Explanatory note

to Resubmission of National Forestry Accounting Plan of Bulgaria

The resubmission of the NFAP of Bulgaria addresses the technical recommendations, published in the SWD (2019) 213/18.06.2019. The changes made in respect to the recommendations have led to change in the FRL. The explanatory note provides information on:

1. the main changes occurred in the calculations and the NFAP;
2. how Bulgaria addressed the recommendations, published in SWD (2019) 213/18.06.2019.
3. The main changes in the resubmission of the NFAP consist of:
	1. Changes in the model used to project FRL;
	2. Changes in the structure of NFAP and in tables and figures.
4. Changes in the model used to project FRL – for the resubmission of the NFAP BG revised and updated the model used to project FRL Two changes have been made, which have resulted in change of FRL:
	1. The projected harvesting is calculated based on “harvest to biomass available for wood supply ratio” estimated as an average during the RP, instead of the “harvest to total biomass ratio” as it was done for NFAP’s submission in 2018.
	2. In the resubmission, the stocking rate during the projections is dynamic while in the previous submission it was stable. The observed trend of decrease in the stocking rate during the RP is extrapolated during the growth simulation.
5. Some changes in the structure of NFAP have been implemented to make it more understandable and logically consistent. For example, the input information to the model is now separately presented. The model results are also presented separately from calculation of the FRL. To facilitate the trace of these changes, we prepared an excerpt from the content of the NFAP, where we have indicated the main changes (please see Appendix 1).
6. Information on how Bulgaria addressed the technical recommendations, published in SWD (2019) 213/18.06.2019

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| **Technical recommendations on Article 8(5) Principles** | **Comments by Bulgaria on addressing** | **NFAP - Chapter/page** |
| 1) Provide information on the continuation of harvest levels by sustainable forest management practices and according to age-dynamics. Justify the reasons for the increase of the harvest during the projected period. | Bulgaria revised the model used to project FRL in order to better reflect the age-dynamics of some strata. These changes affected the FRL and thus new FRL is proposed in the resubmission of the NFAP.The change in the model in response to this recommendation is that:1. The calculation of projected harvesting is made by maintaining the "harvest to biomass available for wood supply ratio" (Alternative 1 of TGD) instead of "harvest to total biomass ratio" as it was done in the previous submission of NFAP (2018). Like this the projections regarding conversion coppices and coniferous plantations reflect better the legacy effects in these forests. Together these forests account for ~50% and have unbalanced age structure. Concerning the conversion coppices this unbalanced age structure is due to an old policy to convert coppice forests into high stem forests by aging. This policy is due since 1960 and nowadays most of conversion coppices are entering its regeneration phase and are subject to harvesting. Regarding coniferous plantations most of the plantations are between 40 and 60 years which is due to intensive afforestation programme in Bulgaria in post war period (started 1950s and ended in late 1980s). Coniferous plantations have lower rotation ages in Bulgaria compared to the natural coniferous stands. The increase in harvest levels is justified with the increase in biomass available for wood supply. | Information related to this change in the model is provided on p.49; p.55-58; p.62-64;More information on issues related to coniferous plantations and conversion coppices is provided on p.32; p.63-64Information on projected harvesting levels is provided on Table 19 and figure 37. Information on development of harvest levels and BAWS is provided on Figure 38 |
| **Technical recommendations on Annex IV, Section A Criteria** |   |   |
| a) Demonstrate how the goal of achieving a balance between anthropogenic emissions and removals will be achieved in the second half of the century. Provide qualitative and quantitative information until at least 2050 consistent with the long-term strategy required under Regulation (EU) 2018/1999. | This information is addressed in the resubmission of the Bulgarian NFAP.  | Chapter II, p.33 |
| c) Clarify how the values of the actual harvest used for FRL have been produced. Describe data sources of harvests. | 1. Data on actual harvest during the RP comes from forest fund reporting form (RF - 5) on annual base.2. Actual harvest during simulation is estimated by applying the ratio of actual total harvest to biomass available for wood supply, estimated as an average for the RP.  | 1. Information on RF 5 on wood removals is provided on p. 37; Historical data on wood removals is provided on figure 20, 21, and table 8 and 9. 2. Information on ratio of harvest to BAWS is provided on table 12. |
| e) Provide a ratio between solid and energy use of forest biomass as documented in the period from 2000 to 2009 used for the estimation of the forest reference level and demonstrate it remains constant throughout the projection. | All information regarding HWP is presented in Chapter III, p. 78-82. The information on ratio is presented on table 29.  | Chapter III, p. 78-82. The information on ratio is presented on Table 29 |
| g) Demonstrate the consistency with the national projections of anthropogenic greenhouse gas emissions reported under Regulation (EU) No 525/2013. Provide explanations for possible differences between national projections and the proposed Forest Reference Level. | This information is addressed in the resubmission of the Bulgarian NFAP.  | Chapter III, p. 82-83. Possible reasons for the observed differences are explained on p. 83 |
| h) Estimate the FRL based on the area under forest management as indicated in Annex IV, Part B (e) i. Estimate the FRL based on carbon pools and greenhouse gases as indicated in Annex IV, Part B (b). Demonstrate the ability of the model used to construct the FRL to reproduce consistently historical data from the national GHG inventory for the reference period. | The model for projected development of the forest resources in Bulgaria, used to construct the FRL, works at the level of TFL. However, all estimates regarding the FRL as emissions and removals are estimated based on MFL which is consistent with FL-FL for 2010 under UNFCCC reporting since the starting year of projection for BG is 2011. The ability of the model to reproduce consistently historical data on GHG inventory for the reference period is presented in Chapter III. The reasons for inconsistency of the level are justified in the text.  | p. 69 - Model results – development of age-related forest characteristics; Chapter III, p. 76, tables 20 - 23; Regarding Consistency - Chapter III, p. 83 - 86 |
| **Technical recommendations on Annex IV, Section B Elements** |   |   |
| b) Include the carbon pools and greenhouse gases consistent with those applied in the latest national GHG inventory. | All mandatory pools and gases are included in construction of FRL.  | p.12; the consistency with GHGI is provided on p.84 |
| c) Provide explanations on how harvest from illegal logging is considered in the adopted policies | Information is provided | Control system on tracing of harvested timber on p. 31; Information on consideration of illegal logging into FRL is provided on p. 49 |
| e) i Provide the area under forest management consistent with Table 4.A (“Forest land remaining Forest land”) from the latest national GHG inventory using the year preceding the starting point of the projection. | Information is provided | Table 20 |
| e) iii Provide information about increments by forest management practice and age-class. Clarify how the values for the actual harvest used for the FRL has been produced. | Information is provided.  | Table 19 |
| e) iv Provide historical and future harvesting rates disaggregated between energy and non-energy uses. | Information is provided | Table 29 |

**Appendix 1**

[**Chapter I General Introduction 12**](#_Toc30073216)

[**General description of the forest reference levels of Bulgaria** – table 1 updated; carbon pools and GHG gases included in the FRL are presented. Information on consistency is provided on p. 84 **12**](#_Toc30073217)

[**Consideration to the criteria as set in Annex IV of the LULUCF Regulation** – table 2 updated **12**](#_Toc30073218)

[**Chapter II Description of the forestry policy and practice 14**](#_Toc30073219)

[**Description of forestry in Bulgaria and of the policies in place in the forestry sector 14**](#_Toc30073220)

[Forestry background in Bulgaria. Fundamental principles of the organisation of forestry 14](#_Toc30073221)

[Forests today. Major challenges and policies in the sector 15](#_Toc30073222)

[Definition of forest 15](#_Toc30073223)

[Institutional framework 16](#_Toc30073224)

[Legislative framework on forests and international commitments 16](#_Toc30073225)

[Forest planning. Forestry plans and programmes. 18](#_Toc30073226)

[Forest management systems – types of felling, intensity, etc. – the text is shorten 18](#_Toc30073227)

[Principles of the sustainable forest management – practical implementation 21](#_Toc30073228)

[State of the forestry sector 22](#_Toc30073229)

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[Total growing stock 26](#_Toc30073234)

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[Biological diversity of forest ecosystems 28](#_Toc30073236)

[Diversity of tree species 28](#_Toc30073237)

[Forest regeneration 30](#_Toc30073238)

[Certification of forests in Bulgaria 31](#_Toc30073239)

[Control system on tracing of harvested timber – new subchapter in the text 31](#_Toc30073240)

[**Information on the expected development of harvesting levels under the different policy scenarios –** the text is supplemented with information regarding conversion coppices **31**](#_Toc30073241)

[**Information on the expected development of the standing growing stock** – new sub-chapter; new figure 12 **33**](#_Toc30073242)

[**Chapter III Calculation of Forest Reference Levels for 2021-2025 34**](#_Toc30073243)

[**Description of the approaches, methods and models for calculating the forest reference level in Bulgaria 34**](#_Toc30073244)

[**Describing and documenting the information sources used to calculate the reference level –** the text is refined to be more clear and logically consistent **36**](#_Toc30073245)

[Stratification of the managed forest areas. Documentation of the strata - the text is refined to be more clear and logically consistent. Figures presenting the age structure of the defined stratum are replaced with new figures, addressing the issue with descripencies with these figures identified during the review 40](#_Toc30073246)

[Description of the documents containing information about sustainable forest management practices applied in the reference period (2000-2009). Forest management intensity in the reference period - information on how illegal logging is considered in our projections is updated. New table 11, showing the rotation ages per substrata and yield class which were considered when calculating the BAWS during the RP and simulation period. 49](#_Toc30073247)

[**Detailed description of the calculation and projection model used to determine the reference level –** the chapter is updated explaining the changes in the model regarding the harvest module and how the stocking rate is treated when simulating the development of the growing stock. These changes are explained in p. 55-62. **55**](#_Toc30073248)

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[Data description 56](#_Toc30073251)

[Simulation procedure 58](#_Toc30073252)

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[Special questions – the simulation of forest harvest 62](#_Toc30073254)

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[**Development of Natural Disturbances under the FRL projections** – changes in the text. BG will not use the provision of ND **76**](#_Toc30073265)

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[Dead wood – changes in figures of table 25 as a result of the changes in the model 78](#_Toc30073269)

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[Non- CO2 emissions from biomass burning – new subchapter. These emissions were not included in the previous version of the NFAP 83](#_Toc30073271)

[FRL and the national projections of anthropogenic greenhouse gas emissions reported under Regulation (EU) No 525/2013 – new subchapter; new tables and figures 83](#_Toc30073272)

[Consistency between the forest reference level and the GHG Inventory 2018 new subchapter; new tables and figures 84](#_Toc30073273)

[Consistency in methodological elements 84](#_Toc30073274)

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