FOREST AND WATER IN THE CZECH REPUBLIC

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Czech Republic: Fact sheet

Central Europe (48-51 N, 12-19 E)

Population: 10.3 million
Area: 78,866 km²

- Water 2 %
- Forests 34 %
- Agricultural land 54 %

Elevation range: 115 – 1,602 m
Temperate climate: Dfb (humid continental)
Dfc (sub-arctic).

Water budget:  
\[ P = 693 \text{ mm} \]
\[ ET = 499 \]
\[ R = 194 \]

Water supply: mainly surface waters (80%)
## Climax zones

<table>
<thead>
<tr>
<th>Climax zone</th>
<th>Area (km²)</th>
<th>Elevation (m)</th>
<th>T&lt;sub&gt;a&lt;/sub&gt; (°C)</th>
<th>P&lt;sub&gt;a&lt;/sub&gt; (mm)</th>
<th>Veg. period (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beech with oak</td>
<td>2,862</td>
<td>400-550</td>
<td>6.5-7.5</td>
<td>650-700</td>
<td>150-160</td>
</tr>
<tr>
<td>Beech</td>
<td>4,505</td>
<td>550-600</td>
<td>6.0-6.5</td>
<td>700-800</td>
<td>140-150</td>
</tr>
<tr>
<td>Beech with fir</td>
<td>6,360</td>
<td>600-700</td>
<td>5.5-6.0</td>
<td>800-900</td>
<td>130-140</td>
</tr>
<tr>
<td>Beech with spruce</td>
<td>3,445</td>
<td>700-900</td>
<td>4.5-5.5</td>
<td>900-1,050</td>
<td>115-130</td>
</tr>
<tr>
<td>Spruce with beech</td>
<td>1,060</td>
<td>900-1,050</td>
<td>4.0-4.5</td>
<td>1,050-1,200</td>
<td>100-115</td>
</tr>
<tr>
<td>Spruce</td>
<td>265</td>
<td>1,050-1,350</td>
<td>2.5-4.0</td>
<td>1,200-1,500</td>
<td>60-100</td>
</tr>
<tr>
<td>Dwarf pine</td>
<td>53</td>
<td>&gt; 1,350</td>
<td>&lt; 2.5</td>
<td>&gt; 1,500</td>
<td>&lt; 60</td>
</tr>
</tbody>
</table>
Mountain forests: 18,550 km² (70 % of forested area).

- Control of 60,000 km of headwater streams.
- Native species: Common beech (Fagus sylvatica), Common silver fir (Abies alba).
- Dominant even – age spruce plantations (84 %).
- Mean rotation period 115 years.
- Annual harvest of timber 6 m³/ha, with, salvage felling (66 %) – wind breaks and epidemics.
- Natural regeneration: 18 % of the artificial one.
- Ownership: State (61 %), private (23 %), and municipal (16 %),
- Priorities: Commercial (75 %), and protective forests (25 %).

Flood control dominates.
Maximum probable flood discharge
Seasonal floods: the Moldau River in Prague

Snow-melt

Rain-storms

Month (I - XII)
Flash floods

- Rain-storms of cca 30 mm/h, 45 mm/2h, 55 mm/3h
- Problems in the Czech Republic particularly in the summer of 2009, 2010 and 2011.
Integrated prevention of flash floods

- Governmental act 799/2010
- Cooperation of the governmental bodies:
  - Ministry of finance
  - Ministry of the environment
  - Ministry of agriculture
  - Ministry of the local development
Generally, problems of understanding forest-water relations in CZ still continue...

Wrong argumentation on forest water relations, conflicts between forest professionals and environmentalists, and confusing the public.

(the Sumava Ntl. Park, 2011)
Forests employed in ecosystem services

Payment for an ecosystem service (PES):

\[ \text{PES} = R \times A + 0.0318 \times V \]

where,

- R – yield (CZK/sq, m),
- A – area of a service (sq. m)
- V – value of that particular stand (CZK)

Act 335/2006 (PES in commercial forests)
Watershed planning

Detailed system of differentiation of protective forests

**Hydrotones:**
- Supporting infiltration
- Control of erosion
- Additional precipitation
- Riparian buffer zones

versus a system of riparian buffer zones only.
Prevention of the climate change impact

- Runoff reduction: 10 – 40 %.
- Seasonal changes: drop (20 – 90 %) in the summer, and increase (30 – 50 %) in the winter.
- Snow cover reduced (30 %).
- Spruce stands endangered (50 %).
Thank you for your attention