10  Questionnaire

10.1  Objective of the questionnaire

The objective of the questionnaire is to validate and, if necessary, correct and complement the techno-scientific information that provides the foundation for the proposed STRUBIAS material requirements outlined in this Interim Report. It is requested to concentrate review efforts on the sections 5 - 8, as your input on the sections 3 and 4 has already been taken into consideration when processing your feedback on the Background Document for the STRUBIAS Kick-off Meeting.

10.2  Procedure

As outlined in the Rules of Procedure of the STRUBIAS sub-group, the sub-group member representatives shall actively collect information and deliver fact-based opinions on the questionnaires that form part of the written consultations. It is important that STRUBIAS sub-group member representatives provide a consolidated opinion that is in line with the views of the member organisations and stakeholders they represent.

Unfortunately, the JRC is not able to accept responses and opinions from organisations and individual persons other than official STRUBIAS member organisations and their selected representatives. The JRC recommends any third party organisations or persons interested in contributing to this work to contact one of the member organisations of the STRUBIAS sub-group. These STRUBIAS members carry the full responsibility for the quality of the information sent to the JRC and may therefore decide to take any external input on board in their reply, or not, after careful consideration and thorough quality-checking.

The STRUBIAS sub-group members shall support their opinions with objective and evidence based arguments. In case of disagreement with the present proposals for nutrient recovery rules, sub-group members shall provide alternative proposals for alternative formulations along with supporting robust techno-scientific data and information.

Sub-group members shall use the channels provided by the Commission for discussion and information exchange. The preferential route for submitting non-confidential information is via the CIRCABC platform as this will facilitate a structured information exchange amid STRUBIAS members. Detailed instructions on how to access the CIRCABC STRUBIAS Interest Group were distributed to sub-group members via e-mail.

Please upload any information in the folder/space entitled "Interim Report – Market study", and then select the matching sub-folders "Written feedback from sub-group". The document

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5 The list of Members of the STRUBIAS sub-group can be found in the Register of Commission Expert Groups Fertilisers Working Group (E01320) (http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=1320) → Tab "Subgroups" → Subgroup of the Commission expert group on Recovery Rules for Fertilising Products
The JRC prefers to receive publically available information in order to support a transparent information exchange process. Nevertheless, it is accepted that some data cannot be made public and should be handled in a confidential manner. If only the data provider or data source is confidential, but not the data itself, it is desirable that member organisations anonymise the data provider/source and upload the document on CIRCABC as indicated above. Confidential data that cannot be publicly shared in any form should be sent via e-mail to JRC-IPTS-FERTILISERS@EC.EUROPA.EU. The document name should include the acronym of the organisation followed by the word "confidential".

The JRC is pleased to take into account any feedback on the questionnaire received from the STRUBIAS sub-group members until the deadline of Thursday 15 March 2018. We guarantee that any input received by the deadline will be taken into account for the further work.
10.3 Questions

Section A: General question

A.1. Have you noticed any **incorrect or obsolete techno-scientific information** in the Interim Report that has an important influence on the market for STRUBIAS materials? If your observation involves an alternative proposal for the STRUBIAS material requirements, please indicate, substantiate and upload supporting techno-scientific information.

Provide your feedback in a structured, tabular format with following headings: observation, page/line numbers and section in the document, correction and/or alternative proposal, techno-scientific rationale that supports the comment raised, reference to techno-scientific data.

<table>
<thead>
<tr>
<th>observation</th>
<th>location in document</th>
<th>correction/alternative proposal</th>
<th>techno-scientific rationale that supports the comment raised</th>
<th>reference to techno-scientific data</th>
</tr>
</thead>
<tbody>
<tr>
<td>e.g. sales prices for mineral P-fertilisers are underestimated by 30%.</td>
<td>e.g. section 2.3.7.2 (line 2864)</td>
<td>e.g. sales prices vary from X to Y EUR</td>
<td>The data found in IFA report (2017).</td>
<td>e.g. IFA. (2017) has been uploaded on CIRCABC</td>
</tr>
</tbody>
</table>
Section B: Specific questions and further data

Please note that all the queries of this section correspond to the questions given in specific sections of the document.

Question 1 on sales prices of STRUBIAS materials on the market (section 7.1.3):

Please provide an indication of:

a) the sales prices of STRUBIAS materials and mono-incineration ashes on the market (Euro per tonne material and P concentration, or Euro per tonne P; indicate if prices are "Free on Board (FOB)" or “CFR (Cost and Freight)" with an indication of the price for transport).

b) Indicate also the physical form of the material (powder, granules, other relevant physical parameters), and to whom materials are sold (blending companies, retailers, end users, etc.).

c) If available, please provide an evolution of the average sales prices in the last decade in order to determine the main factors affecting fertiliser price and their relative importance.

Question 2 on compliance costs (section 7.3):

Please provide information on the following elements that form part of the compliance costs:

a) Cost for REACH registration for fertiliser end-material that will be brought on the market.

b) Cost for compliance under already existing national end-of-waste or similar regimes that enable a market entry for fertilising products derived from STRUBIAS materials.

c) Estimated cost for compliance for P-fertilisers derived from primary raw materials.

d) For facilities that process waste-based materials, information on the cost associated to acquiring waste permits in different EU Member states for non-hazardous and hazardous waste materials. Notably, the costs associated to complying with the obligation for an establishment or undertaking carrying out waste management operations to have a permit or to be registered in accordance with Article 23-26 of the Waste Framework Directive 2008/98/EC.

e) Cost of sampling and analysis through accredited laboratories:

Recovered phosphate salts:

- Nutrients: P, Ca, Mg, citric-acid P
- Metals and metalloids: As, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, Zn
- Persistent organic pollutants: PAH16
- Biological pathogens: E. coli or Enterococcaceae & Salmonella spp.
- Others: macroscopic impurities, dry matter content, particulate matter < 100 μm.
Ash-based materials:

- Nutrients: P, K, Ca, Mg, S, citric-acid P
- Metals and metalloids: As, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, Zn, B, Ba, Co, Mn, Mo, Sb, V
- Persistent organic pollutants: PAH16, PCB, PCDD/F
- Others: pH and neutralising value

Pyrolysis materials:

- Major elements: C, Corg, P, K, Ca, Mg, S
- Metals and metalloids: As, Cd, Cr (total), Cr (VI), Cu, Hg, Ni, Pb, Zn, Ba, Co, Mo, Sb, and V
- Persistent organic pollutants: PAH16, PCB, PCDD/F
- Biological pathogens: E. coli or Enterococcaceae & Salmonella spp.
- Other: pH, neutralising value, macroscopic impurities, particulate matter < 100 μm, particle density, volatile organic matter, specific surface area earthworm avoidance test (ISO 17512)

Where analysis packages are available (e.g. sampling + analysis of a series of metals, PAH16, PCB and PCDD/F), please clearly state what the package contains and its cost.

f) Measurement standards currently applied (national standards, ISO/EN standards, etc.)

Question 3 on possible economic benefits and drawbacks (section 7.4):

Please provide information, preferably in a quantitative manner, on following possible economic benefits and drawbacks of producing fertilising products containing STRUBIAS materials compared to equivalent mined and synthetic inorganic fertilising products.

a) reduced waste compliance costs (e.g. changes in the economic valuation of sewage sludge ashes, etc.);
b) reduced externalities (e.g. avoided costs due to eutrophication, positive effects on human health due to reduced contaminant levels, etc.);
c) potential job creation in production and downstream fertiliser distribution and farmer's cooperatives; please relate expected STRUBIAS production volumes to number of persons employed.
d) impacts on the rural economy;
e) benefits of restoring soil organic carbon for soil fertility;
f) cost associated to new logistics for recovered nutrient products;
g) implications for the restructuring the production and distribution of fertilising products;
h) agricultural equipment adaptations.
Question 4 on slags from the metallurgic industry (section 8.2.8):

Please provide an outlook for slags from the steel industry that are intended for use in agriculture. More specifically, information is requested on following aspects:

a) Evolution in supply and demand for steel industry slags that are used as P-fertilisers in agriculture, as well a realistic outlook for the market outlook for the year 2030. Please express numbers in absolute tonnes of material per year, indicating the P concentration, or in kt P per year. Please provide separate datasets for different types of slags (blast furnace slag, basic oxygen slag, etc.).

b) Data on the content of metals/metalloids (specifically B, Ba, total Cr, Cr (VI), Co, Cu, Hg, Mn, Mo, Ni, Pb, Sb, and V) in the different types of slag. Please provide full datasets or descriptive statistics indicating the 10th, 25th, 50th, 75th and 90th percentile of the distributions.

c) At present, it remains unclear if the production process is adapted in order improve the quality of the resulting slag, or if any supplementary processing is performed on the raw slags obtained to increase their value as a fertilising material. Please provide any relevant information.

d) Information on the relative agronomic efficiency of different output STRUBIAS materials.

e) Evolution of the average sales prices of steel industry slags in the last decade and future outlook (Euro per tonne material and P concentration, or Euro per tonne P).

Question 5 on additional STRUBIAS pathways that should be considered for the 2030 market assessment (section 8.2.9):

Please indicate any additional process pathways that result in the formation of P-fertilisers (pursuant definition and criteria of P-fertilisers as given for PFC 1 in the proposal for the Revised Fertiliser Regulation) and describe their market outlook in term of volumes of P that could be produced by the year 2030. The proposed pathways should meet following conditions:

a) Derived from eligible input materials for each of the three STRUBIAS material groups as outlined in JRC Interim Report on nutrient recovery rules as distributed in May 2017 or derived from eligible input materials that were not listed, but are nonetheless in line with environmental and human health safety aspects and agronomic efficiency as indicated by techno-scientific evidence.

b) Associated to a technological readiness level of stage 6-9.

c) Realistic from an economic point of view based on the current and expected costs/gate fees for input materials, production processes, and revenues of generated output materials.
**Question 6 on market aspects for STRUBIAS materials other than P-fertilisers (section 8.3):**

Please provide an outlook for STRUBIAS materials other than P-fertilisers, as well as their targeted PFC entry in the revised Fertiliser Regulation (i.e. liming material, soil improver, etc.). Please express numbers in absolute tonnes of material per year, and situate the numbers relative to the total PFC volumes applied in the EU-28 agricultural market. Also information on sales prices/gate fees of the end-materials is welcomed. More specifically, information is requested for following two materials:

a) C-rich pyrolysis materials in conventional agriculture, organic farming, and greenhouse farming (i.e. as a growing media);

b) Ashes generated by the forest-based industry, including the pulp and paper industry;