J R C T E C H N I C A L R E P O R T S

Developing an evidence base and related product policy measures for "Taps and Showers"

First questionnaire for stakeholders

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Joint
Research
Centre

Contents

1. INTRODUCTION

BACKGROUND

Following the publication of the Working plan for the Ecodesign Directive (2012-2014) the European Commission has launched a preparatory study on the product group "taps and showers".

The study is being developed by the European Commission's Joint Research Centre (JRC) following the methodology specified by the Commission's Methodology for the Evaluation of Energy related Products (MEErP):

- Task 1 – Scope
- Task 2 – Markets
- Task 3 – Users
- Task 4 – Technologies
- Task 5 – Environment and Economics
- Task 6 – Design options
- Task 7 –Scenarios

As a result, JRC-IPTS will produce a comprehensive techno-economic and environmental assessment for this product group. This will provide policy makers with an evidence basis for assessing whether and how implementing a favorable mix of policy instruments with which to save water and related energy consumption across the EU27.

A key element in this study is the consultation with stakeholders which will allow you to provide useful input to the analysis. Access to background information, work in progress and stakeholder registration is given through the official project website:

http://susproc.jrc.ec.europa.eu/taps_and_showers/index.html

For further information please contact the project team at JRC-IPTS-TAPS-SHOWERS@ec.europa.eu

1ST QUESTIONNAIRE FOR STAKEHOLDERS

A set of information of interest for the study has been collected during the development of the EU Ecolabel and Green Public Procurement (GPP) criteria for sanitary tapware. The aim of this questionnaire is to gather input with which allow revising, updating and integrating the information already available and to undertake Tasks 1, 2, 3 and 4 following the MEErP methodology.

The questionnaire is composed of 3 sections:

- Section 1 deals with "Taps and showers";
- Section 2 deals with "Demand of energy in related systems";
- Section 3 deals with "Water supply chain and wastewater collection and treatment".

The information asked within this questionnaire relates mainly to:

- Legislation and standards of relevance;
- Market and technical data about products and technologies used;
- Consumption of resources and user behaviour;

We would appreciate much to receive a feedback from you **by 7 June 2013** at the latest**.** All responses will be treated as confidential and used for the purposes outlined above. You can send the filled questionnaire, related data, or responses to specific parts of the questionnaire to JRC-IPTS-TAPS-SHOWERS@ec.europa.eu.

Received information will be processed and discussed at the **project kick-off meeting**, which will take place in **Barcelona on 27 June 2013**.

Shall you require any further information in order to complete this questionnaire, please do not hesitate to contact us.

2. ORGANISATION FILLING THE QUESTIONNAIRE

Contact details

Detail	Please enter your details below
Name of contact person	
Job title/Position	
Organisation: **Name**	
Type (e.g. IND, GOV, NGO)	
Short description	
Address	
Postal Code	
Country	
Telephone Number	
Email	
Web	

3. TAPS AND SHOWERS

3.1 DEFINITIONS

The initial scope of this preparatory study covers **taps and showers used to derive water for personal hygiene, cleaning, cooking and drinking in both domestic and non-domestic applications**.

Non-domestic applications include premises such as restaurants, shops, hotels, schools, sport centres, hospitals, office and public buildings.

Taking inspiration from the recently developed EU Ecolabel and GPP criteria for sanitary tapware, the following definitions are proposed to be used also in this study:

- **"tap"** means a directly or indirectly, mechanically and/or automatically operated valve from which water is drawn;
- **"shower"** means a combination of showerhead and interrelated control valves and/or devices.
- **"showerhead"** means
    a) a fixed overhead or side shower outlet, body jet shower outlet or similar device which may be adjustable, and which directs water from a supply system onto the user; or
    b) a moveable hand held shower outlet which is connected to a tap with a shower hose and can be hung directly on the tap or on the wall with the aid of an appropriate support.

Questions

1) *Do you think that the definitions provided are clear and comprehensive or that they should be modified in order to include specific products? If modifications are suggested, please list them together with your rational and a technical definition of any products/features recommended to be added.*

Answer

2) *Could you provide examples of niche products (e.g. high volume wellness showers) and special purpose equipment (e.g. safety showers and industrial kitchen taps)? For each product that you identify please kindly provide your rationale and a detailed technical definition already used by industry or propose a new definition.*

Niche product / Special purposed equipment	**Rationale**	**Existing definition**	**New definition**

3.2 REVIEW OF AVAILABLE INFORMATION ON LEGISLATION AND STANDARDS

Different types of products can be included within the broad category of taps and showers. Taps for example are available as one hole, two holes, mixers, taps with automatic shut-off or single lever tap design, etc.

A set of information on product classification, standards and legislation which has been identified during the development of the EU Ecolabel and GPP criteria for sanitary tapware is reported in the supporting information provided as separate document:

a) Prodcom category or categories (Eurostat), see Section I of the supporting information;

b) EN- or ISO-standard(s), see Section II of the supporting information;

c) Legislation and product policy instruments such as other labelling schemes, see Section III of the supporting information.

You are kindly invited to have a look at Section I, II and III of the Supporting Information and to reply to the following questions.

Questions

3) Based on your experience, *are the given Prodcom categories applied for reporting within your company or the industrial sector? Which alternative classification systems are used by industry?*

Answer

4) Are the presented information comprehensive or are there any relevant information (at national, European or international level) which should be integrated and/or updated? Please, provide details of any changes needed regarding: a) Prodcom categories; b) EN- or ISO-standard(s); c) Legislation and product policy instruments (e.g. labelling schemes); d) Any others

Answer
a) Prodcom categories
b) EN- or ISO-standard(s)
c) Legislation and product policy instruments (e.g. labelling schemes)
d) Any others

5) The main function of taps and showers is to deliver water that is of a quality that is fit for human consumption and that has a desired temperature. Is this functional definition exhaustive or would you be able to identify additional functional performance parameters of relevance? If yes, please indicate which ones.

Answer:
Primary function(s)
Secondary function(s)

6) Are there any other relevant legislation and standards worth mentioning with respect to:

a) different functional performance parameters,

b) use of resources (energy and materials),

c) water abstraction, impoundment, storage, treatment and distribution of surface water or groundwater

d) waste production,

e) emission measurement (e.g. emissions from surface treatment processes),

f) safety,

g) noise and vibration?

h) waste-water collection and treatment which subsequently discharge into surface water.

If yes, please indicate which ones.

Answer
a) functional performance parameters
b) resources use (energy, water and other materials)
c) water abstraction, impoundment, storage, treatment and distribution of surface water or groundwater
d) waste production
e) emission measurement
f) safety
g) noise and vibrations
h) waste-water collection and treatment which subsequently discharge into surface water.

7) Which of the elements identified or suggested in section 3.2 are considered to create technical or economic barrier to producers? Which other elements could create difficulties to producers? Please provide your rationale.

Answer

3.3 MARKET ANALYSIS

3.3.1. Basic market data

In order to assess both the size of the market and the market significance of specific types of products, the following pieces of information are necessary:

- production,
- sales,
- trade,
- stocks (stock refers to the products already placed into the market and installed) and
- market trends in the EU27 Member States.

Data should be, as far as possible, expressed in physical volume (e.g. units) and in money value and split by Member State.

Aggregated information on production and trade from Eurostat and an estimation of sales and stocks have been collected during the development of the EU Ecolabel and GPP criteria (see Section IV of the Supporting Information). The following questions aim at revising and completing the available information base.

Questions

8) Are you aware of any databases apart from the Eurostat which contain the above mentioned basic market data for EU27 or specific Member States? In case of import/export data, please indicate countries of trade. If yes, please indicate them in table below.

Data (physical volume and/or money value)	***Taps***		***Showers***		***Showerheads***	
	EU27	Member State(s)	EU27	Member State(s)	EU27	Member State(s)
Production						
Sales						
Import						
Export						
Stocks						
Market trends						
Please indicate any other studies below:						

3.3.2. Market segmentation, technology penetration and trends

In order to receive better insight into the market of taps and showers, information regarding functional, technical and geographical differences between market segments is needed.

Questions

9) Could you please fill the information on market segmentation and technology penetration reported in the tables below?

(a) Segmentation and expected trends by <u>application</u> in Europe (please indicate: if percentages refer to physical volume or money value, country and year of reference)

Application	***Taps (%)***	***Showers (%)***	***Showerheads (%)***
Domestic • Now • Trend			
Non-domestics • Now • Trend			
Please provide any other information to further break down the market segmentation by application (e.g. shares for kitchen taps, bathroom taps, other taps)			

(b) Segmentation and expected trends by <u>water flow rate</u> (please indicate: if percentages refer to physical volume or money value, country and year of reference)

Water flow in L/min ***(please modify if needed)***	***Taps*** (%)	***Showers*** (%)	***Showerheads*** (%)
Max 3 L/min (if appropriate) • Now • Trend			
Max 4 L/min (if appropriate) • Now • Trend			
Max 5 L/min • Now • Trend			
Max 6 L/min • Now • Trend			
Max 8 L/min • Now • Trend			

Max 10 l/min • Now • Trend			
Max 13 L/min • Now • Trend			
Max 15 L/min • Now • Trend			
> 15 L/min • Now • Trend			
Lowest maximum flow rate technically feasible? (L/min; specific application)			
Highest flow rate known? (L/min; specific application)			

(c) Segmentation and expected trends by <u>materials</u> used (please indicate: indication of average weights, if percentages refer to physical volume or money value, country and year of reference)

Material	***Taps*** (%)	***Showers*** (%)	***Showerheads*** (%)
Brass • Now • trends			
Stainless steel • Now • trends			
Plastic • Now • trends			
Please add materials or mix of materials if needed			

(d) Identification of <u>innovative technologies for water and/or energy saving</u> (please include types, registered/expected associated variations of product prices, current penetration and expected trends)

Technology	***Taps***	***Showers***	***Showerheads***

Commonly used			
Innovative but not widely spread yet			
Still in pilot stage			

(e) Segmentation and expected trends by <u>water and/or energy saving technology (please indicate: if percentages refer to physical volume or money value, country and year of reference</u>)

Technology	***Taps (%)***	***Showers (%)***	***Showerheads (%)***
Aerators • Now • Trends			
High flow barriers • Now • Trends			
Thermostat • Now • Trends			
Hot water barrier • Now • Trends			
Please add technology if needed			

(f) Segmentation and expected trends by <u>water control devices</u> (e.g. sensor) (please indicate: if percentages refer to physical volume or money value, country and year of reference)

Water control device	***Taps (%)***	***Showers (%)***	***Showerheads (%)***
Single lever, single outlet • Now • Trends			
Double lever, single outlet • Now • Trends			
Double outlet • Now • Trends			
Infrared sensors • Now			

• Trends			
Push button • Now • Trends			
Non-manual control • Now • Trends			
Please add types of water control device			

(g) Penetration and expected trends for <u>design features</u> not mentioned before (please indicate: if percentages refer to physical volume or money value, country and year of reference)

Feature	***Taps (%)***	***Showers (%)***	***Showerheads (%)***
Please add features if needed			

(h) Share and expected trends for <u>niche products</u> (e.g. high volume wellness showers, safety showers, industrial kitchen taps) (please indicate: if percentages refer to physical volume or money value, country and year of reference)

Niche product	***Market share***	***Expected trends***	***Relevance***	***Rationale***
Please add products				

(i) Market composition in terms of companies' turnover and number of employees

Company	***Taps (%)***	***Showers (%)***	***Showerheads (%)***
SME(*) • Now • Trends			
Large • Now • Trends			
Key Players			

(*) number of employees < 250 and annual turnover < 50 M€, and/or annual balance sheet < 43 M€

10) *Have you, as a manufacturer or retailer, obtained any evidence that market penetration is enhanced for products with good environmental profile (i.e. water and energy efficient products) or consumer interest in eco-design, labelling or Green Public Procurement? If yes, what instruments/measures could have the highest impacts on market penetration and to which extent?*

Answer

3.4 USER BEHAVIOUR AND CONSUMER EXPENDITURES

3.4.1. Water and energy consumption

User behaviour is considered to play a key-role in determining the environmental impacts from the product's lifecycle. Background data on total water consumption has been collected during the development of the EU Ecolabel and GPP criteria for sanitary tapware (see Section V of the supporting information). However, more detailed information on product lifespan and water and energy consumption are needed for understanding how the impacts vary across Europe.

Questions

11) *Do you have statistical information (average data and/or variation range) on water and energy consumption associated to the use of average products under study across the EU-27? Please also provide information on technologies for water and energy saving implemented in products (*e.g. aerators, high flow barriers, thermostat, hot water barrier*) across the EU-27 in order to understand how these could influence the user behaviour.*

(a) Water and energy consumption associated to products on the market (please provide average data and/or variation range)

Product (please modify including average products and water and energy saving technologies)	***Description (technology, country, year, av. price)***	***Water flow (L/min)***	***Water consumption per person per day (L/person)***	***Hot water average cons. (% of tot)***	***Average temp. of hot water (°C)***	***Electricity consumption for supply and control of water flow at the final user (kWh/L)***
Kitchen tap						
Bathroom tap						
Outdoor tap						
Showers						
Please add rows as needed						

(b) Description of user behaviour practices (please provide average data and/or variation range)

Product (please modify including average products and water and energy saving technologies)	***Daily frequency of use per person (nr.use/person)***	***Average time for each single use (min)***	***Water wasted due to wrong user behaviour practices (% of water***	***Water wasted due to inherent characteristics of the system (e.g. waiting for hot-water)***

			used)	***(% of water used)***
Kitchen tap				
Bathroom tap				
Outdoor tap				
Showers				
Please add rows as needed				

12) Do you have aggregated data on water and energy consumption associated to the use of taps and showers across the EU-27?

Data (average and range)	***Total***		***Taps***		***Showers***	
	EU27	Member State(s)	EU27	Member State(s)	EU27	Member State(s)
Water consumption (L/year)						
Water consumption (L x person^{-1} x year^{-1})						
Water consumption (L x buildings^{-1} x year^{-1}) • Household • Schools • Hospitals • etc						
Energy for water heating (MJ/l)						
Electricity for water supply and control (kWh/l)						

13) Could you kindly inform us about any additional studies concerning user behavior in the EU-27 or specific Member States (i.e. average data and variance for frequency and time of product use, water temperature, water wasted at each use, cultural or geographical differences in consumption patterns, etc.)?

Answer

14) Can user guidance in your opinion have an influence on the use of the product? Please provide practical examples and differentiate between products for domestic and non-domestic applications.

Answer

15) *How much can water/energy technologies influence the use of the product? Please provide practical examples and differentiate between products for domestic and non-domestic applications.*

Answer

3.4.2. Product lifetime

The technical lifespan of products differs from the real time of use, after which products are disposed and replaced. According to the pieces of information available, products lifetimes can vary as follows:

In domestic premises

- Kitchen taps: 5 to 20 years
- Bathroom taps: 5 to 20, but are designed to last more than 20 years (this seems to indicate the influence of fashion and improved technologies)
- Outdoor taps: 10 to 30 years
- Showerheads: 5 to 15 years
- Showers: 5 to 15 years

In non-domestic premises

- All taps: 5 to 20 years
- Showerheads: 5 to 10 years
- Showers: 5 to 10 years

Average lifetime

- Domestic all taps: 16 years
- Domestic showerheads: 10 years
- Non-domestic taps: 10 years
- Non-domestic showerheads – 7 years
- Non-domestic showers – 7 years

Questions

16) *Do you agree with the information presented above or alternative figures would be more appropriate? Please add information also for specific application that could differ from average values (for example very frequent use products)*

	Taps		***Showers***		***Showerheads***	
	Technical lifespan	Real time	Technical	Real	Technical	Real

	declared of use	lifespan time	lifespan time
Domestic use			
Non domestic use			
Please add rows for specific applications if needed			

17) *What is the typical time, for this product group, after which there is a significant change in product design / technology? Which are the main innovations to the products expected to spread in the coming years?*

Answer

18) *How relevant is maintenance for this product group and which are the usual practices? Please provide practical examples and differentiate between products for domestic and non-domestic applications.*

Answer

19) *How can product installation and design influence product durability and maintenance? Please provide practical examples and differentiate between products for domestic and non-domestic applications.*

Answer

20) *How are taps and showers handled at the end of their useful life? In particular, please indicate which amount (%) of products and/or which homogeneous parts are: (a) prepared for reuse/remanufacture; (b) recycled; (c) recovered; (d) disposed.*

Answer

21) *Which is the typical approach followed in Europe for valorizing the product after its useful lifetime (reuse, recycle, recovery) and which are the technical and economic difficulties encountered (e.g. presence of hazardous substances or impurities)? Which is the market for reused and remanufactured products and for recycled materials?*

Answer

3.4.3. Consumer expenditures data

Questions

22) Please, could you kindly provide average information on consumer expenditure base data?

Average costs (and cost variation)	***Taps***		***Showers***		***Showerheads***	
	€/product	***€/kg of product***	***€/product***	***€/kg of product***	***€/product***	***€/kg of product***
Factory prices incl. VAT: • Domestic • Non-domestic • Other specific applications						
End consumer prices incl. VAT: • Domestic • Non-domestic • Other specific applications						
Installation costs • Domestic • Non-domestic • Other specific applications						
Maintenance costs along the product life time • Domestic • Non-domestic • Other specific applications						
Repair costs along the product life time • Domestic • Non-domestic • Other specific applications						
Disposal tariffs/ taxes						

• Domestic • Non-domestic • Other specific applications						

Product	***Average weight (kg)***		
	Domestic	***Non-domestic***	***Other specific applications***
Taps			
Showers			
Showerheads			

3.5 PRELIMINARY IDENTIFICATION OF CASE STUDIES OF INTEREST

This section aims at preliminarily identifying product options for which it could be relevant to perform an environmental end economic assessment. The assessment should consider:

a) Average and reference products already available on the market,

b) Best available technologies for improving water/energy efficiency already available on the market,

c) Technologies for improving water/energy efficiency not available yet on the market ,

d) Alternative design options of potential relevance.

The following products have been analysed for the development of the EU Ecolabel and GPP criteria for sanitary tapware:

- Tap made of brass for domestic application
- Tap made of brass for non-domestic application
- Tap made of stainless steel for domestic application
- Tap made of stainless steel for non-domestic application
- Shower made of plastic and metal for domestic application
- Shower made of plastic and metal for non-domestic application

Further information can be found in

http://susproc.jrc.ec.europa.eu/ecotapware/docs/Task%204_Report_Base_Case_Assessment%20Final_Sept.2011.pdf

Questions

23) Please, could you kindly indicate if the case-studies analysed for the EU Ecolabel are still relevant? If not, how they should be modified?

Answer

24) Which additional products options would be worthy to analyse with respect to points a, b, c, d above? Could you kindly provide preliminary information on or share sources of information on bill of materials, water and energy consumption data, lifetime and prices for the suggested case studies?

Case-study of relevance	***Rationale***	***Product description***	***Key-data for environmental and economic assessment***

4. DEMAND OF ENERGY IN RELATED SYSTEMS

One of the tasks of the study is to identify, describe and analyse systems related to taps and showers in which energy is demanded.

Questions

25) The systems related to taps and showers in which resources (e.g. energy and materials) is demanded would include:

a) Water abstraction, impoundment, storage, treatment and distribution of surface water or groundwater

b) Water supply and control at the user

c) Water heating

d) Waste-water collection and treatment which subsequently discharge into surface water.

Do you consider the list of systems as exhaustive or should other systems taken into consideration? Could you provide average figures and variation for the associated energy consumption or reference to relevant information for their estimation, please?

Related system in which energy is demanded	***Heat consumption (MJ/L)***	***Electricity consumption (kWh/L)***	***Reference to relevant information***
a) Water abstraction, impoundment, storage, treatment and distribution of surface water or groundwater			
b) Water supply and control at the user			
c) Water heating			
d) Waste-water collection and treatment which subsequently discharge into surface water.			
Please add other systems if needed			

26) Please, could you kindly indicate relevant sources of key information on legislation, standards, technologies (characteristics, performance and deployment at the EU-27), for the related systems identified above?

Related energy system	***Legislation and standards***	***Technology (characteristics, performance and deployment)***
a) Water abstraction, impoundment, storage, treatment and distribution of surface water or groundwater		

b) Water supply and control at the user		
c) Water heating		
d) Waste-water collection and treatment which subsequently discharge into surface water.		
Please add other systems if needed		

27) Which are the different water heating systems available across the EU-27? Which are their market shares, their associated costs, their energy conversion efficiency and the expected trends for the coming years?

(a) Share of different water heating systems across the EU (please indicate in brackets country, year and the measure unit to which the percentage refers, e.g. installed capacity, energy produced and/or consumed, number of installations)

Water heating system	***Installation share (%) - now***		***Installation share (%) - trends***	
	EU27	Member State(s)	EU27	Member State(s)
Natural gas boiler				
Oil boiler				
Biomass boiler				
Electric boiler				
Thermo-solar boiler				
Others, please add if needed				

(b) Techno-economic data

Water heating system	***Average capacity (MW_{output})***	***Energy conversion efficiency (%)***	***Lifetime (yr)***	***Purchase and installation costs (€)***	***Maintenance and repair practices and costs (€)***	***Disposal practices and costs (€)***
Natural gas boiler						
Oil boiler						
Biomass boiler						
Electric boiler						
Thermo-solar boiler						
Others, please add if needed						

5. WATER SUPPLY CHAIN AND WASTEWATER COLLECTION AND TREATMENT

As taps and showers are embedded in a larger context of infrastructure, a further issue of relevance for this study could be the analysis of water supply chains and the subsequent collection and treatment after use.

Questions

28) *Please, could you kindly provide information on regions of Europe where there is a problem of water scarcity and regions where water availability is not considered a critical issue?*

	Answer
EU27	
Member State(s)	

29) *Please, could you kindly provide key information on the state of the art of water distribution systems across Europe (e.g. techniques and technologies, design, water flow patterns, water loss)?*

Characteristic	***Information***
Techniques and technology	
Design	
Water flow patterns	
Water loss	
Please add other rows if needed	

30) *Please, could you kindly provide key information on the state of the art of water purification practices (e.g. techniques and technologies, installed capacities, wastewater flow and load handled, emission limit values to respect, inputs and outputs of materials and energy to the process) across Europe?*

Characteristic	***Information***
Techniques and technology	
Installed capacities	
Wastewater flow and load handled	
Emission limit values	
Input of materials and energy to the process	
Outputs from the process	

Please add other rows if needed	

31) *Please, could you kindly provide key information on the state of the art of wastewater collection systems (e.g. techniques and technologies, design, water flow patterns, water loss) across Europe?*

Characteristic	***Information***
Techniques and technology	
Design	
Water flow patterns	
Water loss	
Please add other rows if needed	

32) *Please, could you kindly provide key information on the state of the art of municipal wastewater treatment practices (e.g. techniques and technologies, installed capacities, wastewater flow and load handled, emission limit values to respect, inputs and outputs of materials and energy to the process) across Europe?*

Characteristic	***Information***
Techniques and technology	
Installed capacities	
Wastewater flow and load handled	
Emission limit values	
Input of materials and energy to the process	
Outputs from the process	
Please add other rows if needed	

33) *How could collection systems and waste water treatment facilities/technologies of some country/ region be affected by measures aiming at reducing water consumption? Please provide references to existing evidence (e.g. scientific studies, tests carried out)*

Answer

34) *To your knowledge, which technical measures are usually taken in Europe to adapt collection systems/waste water treatment plants to variations of the volumes of the drained water? Please provide references to existing evidence (e.g. scientific studies, tests carried out)*

Answer

6. OTHER INFORMATION

If there any other relevant information on taps and showers you would like to provide please fill the box below or contact us at JRC-IPTS-TAPS-SHOWERS@ec.europa.eu. Thank you very much for the time invested to provide the feedback to us. Your valuable input will be processed and taken into due account along the study.

Additional comments

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