

Linking multi-functional forestry goals with the legacy of spruce plantations in Scotland



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A synthesis talk, based upon an ongoing research on Multi-functional Land Use (WP 3.5) and Valuation of ESS (WP 1.2) of the Scottish Government Strategic Research Programme.

Focus: multi-functional forestry (MFF). Purpose: seeking to contribute to its improved inclusion in countryside w. r. t. landscape components and implications that forests have for the ENV and people.

MFF provides challenges for scientists & practitioners:

- How can MFF be characterised?
- How can it be translated into policy design?
- What are public attitudes to MFF?
- How do people see the future of our forests?

Phases:

❑ **Deforestation** (early and intensively)

Early 20th century - forested area was <5%

1919 - a state forest service (FC) was established

❑ **Commercial planting** of Sitka spruce (SS)

The forest area trebled in the 20th century (to >17%).

Justification (by Warren, 2002): productive and easily managed; straight-edged plantations minimize fencing costs; large areas bring economies of scale; hardy species were needed for establishing forest ecosystems on degraded sites

By 2000, 70% of forest – coniferous (with 47% - SS)



❑ **Multi-functional forestry (MFF)**

UNCED (1992) – Non-Binding Forest Principles:

“forest should be sustainably managed to meet social, economic, ecological, cultural and spiritual human needs of present and future generations”

Scottish Forestry Strategy (2000 & 2006)

- **Max value of the wood resource**
- **Create a diverse resource**
- **Positively contribute to the ENV**
- **Provide opportunities for people to enjoy forests**
- **Help communities to benefit from them**



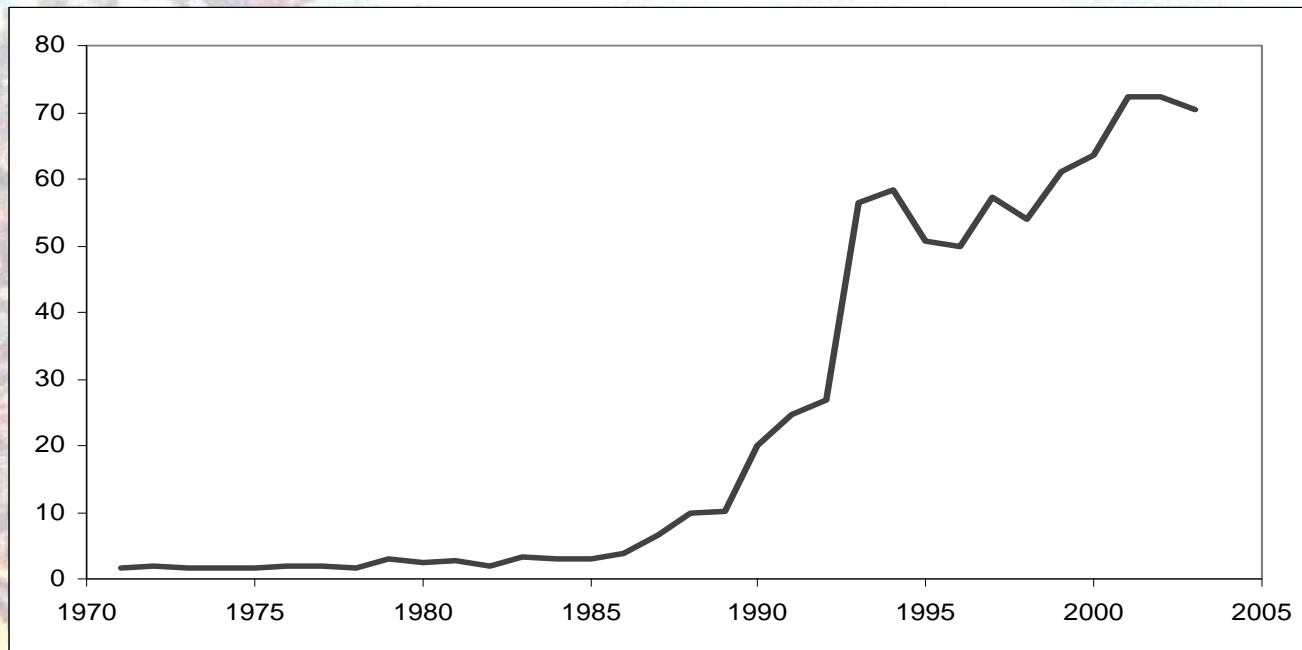
Millennium Ecosystem Assessment (2005):

- Provisioning ecosystem services (ESS): timber, fuel, food, clean water, agro-forestry; medicinal plants; non-timber products
- Regulating and supporting services: biodiversity (BD), watershed and hazard prevention, climate change mitigation, soil fertility, water storage
- Cultural and social services: recreational, spiritual, educational, as working places, sources of income, and of cultural and ethnological diversity



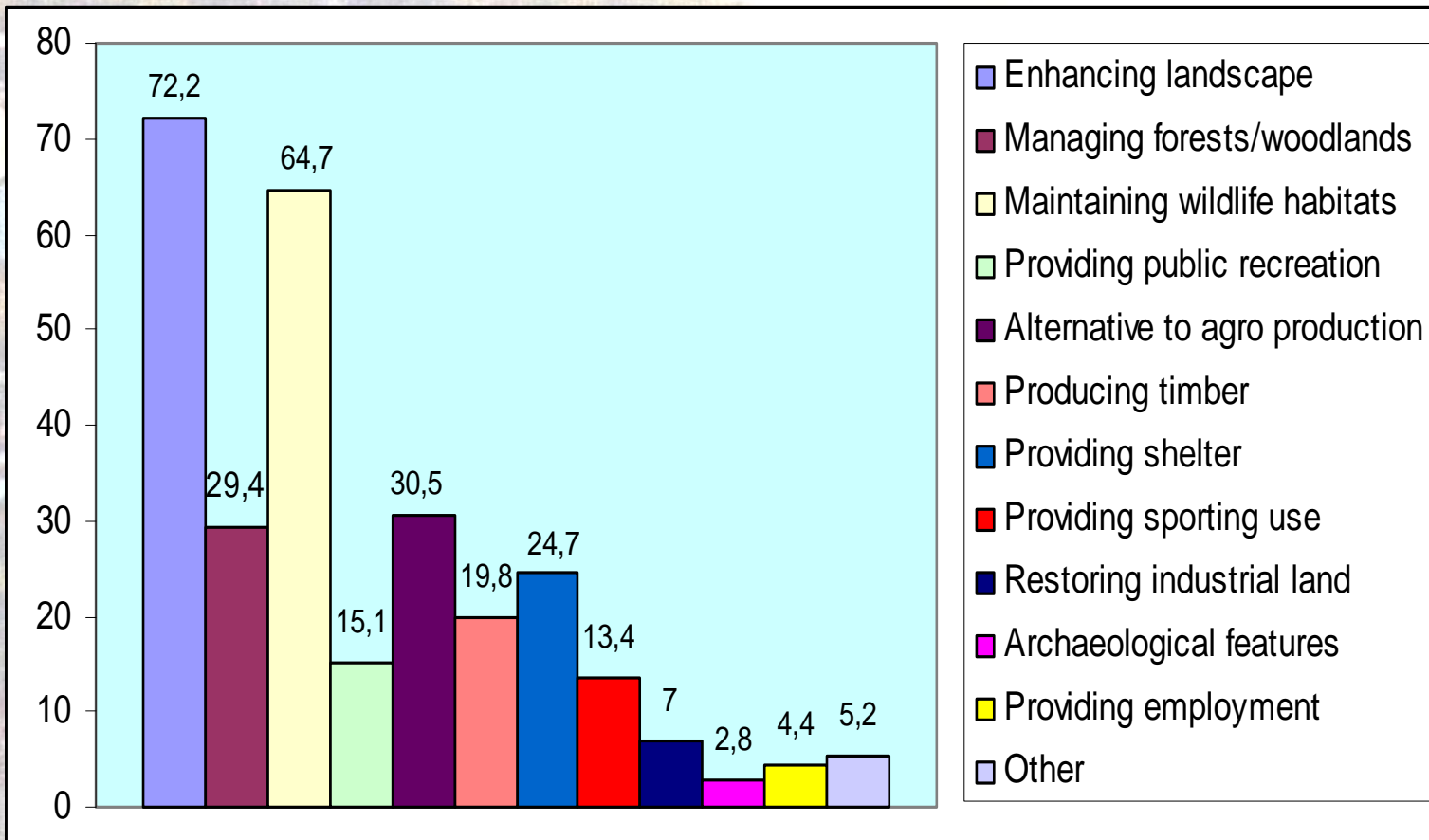
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A core characteristic of MFF is a change in relative emphasis from commodity production to provision of multiple ESS: from max production of material goods (wood) to forestry's broader objectives



Broadleaved (new) planting as % of total (new) planting (FC, 2003)

In 2012, 75% of new planting is native woodland and this needs to be balanced out (40% : 60%)



High priority objectives (HPO) in WGS applications of 1995-2003, %
Computed, based on data from FC (2003)

The average number of HPO per application was 3. The 'productivist objective' was no longer mandatory and was on the 6th position

Mather, Hill & Nijnik, 2006, *Journal of Rural Studies*, 22: 441-455

Two main visions of MFF:

- ❑ **Vertical MF**, with each lot of land or forest stand fulfilling two or more functions (Dana, 1943).
- ❑ **Horizontal MF**, when different areas are dedicated to different functions (Pearson, 1944).

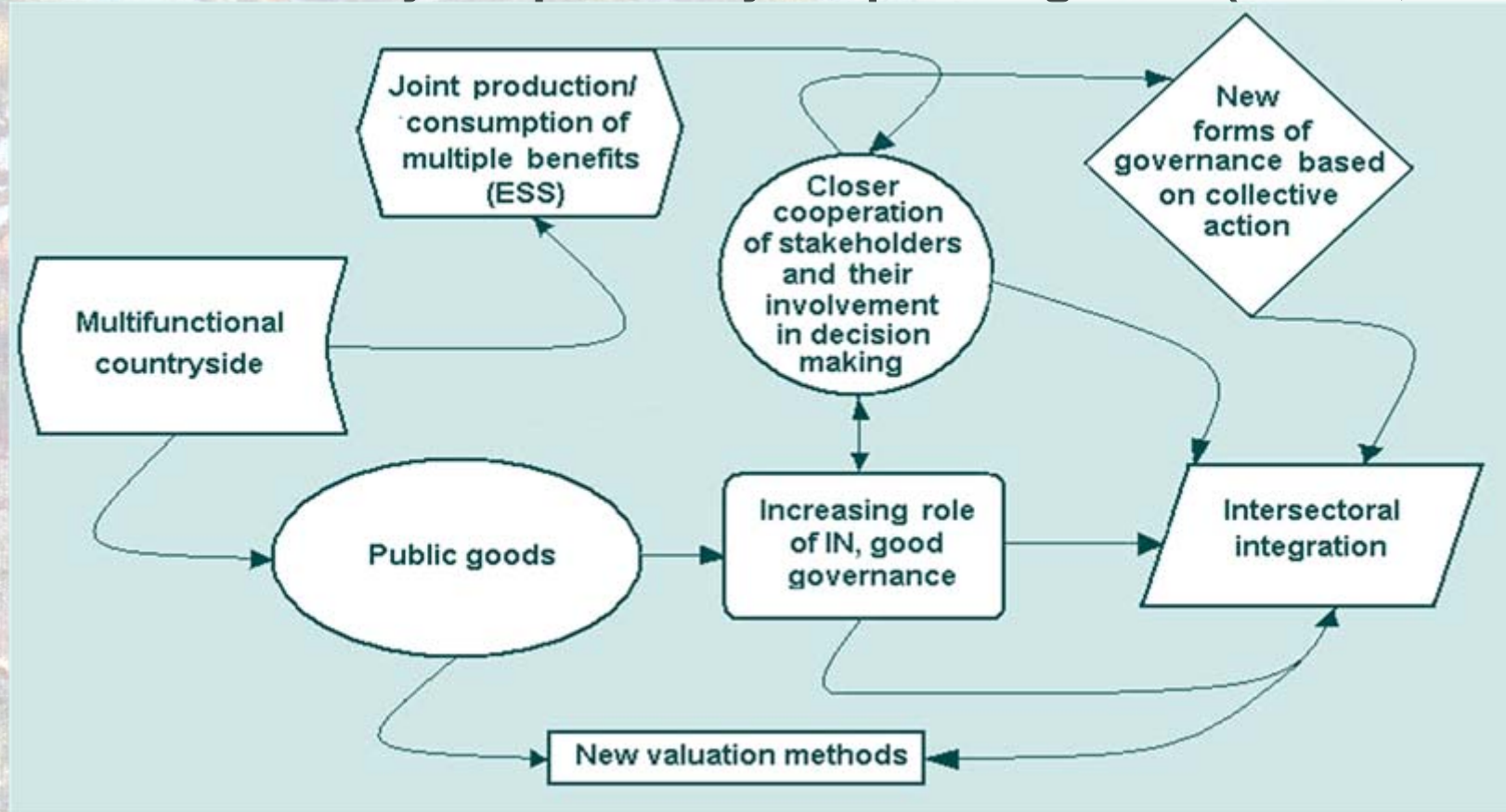
The vertical vision dominates, but horizontal has its advocates (Vincent & Binkley, 1993).

Bowers & Krutilla (1989) – forest can produce a list of outputs, many of which are complementary.

Sedjo (2004) puts forward specialization in MFF.

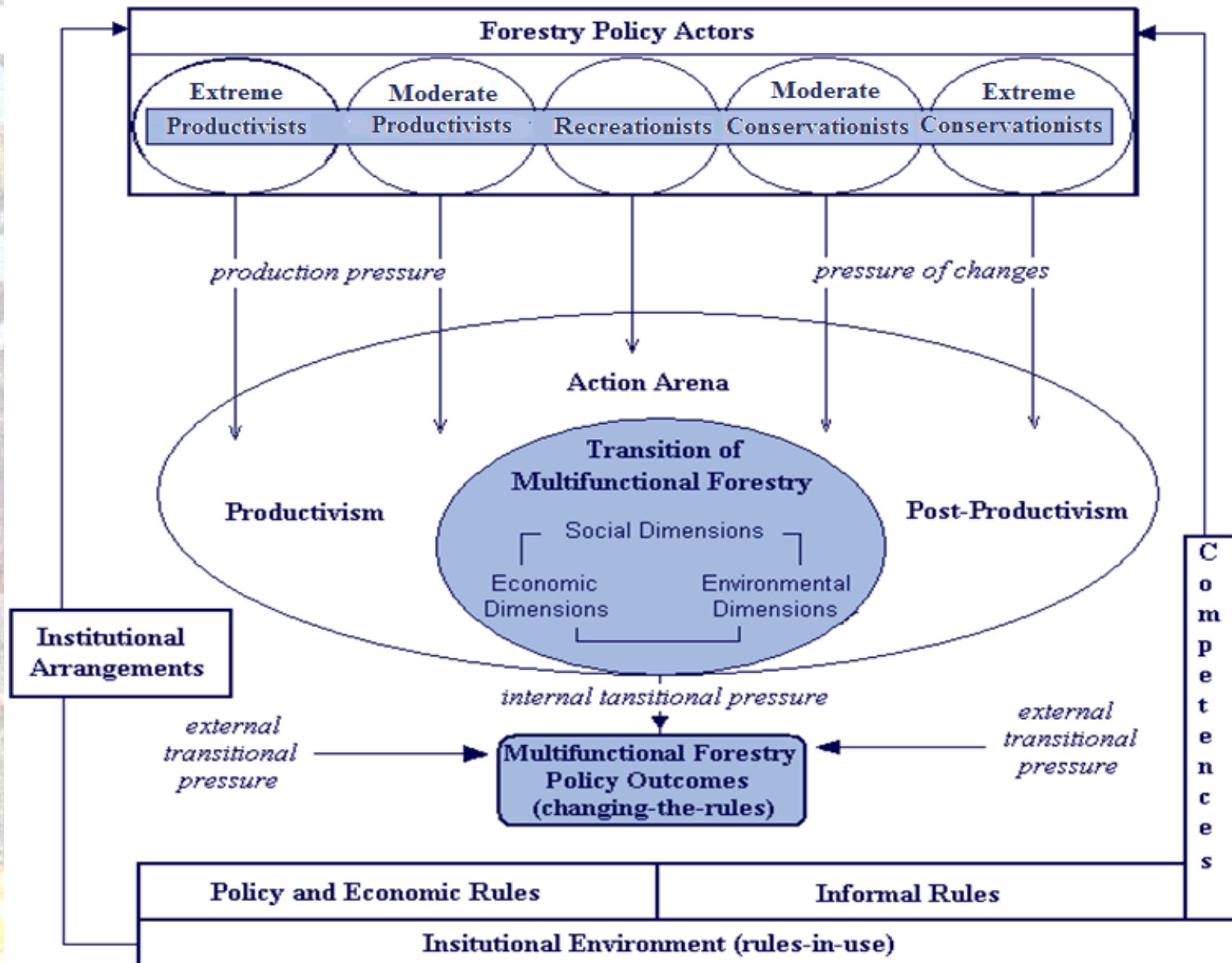
Two main features of multi-functionality

- Joint production of multiple outputs
- Non-commodity outputs may be public goods (OECD, 2002):



It is important to incorporate behavioural, IN, experimental economics, interdependent decision-making, dynamics etc. in ESS valuation

MFF was analysed in terms of (i) policies and institutions (ii) empirical evidence 'on the ground' and (iii) public & stakeholder attitudes



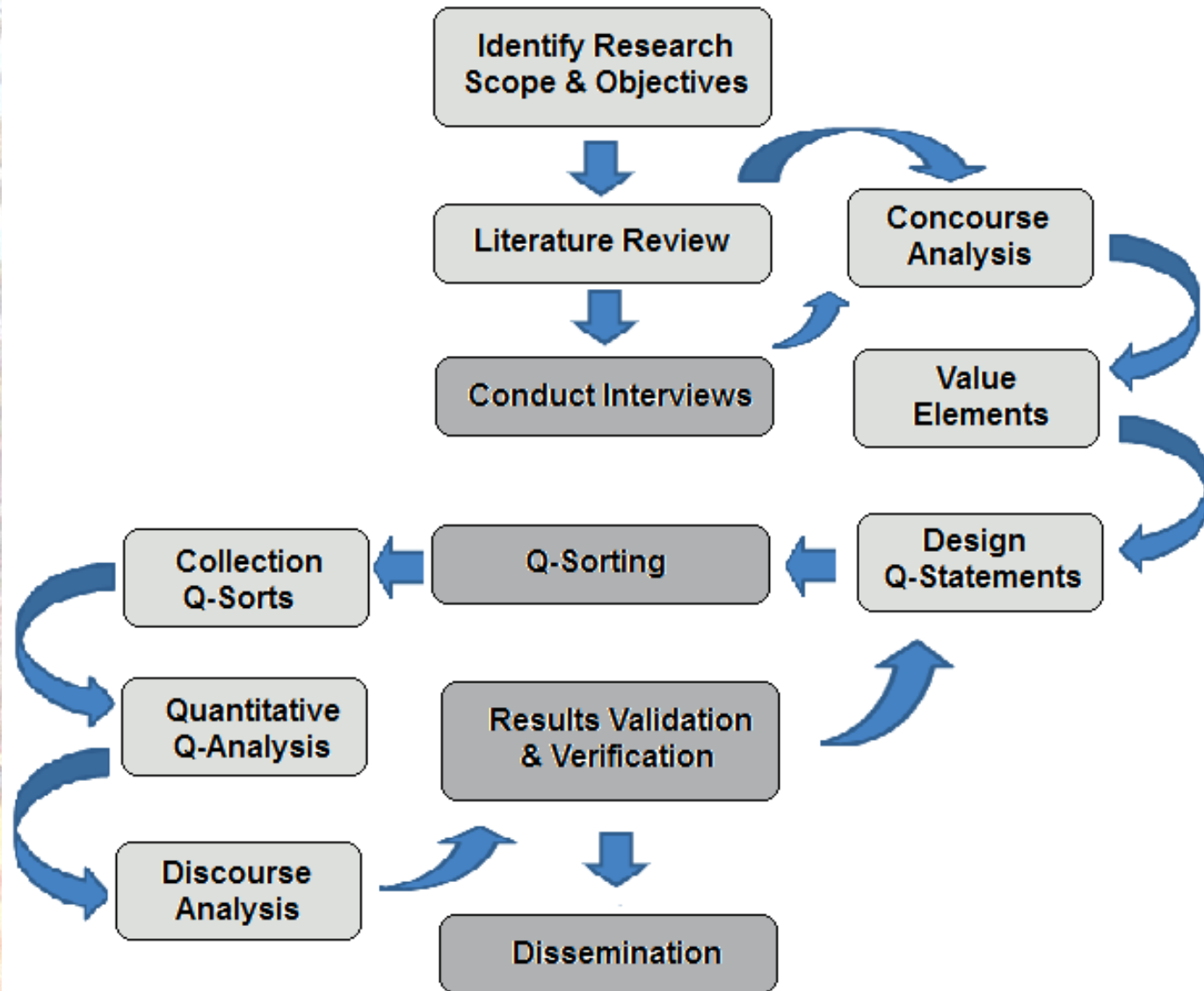
Q-Methodology:

- ❑ Q-method (from Stephenson, psychologist): ‘a systematic and rigorously quantitative means for examining human subjectivity’
- ❑ Concern is *not with how many people* believe such and such, but *why* and *how* they believe what they do
- ❑ Anything that’s difficult to quantify: attitudes, policies, participation etc can be addressed
- ❑ It allows us to reveal the multiple points of view, i.e. the attitudinal groups that exist, and explain what influences the heterogeneity of attitudes

Steps in a Q methodology study:



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Identification of stakeholder priorities of forestry:

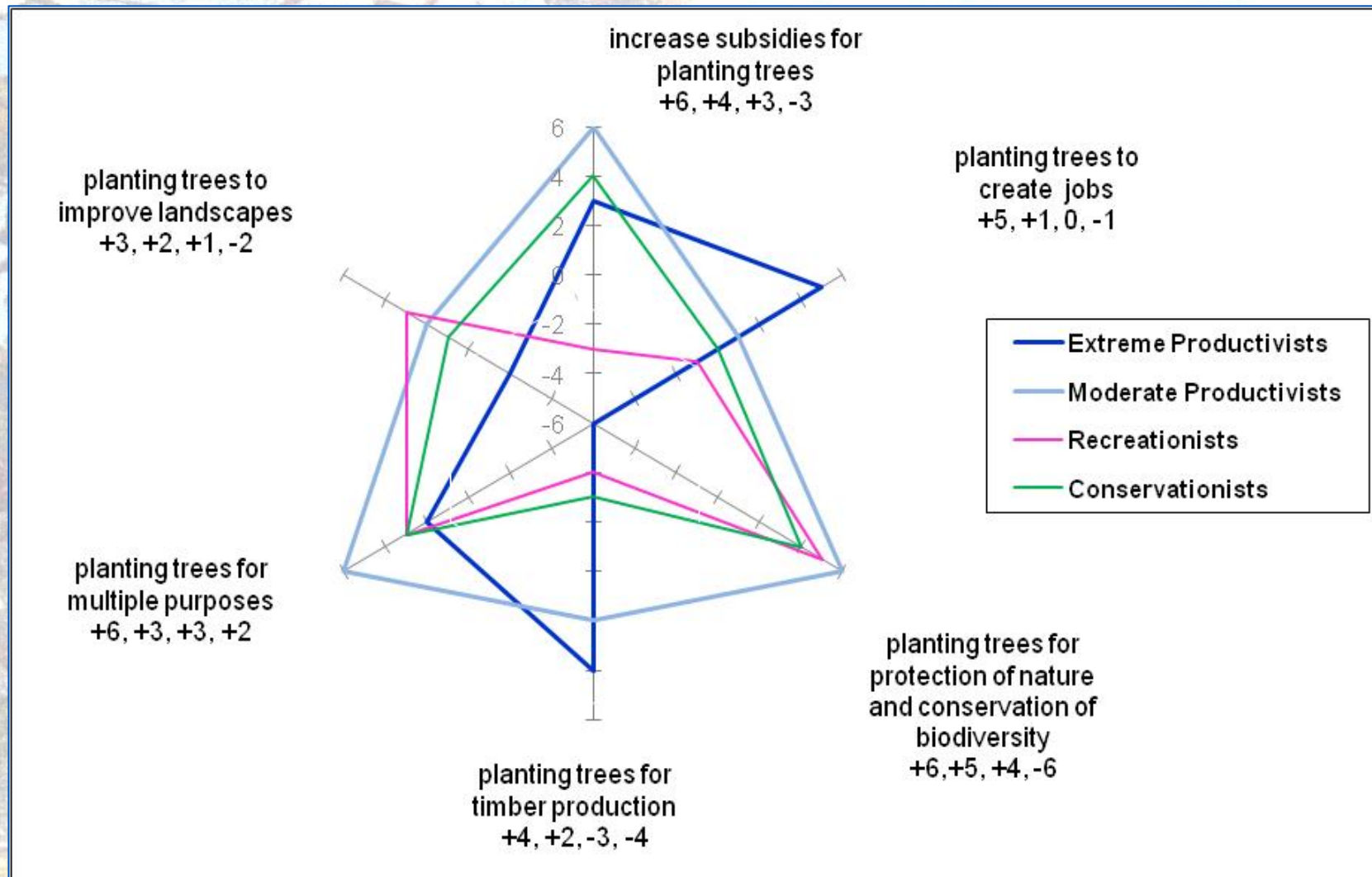
Stage 1: Public evaluation of the role and place of forest in the development of countryside

Stage 2: Stakeholder evaluation of landscape changes and components

Stage 3: Stakeholder evaluation of ecosystem services in multi-functional forests

- ✓ Balance stakeholder interests
- ✓ Identify conflicts to avoid & manage them
- ✓ Incorporate perceptions into policy design

Some insights into public attitudes to woodlands expansion in Scotland:



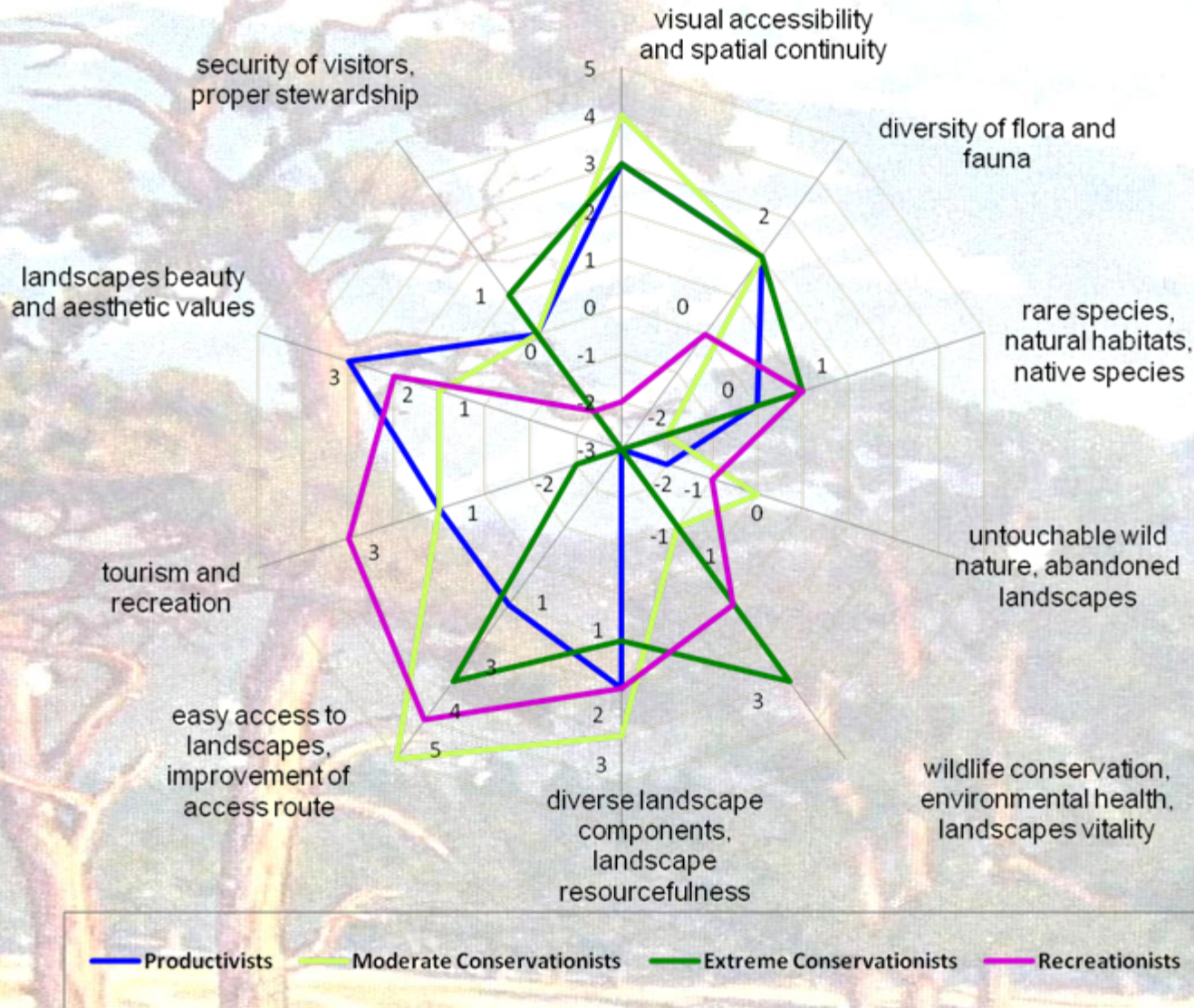
Selected results of a Q-study for Scotland

- ✓ Although the attitudes are diverse, there is public understanding of the necessity *to enlarge wooded cover*
- ✓ *Positive relationship*: education/occupation, work experience and the support to woodlands expansion
- ✓ *MFF is recognised*, with *BD* conservation
- ✓ Some people prioritise *native woodlands* over *plantations*, others don't really make any distinction
- ✓ Attention is paid to new *employment* opportunities and to *production* forestry
- ✓ Role of forests in *landscapes* is considered important
- ✓ Attention is paid to *aesthetic landscape values*, our rights to enjoy beauty and attract tourists to remote areas
- ✓ *Easy access, visual accessibility & landscape continuity* are important considerations

Stakeholder evaluation of components and characteristics of wooded landscapes:



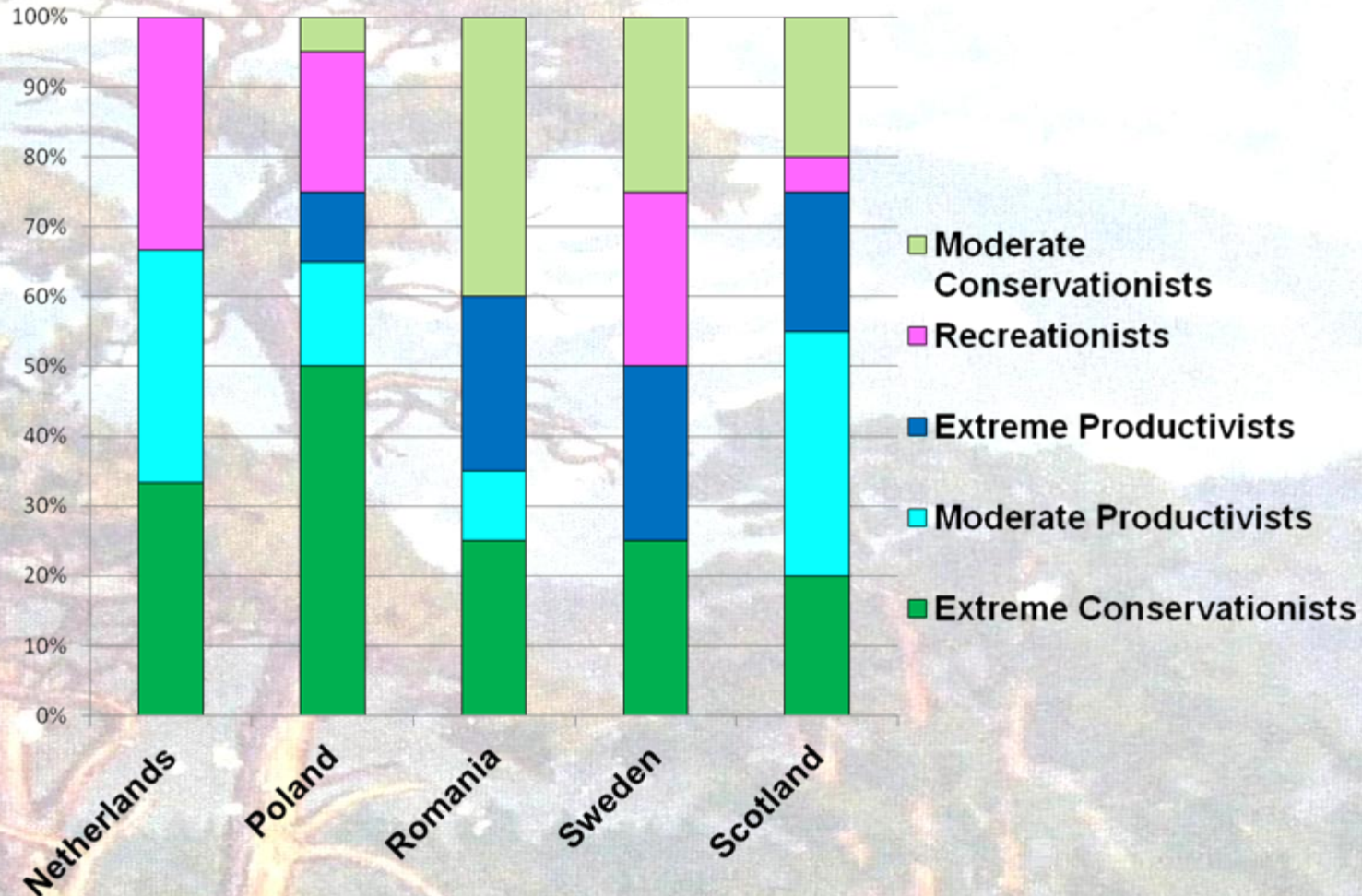
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Distribution of the groups (%):



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Note: each column totals 100%, showing the percentage of respondents which belong to various attitudinal groups in each of the countries analysed

Key conclusions: a multi-national study

- ***Commonalities*** in heterogeneity of stakeholder attitudes across countries
- The mix of attitudinal groups implies ***recognition of MFF*** and of ***ESS types*** characteristic of each group identified
- Attitudinal diversity across countries is associated with ***differences in stakeholder values & competencies*** that are likely shaped by IN and economic developments and cultural differences
- MFF may evolve towards ***commercialisation*** (recreation)
- The role of forestry for ***climate*** mitigation is recognised
- A ***new phase in MFF***, with productive & carbon forestry as core objectives?

Some directions for future research:

- ❑ Develop novel *methods* (interdisciplinary) and analyse *human needs & values*, responses & actions
- ❑ Analyse *consumers' behaviour* & the demand for ESS
- ❑ Analyse the influence of the *CAP reform*, & of other drivers (policy, ENV, CC etc.) and of MFF responses (e.g. adaptive forest management)
- ❑ *Value multiple ESS* (regulatory, cultural) and trade-offs
- ❑ Assess forestry *integration with the other land-users*
- ❑ Evaluate various LU policy options at different *scales*
- ❑ Advance *dynamic* considerations and scenario analysis, including participatory (action research)