



# **The content and change of British forestry: economic research priorities and why these are important**

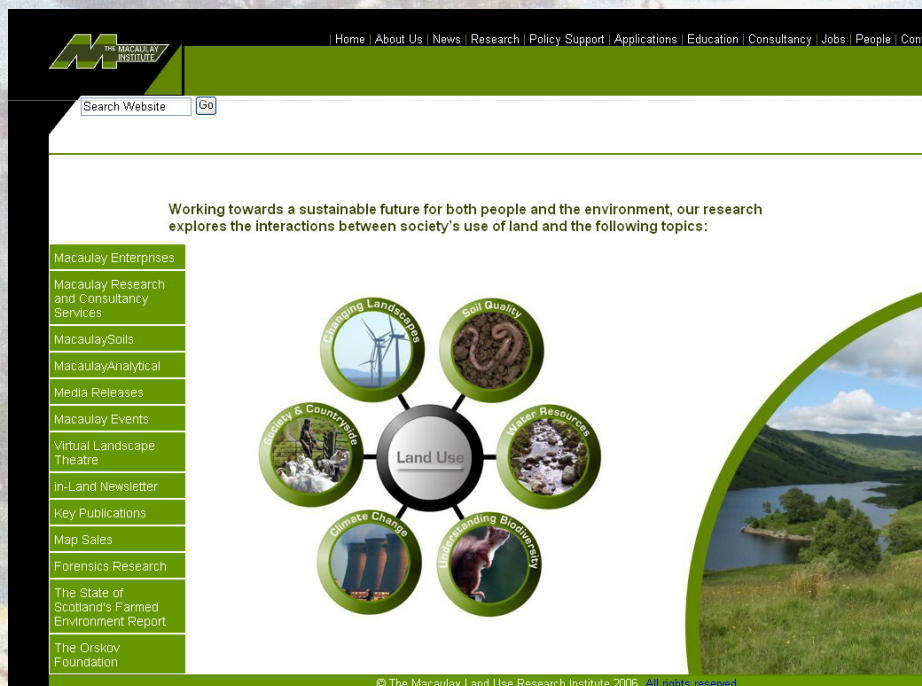
*Dr Maria Nijnik &  
Professor David Miller  
The Macaulay Land Use  
Research Institute, UK*



# Macaulay Institute

**Research across environmental & social sciences for:**

- i) protection of natural resources (NR)**
- ii) creation of integrated land use (LU) systems**
- iii) development of sustainable rural communities**

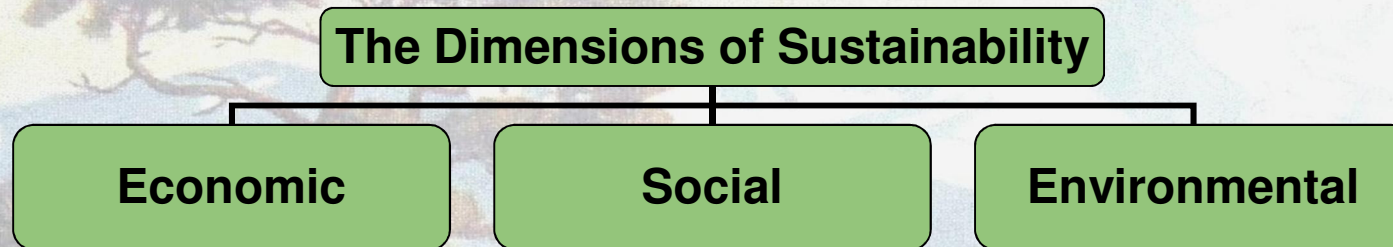


The screenshot shows the Macaulay Institute website. At the top is a navigation bar with links: Home | About Us | News | Research | Policy Support | Applications | Education | Consultancy | Jobs | People | Contact. Below this is a search bar with the text "Search Website" and a "Go" button. The main content area features a central graphic with "Land Use" in the center, surrounded by seven circular icons: Changing Landscapes (wind turbine), Soil Quality (worm), Water Resources (water drop), Understanding Biodiversity (animal), Climate Change (sun and clouds), Economy & Countryside (countryside), and Macaulay Soils (soil). To the left of this graphic is a vertical menu with the following items: Macaulay Enterprises, Macaulay Research and Consultancy Services, Macaulay Soils, Macaulay Analytical, Media Releases, Macaulay Events, Virtual Landscape Theatre, In-Land Newsletter, Key Publications, Map Sales, Forensics Research, The State of Scotland's Farmed Environment Report, and The Orskov Foundation. Below the menu and graphic is a copyright notice: "© The Macaulay Land Use Research Institute 2006. All rights reserved."





# How to attain sustainable rural development?



- ✓ **Economic:** efficiency & sustainability;
- ✓ **Social:** ensuring a strong, healthy and just society; social cohesion, equity & poverty alleviation;
- ✓ **Ecological:** sustainable NR management & living “within the limits”.



# It is important to focus on

- *New industries & markets*;
- *Rural-urban* linkages;
- Responses to *drivers & risks*;
- Changing *demands* for forest *ESS* &
- Changing consumption patterns;
- *Opportunities/challenges* for sustainable provision of ESS & multifunctional (MF) sustainable forestry;

DEMAND



SUPPLY



# Forestry in the UK

## Wooded cover:

**UK – 11.6%**

**Scotland – 16.9%**

**EU – 36%**

## Stages:

- **Deforestation**
- **Commercial planting**
- **Preservationist**
- **MF forestry**

- ☐ Recreation and leisure
- ☐ Landscape and amenity
- ☐ Biodiversity and habitats
- ☐ Physical and mental health
- ☐ Carbon sequestration
- ☐ Absorption of air, water & noise pollutants
- ☐ Management of water resources
- ☐ Archaeological & historic sites
- ☐ Education, etc. (FTA, 2004)

**Annual value:** £1.02 Bln. (UoNewcastle) of which 75% recreation (excluding tourism) & biodiversity (BD).



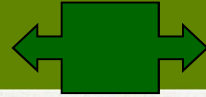
## Important questions re to forestry

- 
- How to enhance *policies* & develop *capabilities* for SFD?
  - What are the S-E most *feasible options* to improve forestry performance & rural livelihoods?
  - What are the *trade-offs*, e.g. BD conservation vs. bio energy (BE) markets, in terms of the associated costs, benefits & risks?
  - What are the *win-win* solutions (e.g. when higher financial returns lead to better environmental performance, or when SFD & CC policy measures are co-integrated).



# Climate change (CC) focus

Adaptation



Mitigation

How to value losses and damages?  
How to assess risks and uncertainties?

- *Attitudinal* & *IN analysis* of CC agreements & C markets
- *Economics of C sequestration (CS)* through forestry;
- Bio energy (BE) and wood products projects;
- Can forestry provide *cost-efficient* & *desirable* CSS?
- How to translate *sustainability requirements* of forestry & BE development into policy guidelines?
- How to overcome *market limitations* & *develop incentives* for CS forestry projects?
- How to place forestry & BE production in the *general context of MF sustainable LU* ?



# Multi-functionality (OECD 2002)

- **Joint production of multiple outputs (ESS)**

may result in conflicts, necessitating end-users' collaboration, capability development; cross-sectoral *co-operation & spatial integration*;

New *(multi-level) governance* with a rising role of government;

*Integrated & spatial* (e.g. landscape) *approach*;

- **Non-commodity outputs: public goods**

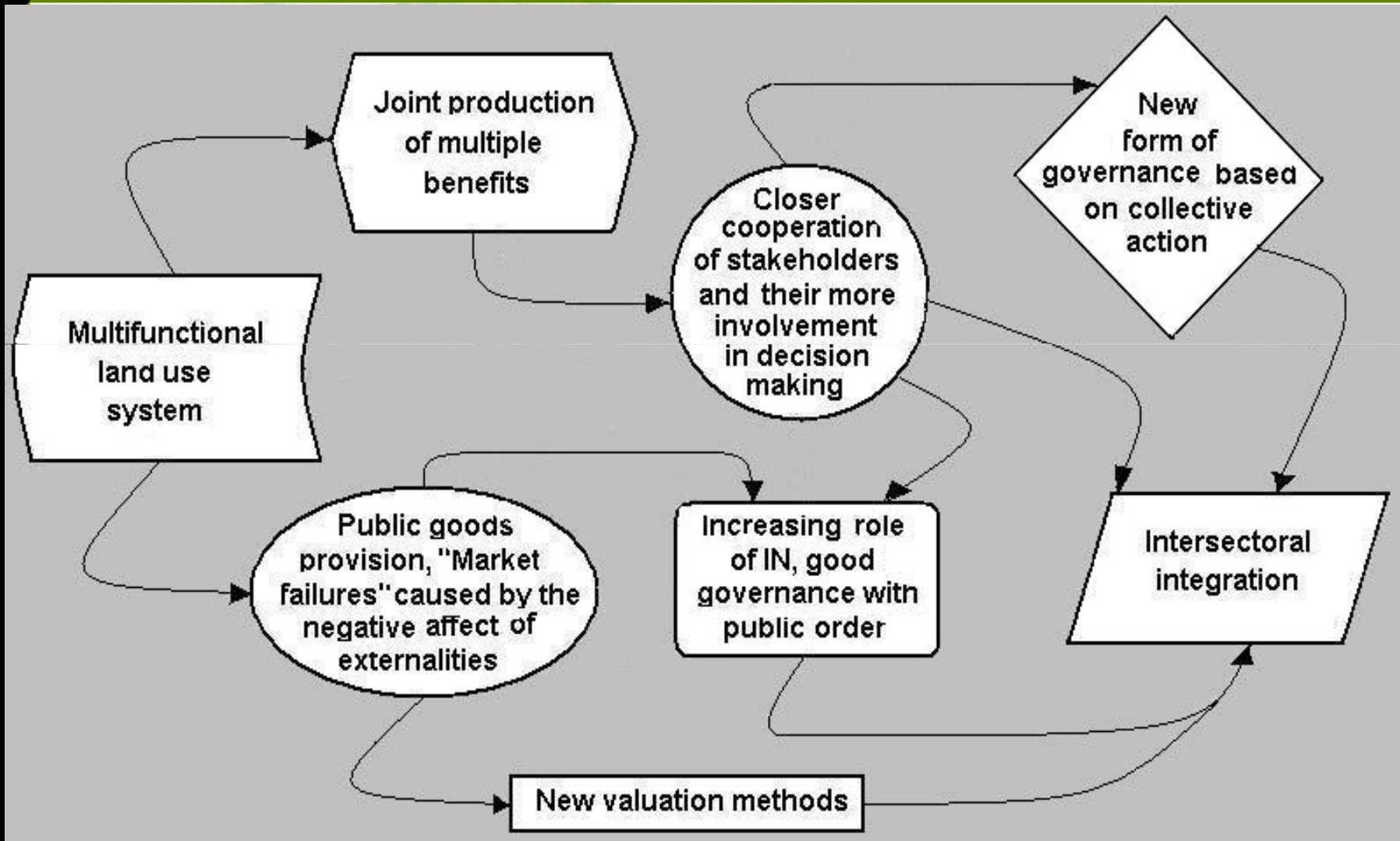
leads to *market failures* & thus again to a *rising role of governance* structures, *others than markets*.

*New methods* (non-market valuation of ESS).

*(Nijnik et al. 2010, journal of Forests, Trees & Livelihoods)*



# MF changes: an outlook





## Why new methods are needed?

- Rising inconsistency with neo-classical economics (NCE). In fact, multiple LU & ESS values have a much broader spatial & temporal distribution than the distribution of the costs.  
*Public goods - non-rival & non-excludable. Market failures.*
- NCE: *preferences* are *fixed* & *stable*. The value *system* & *IN* are *exogenous* & their role in optimal outcomes is overlooked (see e.g. Kant 2003, *Forest Policy & Economics*).

Buy today, public opinion is crucial for decisions & governance is often based on collective action.



## Basic NCE theorems do not hold due to

- *endowment effects* & *transaction costs* (TC);
- “*agents*” *often care* of others & may be irrational;
- “agents” often *behave non-competitively*;
- NCE neglects *interdependent decision-making*;
- the *Coase’s assumption* “if property rights are well-defined & there are no TC” *doesn’t hold*.

Therefore, it is imperative to incorporate behavioural, institutional & experimental economics, interdependent decision-making, endowment effects & transaction costs in forest economic models (*see also Oskam, 2009*).



## Considerations about new economic methods:

### At MLURI we develop & employs:

- ✓ Economic modelling;
- ✓ Cost-effectiveness & CBA;
- ✓ Simulation and optimization techniques;
- ✓ Scenario analysis & Applied GEM;
- ✓ Contingent valuation & Multi-criteria analysis;
- ✓ Preference techniques & Q-methodology;
- ✓ Econometrics (statistics).

It is crucial to develop new *methods* addressing the complexity & going beyond the NCE postulates. *Non-market valuation* of ESS.

*Combine methods*, also from other disciplines, if appropriate.



# Stakeholder evaluation research

✓ We elaborated research tools & analysed woodlands integration in landscapes. This work resulted in identification of end-user priorities of rural changes; forestry development & concerning wooded landscapes & their components.

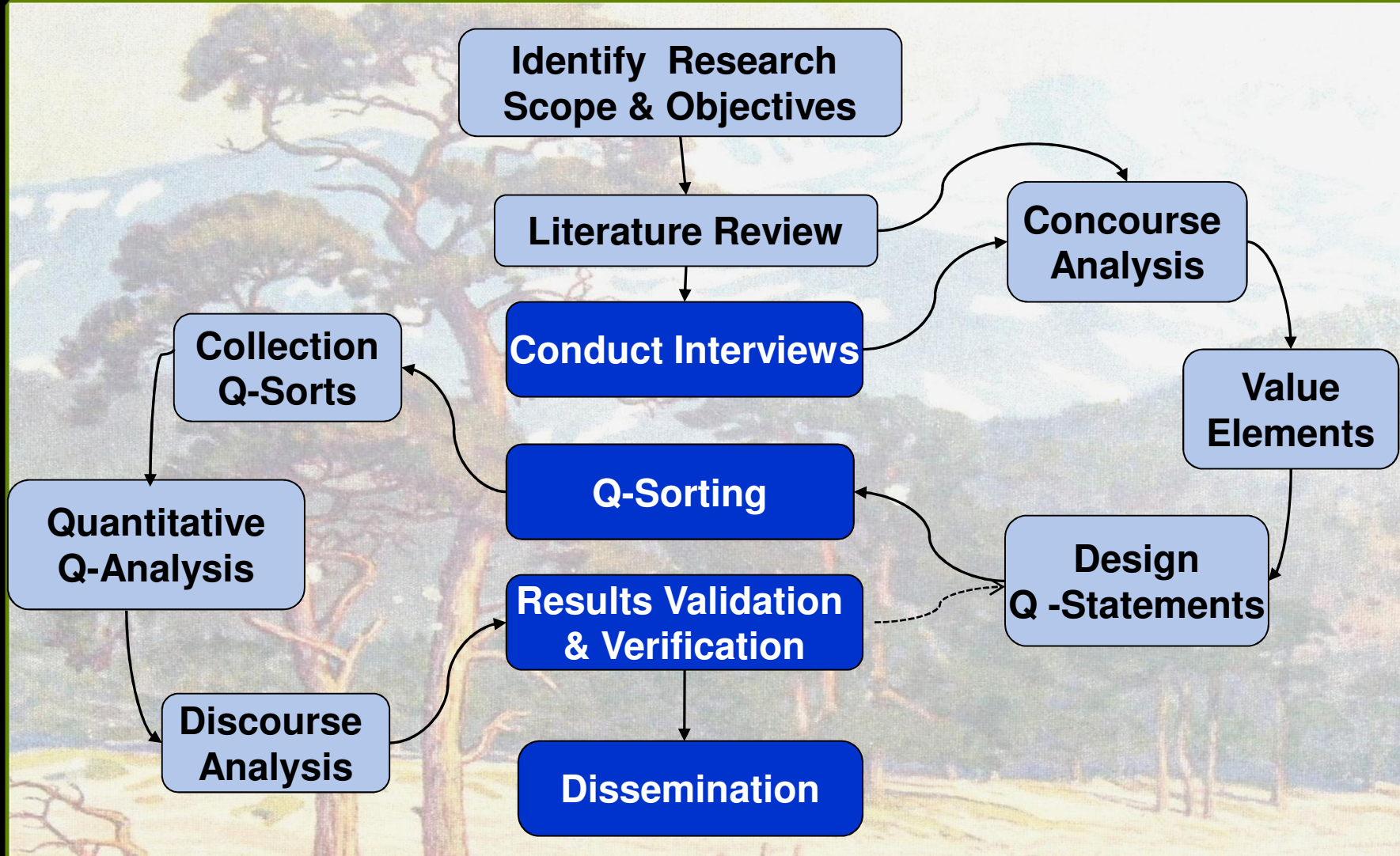
Phase 1: **SRD & forestry** (Visulands, *Miller et al, 2006*);

Phase 2: **Landscape changes & components & place & role of forestry in MF LU systems** (Visulands);

Phase 3: **Ecosystem functions & BD conservation in managed woodlands** (AlterNet & ManForest).



# Methodology





# Q-methodology

Q-method is “a *systematic & rigorous quantitative means* to examine *values & believes*” (Brown, 1996).

Focus: *anything that is difficult to quantify...*

Concern: *not how many people* believe... but *why & how* they believe what they do.

Q-method correlates “people with their views to *reveal the multiple points of view*” (Brown, 1996).



## Q-method enables:

- reveal & explain attitudes & *perspectives from the standpoint of the persons* observed;
- provide *insights into preferences*;
- *identify criteria* that are important;
- *explain factors* influencing attitudinal diversity;
- outline areas of *consensus & conflict*;
- specify, select & evaluate *policy options*.



## A brief synopsis of the attitudes

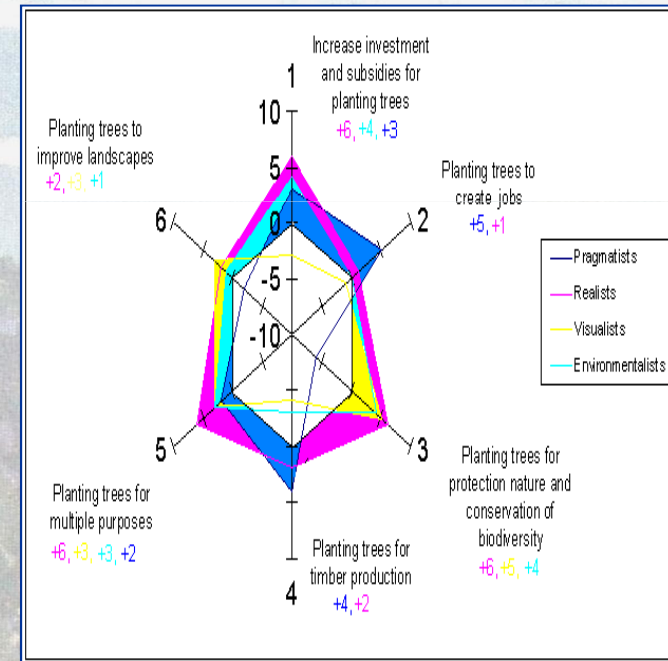
Group 1 <b>Pragmatists</b>	support woodlands expansion for multiple purposes
Group 2 <b>Idealistic Visualists</b>	preoccupied with aesthetic & cultural values of rural areas
Group 3 <b>Radical Environmentalists</b>	favour the intrinsic values of nature & are ecologically oriented
Group 4 <b>Progressives</b>	stand for stable timber production & for conservation of native woodlands
Group 5 <b>Utilitarian Visualists</b>	support tree-planting to improve landscapes & protect nature
Group 6 <b>Realists</b>	concerned of social & environmental impacts of tree planting

*Nijnik & Mather 2008, Landscape and Urban Planning*



# Selected results

- *Consensus on the enlarging of wooded cover;*
- **Six groups of attitudes;**
- **Groups 3 & 4 prioritise native forests over plantations;**
- **Group 2 & 5 represent Visualists**





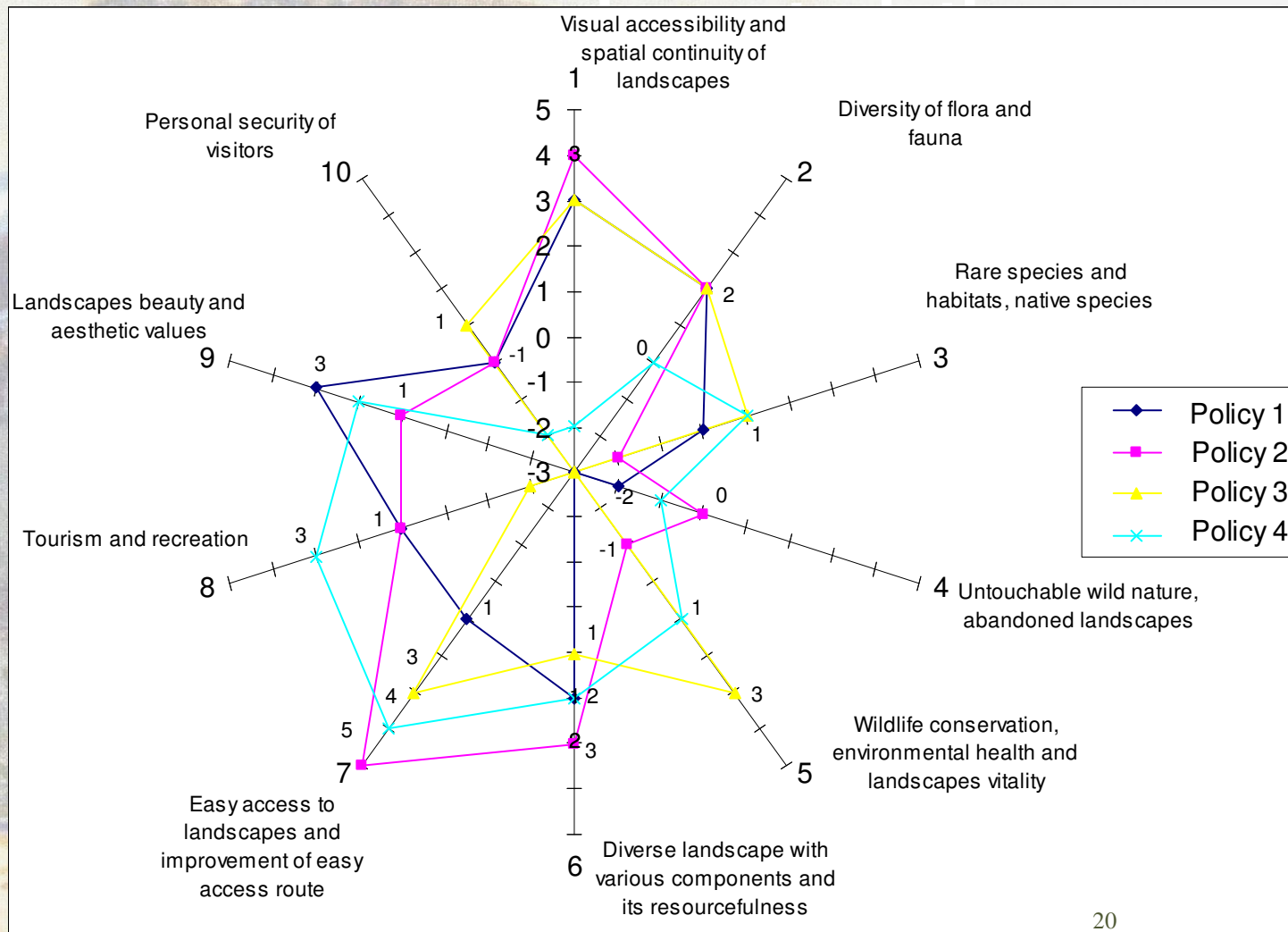
## Identified possible policy priorities

- **More** investments to attain a proper balance between nature preservation & development;
- **Shift** of efforts and new investments to improve landscapes and to enhance nature protection;
- **Shift** towards enhancement of farming activities along with urbanisation & the development of infrastructure;
- **Shift** towards overall S-E development of rural areas to improve life of local communities.

*Nijnik et al. 2008, Land Use Policy*



# Stakeholder evaluation of landscape components & features





# Preference analysis of the components of wooded landscapes

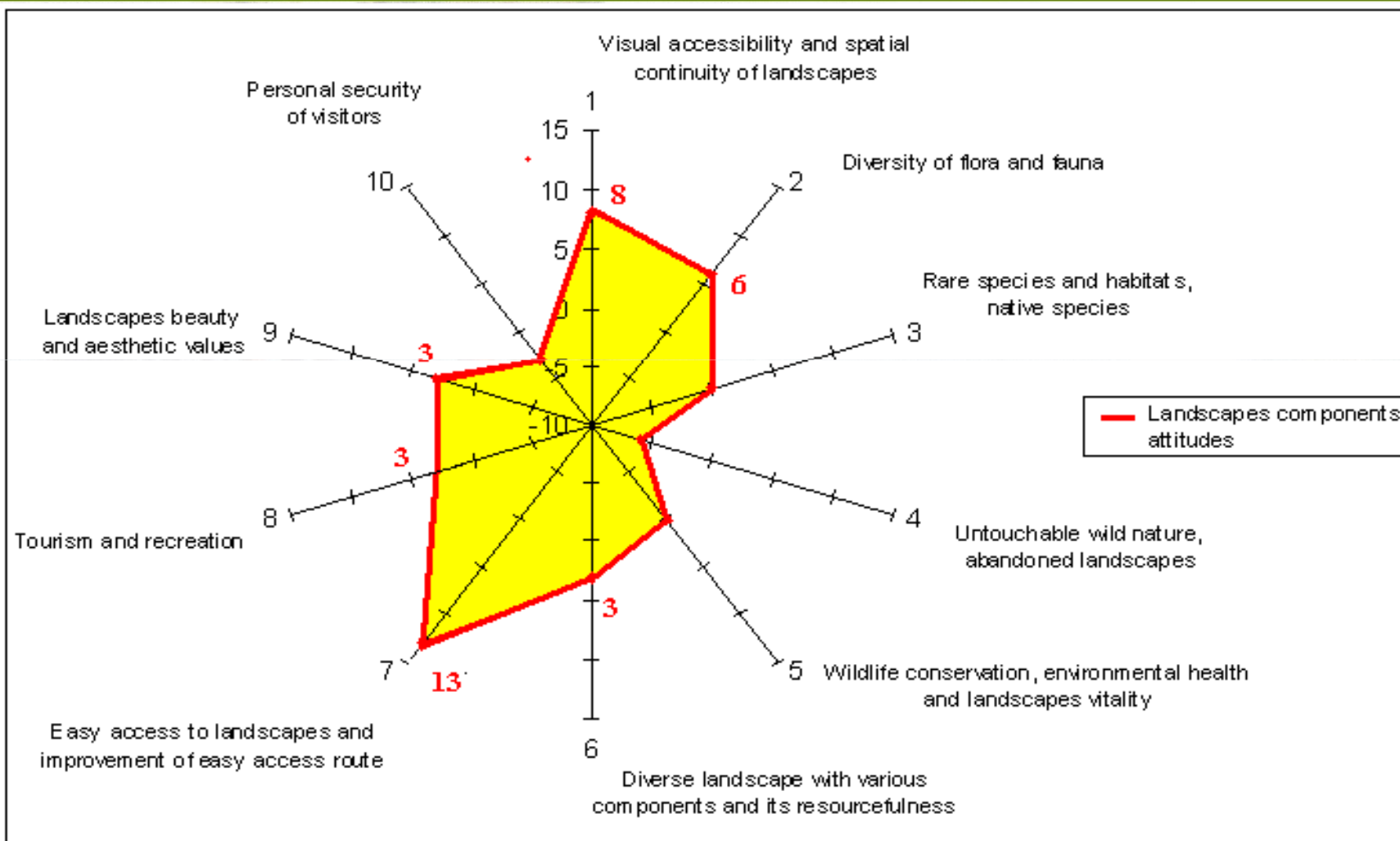
## For the first (balanced) option:

- landscape beauty and high aesthetic values (+3),
- visual accessibility and spatial continuity(+2),
- diversity of landscape components and their resourcefulness (+2),
- diversity of flora and fauna (+2),
- landscapes openness for tourism/recreation (+1),
- accessibility, with the improvement of access routes (+1).

*Nijnik et al. 2008, Land Use Policy*



# Synopsis of the preference analysis





# Conclusions

- ☐ Forestry is developing to MF, with inter-sectoral spatial integration; rising role of deliberative multi-level GOV; & the necessity for development of new S-E methods, e.g. based on stakeholder evaluation;
- ☐ Our study shows the diversity of attitudes towards forestry; people in the UK pay attention to aesthetic values of forests, the rights of people to enjoy their beauty & to attracting tourists to forests (with natural woodlands often valued higher than plantations).
- ☐ This research signifies the consensus on the necessity of the development of forestry in Britain, as offering a range of benefits to the people, environment, and to the economy.