

Feedback by component			
			2021 could be used as reference. Additionally, the text in the component relevant for Target 2 refers to extension of the network, while the costing methodology includes cost for repairs of sewerage network. The unit cost of repairs is over 100% higher than the unit cost of the new network. This difference needs to be explained in the case of sewerage network, as this is not the case for the drinking water network.
	I.1.2	Water and sewerage systems for agglomerations <2000 p.e.	<ul style="list-style-type: none"> There are no cost reference points indicated for the costing of Target 3 point a. The reference indicated for Target 3 point b is also too vague. In the costing description of Target 4, the costs for service connection to water and sewerage are used, while there is no methodology or cost reference points indicated for those costs and they appear high (see comments for T1 and T2 above).
	I.1.3	First connection	<ul style="list-style-type: none"> In the costing description of Target 5, the costs for service connection to water and sewerage are used, however there is no methodology or cost reference points indicated for those costs and they appear high (see comments for T1 and T2 above).
	I.1.4	Water storage systems and floods management	<ul style="list-style-type: none"> Cost reference points are not provided. Reference is made to previous investments of the respective authorities. Please submit reports, projects used for this purpose. The methodology is either too vague (just a list of possible investments) or absent.
	I.1.5	Equipping ANAR monitoring stations	<ul style="list-style-type: none"> Cost reference points and methodology are not provided.
	I.1.6	Water Cadastre	<ul style="list-style-type: none"> Cost reference points and methodology are not provided.
	I.1.7	Drainage and drainage systems	<ul style="list-style-type: none"> Cost reference points are vague. Please submit reports, projects used for this purpose.

I.2.		We strengthen Romania and protect biodiversity
	I.2.1 <i>Afforestation and related activities</i>	<ul style="list-style-type: none"> • The methodology for the calculation of the final cost and the sources from which unit costs / reference values are extracted are not specified and not always provide. • Information on the final cost breakdown is limited to the presentation of unit cost multiplied by reference value, e.g. hectares. A more detailed unit costs breakdown needs to be provided to understand what they contain to assess the costing of the different measures. • In addition to the comments above applicable to all measures, please find more detailed observations on the individual measures: <p>I.1. – Investments in new areas occupied by forests including urban forests:</p> <ul style="list-style-type: none"> • Information provided is based on an average unit cost of EUR 13.300/ha. The target of this measure is to afforest 25.000 ha by 2023 (and 45.000 by 2026). However, there is no explanation of the methodology used that justifies the provision of EUR 630 million. More detailed information on how this final cost is broken down into its different components is required. <p>I.2. – Investments in the restoration and natural regeneration of degraded forest ecosystems, including Natura 2000 forest habitats:</p> <ul style="list-style-type: none"> • Sources used to obtain the final cost are not properly indicated, but generally referred to as “Similar investments by ANANP”. A clear indication of the sources and the data used and more detailed information on the breakdown of the costs are required. <p>I.4 – Investing in modern technologies to remove wood affected by extreme weather events and biotic pests:</p> <ul style="list-style-type: none"> • There is no explication of how estimated unit costs were calculated.

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	I.1.7	<i>Drainage and drainage systems</i>	<ul style="list-style-type: none"> • Cost reference points are vague. Please submit reports, projects used for this purpose.
	I.1.8	<i>Meteorological systems</i>	<ul style="list-style-type: none"> • Cost reference points and technical characteristics for the meteorological stations are not provided. • Cost reference points and technical characteristics of the Data Centre STS are not provided.

- A general reference to Komsilva is provided but there is no clear indication of the specific sources used to estimate the unit costs and they are not broken down.

I.6.a – Update of approved management plans:

- EUR 120 million are foreseen but it is not clear to which costs these are related. The target value of 250 protected natural areas was calculated by reference to a unit cost of approx. EUR 400 000 per natural protected area. More information on the specific source used to estimate the final cost is required.

I.7.a – Removal of obstacles in watercourses in order to facilitate the restoration of connectivity of dependent habitats and species:

- It is not clear what the unit cost of EUR 100 000/ha entails as it is not broken down into its different elements. Reference to ANANP is provided but there are no specific sources on which unit costs are based and that should be provided.

I.7.c – decolourisation of the Danube Delta lakes:

- RO authorities provide the “ARBDD’s feasibility study” and the “opinion of the Inter-ministerial Council approving public works of national interest and housing No 24/08.10.2018” as sources of information backing up the methodology used. ARBDD’s feasibility study should go under “specify source” and the source should be provided.

I.7.d – Implementation of a monitoring system for wild sturgeons along the Lower Danube:

- Information on the breakdown of the final cost should be provided and a clear indication to specific sources used for the estimation of the cost.

I.3.		Waste management	
	I.3.1	<i>Full waste management systems</i>	<p>I.1: integrated municipal waste management systems:</p> <ul style="list-style-type: none"> • The calculation of the unit cost of EUR 60 million/SMID (Integrated Waste Management System) is based on the County/Municipality Waste Management Plans. The text of the component indicates that the estimations also result from the feasibility studies for approved SMIDs (SMID Galați) or those under preparation (SMID Ilfov, SMID Brașov, upgrade SMID Sibiu, Bistrița Năsăud, Bacău, Sălaj, Dâmbovița). More specific information on how the value of EUR 60 million has been calculated is needed. • The amount allocated to the investment is EUR 840 million. However, putting together the amounts in the table of milestones and targets (T1), the result is EUR 740 million.
	I.3.2	<i>Other investments in waste management</i>	<p>I.2: Infrastructure for manure:</p> <ul style="list-style-type: none"> • The unit cost of EUR 1 million/scheme is based on the previous information from the Integrated Pollution Control Project benefitting from a World Bank loan. However, we would need to have more information about it (like an excerpt on costs) or a link to where supporting information for this calculation could be found. The source should be provided. • More information on the calculation of this cost per scheme is required. What has been included in this “standard” scheme to arrive to the amount of EUR 1 million? How have the calculations applied to a project started in 2017 been adjusted to arrive to an estimate fitting the RRP timeframe?

Feedback by component

Investment 2 – Modernisation of railway lines, including the implementation of ERTMS

Investment 3 – Acquisition of sustainable rolling stock

- I2.F - Electronic and electrodynamic centralisation: Table 28 – Cost requested from PNRR: EUR 44 million, while in Table 29 the addition of estimated costs gives EUR 45.18 million.
- I3 - The explanations about the 30 retrofitted locomotives are not clear (page 140).
- TA cost for R1 and R2 amount to EUR 29 million – no justification for this cost is provided (only a statement that it is similar to TA contracts for 2014-2020).
- ERTMS : the costs related to the implementation of ERTMS along the two key TEN-T lines Cluj-Napoca-Bihor and Arad-Timisoara-Caransebes (EUR 1.2 M x km) appear abnormally high compared to similar projects co-funded through CEF such as the deployment of ERTMS Level 2 (Baseline 2, release 2.3.0d, including GSM – R) on 85 km double tracks long sub-section Brasov – Apata (km 170+285 – km 208+090) and Cata – Sighisoara (km 236+290 - km 282+842), for a total cost of EUR 21.6 million representing roughly EUR 0.25m / km. This last figure is also confirmed by the cost estimate produced for the purpose of CEF2 unit contribution decision.

Moreover, the amount of EUR 75 million (for each line) and which title is “other interventions adjacent to ERTMS” requires further explanation and justification.

Furthermore, the cost for ERTMS on board (page 140) is not fully justified and seems overestimated. For 32 newly purchased railcars and the 30 retrofitted locomotives, the total estimated cost is EUR 104 million out of EUR 310 million investment. The retrofitting with on board ERTMS/unit should be around 273 000 EUR.

			information should be more specific (which markets have been analysed, comparative analysis). A copy of the source should be provided.
I.4.		Sustainable transport	
	I.4.1	Roads	<ul style="list-style-type: none"> • Page 116 - Please provide Annex 5A8 also with breakdown of costs in EUR. Please clarify the slight difference between 41 million EUR in the main document and 44 million EUR indicated in the Annex. • Page 118 – Please provide further details on the justification of the costs related to tolling and control infrastructure interventions. • The targets include the recharging points carried out in Investment 1 (264 points) and at least 20% of new clean vehicles purchased by public entities. However, it is difficult to find the overall cost for this investment, as well as the unit costs for each recharging point, which would help to evaluate this part of the component. • Road safety: the cost breakdown related to each of the 129 “black spots” identified should be provided in order to better evaluate this part of the component. <p><i>[4 — Sustainable transport — I1 — Road infrastructure, Sub-measure 7 — Road safety infrastructure — digital tagging should be 40% and not 100%.]</i></p>
	I.4.2	Railway infrastructure and rolling stock	<ul style="list-style-type: none"> • I2.A - Upgrades including ERTMS: it is not clear whether the cost standard of EUR 1.2 mil/Km is VAT inclusive or not (in relation to the implementation costs of the Simeria-Gurasada modernisation project – Km 614).

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Overall, given the recent experience in RO regarding ERTMS implementation not followed by the operational use of the system (in particular due to lack of Notified bodies, administrative capacity of the National Security Agency – lack of locomotives authorised in RO able to conduct tests), a precise plan to remedy the situation and ensure that this funding is properly utilized would be necessary.

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Investment 3 - Acquisition of sustainable rolling stock

- TA cost for R1 and R2 amount to EUR 29 million – no justification for this cost is provided (only a statement that it is similar to TA contracts for 2014-2020).
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Please clarify why the ERTMS cost estimation is based on a previous project, *Simeria — Gurasada — Km 614*, and not on the costs foreseen in the FS. Please clarify which lines (chapters) of the estimated quotation from the FS were considered as costs for ERTMS deployment.

- Renewal / Quick wins: at page 94, it is stated that “quick wins” will consist in a renewal of “2 534 km of rail where commercial speed increases by 15% through renewal works and Quick wins”. Would it be possible to better explain (1) what will be the average cost x km for this intervention (2) the breakdown of cost the different activities foreseen?

Furthermore, at page 84 it is said that Taxiway renewal interventions may be partially carried out by CNCF CFR S.A (in a percentage of approx. 30%).

Would it be possible to get more information of the precise activities that will be carried out directly by CFR and which sections of the network this will refer to?

- Page 86 – For renewals – additional justification needed to reason the procurement of hydrogen locomotives by 2024 for sections to be electrified by 2026. It is mentioned that 12 hydrogen locomotives are foreseen for Bucuresti-Pitesti route leading to 381 mil EUR investment (cost per Hydrogen locomotive EUR 11.5 million*12 units= 138 million + 231 upgrade of the line = EUR 369 million) – slight difference to be justified. Page 95 - Hydrogen locomotives for Otopeni Airport- Bucharest, however not further included in page 86 - to be rectified/clarified.

Required clarification on the routes to be covered by hydrogen locomotives/no of locomotives per section as well as required improved needs assessment considering the cases where the lines are foreseen to be electrified.

Feedback by component

- Page 88 - Quick wins - Tecuci — Bârlad — Vaslui — Iași lines is being considered for inclusion in the TEN-T Comprehensive network. However, this request has not yet been introduced. To be clarified.
- Page 129 - Cost of renewals – please provide the cost of works in line with the tender award for the sections Olteni — Gălățeni and Chitila — Săbăreni, mentioned as reference for historical data on renewals and any relevant historical data that led to the cost estimation. Please confirm that the cost of EUR 223m for Bucuresti-Pitesti is referring to the 88 km under RRF and excludes the cost of Chitila- Bâldana.
- Page 135 - Cost of electronic and electro-dynamic centralisation by railway sector – Please indicate the reference cost as foreseen in the FS for the Centralisation on the Adjud — Siculeni and Ilia — Lugoj lines and any relevant historical data.
- Page 139 – Cost for green rolling stock – Please provide market studies, offers, tender award notices based on which you made the estimations for the procurement of new rolling stock and the modernisation of the rolling stock.
- In annex 10 - Green Rolling Stock – we cannot find the rolling stock related to increasing navigable potential. If no longer included, please revise the title of the investment.
- I4 – It is not clear whether the 30 metro frames are included in the EUR 600m cost requested

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	1.4.3		Investment 4 - Metro infrastructure	<p>• I4 – It is not clear whether the 30 metro frames are included in the EUR 600m cost requested from RRF.</p> <p>In the technical meeting it was mentioned that the RRP includes only the tunnels and stations, and not signalling and rolling stock, please specify and provide reference of unit costs and costs of similar investments to justify the estimated cost.</p>

Feedback by component			
			<ul style="list-style-type: none"> At page 101, 30 electric metro frames (15 trains for M4 in Bucharest and 16 trains for M1 in Cluj-Napoca) are indicated among the deliverables. Taking into consideration that not the entire length of the two metro lines will be financed from PNRR, will the metro trains be acquired by 2026?
I.5.		Renovation Wave Fund	
	I.5.1	Rehabilitation of residential buildings	<ul style="list-style-type: none"> The presentation of costing data in T2 Green Digital & Costs for this investment is confusing as the excel file distinguishes between two different strands / rows (EUR 320 million and EUR 680 million), while it is unclear what these correspond to. <p>Please check and update the information given on the investment costs (tab 2) and the information given on milestones and targets (tab 1) to make sure that they are coherent.</p> <ul style="list-style-type: none"> The calculation of the costs for this investment is based on an average renovation unit cost (200 EUR / m²) and on an estimation of the surface area to be renovated (2 857 142.86 m²) but it is unclear how the total cost of EUR 1 billion is obtained as: 1) the plan does not clarify what share of the renovation costs would be covered by the investment; 2) there are inconsistencies between the information given in T2 Green Digital & Costs and the information given in tab 1 Milestones and Targets (which suggests that 6.5 million m2 of renovated surface area is targeted).

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