Capturing forest public goods and externalities: valuation and policy tools
An application to Mediterranean forests

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Objectives:
- to identify and valuate MEDiterranean FORest public goods and EXternalities (MEDFOREX)
- to place the estimates within the institutional and policy tools context
- to derive policy recommendations

Valuing Mediterranean forests: towards Total Economic Value
Eds. Maurizio Merlo and Lelia Croitoru
**Total Economic Value (TEV)**

<table>
<thead>
<tr>
<th>Use Values</th>
<th>Non-Use Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Direct Use</strong></td>
<td><strong>Indirect Use</strong></td>
</tr>
<tr>
<td>Timber, firewood</td>
<td>Watershed protection</td>
</tr>
<tr>
<td>Cork, honey, mushrooms, etc.</td>
<td>Landslides and flood prevention</td>
</tr>
<tr>
<td>Grazing</td>
<td>Carbon storage</td>
</tr>
<tr>
<td>Hunting</td>
<td>Personal future recreation, potential source of energy and raw materials, pharmaceuticals</td>
</tr>
<tr>
<td>Recreation</td>
<td>Landscape, recreation, source of energy and raw material, biodiversity, available to future generations</td>
</tr>
</tbody>
</table>

**Bequest**

- Biodiversity, respect for the rights or welfare of non-human beings

**Existence**

- Annual flows of forest goods and services

**Non-Use Values**

- Pharmaceuticals
- Personal future recreation, potential source of energy and raw materials
- Landscape, recreation, source of energy and raw material
- Biodiversity, respect for the rights or welfare of non-human beings

**Option**

- Watershed protection
- Landslides and flood prevention
- Carbon storage
- Personal future recreation, potential source of energy and raw materials, pharmaceuticals

**Indirect Use**

- Non-use values

**Direct Use**

- Use values

**Approach:**

- Landscape, recreation, source of energy and raw material, biodiversity, available to future generations
- Personal future recreation, potential source of energy and raw materials, pharmaceuticals
- Biodiversity, respect for the rights or welfare of non-human beings

**Other negative externalities:**

- Erosion, floods and landslides due to poor or no forest management
- Loss of landscape values due to illegal actions
- Damages provoked by forest fires


- Annual flows of forest goods and services

- Valuation: variety of methods based on official statistics, supplemented by results of other research; national level
Results:

Direct use values

<table>
<thead>
<tr>
<th></th>
<th>North-western countries</th>
<th>South and Eastern countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timber and firewood</td>
<td>€50-100/ha</td>
<td>€10/ha</td>
</tr>
<tr>
<td>50-90% timber</td>
<td>€50/ha</td>
<td>60-75% firewood</td>
</tr>
<tr>
<td>Grazing</td>
<td>€10/ha</td>
<td>€50/ha</td>
</tr>
</tbody>
</table>

Differences in economic and institutional contexts

- Abandonment
- Negative externalities due to poor forest management
- Prevalence of private forest ownership
- Rural communities dependent on forests
- Excessive use (illegal acts) = > degradation
- State ownership: free rights guaranteed by laws and traditions; special arrangements
- Compromise: legislative and financial economic incentives (Morocco, Algeria)

Trend towards internalisation by markets:

North:
- market-based tools: direct payments;
  payments for related goods
- institutional and management tools: property rights changes, regulations

Benefits are usually enjoyed by visitors and tourism industry, while costs are supported by local community

South and East:
- usually benefits enjoyed for free by visitors - very rarely are internalised by markets
Water-related issues

- €120-150/ha (Italy, Greece, Morocco) or some 70% of TEV
- Differences between Northern and Southern Mediterranean basin regarding water availability and use patterns
- Institutional-legal context: multipurpose Mediterranean forest policy, aimed primarily at water issues rather than timber production
- Central issue also to Southern Mediterranean: scarcity linked to semi-arid climate and irregular rainfalls
- Public financing for subsidising reforestation plans (Algeria, Tunisia)

Indirect use values

Carbon sequestration

- Public good
- Carbon sink: Northern Mediterranean: €8/ha and Tunisia (€3/ha)
- Carbon source: €3/ha (Morocco), €6/ha (Algeria) and €8/ha (Lebanon) as a result of deforestation for timber purposes and conversion to agriculture

Indirect use values: trend towards compensating forest owners through collective agreements
Existence values

Biodiversity conservation

- people’s WTP or actual payments of (international) organisations (€0.7/ha ÷ €33/ha)

- difficult to establish market mechanisms: ‘sponsorships’ for habitat conservation

Main TEV components of Italian forests
Conclusions:

- Multipurpose nature of Mediterranean forests - mostly distinguished by public goods and externalities (water-related issues);

- forest public goods and externalities are only partially internalised by markets, especially in the north-western Mediterranean countries;

- public benefits are enjoyed by visitors, tourism industry, society as a whole, whereas the costs of producing them are supported by a small rural community: compensation?

- difficult to internalise some public goods by markets: watershed protection, carbon sequestration: negotiated agreements with local communities and public funding? participation in forest management decisions? development of local forest-based processing activities?

Mix of policy tools: institutional, financial-economic, market