Climate Strategy & Action Plan
Republic of Serbia

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Climate Change Adaptation Options
Report of stakeholder workshop for the Forestry Sector

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1 GENERAL DISCUSSIONS AND FINDINGS

The meeting aimed to acquire stakeholder input for the assessment of the risks associated with sector specific climate change impacts and to create a short list of measures to address the highest risks as assessed during the workshop. The ultimate goal of the meeting was, to identify three priority adaptation measures for the sector, which will now enter the planning stage.

The stakeholder engagement is foreseen as an element of the second stage of the Adaptation Planning Framework (APF), which is being developed in the Climate Strategy and Action Plan project. Stakeholder engagement is essential to the APF as the expertise of relevant Serbian individuals and organisations is needed in order to assess climate change risks and potential adaptation measures.

The APF is a user friendly tool currently under testing and development, which provides a step by step guide focused on assessing the risks associated with climate change and related extreme weather impacts and identifying and prioritising adaptation options to reduce key risks. It will be made available in 2018.

The APF is divided in four stages, as shown in figure 1. The stakeholder assessment reported in this document is part of stage two.

Figure 1 – The stages of the Adaptation Planning Framework

![Diagram of the Adaptation Planning Framework]

The stakeholder workshop started with a brief presentation to frame the meeting within the scope of the project “Climate Strategy and Action Plan. The presentation also highlighted that the strategy will be focused mostly on mitigation (measures to reduce greenhouse gas emissions), but that it will also include specific adaptation measures for three priority sectors: water resources – hydroelectricity production; forestry – bioenergy production; agriculture – food production.

Stakeholders mentioned that in addition to the specific priority measures for the sector, the strategy should include some important principles such as profiting from synergies between adaptation and mitigation and recognising the linkages between climate change impacts and adaptation measures. The Ministry of Environmental Protection (MEP) highlighted that an adaptation-specific strategy should be elaborated in the coming years.
Following this discussion, Nenad Petrovic, the project expert on forestry, briefly introduced the topic by highlighting the key climate and climate change drivers as assessed in Serbia’s Second National Communication (SNC). He also listed some adaptation measures included in the SNC for the sector.

Stakeholders were then invited to assess the severity of the consequences of the identified climate change impacts. The methodology was explained and stakeholders cast their votes for each impact.

The project team provided the assessment of likelihood based on the information contained in the SNC while stakeholders assessed only the consequences of climate change and extreme weather impacts to the forestry sector. (See next session for more detailed information).

After the risks were assessed, the project team examined the suggested adaptation measures provided in the experts presentation and simplified the list to only include adaptation measures, which addressed the highest risks. Participants were then invited to evaluate each measure from the short list, taking into account a proposed set of evaluation criteria (see below for further details).

The meeting was closed with the team thanking the stakeholders for their extremely valuable inputs from the participants and promising to send a meeting report and a satisfaction questionnaire by the end of the week.
2 OUTCOMES OF DISCUSSION ON RISK ASSESSMENT

Participants were asked to assess the risks of the following impacts of climate change:

- **High temperatures/Drought (likelihood: 4)**
  - I1: Loss of tree vitality and decrease of health condition of forests
  - I2: Drying of forests due to the primary and secondary pathogens
  - I3: Forest fires
  - I4: Drying of forests of certain tree species
  - I5: Redistribution of certain tree species
- **Flooding/extreme precipitation and other weather events (likelihood: 3)**
  - I6: Landslides/erosion
  - I7: Ice, snow and windbreaks in forests
- **High temperatures/Drought (likelihood: 4)**
  - I8: Influence to bioenergy supply

The assessment of likelihood was proposed by the team (as noted above), in accordance with the following definition and scale:

**Likelihood scale** – this represents the likelihood that a severe hazard event will occur under the selected climate change scenario (IPCC A2) and at the future time period (2050) that the risk assessment is focused on:

- 1 – Low (Very unlikely that the hazard event will occur)
- 2 – Moderate (Hazard event as likely to occur as not)
- 3 – High (Likely that the hazard event will occur)
- 4 – Very high (Virtually certain that the hazard event will occur)

Stakeholders agreed with the proposed likelihood assessment, and in one case an amendment was made to increase the likelihood of extreme precipitation events from 1 to 3.

Stakeholders were then asked to assess the severity of consequences of the impacts, using the following definition and scale:

**Consequence scale** – this represents the severity of the consequences associated with climate change and extreme weather related impacts being considered within the risk assessment. This assessment should be based around the consideration of a reasonable worst case scenario (i.e. the hazard event impacting on the sector is a major one)

- 1 – Low (The impact has little or no negative implications to the sector)
- 2 – Moderate (The impact has some negative implications to the sector, but there are at a scale that can be managed enabling key functions to continue)
- 3 – High (The impact has widespread negative implications to the sector, which in some cases may lead to sustained loss of key functions)
- 4 – Severe (The impact has major negative implications to the sector which in some
The results of the stakeholder assessment of risks of climate change impacts are included in the following matrix:

**Figure 2 – Stakeholder determined climate change impact risk matrix**

![Risk Matrix Diagram]

Taking into account the results of the risk assessment above, a short list of adaptation measures was created, drawing on the measures from the long list that addresses the impacts identified as having the highest risks. According to Figure 2, impacts that have a very high likelihood and a high severity are located in the red zone, which is assessed as the zone with the highest risk. Those impacts are: impact 1 (Loss of tree vitality and decrease of health condition of forests); 2 (Drying of forests due to the primary and secondary pathogens); 3 (Forest fires); 4 (Drying of forests of certain tree species); and 8 (Influence to bioenergy supply).

The short list of measures is as follows:

1. Change of forest management practices toward Close to nature forest management approach (I1, I2, I3, I4, I8)
2. Introduction of “Climate smart forestry” approach (I1, I2, I3, I4, I8)
3. Afforestation of new land using site mapping and CC adapted tree species (I1, I2, I3, I4, I8)
4. Introduction of agro forestry especially in lowlands (I8)
5. Construction of new forest roads and fire protection forest roads in fire-prone regions (I1, I2, I3, I4,)
6. Establishing of research and monitoring system of CC effects (pathogens, forest fires, water balance level) and early treatment of pathogens and forest fires (I1, I2, I3, I4)
7. Promotion of uneven-aged forests and mixed forests structure (I1, I2, I3, I4,)
8. Selection of new varieties of trees resistant to CC (I2, I3, I4)

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1 Due to the need for a manageable number of measures to be evaluated in the workshop, the team decided to include in the short list only the structural/physical measures (as classified in the Second National Communication).
9. Improve water resource management (especially in floodplains) (I1, I2, I4, I5)
10. Rehabilitation of stands damaged by abiotic and biotic factors and fire-damaged stands (I1, I3, I4, I8)
11. Establishing of proper SR (I8)
12. Conversion of coppice into high forests (I8)
3 OUTCOME OF EVALUATION OF MEASURES IN SHORT LIST

Stakeholders were invited to evaluate each of the measures in the short list based on the evaluation approach presented in Table 1.

Table 1 – Criteria for evaluation of adaptation measures

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Description of criteria</th>
<th>Weight</th>
<th>Scoring the options against the criteria</th>
</tr>
</thead>
</table>
| Effectiveness  | How effective is the adaptation option in reducing the target impact?                    | 3      | 1 – No evidence it reduces the target impact  
2 – Limited evidence it can reduce the target impact  
3 – Proven to reduce the target impact |
| Efficiency     | Do the benefits of the adaptation option exceed any associated costs?                    | 3      | 1 – Benefits unlikely to exceed costs  
2 – Benefits likely to exceed costs  
3 – Benefits significantly exceed costs |
| Mitigation     | Does the adaptation option support or conflict with the achievement of mitigation goals? | 1      | 1 – Conflicts with the achievement of mitigation goals  
2 – Potential to support the achievement of mitigation goals  
3 – Strongly supports the achievement of mitigation goals |
| Urgency        | Is the target impact that the adaptation option aims to reduce already being experienced?| 2      | 1 – No experience of the impact  
2 – Isolated records of the impact  
3 – Impact regularly experienced |
| Multifunctionality | Does the adaptation option generate other benefits in addition to addressing the target impact? | 2      | 1 – Solely addresses the target impact  
2 – May generate several benefits in addition to addressing the target impact  
3 – Will generate a range of benefits in addition to addressing the target impact |

Stakeholders were asked to evaluate the short list of measures proposed (M1-M12) against the highest rated impacts (I1-I4 and I8) according to the five criteria mentioned in table 1. Weighting of criteria has previously been defined together with the expert and remained same for all measures: Effectiveness 3, Efficiency 3, Mitigation 1, Urgency 2 and Multifunctionality 2. The results were obtained by multiplying the scores for each of the measures from 1 to 3 with the weighting factor of the criteria. The scores achieved for each measures are presented in Table 2.
The ranking of the measures based on the results of the stakeholder evaluation is as follows:

**Table 2 – Ranking of short list measures**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Measure</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M 3 - Afforestation of new land using site mapping and CC adapted tree species</td>
<td>141,33</td>
</tr>
<tr>
<td>2</td>
<td>M 1 - Change of forest management practices toward close to nature forest management approach</td>
<td>127,59</td>
</tr>
<tr>
<td>3</td>
<td>M 2 - Introduction of a &quot;climate smart forestry&quot; approach</td>
<td>126,03</td>
</tr>
<tr>
<td>4</td>
<td>M 7 - Promotion of uneven-aged forests and mixed forest structures</td>
<td>109,26</td>
</tr>
<tr>
<td>5</td>
<td>M 6 - Establishing of research and monitoring system of CC effects (pathogens, forest fires, water balance level) and early treatment of pathogens and forest fires</td>
<td>106,32</td>
</tr>
<tr>
<td>6</td>
<td>M 8 - Selection of new varieties of trees resistant to CC</td>
<td>105,95</td>
</tr>
<tr>
<td>7</td>
<td>M 10 - Rehabilitation of stands damaged by abiotic and biotic factors and fire-damaged stands</td>
<td>100,95</td>
</tr>
<tr>
<td>8</td>
<td>M 5 - Construction of new forest roads and fire protection forest roads in fire-prone regions</td>
<td>97,41</td>
</tr>
<tr>
<td>9</td>
<td>M 9 - Improve water resource management (especially in floodplains)</td>
<td>81,70</td>
</tr>
<tr>
<td>10</td>
<td>M 11 - Establishing of proper SRP</td>
<td>29,25</td>
</tr>
<tr>
<td>11</td>
<td>M 12 - Conversion of coppice into high forests</td>
<td>28,58</td>
</tr>
<tr>
<td>12</td>
<td>M 4 - Introduction of agro forestry especially in lowlands</td>
<td>28,33</td>
</tr>
</tbody>
</table>

Based on this outcome, the measures ranked as 1, 2 and 3 will be proposed to move to stage 3 of the APF: Planning.
4 ATTENDANCE LIST

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Predrag Jovic</td>
<td>Min. of agriculture, Directorate for Forestry</td>
</tr>
<tr>
<td>2.</td>
<td>Zvonimir Bakovic</td>
<td>&quot;Srbijasume&quot; - Public Forestry Authority of Serbia</td>
</tr>
<tr>
<td>3.</td>
<td>Sladjana Dabic</td>
<td>&quot;Vojvodinasume&quot; - Public Forestry Authority of Vojvodina</td>
</tr>
<tr>
<td>4.</td>
<td>Marko Marinkovic</td>
<td>&quot;Vojvodinasume&quot; - Public Forestry Authority of Vojvodina</td>
</tr>
<tr>
<td>5.</td>
<td>Milan Medarevic</td>
<td>Faculty of Forestry, Belgrade</td>
</tr>
<tr>
<td>6.</td>
<td>Marija Trikic</td>
<td>Institute for nature protection of Serbia</td>
</tr>
<tr>
<td>7.</td>
<td>Natasa Djereg</td>
<td>CEKOR</td>
</tr>
<tr>
<td>8.</td>
<td>Vladimir Djurdjevic</td>
<td>Institute of meteorology, Faculty of Physics</td>
</tr>
<tr>
<td>9.</td>
<td>Kis Alen</td>
<td>Institute for nature protection of Vojvodina</td>
</tr>
<tr>
<td>10.</td>
<td>Bratislav Kisin</td>
<td>&quot;Srbijasume&quot; - Public Forestry Authority of Serbia</td>
</tr>
<tr>
<td>11.</td>
<td>Mirjana Jovanovic</td>
<td>Belgrade Open School - Energy, Climate and Environment</td>
</tr>
<tr>
<td>12.</td>
<td>Leopold Poljakovic-Pajnik</td>
<td>Institute of Lowland Forestry and Environment, N.Sad</td>
</tr>
<tr>
<td>13.</td>
<td>Klara Sabados</td>
<td>Institute for nature protection of Vojvodina</td>
</tr>
<tr>
<td>14.</td>
<td>Ana Repac</td>
<td>Ministry of Environmental Protection, CC Unit</td>
</tr>
<tr>
<td>15.</td>
<td>Marko Ilic</td>
<td>Ministry of Environmental Protection, CC Unit</td>
</tr>
<tr>
<td>16.</td>
<td>Aleksandar Popovic</td>
<td>Ministry of Environmental Protection, CC Unit</td>
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<tr>
<td>17.</td>
<td>Ariana Savic</td>
<td>Ministry of Environmental Protection, CC Unit</td>
</tr>
<tr>
<td>18.</td>
<td>Snezana Kuzmanovic</td>
<td>Ministry of Environmental Protection</td>
</tr>
<tr>
<td>19.</td>
<td>Vladimir Nikolic</td>
<td>Faculty of Forestry</td>
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</tbody>
</table>