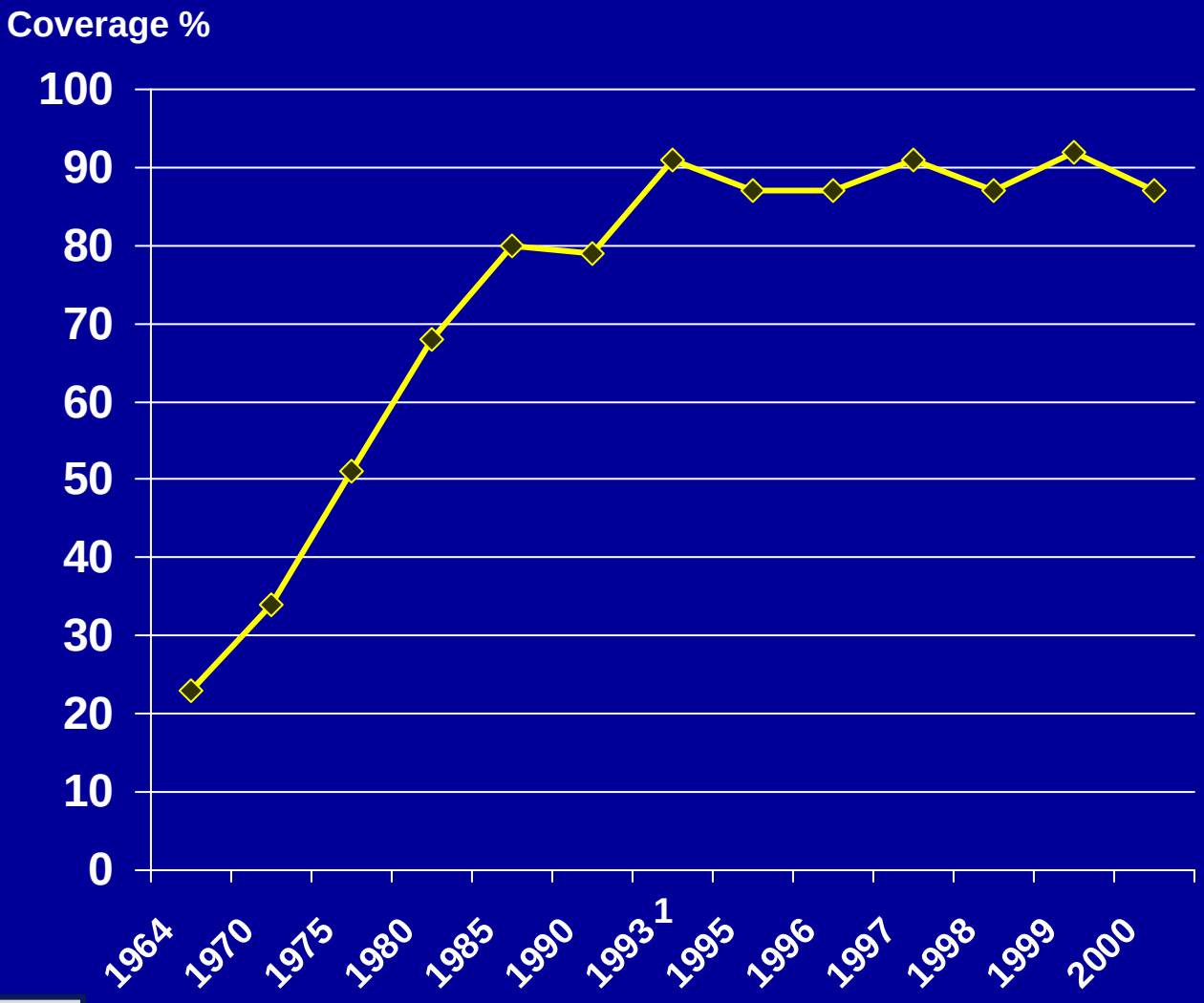
- **ICT and information ergonomics**
- New risks from **ICT and NIR**
- **New chemicals**
- **New allergens and sensitizers**
- Office **ergonomics**
- **Musculoskeletal** disorders of light physical work
- Psychological **stress**
- **Working time** issues
- **Violence** and harassment
- **Work ability and ageing** workers

Responses

New governance

- Health and safety management systems
- Information steering
- Good practices
- Sustainable health and safety policies
- Corporate social responsibility
- Zero risk approach
- Development-oriented occupational health services

Employees covered by OHS as a proportion of the total employee population



[1] new measurement method

Human resources in OHS

- OH physician
- OH nurse
- Occupational hygienist
- Safety engineer
- Psychologist
- Work physiologist, ergonomist or physiotherapist
- Others: toxicology, analytical chemistry, social sciences, work management, etc.

Resources for OHS in Finland

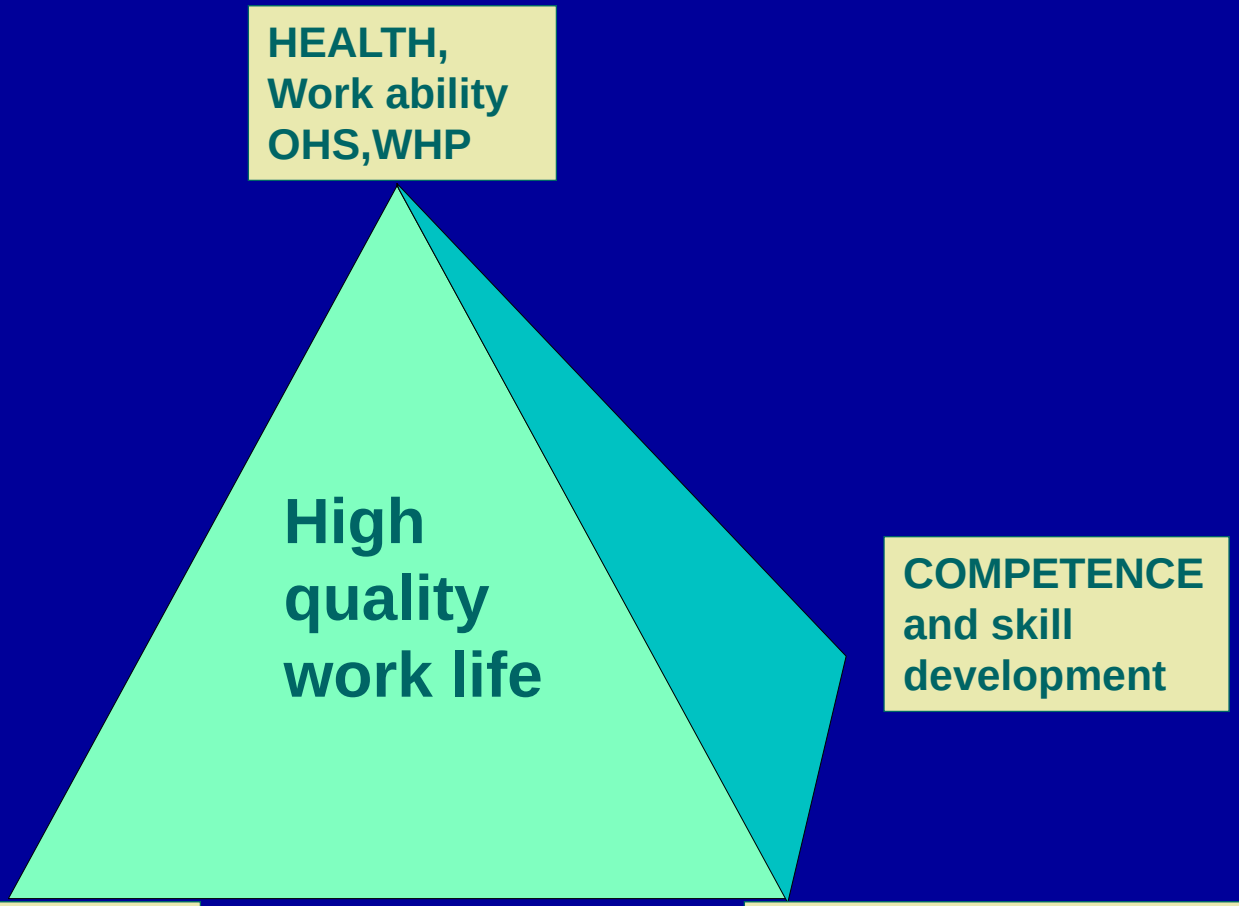
OHPs	1799
OHNs	1930
Physiotherapists	589
Psychologists	198
Occupational hygienists	120
Assisting personnel	849
Total	5485

In addition, 10,000 Safety engineers (most of them part-time)

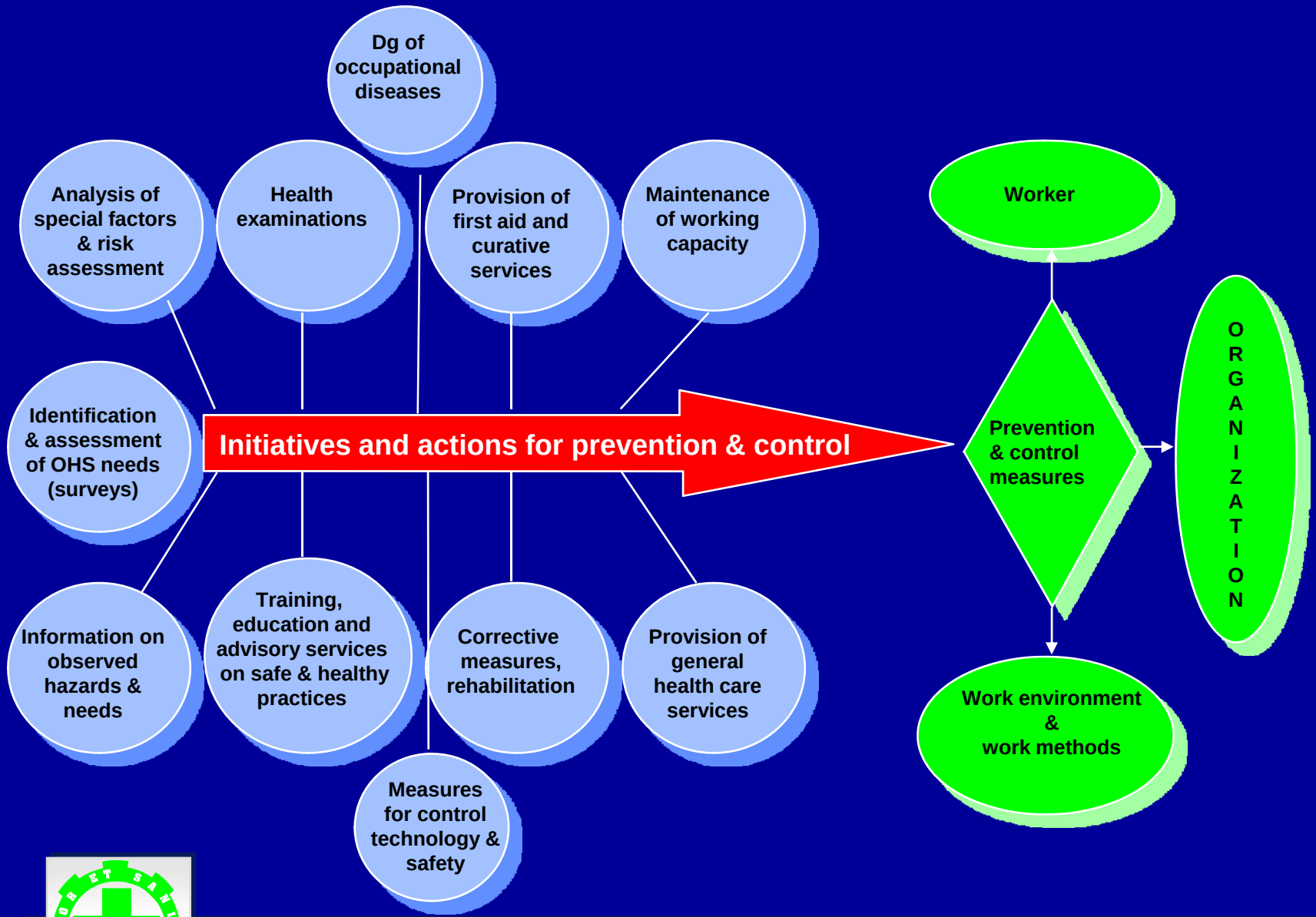
Assessment of different OHS-models

Model	Typical field of application	Typical size of the client enterprise	Multi-disci-plinarity	Spec. compe-tence in OH	Impact capacity	Inte-gration with safety services	Inte-gration with general health services	Cost-effecti-veness
1. In-plant service	One company	Large	+++	High	+++	+++	±	+++
2. Group service	Numerous enterprises with high variation of activities	SMEs	++	High	++	+	±	++
3. Trade service	Numerous enterprises with one or a few types of activities	All sizes	+++	High	+++	+++	±	+++
4. PHC-unit	Numerous enterprises with high variation of activities	SMEs	±	Not always high	+	±	+++	+
5. Private phys.	One or a Few enter-prises	Large or small	–	Variable	+	±	–	+

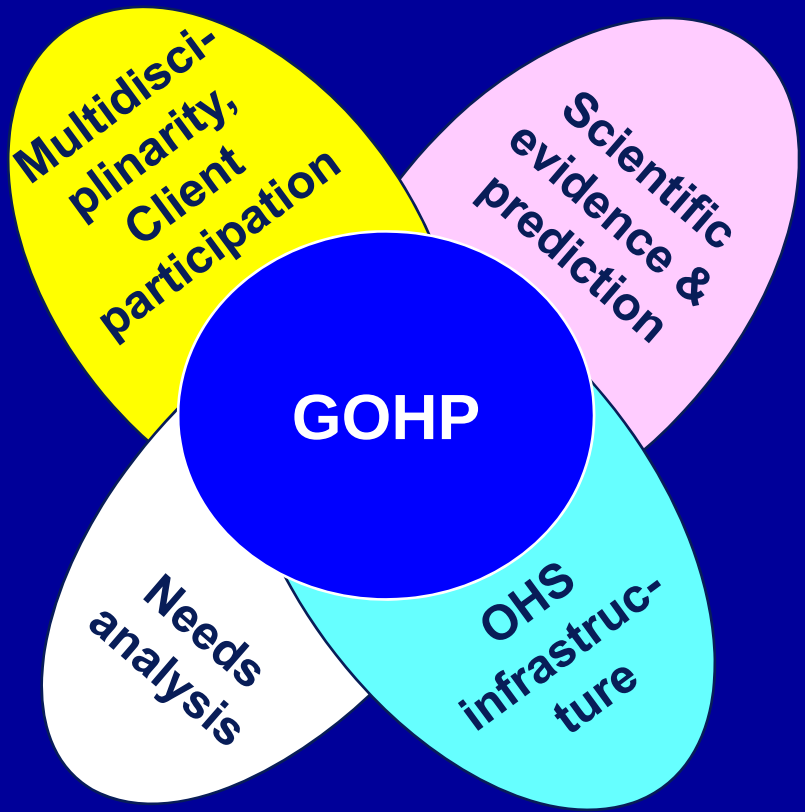
Finnish model for OH&S



Operational flow-scheme of the OHS activities in Finland



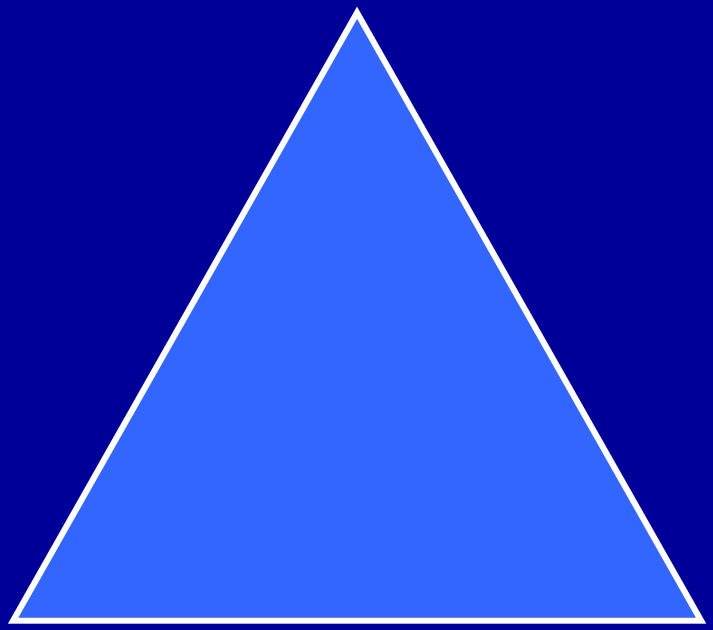
Good occupational health practice (GOHP)



Investing in quality

Social

Social quality - social cohesion



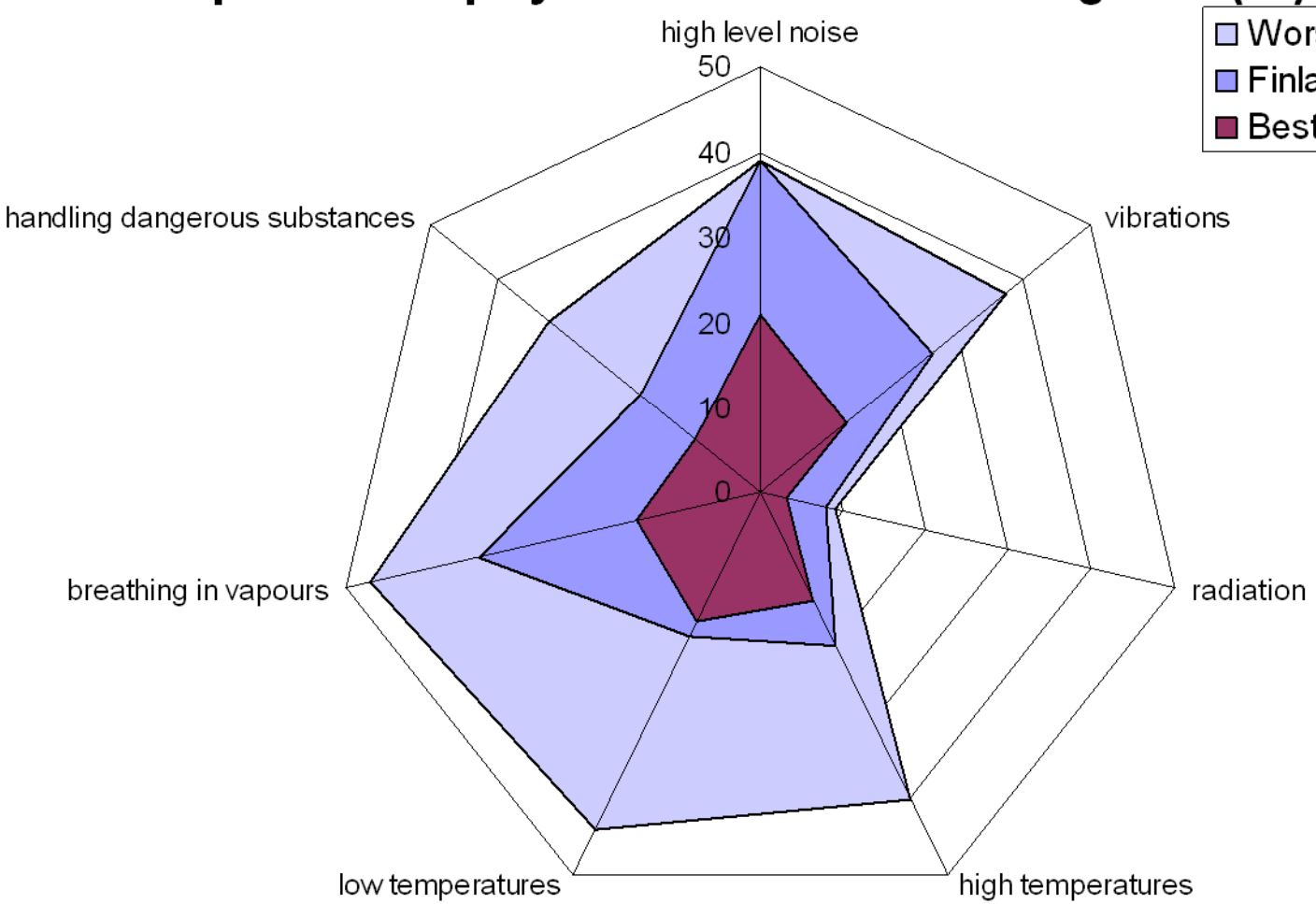
Economic
Competitiveness
- dynamism

Employment
Full employment
- quality of work

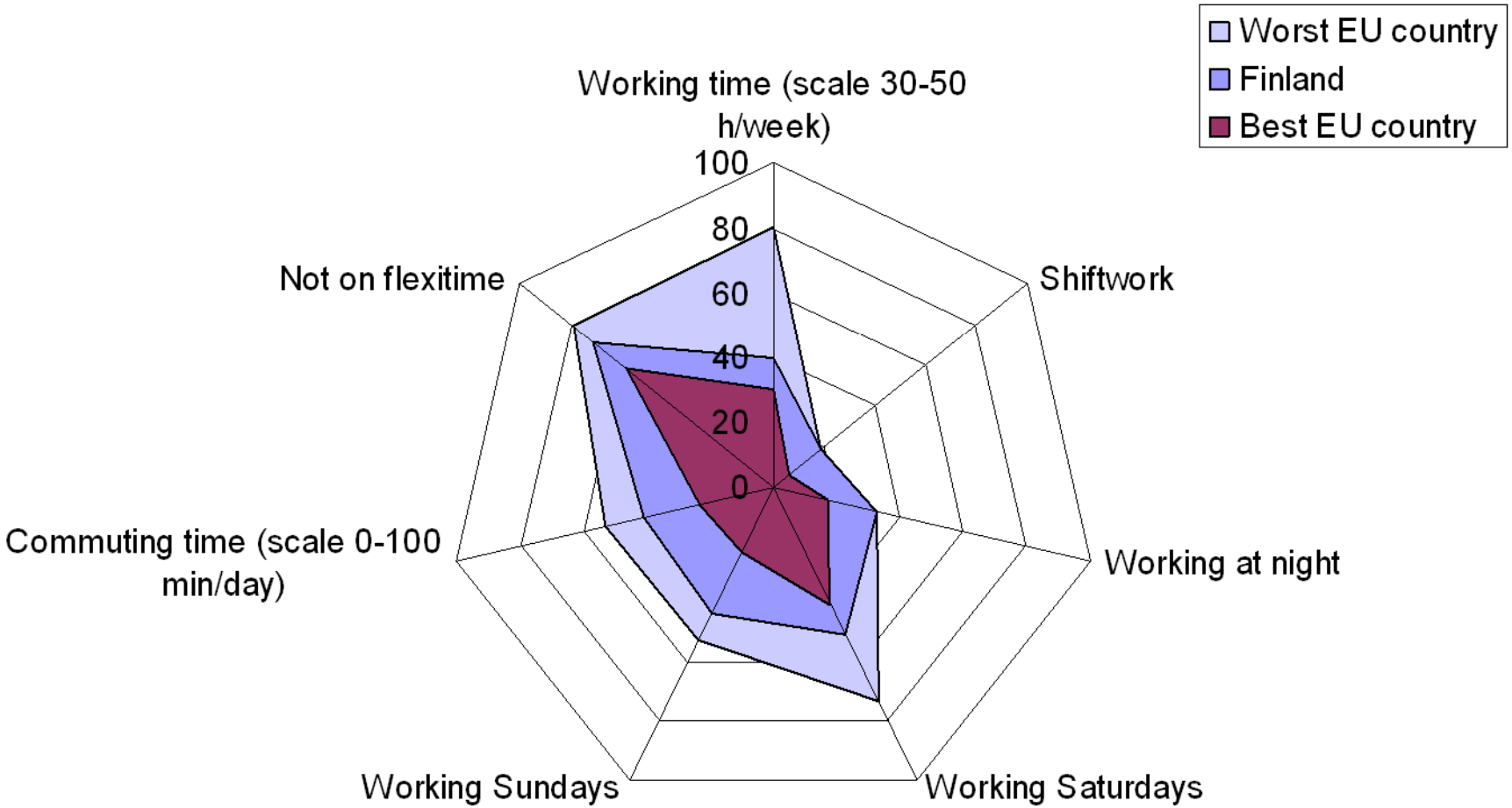
Source. European Commission 26.6.2001

Examples

Work environment in Finland: Prevalence of exposure to physical and chemical agents (%)

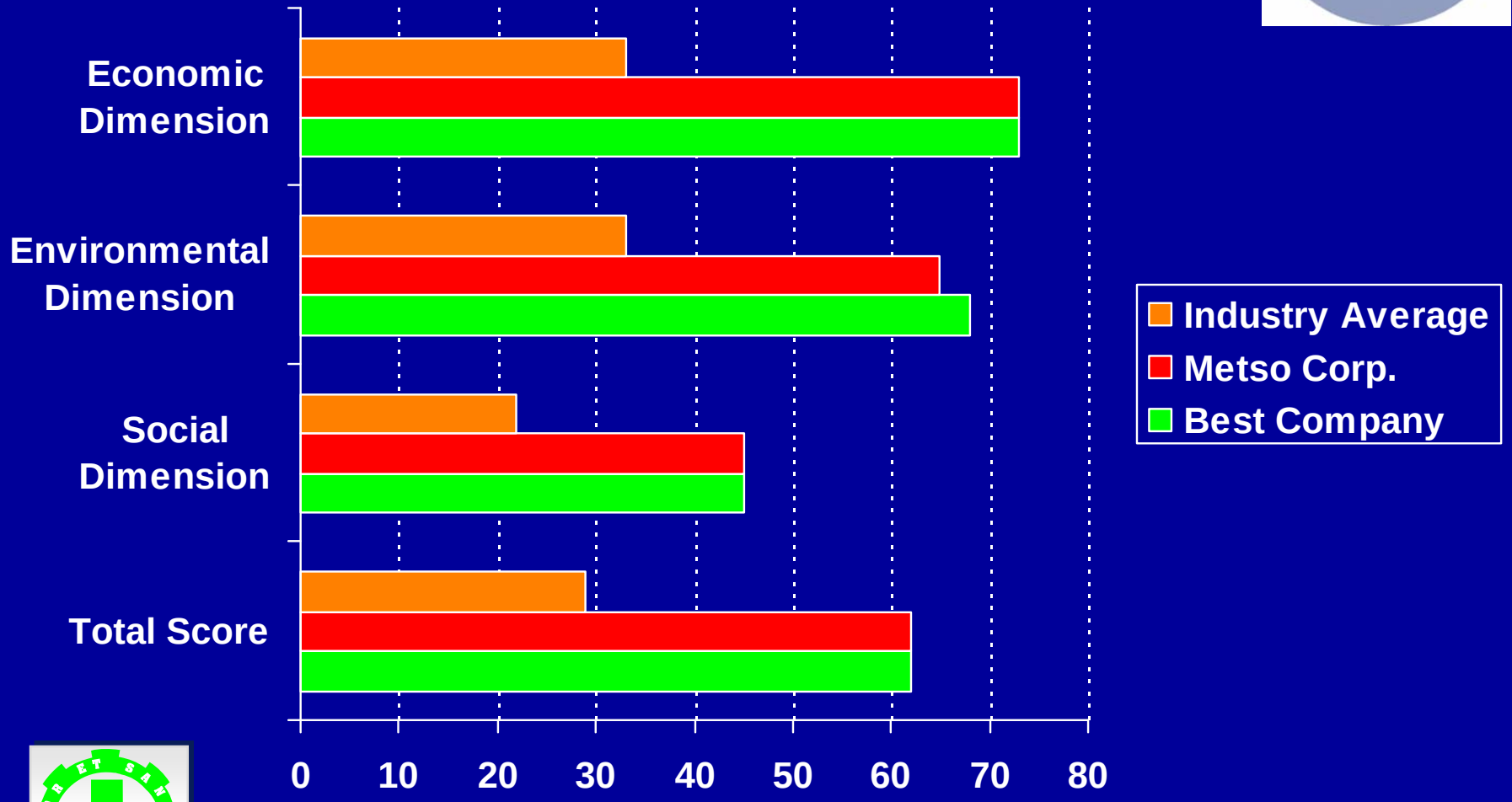


Prevalence of working time arrangements in Finland (%)

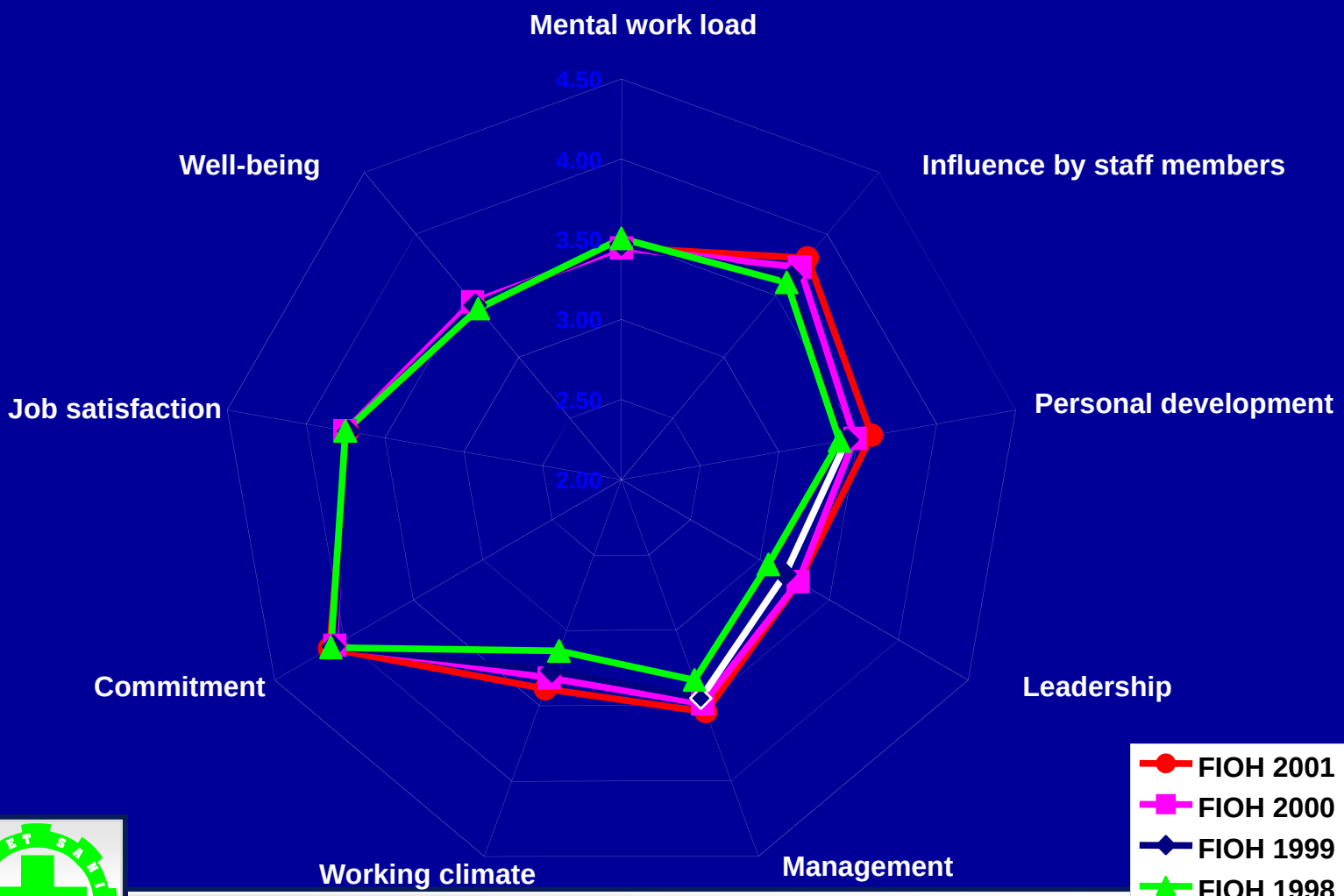


DJSI Sustainability Scores

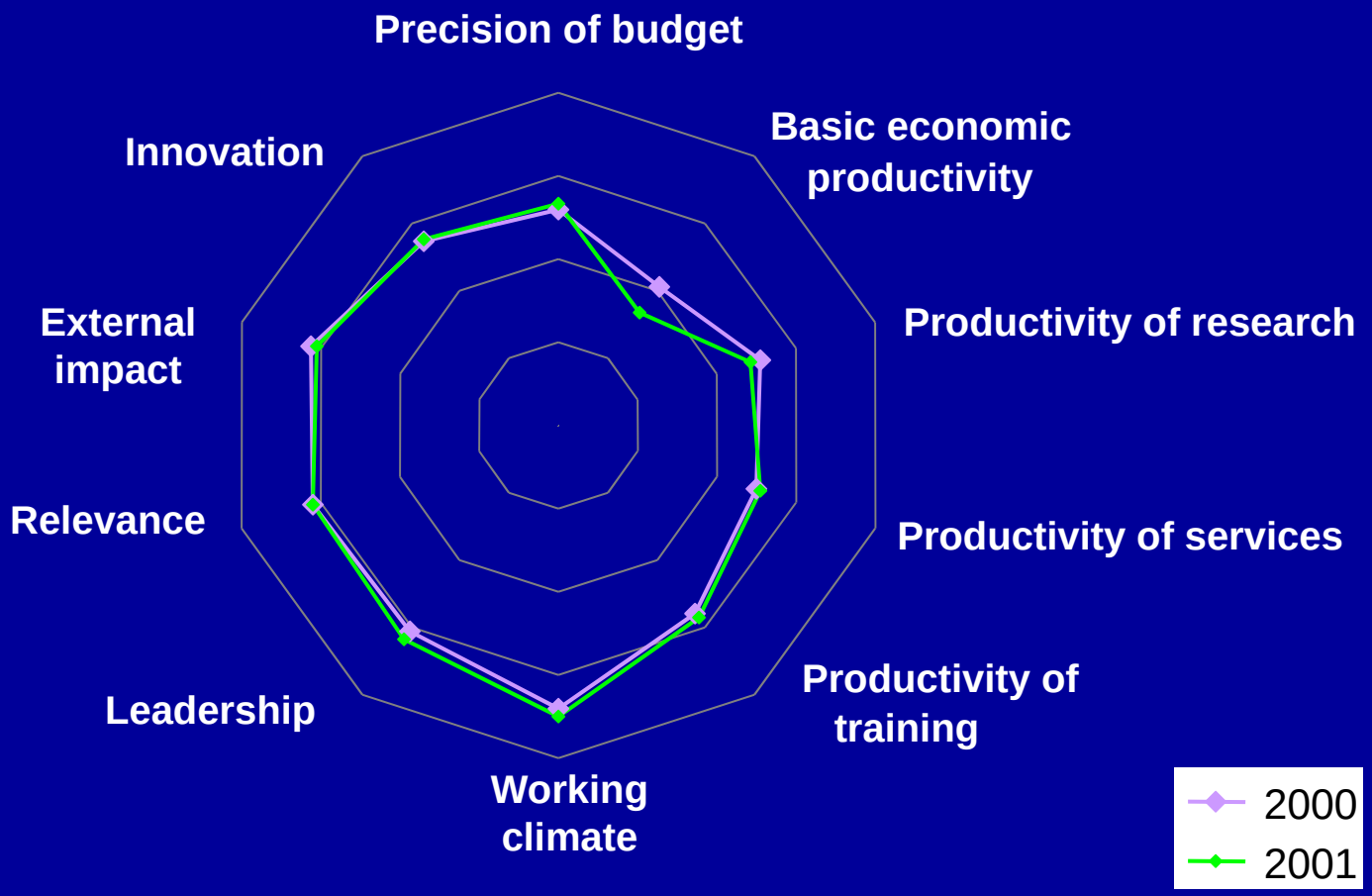
Metso Among Top 10% in Its' Industry Sector



FIOH wellbeing at work index (WAT)



MBR indicators 2000 - 2001, whole FIOH



Economy

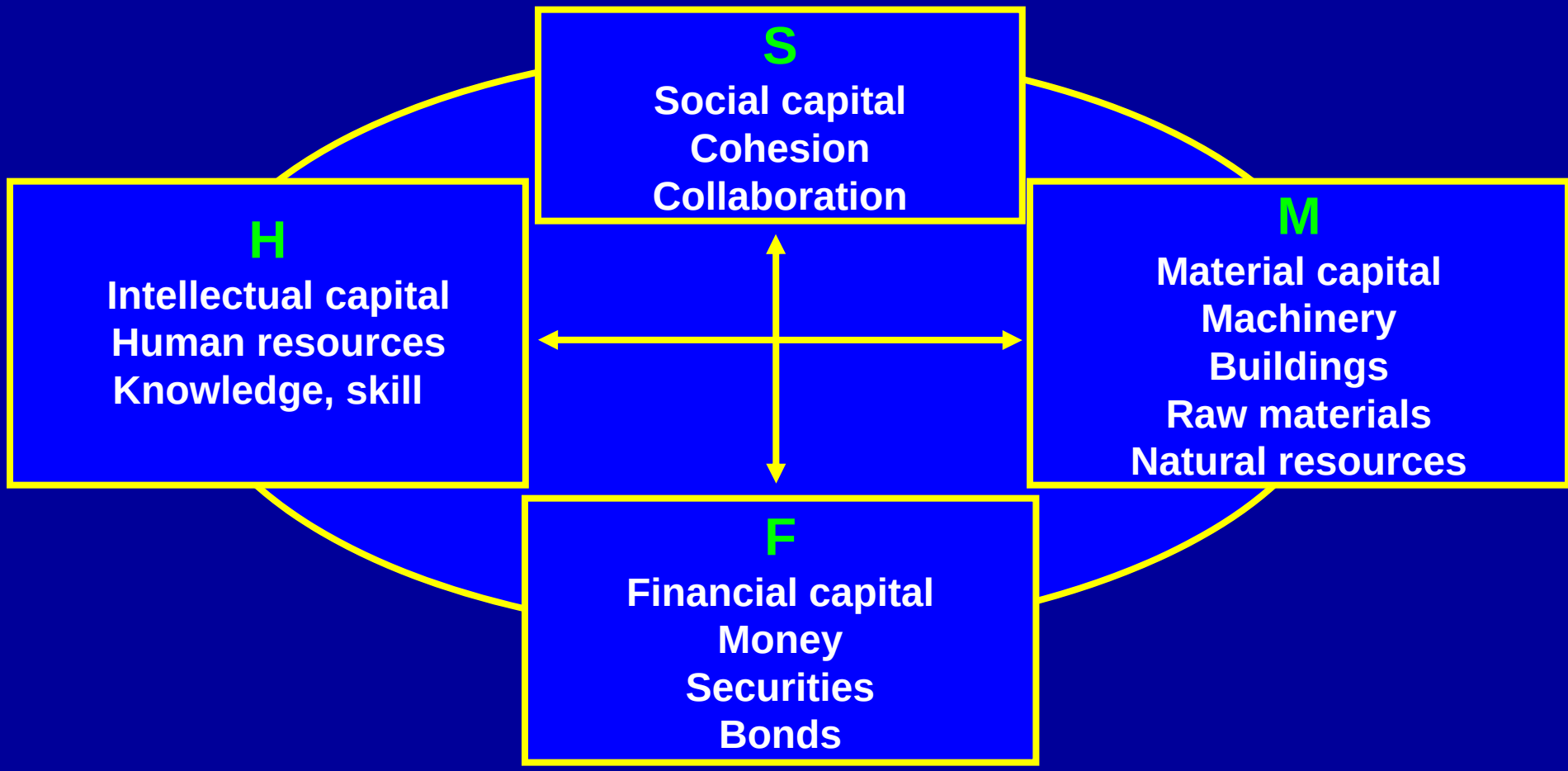
Loss by injuries and diseases — **4% of GNP**

Loss by poor work ability and poor work environment — **20% of GNP**

Poorest countries and poorest enterprises suffer greatest losses

World as a whole is losing its wealth at the rate of about 0.1% a year

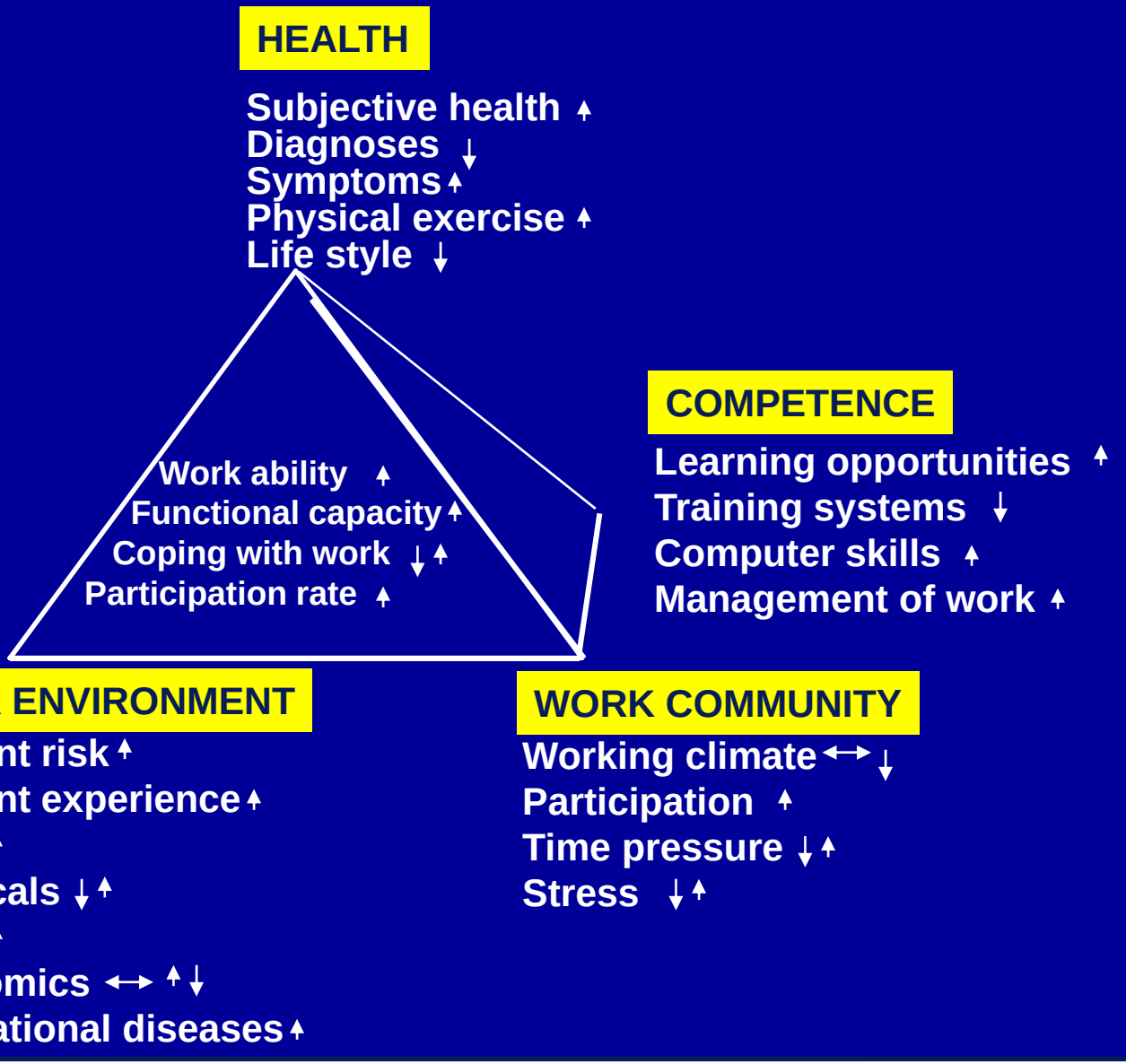
Four types of capital



$C = f(F \times M \times H \times S)$

Changes in working conditions and work ability 1997–2000

(Piirainen et al. 1997 amd 2000, Rantanen 2000)



Summary: 21st Century

- Work life will need OH&S more than ever
- Full coverage of services need to be organized
- Content and competence of OHS need to be renewed
- New service provision models are needed
- Multidisciplinary, comprehensive approach
- OHS has been found productive in view of health, work ability and enterprise and national economy

Evolution of Finnish occupational health services