

### 3 Design and brief description of the guidelines and demonstration sites

#### Germany

aFMM	Guidelines Deliverable D1.3 May 2020	Demonstrations sites Deliverable D1.4 July 2020
<b>Production forest</b>	<p>Most forest areas in Germany are still coined by a century of mainly production oriented forestry. Since a few decades this is changing on forest areas belonging to the federal states (about 1/3 of Germany's forest area) and municipalities; but on many private forest areas, especially larger estates, maximizing wood production with conifer species as the backbone remains most important.</p> <p>Under the challenge of climate change, stability plays an important role; this could be addressed by increasing the share of non-native species where applicable (Douglas fir), by strong an early thinnings, and/or shortened rotation periods.</p> <p>In our guidelines we try to sum up what can be learned for the production forest aFMMs from the ALTERFOR simulations and from our long-term research plots.</p>	<p>At our institute we manage a large network of long term growth and yield trials (~280 trials comprising ~800 plots). Among them, there are several long-term research sites/plots (most under survey for several decades at least) which are very useful for demonstrating key options and implications for production forest concepts. Among them (directly located in or in close vicinity to the Southern German case study) are the Norway spruce thinning and spacing trials Zusmarshausen 603, 604 and Fürstenfeldbruck 612. All of these trials comprise several very different treatment variants from no thinning at all up to consequent low density and almost solitary tree concepts. These experiments inform about the elasticity of the wood production in connection to stand density (i.e. a risk-determining trait).</p> <p>A good demonstration site is also the monospecific Douglas fir plot in the Douglas-fir/European beech growth series trial Krumbach 861. This plot is insofar very interesting as at allows to compare the productivity of Douglas fir with Norway spruce under comparable site conditions as well as the productivity of Douglas fir in monoculture with Douglas fir/European beech mixed stands. All plots are surveyed in five to eight year intervals. Fact sheets (including maps, diagrams, and tables documenting the development) are updated after each survey.</p>

<p><b>Multifunctional forest</b></p>	<p>Since a few decades, forest management in public forests (federal states, municipalities) undergoes a transition from even-aged conifer monocultures towards a multifunctional forestry with high shares of deciduous species. The final goal is to come to uneven-aged mixed stands on the long run that can be kept in that state. The German national forest inventory shows a general change of species shares in the younger age classes as a result of this trend. The idea behind these concepts is to provide a broad range of ecosystem services on the same forest area, production being important, but not automatically more important than other services.</p> <p>Given the extensive drought damages in the last years, politicians are now pushing for a significant acceleration and even more consequent conception of this transition process. Much under debate is the question, if or not non-native species should be included in such concepts or not.</p> <p>As for the previous concept, we summarize in our guidelines what can be learned from the ALTERFOR simulations and from our long-term research plots .</p>	<p>Concerning the multifunctional forest concept, we can contribute different long term trials/plots as demonstration sites, among them the mixed stand plot series Krumbach 816 which comprises mixed stands of European beech, Douglas fir and Norway spruce at different stages of development. This plot series provides a quantitative basis to a hotly debated issue (mixed stands of native species with the non-native Douglas fir). The mixed stand plot Laugna 315/2 comprising European beech, pedunculate oak, Norway spruce, Douglas fir, and European larch allows a direct comparison of the dynamics of a multi-mixture to the classic Norway spruce monoculture. The thinning and spacing pedunculate oak trial Illertissen 039 completes the picture. Oak is among the native deciduous species whose importance in Germany will probably strongly increase. This experiment informs us about the response of the species on initial spacing and thinning strength. All plots are surveyed in five to eight year intervals. Fact sheets (including maps, diagrams, and tables documenting the development) are updated after each survey.</p>
<p><b>Set aside</b></p>	<p>A demand regularly raised by nature protection NGOs is to stop forest management immediately on large forest areas. Often this seems to be connected with idealistic pictures of the visual impression of unmanaged forests. For most of the forest areas under debate this would mean, however, an abrupt switch from quite intensive management to self-thinning.</p> <p>Most of our long-term trials comprise untreated plots that serve as a reference. In the context of set aside FMMs, they can pro-</p>	<p>The above-mentioned thinning and spacing trials Zusmarshausen 603, 604, Fürstenfeldbruck 612, and Illertissen 039 all contain unmanaged reference plots which are ideal for demonstrating the dynamics of forests when silvicultural management is stopped. Fact sheets (including maps, diagrams, and tables documenting the development) are updated after each survey.</p>



	vide a realistic picture about the development of managed forests when management is shut down. In our guidelines, we summarize the relevant facts drawn from these plots, and the ALTERFOR simulations.	
<b>General</b>	All related material and contact details for additional information will be available on the website of the Chair for Forest Growth and Yield, Technische Universität München.	

