

Appendix P1

Technical Specification for Single Tender with Jaakko Pöyry Consulting

**And
Proposal of Jaakko Pöyry Consulting**

Technical Specification for Single Tender with Jaakko Pöyry Consulting in Finland

1.1 THE IMPACT OF BEST AVAILABLE TECHNIQUES (BAT) ON THE COMPETITIVENESS OF EUROPEAN INDUSTRY

1 Background

The aim of the BAT Competitiveness Project is to develop a methodology to assess the impact of the introduction of BAT, as defined in Directive 96/61/EC, known as the Integrated Pollution Prevention and Control (IPPC) Directive, on firm competitive performance, both in relation to the EU's competitors and within the EU, and to develop guidance notes on how to complete the questionnaire which is the basis of the project methodology for assessing the impact on firm competitive performance. The project will examine the cement sector, pulp and paper and also non-ferrous metals processing.

The assessment of the impact of BAT on competitiveness is structured around the following hypotheses. The questionnaire and research method adopted in this study focus on tests of these hypotheses, hence the proposed methodology and guidance to test the impact of BAT on competitiveness will reflect the variables considered below:

Hypotheses

(i.) High standards and strict enforcement, although they may represent a short term cost and burden to the firm, could in the medium and longer term push firms on to a higher growth path by forcing them to make product and process changes which yield higher competitiveness. If this happened it would represent part of the so-called “double dividend”, i.e. gains in environmental performance would also be accompanied by increased economic performance.

(ii.) The proportional cost of compliance (relative to turnover) by the firms is likely to be a negative function of the productivity level (i.e. firms which in general have the management and other capabilities to produce high productivity and competitiveness also find it easiest to adapt to the specific challenge posed by environmental measures)

(iii). The proportional cost of compliance is also likely to be a negative function of the size of plants/firms.

(iv). The other characteristics of best practice and strongly competitive firms are anticipated to include:

(a) Implementation of a relatively large number of environmental initiatives and reduced emissions through strong process control (i.e. maintenance)

(b) Management which is more environmentally conscious than the average.

(v.) The age of the plant and machinery in each firm is likely to impact on environmental outcomes, costs of compliance and the number of clean technology initiatives undertaken. The younger the capital stock the better the environmental outcomes. Plants with very old capital stock may also be at the point of replacement investment

(vi.) Plants with a higher proportion of skills, or those with strong R and D efforts, are more likely to introduce a large number of clean technology initiatives and be more successful in reducing environmental costs.

(vii.) Where multinational branch plants are sampled in those parts of the EU with the lower environmental standards/enforcement, they will generally have higher environmental standards than indigenously owned plants making similar products.

(viii.) Relations within the supply/production chain are likely to be both an influence upon, as well as being influenced by, the level of environmental standards, e.g. a manufacturer may find it easier to increase the environmental standards of its products if it has a reliable and competent base of suppliers to draw on. A manufacturer may be forced to upgrade product and process environmental standards by pressure coming from the customers of plants in the three sectors under study.

(ix.) Location can affect the cost of compliance and adoption of clean technology. There are important competitiveness differences between countries in the Community, and underlying these differences are differences in productivity and skills, the capacity for advanced research and development and differences in cost of capital (i.e. amount of supportive subsidies among other things) , and since these may be important factors influencing the ability of a firm to efficiently adapt to regulations, then there is the potential for environmental policy to differentially influence the competitiveness of firms between regions and countries.

Proposed research method to test the hypotheses: Matched plant comparisons

Where the objective is to identify factors, which affect the efficient adjustment to regulation (including compliance costs), or classes of firms which may be vulnerable, matched plant studies are useful. They will not themselves provide an answer to the question: what is going to be the likely industry adjustment to output following regulation i.e. what is the effect on industry as a whole. However the findings will provide an input to such an analysis. What is involved is benchmarking where the economic performance of best environmental practice plants is compared with the economic performance of plants with average environmental performance and including plants outside the EU subject to both stronger or weaker regulation. The economic impacts of regulation are then examined and reasons for differences sought.

2 Objective

The overall aim of the study within this tender specification is to provide background analysis and statistical material relevant to a study of the impact of BAT on competitiveness in the paper and pulp industry. The study will also assess the likely impact of BAT on competitiveness in that industry with particular reference to three products: copy paper, kraft pulp and white line chipboard. The background statistical data and analysis should be relevant to the choice of plants and analytical approach to be undertaken in the matched plant study described above. In addition the consultants should provide relevant material from which case studies from the industry can be drawn, provide an input to the questionnaire design, and an input to the analysis and interpretation of the case study material collected. In addition guidance on a methodology to assess the impact of BAT on competitiveness of individual plants is also required.

The final outcome of the study will be in the form of a report.

1.1.1 3 Tasks and work plan of the study

3.1 Detailed tasks

In detail Jaakko Pöyry Consulting should provide an:

- a) Analytical overview of the paper and pulp industry worldwide from which the sample products kraft pulp, white line chipboard and copy paper will be drawn. The focus for the product copy paper is on the grade made from virgin fibres. It is necessary to show how the selected product fits the general product category (i.e. all copy paper).

The overview should analyse the structure and performance of the industry across Europe and between Europe and key competitor countries. The structural background data should give a particular focus on the three products to be sampled for the case study research. Analyses should include trends in output and employment, trade, production costs, technology, productivity and profitability. Measured differences in performance (including productivity) and sources of differences should be explained. In addition a SWOT analysis should be undertaken for the three products. With respect to technology, a distribution relevant to the impact of BAT on competitiveness should be analysed across Europe and between Europe and key competitor countries. Describe current environmental regulation across Europe and between Europe and key competitor countries and differences in environmental performance.

- 1.2 b) Describe the environmental regulation (and likely enforcement) arising from IPPC relevant to the three product groups considered. Review potential impact of BAT on competitiveness within Europe for the three product groups, making different assumptions about how BAT might be implemented. Similarly describe the regulation of key competitor countries. Estimate the cost of compliance for the above and consider how specialisation, R&D, skills, innovation, age of technology and demand side factors impact on costs of compliance and competitiveness. Review the above

in relation to the hypotheses set out in section 1 of this document.

- c) Review and revise the IPTS draft questionnaire. Particular emphasis is to be placed on adapting the questionnaire to the pulp and paper industry and to industry specific BATs. Special attention should be given to marrying questions on the age of plant and equipment to their technological age (given the industry's practice of continuously updating equipment). In addition answers to some questions require respondents to be given a choice of ranges. The consultant will give the ranges. Other questions relevant to an assessment of the impact of BAT on competitiveness should be reviewed including the appropriate measurement of BAT, the cost of BAT and its impact on the competitiveness, output and employment of the firm.
- d) The consultant will provide a sampling frame for the matched plant research including the names of mills to match (on a best practice/average practice basis) within and outside the EU, and including Asia and the Americas. The consultant will also provide help in obtaining an interview with mill managers. Much of this part of the exercise should take place at the beginning of the contract, although sample recommendations may continue for the duration of the study. Sufficient names are required to successfully undertake twenty matched comparisons.
- e) The consultant will provide an input to the analysis and interpretation of the case study material (data on individual plants will be confidential to IPTS). The purpose is for the case study field work and analysis, undertaken by IPTS, to form an integral part of the report produced by Jaakko Pöyry.
- f) The consultant will provide a list of factors and an appropriate methodology (to be used e.g. by a regulator or government official) for assessing the impact of BAT on the competitiveness of an individual plant or local national industry.

3.2 Time frame and deliverables

One month after starting the contract the review of the IPTS draft questionnaire and a draft list of sample mills should be provided to IPTS. Three months after the contract starting date a first draft of part a) in section 3.1 should be completed and provided to IPTS as an interim report.

The work should be completed 8 months after the start date. The draft final report is to be commented upon by IPTS after consulting with the other services of the Commission within six weeks of its receipt by IPTS. The final report will take into account any conditions set for its acceptance by IPTS and will be reproduced by the tenderer in a presentable form in ten copies.

The proposal should give a detailed description of the factors which will be included in the report.

4 Co-ordination and meetings with the Commission

Close contact between the IPTS and Jaakko Pöyry will take place during the progress of Jaakko Pöyry's study and for an input of Jaakko Pöyry to the case study work undertaken by the IPTS. This contact will be maintained through email, telephone and meetings. At least four meetings with the Commission staff discussing the interim report, anonymised case study material (two meetings) and the final report will be required. The meetings will take place in the contractor's offices.

Proposal from Jaakko Pöyry Consulting (JPC)

1 BACKGROUND

Jaakko Pöyry Consulting (JPC) has been invited to submit a proposal/single tender to undertake a study of the impact of BAT on the competitiveness of the paper and pulp industry. This proposal is based on the Technical Specification for the work. In it, JPC's approach to optimally supporting the work at IPTS is shown.

2 FOCUS: PRODUCTS TO MILLS TO COMPANIES

The focus for the proposed study would be for

- Products: kraft pulp, white line chipboard/containerboard and copy paper
- Mills: a sample of European, Asian and American mills

to fit in with the overall viewpoint of looking at single companies (good environmental performance vs. average environmental performance)

3 THE STUDY COMPONENTS

The study could be divided into six parts, according to the Technical Specification/3.1 Detailed Tasks. The abbreviated names below were created by the consultant and do not fully cover all subtasks, but these will be explained in more detail further on.

- a) Analytical overview of the paper and pulp industry worldwide
- b) Benchmarking IPPC /BAT-type environmental regulation and its impact
- c) Reviewing and revising the IPTS draft questionnaire
- d) Providing a sampling frame for the matched plant research including names of mills to match
- e) Providing an input to the analysis and interpretation of case study material
- f) Providing a list of factors and an appropriate methodology for assessing the impact of BAT on the competitiveness of an individual plant or local national industry

3.1 Analytical Overview of the Pulp and Paper Industry Worldwide

The analytical overview will be structured along the lines described in Figs. 1 and 2: *towards trends* and *towards SWOTs*. In addition, some special viewpoints felt to be relevant by the consultant will be addressed.

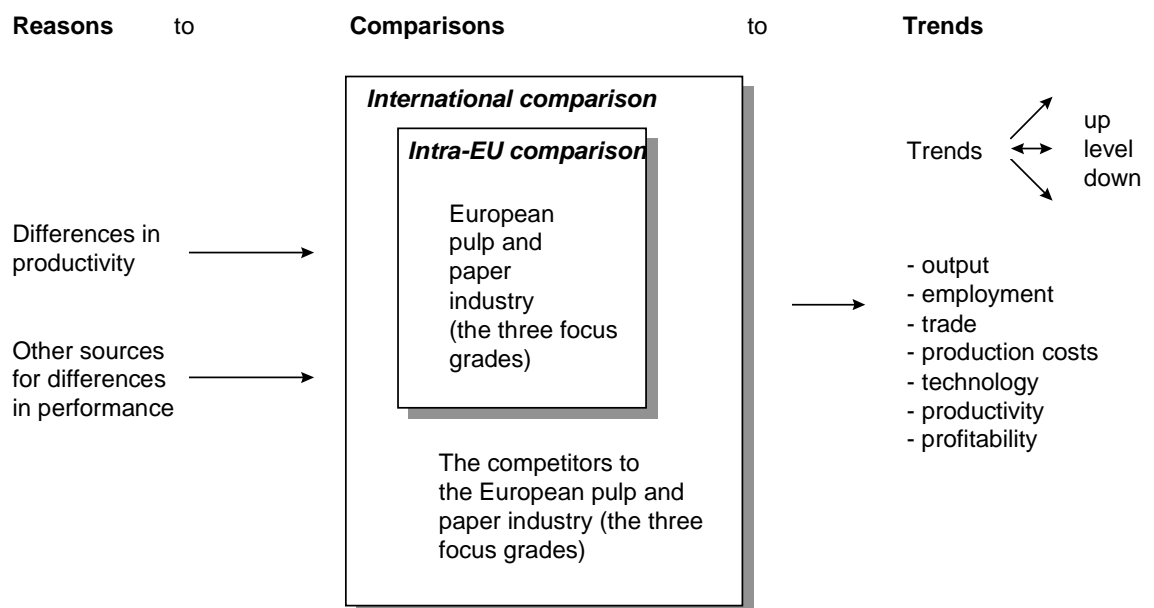
Generic Viewpoint: Diversity & Dimensions

Our basic hypothesis, which our experience and studies so far would seem to vindicate, is that **the diversity of the European pulp, paper and board industry is an essential element of competitiveness**. Competitive diversity serves as an analogon to biodiversity. Different types of companies/mills fill different niches in the ecosystem. This hypothesis in no way clashes with the hypotheses presented in the Technical Specification.

Towards Trends

Figure 3-1 shows the progress of this stage from *reasons for differences* through *comparisons* towards *trends*.

FIGURE 3-1
Reasons to Comparisons to Trends



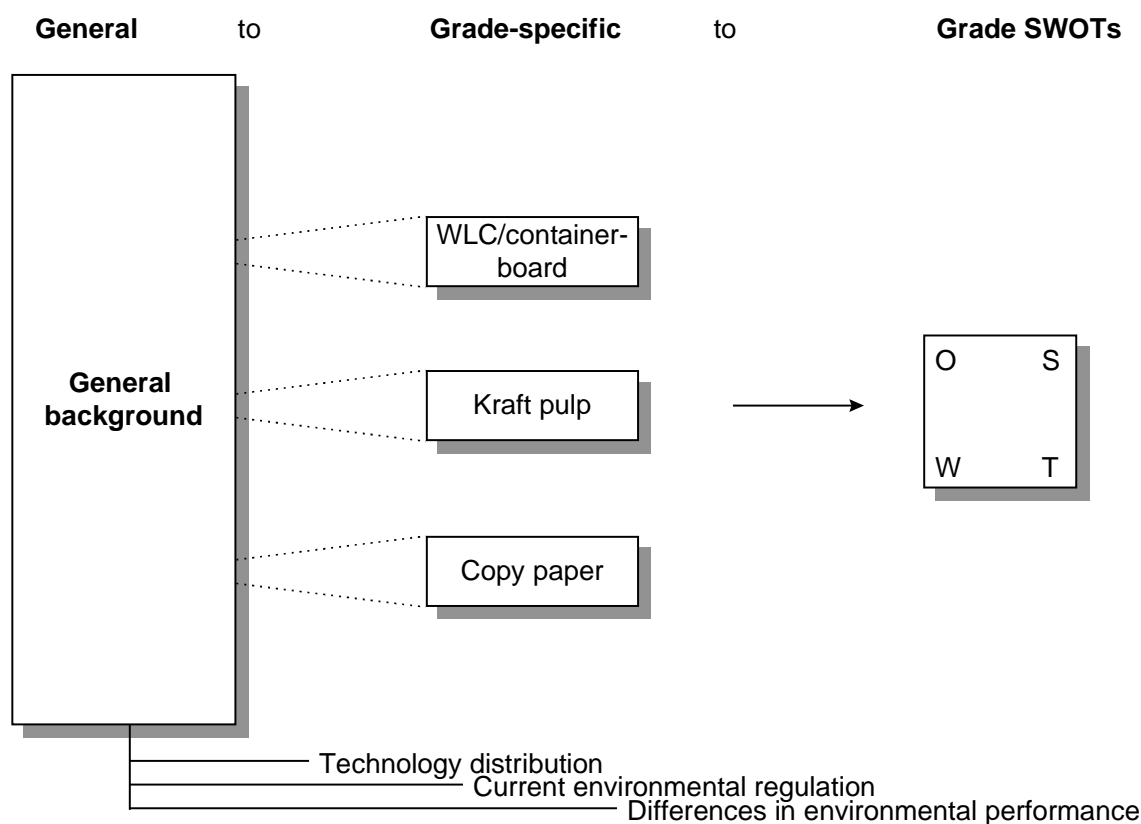
That is, behind trends for the factors listed in the Technical Specification we have an *intra-European* and an *international comparison*, for which *main reasons for differences in performance* (e.g. productivity) are explained.

Towards SWOTs

The other line of advance for this stage is described in Figure 3-2 as a progress from general information to grade-specific and to grade SWOTs,

with a threefold technological/ legislative/ environmental performance perspective.

FIGURE 3-2
General to Grade-specific to SWOTs



Thus, from the general background we process to a grade-specific focus and SWOTs, while examining technology distribution, current environmental regulation and differences in environmental performance.

Additional Viewpoints

Three smaller subsections will focus on some specific aspects felt to be of relevance. These aspects have been given names:

HOP, SKIP, STEP vs. JUMP? That is, should environmental investments be made in a series of small continuous steps or in one big jump for cost-efficiency? A case methodology will be used.

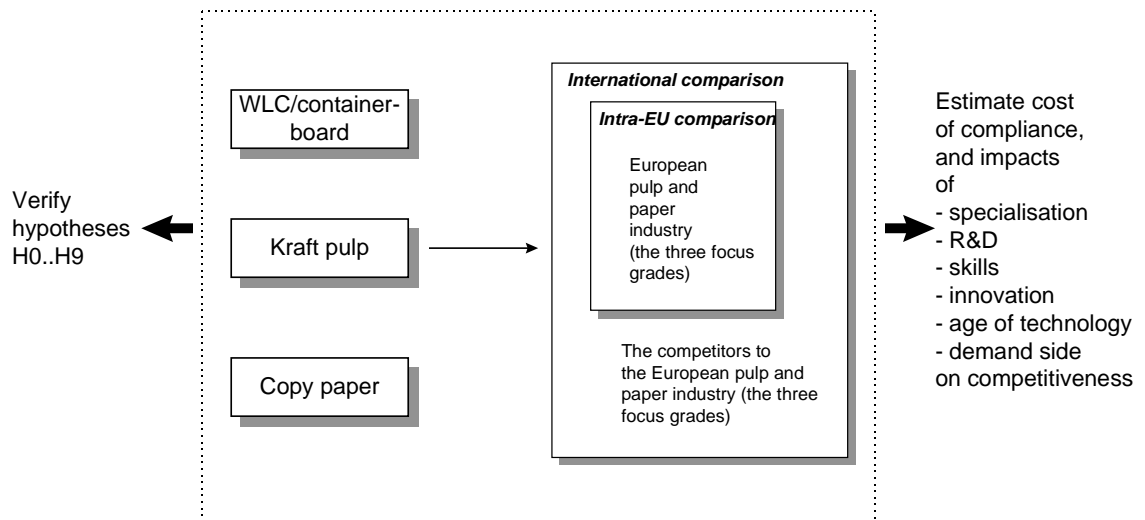
INNOVATION: CASES There can be no innovation case for BAT, since there is no history of BAT/IPPC-type directives, but some illustrative pulp and paper innovations will be analysed and put in the right context.

ENDANGERED SPECIES will consist of a rough estimate of the percentage of European mills threatened to a lesser or higher degree by proposed BAT levels applied "by the book".

3.2 Benchmarking IPPC /BAT-type Environmental Regulation and Its Impact: Hot Spot Analysis

Figure 3-3 shows the structuring of this stage. It is worth noting how this stage combines elements from the previous one.

FIGURE 3-3
IPPC/BAT-type Legislation vs. Hypotheses,
Cost of Compliance and Competitiveness Factors



Thus, for the three focus grades, an IPPC/BAT-type legislation benchmarking (intra-EU and international) is used to verify the hypotheses H0..H9 in the Technical Specification and the impact on cost of compliance and competitiveness factors. This stage can also be called a **Hot Spot Analysis**, as it aims to highlight differences/hot spots in the way the focus sectors are regulated globally.

Additional Viewpoints

Here, one small additional subsections is felt to be of relevance:

BAT VS. MANDATORY RECYCLED CONTENT - a look at the impacts of another type of possible regulation.

3.3 Systematising Information Gathering

Two of the stages can be grouped under the heading “Systematising Information Gathering”:

- c) Reviewing and revising the IPTS draft questionnaire

- d) Providing a sampling frame for the matched plant research including names of mills to match

These stages are described in sufficient detail in the Technical Specification.

3.4 Providing an Input to the Analysis and Interpretation of Case Study Material

Again, a stage that is described in sufficient detail in the Technical Specification.

3.5 Providing a List of Factors and an Appropriate Methodology for Assessing the Impact of BAT on the Competitiveness of an Individual Plant or Local National Industry

The methodology provided will e.g. include the following subsection:

RULES OF THUMB FOR COST FACTORS. Age, technology, value added and other relevant factors and their impact on BAT/competitiveness costs will be analysed and put into a table of rules of thumb (of the type IF the product is value added THEN ...)

Practicality and applicability is the aim.

4 JAAKKO PÖYRY CONSULTING COMPETENCE

4.1 Key Qualifications Needed for the Study

For this particular study, five special criteria can be lifted out:

- *profound knowledge of the area.* Here, Jaakko Pöyry Consulting is the world's leading consultancy for the forest industry worldwide, with more than 40 years of experience.
- *unique database and models.* The Jaakko Pöyry databases and models are something of a global benchmark in the area. They are constantly being developed further, a task in which the project leader, Dr. Vasara, as head of two business areas ("Environmental and Industrial Strategy" and "Business Intelligence Systems") has the main responsibility

- *experience at EU-level competitiveness assessments.* For the newly published Commission Communication on the Competitiveness of the Forest-Based Industries, three benchmarking studies were commissioned by DG III/C/5. The project team (including project leader) for the one with the greatest relevance for the current study (i.e. the benchmarking dealing with the global competitiveness of the European pulp, paper and board industry) is in all key aspects identical to that envisioned for this BAT/competitiveness study. Thus, consistency can be achieved.
- *time/cost savings.* To be able to perform the study within the timeframe envisioned and the budget, the headstart afforded by the factors above is necessary.
- *global, personal-level mill contacts.* Given the Jaakko Pöyry Group's leading status both as a management consultant and engineering consultant, the company's network of contacts to the world's mills is unique - a key component in some of the tasks given to the consultant.

For a list of relevant references, see Annex I.

4.2 A Brief Profile of Jaakko Pöyry Consulting Oy

Overall Capability: The **Jaakko Pöyry Group** is a neutral world leading consulting and engineering organisation. Its core areas of expertise are forestry and forest industry, energy and environmental protection. It employs about 4200 professionals in 26 countries worldwide.

Jaakko Pöyry Consulting (JPC) is an independent specialised management consulting company within the Jaakko Pöyry Group. It is recognised as the foremost advisor to the global forestry and forest-based industry sector.

JPC embraces a global network of 330 professionals around the world. It operates from major offices in Finland, the United States, Australia, New Zealand, Singapore, Germany, Sweden and the United Kingdom. The principal network offices specialise in corporate sector management consulting.

4.3 Jaakko Pöyry Consulting Tools

During the course of the study, in-house expertise and databanks will be used extensively.

4.3.1 Data Sources

JPC has organised a synchronised, global collection of data on sustainable forest resource management, pulp and paper manufacturing, wood products industry development, recycling, paper and paperboard converting, energy generation, environmental protection and management, and economic demand drivers. The databases have been continuously augmented for over 30 years.

Our 330 management and business consulting experts have access to the unique industry databanks covering:

- technical specifications of over 4000 pulp and paper mills worldwide
- unit costs (fibre, energy, chemicals, labour, etc.) in all major pulp and paper producing countries and regions
- design and cost data for all types of wood industry units including sawmills, wood-based panel mills, builders' woodwork plants and other value-added manufacturing operations
- market and trade statistics of all types of forest products globally
- financial performance of more than 150 forest industry companies over the last 25 years
- merger and acquisition values of most transactions since the early 1980s
- global forest resource and wood production database coupled with comprehensive FAO forestry database
- global database of forest products transport cost factors and a flexible model for estimating the logistics costs for all transport modes

4.3.2 Data Mining

In extracting information from databands and in combining different dimensions, mathematical methods such as clustering and neural networks are utilised. Jaakko Pöyry Consulting ENTIRE is a computer tool for sophisticated, visual data mining using so-called self-organising maps (SOMs) - a type of neural networks.

4.3.3 Quality Assurance

The project routines, norms and standards are well documented. The quality assurance routines are in place. JPC adheres strictly to the codes of conduct of the international consultancy federation FIDIC and the corresponding Finnish association SKOL.

The code of conduct covers the utilisation of state-of-the-art planning and analytical tools, systems and methods for engineering design, techno-economic, environmental, financial and socio-economic studies. We also pay due attention to the adoption and transfer of the core knowledge to local operating environment, both physical and cultural.

5 PROJECT: TIMEFRAME, DELIVERABLES, COST AND PERSONNEL

The timeframe is specified in the Technical Specification, and JPC commits itself to it. That is (in concise format: for a full listing, see the Technical Specification):

- one month after the start, the review of the draft questionnaire and a draft list of mills

- three months after the start, a first draft of stage a) (the industry analysis)
- eight months after the start, work completion and draft final report

Contents of Final Report

For the contents of the final report, the basic structure is envisaged as follows - four main components:

- I Analytical Overview
- II Regulatory Benchmarking
- III Case Studies
- IV Recommended Methodology

I Analytical Overview consists of the components described in section 3.1 in this document. As the tender specifies close contact and co-operation between the IPTS and Jaakko Pöyry Consulting, we do not believe that it is relevant at this stage to provide an exact table of contents for the report. While the components remain, the work process will shape the order and emphasis to put on each part. This is not uncertainty on the part of the consultant, simply an acknowledgement of the nature of an interactive process.

II Regulatory Benchmarking consists of the components described in section 3.2. What was said above for Analytical Overview also applies here.

III Case Studies particularly attests to the interactive nature of the study, as the Technical Specification states “The purpose is for the case study field work and analysis, undertaken by IPTS, to form an integral part of the report produced by Jaakko Pöyry.” Thus, we reserve a place in the report for the IPTS work and relevant components (chosen by IPTS) from stages c) and e) (JPC input to questionnaire and case studies).

IV Recommended Methodology is divided into two parts: the report for stage f), where a list of factors and an appropriate methodology for assessing the impact of BAT on the competitiveness of an individual plant or local national industry and d), where a sampling frame is developed (it is felt that the sampling frame should be applicable for follow-up studies or other related research). The reports for these two stages will be written together into a handbook format, as the methodology is aimed to used e.g. by a regulator or government official.

