Developing Tools to Meet the Demand for Sustainable Forestry

A Scottish case study

Forest Research
Northern Research Station
Edinburgh

www.forestresearch.gov.uk

Forest Research

Four Scenarios:

1. Business as Usual, i.e. the current management regime.
2. Climate change increasing the intensity of biotic threats, along with a parallel target of forested land being restored to broadleaves.
3. Restoration of intensive forested areas to a more "natural" system in order to increase both biodiversity and attractiveness for tourism.
4. Responding to climate change mitigation policies as woodfuel industries increase their demand for wood chips.

- The impact of these scenarios was measured against various sustainability indicators including Gross Value Added, Greenhouse Gas Emission and Carbon Stock, Forest Biodiversity, Employment, and Recreation.
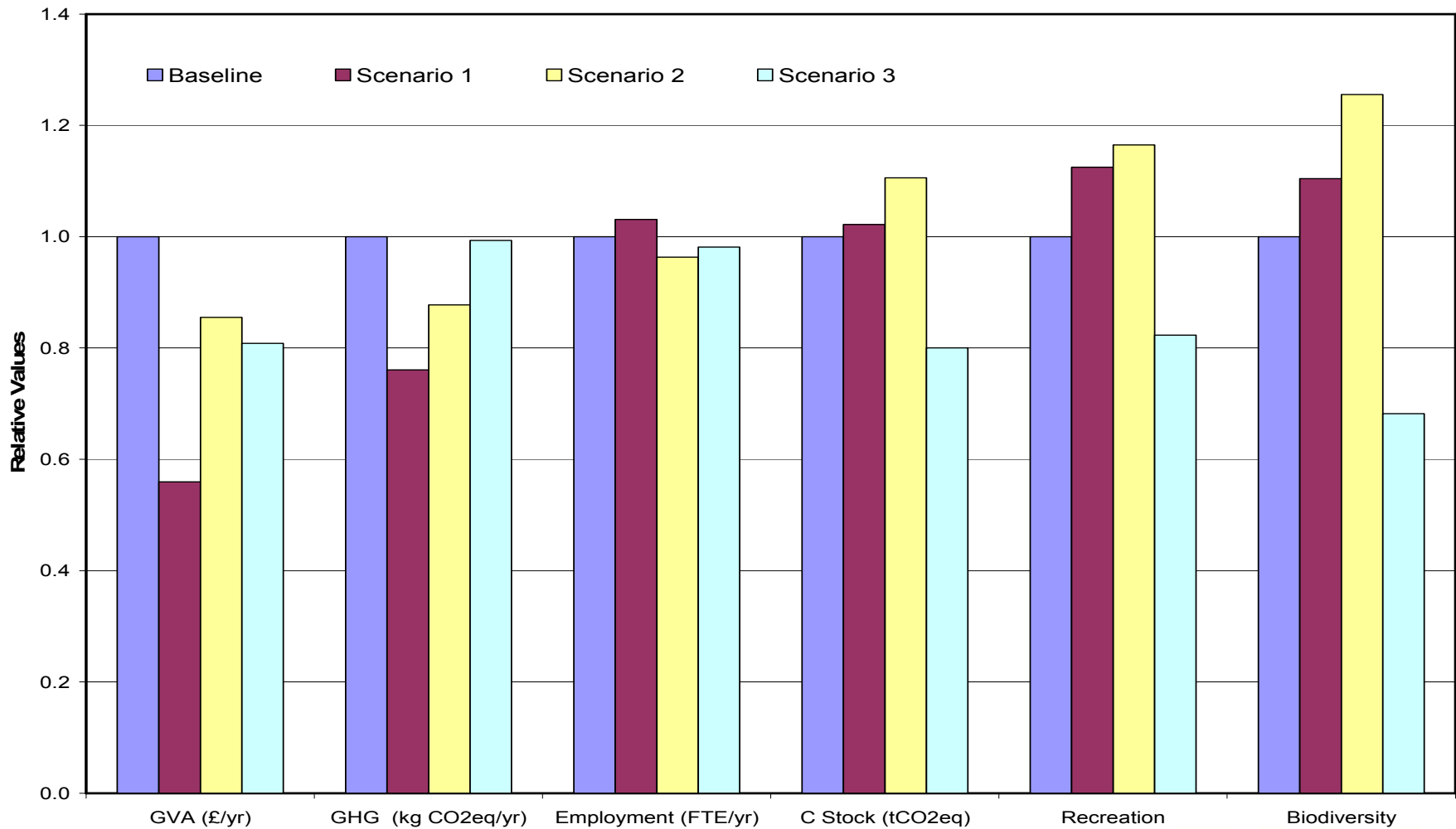
- The aggregated indicator results from the completed analysis will be presented to various stakeholder groups representing a range of industrial, environmental, and community enterprises.

- This case study was an illustration of how ToSIA principles may be applied at forest stand level.

- A major advantage of the ToSIA methodology is that it allows the user to analyze not only current sustainability impacts but also impacts from potential future scenarios as well.

- The case study generated a large amount of results which were analyzed to determine the impacts each scenario had on the sustainability indicators.

- In the following bar graph, the relative values of all the calculated indicators are shown against the baseline (business as usual). Displaying the results in this way allows for a comparative analysis of the scenarios.
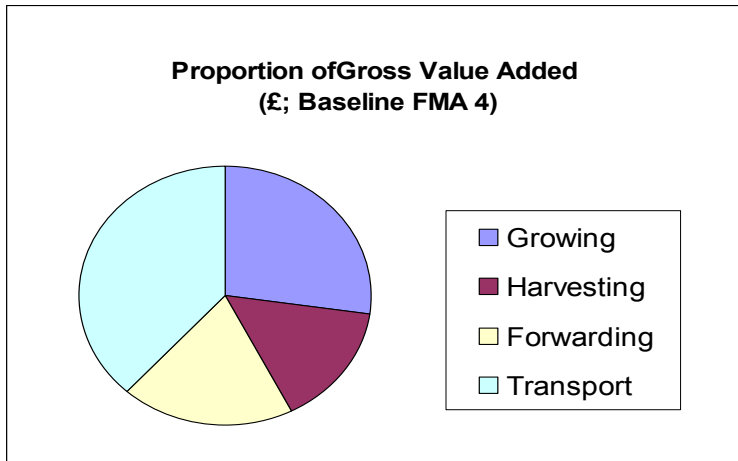
Case study results

Relative values of key indicators for 3 scenarios in comparison to the Baseline
(current management)

GVA values by process for Baseline FMA 4.

**Proportion ofGross Value Added
(£; Baseline FMA 4)**

- Growing
- Harvesting
- Forwarding
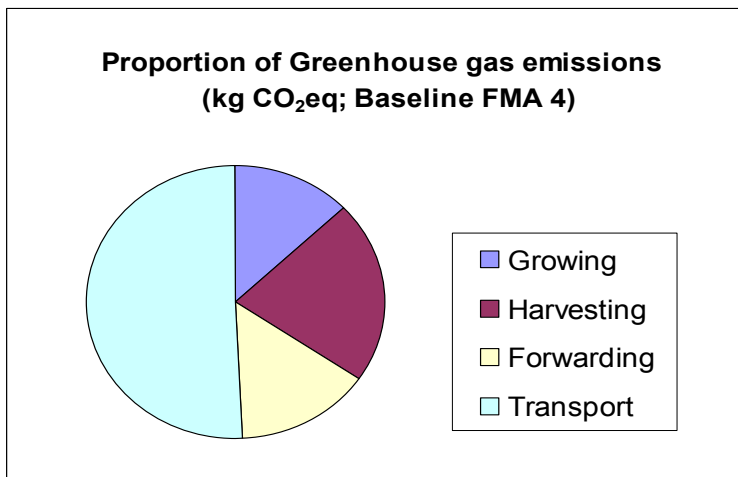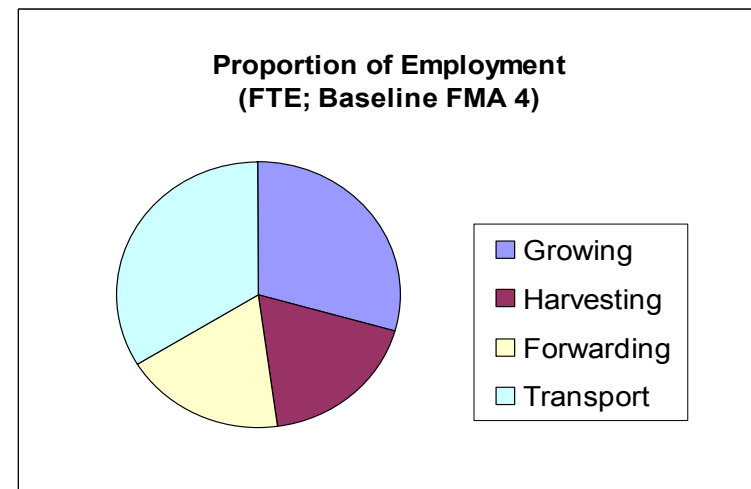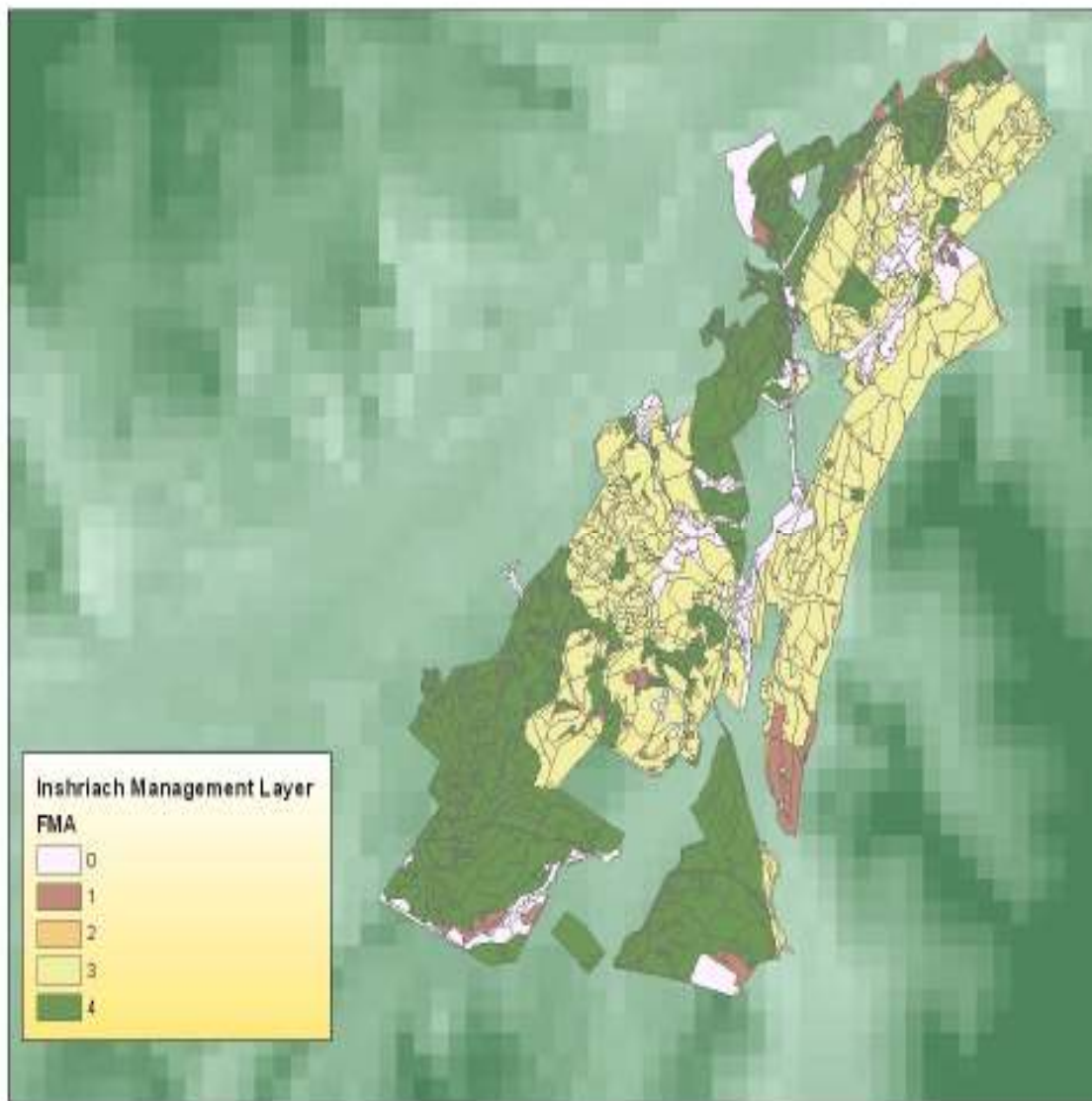- Transport

- It is also possible to assess the results in greater detail, for example, at a hectare level instead of forest stand level.

- In these figures the accumulated values of GVA, greenhouse gas emissions and employment are shown as the proportion contributed from each stage of the wood chain for FMA 4 (baseline scenario).

GHG values by process for Baseline FMA 4.   *Employment values by process for Baseline FMA 4.*

**Proportion of Greenhouse gas emissions
(kg CO_2eq; Baseline FMA 4)**

- Growing
- Harvesting
- Forwarding
- Transport

**Proportion of Employment
(FTE; Baseline FMA 4)**

- Growing
- Harvesting
- Forwarding
- Transport

- FMA 1 is a forest nature reserve
- FMA 2 is continuous cover forestry
- FMA 3 is combined objective forestry
- FMA 4 is intensive even-aged forestry
- FMA 5 is wood biomass production.

Inshriach Management Layer
FMA
0
1
2
3
4
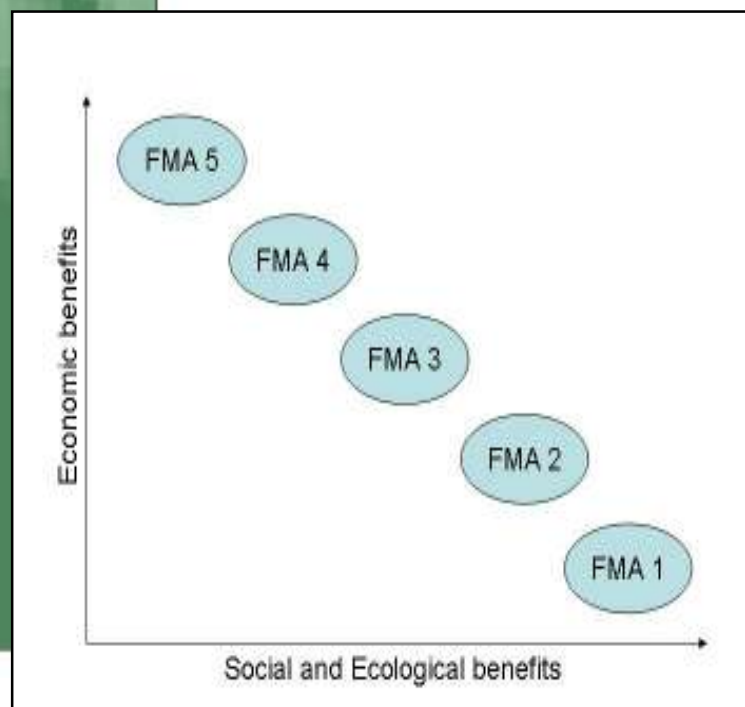
- Expand case study methodology throughout the Cairngorms National Park

- Visualise sustainability indicators spatially

- Develop Recreation and Biodiversity/Connectivity indicators using landscape modelling techniques

- Engage with stakeholders to understand relative impacts of scenarios and validate the outputs of the approach

- Investigate how the approach would be incorporated into planning