



EUROPEAN COMMISSION  
DIRECTORATE-GENERAL JRC  
JOINT RESEARCH CENTRE  
Institute for Prospective Technological Studies (Seville)  
**Sustainable Production and Consumption**

## **1<sup>st</sup> Meeting of the AHWG for the Development of the Commission Decision establishing the Ecological Criteria for the Award of the Community Ecolabel for Taps and Showerheads**

**Sevilla 22 March 2011**

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4.	Criteria areas for taps and showerheads – general overview
5.	Water efficiency criteria
7.	Material, recycling and maintenance criteria
8.	Corporate criteria
10.	Conclusions and close of the workshop



## EU Ecolabel and Green Public Procurement criteria development

Rugile Balzekaite  
DG Environment EU Ecolabel  
Coordinator

### EU Ecolabel

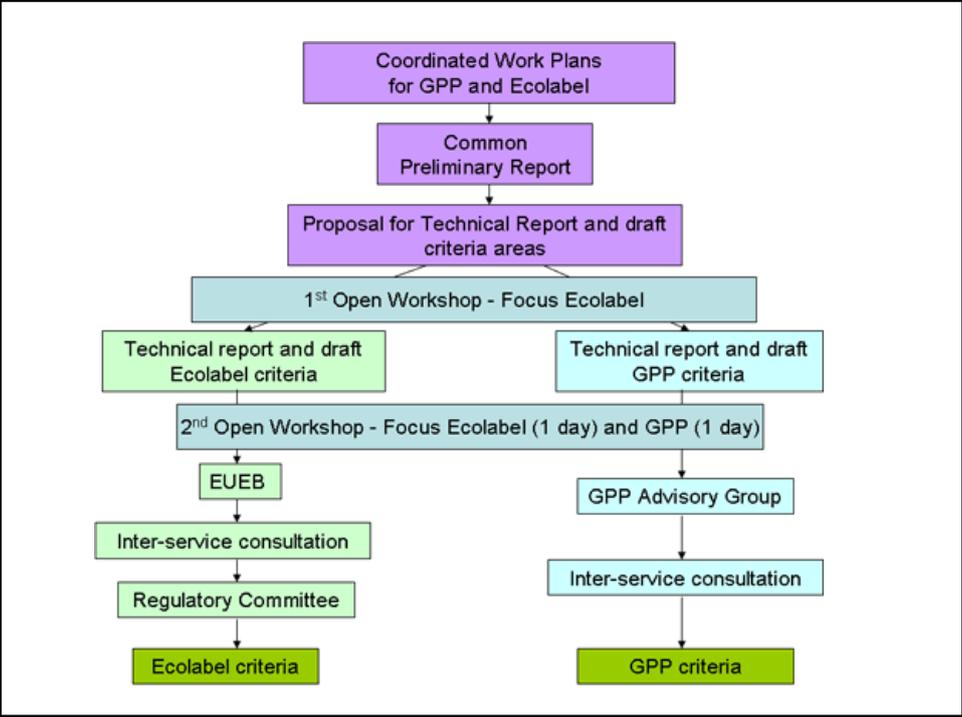
- Established in 1992
- New Regulation 66/2010 on EU Ecolabel
- Voluntary scheme aiming at promoting the products with a lower environmental impact
- Multi-criteria
- Life-cycle based
- Third party verified
- So far – 26 product groups, ~ 25 000 products labelled

## Green Public Procurement

- European Commission Communication of 2008 in the framework of Sustainable Consumption and Production Action Plan
- Promote procurement that addresses environmental considerations into account
- So far – criteria for 18 product groups

## Criteria development

- Until now – criteria developed by EU Ecolabel competent bodies or with help of contractors
- Today marks a start of a new period – Joint Research Centre of the European Commission (JRC/IPTS) develops criteria for EU Ecolabel and GPP



Joint Research Centre (JRC) -

# Ecolabel and Green Public Procurement Criteria - Process Description



**IPTS - Institute for Prospective Technological Studies**

Seville - Spain

[www.jrc.ec.europa.eu/](http://www.jrc.ec.europa.eu/)

1<sup>st</sup> AHWG Sanitary Tapware – 22<sup>nd</sup> March 2011



**IE – Petten, The Netherlands**  
*Institute for Energy*



**IRMM – Geel, Belgium**  
*Institute for Reference Materials and Measurements*



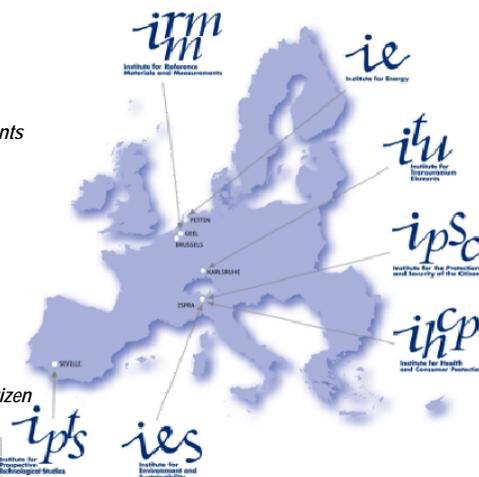
**ITU – Karlsruhe, Germany**  
*Institute for Transuranium Elements*



**IES/IHCP/IPSC – Ispra, Italy**  
*Institute for Environment and Sustainability*  
*Institute for Health and Consumer Protection*  
*Institute for the Protection and Security of the Citizen*



**IPTS – Sevilla, Spain**  
*Institute for Prospective Technological Studies*



## Product Policy Support Activities

Within the European Commission IPTS supports the development and implementation of environmental product policies, amongst them the Ecolabel Regulation and the Green Public Procurement Communication.

**Objective: Concentrate product policy implementation support to harmonise methodologies and procedures**

## Product Policy Support Activities

### Activities:

Identification of priority product groups according to environmental assessment

Development of workplans for the different instruments

Scientific analysis of environmental aspects and impacts of each product group

Develop criteria and implementing measures until the stage of voting in committee

## Criteria development step by step (1)

### Technical Analysis

Task 1 – Product scope and definition

Task 2 – Market analysis

Task 3 – Technical analysis

Task 4 – Improvement potential

Preliminary Report

Draft Criteria Proposal  
+ Technical Report

Published on the dedicated website: <http://susproc.jrc.ec.europa.eu/ecotapware/>

## Criteria development step by step (2)

### Stakeholder consultation

Preliminary Report

Draft Criteria Proposal  
+ Technical Report

Input to 1<sup>st</sup> AHWG

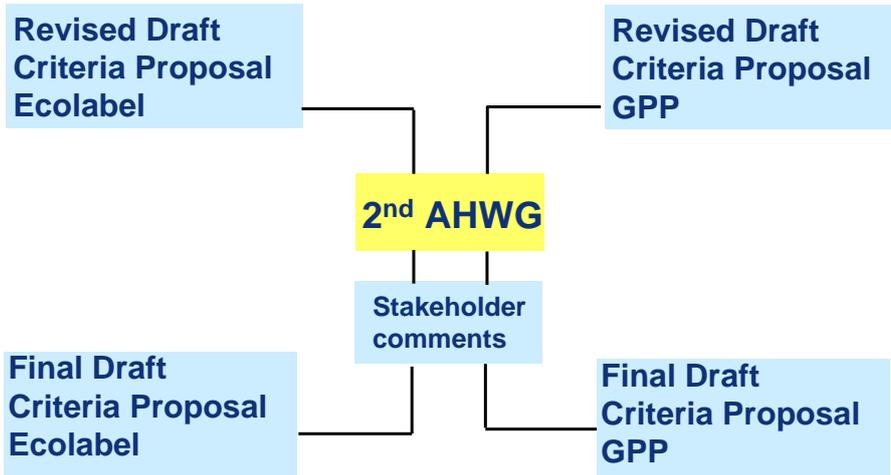
Today!

Stakeholder  
comments

Revised Draft  
Criteria Proposal  
Ecolabel

Revised Draft  
Criteria Proposal  
GPP

## Criteria development step by step (3)



## Criteria Development for Sanitary Tapware

Stakeholders can comment on working document up to 4 weeks after the meeting (mid/end April)

Separate draft criteria proposals for Ecolabel and GPP will be prepared and published 4 weeks ahead of next AHWG

Second AHWG to take place in 2<sup>nd</sup> half of 2011

Again 4 weeks to comment on draft criteria proposals

End 2011 final draft criteria available

## 1<sup>st</sup> AHWG - Today

- **Begin a discussion on the key issues concerning the potential ecological criteria**
- **Agree on identified criteria areas**
- **Discuss criteria areas and sub-criteria one by one**

**The goal of today meeting is not to define exact criteria formulations and values**

**Thank you!**

Tap and Showerheads  
First Ad-hoc Working Group Meeting



Chris Nuttall / Phil Dolley – 22<sup>nd</sup> March 2011

Presentation Outline



- Product Group Definition
- Methodology
- Economic Analysis – Stocks, Sales, Trade
- Market Analysis
- User Behaviour
- Base Case Assessment
- Key Observations

## Product Group Definition

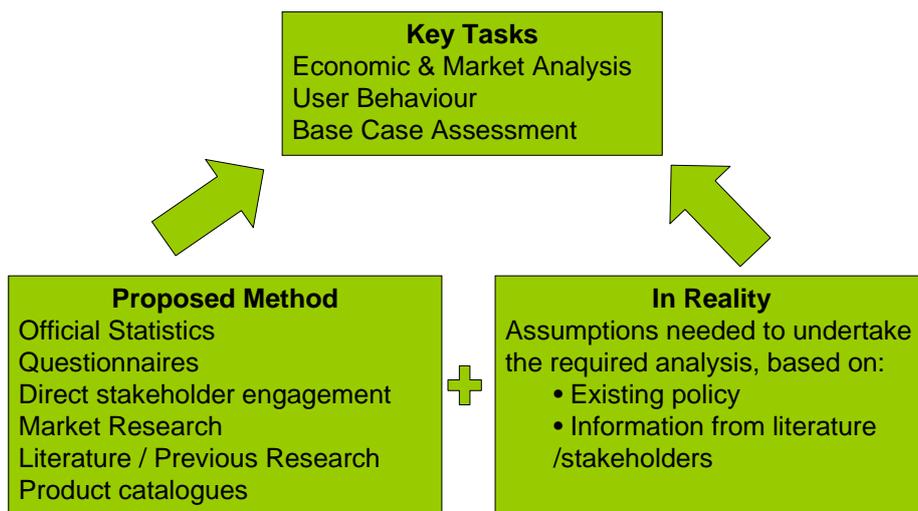


**Taps:** “a small diameter directly or indirectly manually operated valve from which water is drawn”

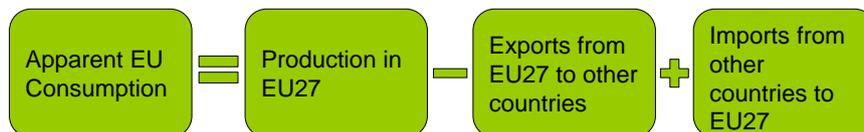
**Showerheads:** either a “fixed overhead or side shower outlet (or body jet or a similar device), which may be adjustable, and which directs water onto the user” OR “moveable hand held shower outlet which is connected to the sanitary tapware via a shower hose and can be hung directly on the tapware or on the wall with the aid of an appropriate support (also known as a shower handset)”

- Scope; domestic and non domestic
- Exclusions; bath tub taps, safety taps/showers

## Methodology



### Generic Economic Data:



- Key figures for EU27 (thousands of units):

	Consumption	Production	Exports	Imports
EU 27 – Taps	185,400	164,600	80,500	101,300
EU 27 - Showerheads	61,800	54,900	26,800	33,800

### Market & Stock Data:

- Establish level of existing product stock
- Key Assumptions
  - Number of taps per houses / apartments
  - Product lifetimes – based on feedback
  - No. of businesses, UK H&S Guidance on welfare provisions
- Figures calculated for domestic and non domestic stock (million)

Country	Domestic 2007	Domestic 2020	Non-Domestic 2007	Non Domestic 2020
EU 27 – Taps	101.5	115.3	69.8	95.0
EU 27 - Showerheads	24.8	28.2	27.9	37.0

## Market Analysis

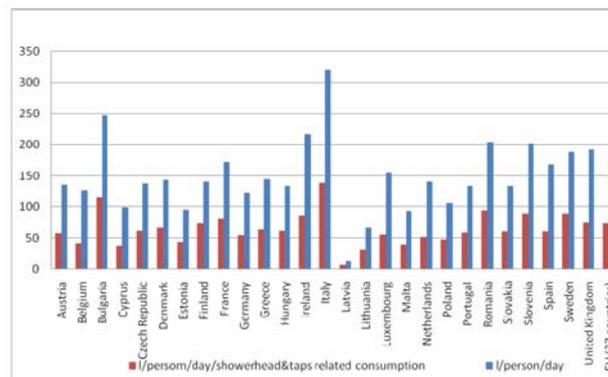


- Production Structures
  - Key producers include Italy, Germany, Spain
- General shift from baths to showers
- Mixer taps increasingly popular in place of pillar taps
- Fashion is a key driver – styles, colour
- Non domestic market includes additional features
- Increasing inclusion of water saving features
- Expenditure Data

## User Behaviour



- Behaviour is key in terms of use phase water consumption:



- Repair and maintenance
- End of life aspects

## Base Case Assessment



- Ecolabel Regulation 2010 Annex I states criteria should be based on life cycle data and quantitative environmental impacts
- MEEuP Methodology uses a tool EcoReport
  - Provides an indication of the key impact areas from a life cycle perspective across a number of indicators
- EcoReport Inputs
  - Product material composition
  - Lifetime
  - Packaging
  - In use – water and energy consumption

## Base Case Inputs



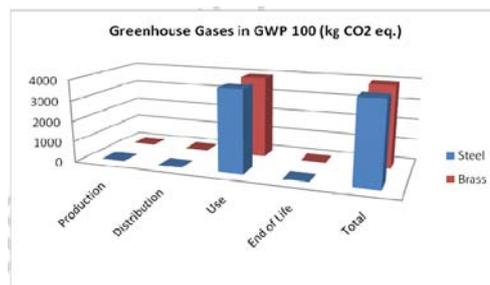
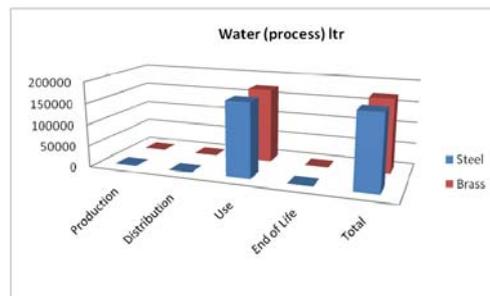
Product	Base Case in Draft Report		Proposed by CEIR	
	Material	Weight (g)	Material	Weight (g)
<b>Tap</b>	Brass	882	Body Brass	842
	Chrome Plate	9	Plastic	63
	Stainless Steel	59	Ni/Cr Plating	2
	Plastic	7	Ceramic	21
			Handle zinc	209
		Pressure hoses (steel/rubber)	142	
<b>Shower Head</b>	Brass	89	Ni/Cr Plating	2
	Plastic	76	Plastic	177

## EcoReport Results – Domestic Brass Tap



Parameter	Units	Production	Distribution	Use	End of Life	TOTAL
Total Energy (GER)	MJ	0.07%	0.07%	99.85%	0.00%	100.00%
of which, electricity (in primary MJ)	MJ	0.03%	0.00%	99.97%	0.00%	100.00%
Water (process)	ltr	0.00%	0.00%	100.00%	0.00%	100.00%
Water (cooling)	ltr	0.01%	0.00%	99.99%	0.00%	100.00%
Waste, non-haz./ landfill	g	2.73%	0.05%	97.16%	0.05%	100.00%
Waste, hazardous/ incinerated	g	0.05%	0.05%	99.57%	0.34%	100.00%
<b>Emissions (Air)</b>						
Greenhouse Gases in GWP100	kg CO2 eq	0.08%	0.13%	99.77%	0.00%	100.00%
Ozone Depletion, emissions	mg R-11 eq	neg	neg	neg	neg	neg
Acidification, emissions	g SO2 eq	0.22%	0.06%	99.72%	0.00%	100.00%
Volatile Organic Compounds (VOC)	g	0.00%	0.00%	100.00%	0.00%	100.00%
Persistent Organic Pollutants (POP)	ng I-Teq	4.37%	0.00%	95.63%	0.00%	100.00%
Heavy Metals	mg Ni eq	13.05%	0.17%	86.67%	0.06%	100.00%
PAHs	mg Ni eq	1.63%	1.63%	96.20%	0.00%	100.00%
Particulate Matter (PM, dust)	g	0.38%	5.82%	92.87%	0.94%	100.00%
<b>Emissions (Water)</b>						
Heavy Metals	mg Hg/20	2.35%	0.00%	97.65%	0.00%	100.00%
Eutrophication	g PO4	25.00%	0.00%	75.00%	0.00%	100.00%
Persistent Organic Pollutants (POP)	ng I-Teq	neg	neg	neg	neg	neg

## EcoReport Results - Taps



## Summary - Key Observations



- In use water consumption is key for taps and showerheads
  - Results support the focus of other schemes on water flow rates
- Material composition of taps is predominately brass/chrome plate, showerheads are more varied but impacts related to these are minimal compared to in use phase
- Lifetime and end of life aspects e.g. waste should be considered
- Provision of clear installation/consumer information is important



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## Joint Research Centre (JRC)

### Development of ecological criteria for Water-using-Products – taps and showerheads



#### General overview

**IPTS - Institute for Prospective Technological Studies**

*Seville - Spain*

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## Content

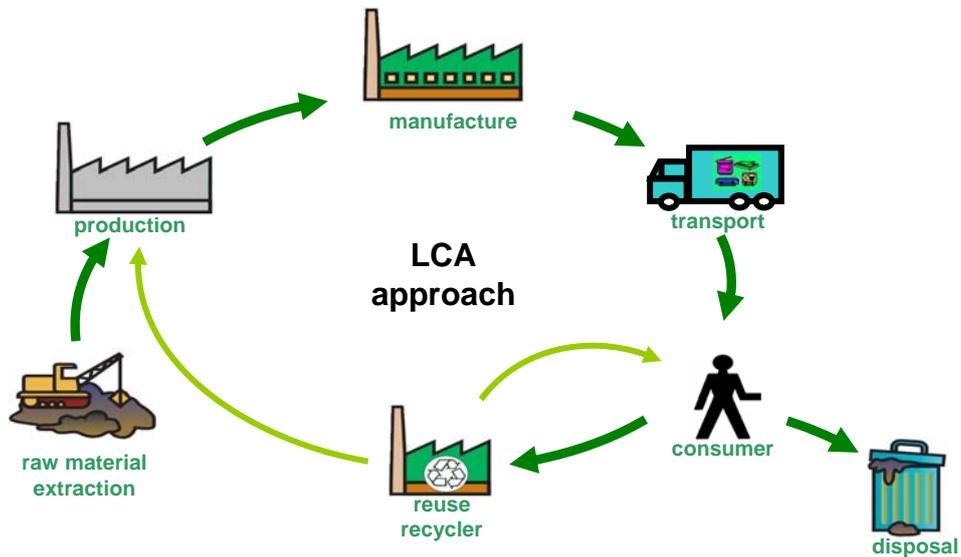
- Preliminary results of base case assessment
- Criteria in other ecolabelling schemes
- Proposed criteria areas

## Sources for criteria proposal

- I. Our preliminary study
- II. Existing ecolabelling schemes:
  - EU labels
  - Non-EU labels
  - Industry labels

## Content

- **Preliminary results of base case assessment**
- Criteria in other ecolabelling schemes
- Proposed criteria areas



## I. Key result of preliminary study → Importance of use phase

The preliminary results of the study show that main environmental impacts of taps and showerheads are related to their use phase i.e. the consumption of water and energy for water heating

Parameter	Units	Production		Distribution		Use		End of Life		TOTAL	
		Value	% of total	Value	% of total	Value	% of total	Value	% of total	Value	% of total
Total Energy (GER)	MJ	66	0.07	64	0.07	90,050	99.85	3	0.00	90,183	100.00
of which, electricity (in primary MJ)	MJ	26	0.03	0	0.00	90,048	99.97	0	0.00	90,074	100.00
Water (process)	l	7	0.00	0	0.00	172,435	100.00	0	0.00	172,442	100.00
Water (cooling)	l	19	0.01	0	0.00	240,128	99.99	0	0.00	240,147	100.00
Waste, non-haz./ landfill	g	2,937	2.73	57	0.05	104,436	97.16	59	0.05	107,489	100.00
Waste, hazardous/ incinerated	g	1	0.05	1	0.05	2,075	99.57	7	0.34	2,084	100.00
<b>Emissions (Air)</b>											
Greenhouse Gases in GWP100	kg CO2 eq	3	0.08	5	0.13	3,930	99.77	0	0.00	3,939	100.00
Ozone Depletion, emissions	mg R-11 eq	neg		neg		neg		neg		neg	
Acidification, emissions	g SO2 eq	50	0.22	14	0.06	23,188	99.72	0	0.00	23,253	100.00
Volatile Organic Compounds (VOC)	g	0	0.00	0	0.00	34	100.00	0	0.00	34	100.00
Persistent Organic Pollutants (POP)	ng i-Teq	27	4.37	0	0.00	591	95.63	0	0.00	618	100.00
Heavy Metals	mg Ni eq	233	13.05	3	0.17	1,547	86.67	1	0.06	1,785	100.00
PAHs	mg Ni eq	3	1.63	3	1.63	177	96.20	0	0.00	184	100.00
Particulate Matter (PM, dust)	g	2	0.38	31	5.82	495	92.87	5	0.94	533	100.00
<b>Emissions (Water)</b>											
Heavy Metals	mg Hg/20	14	2.35	0	0.00	581	97.65	0	0.00	595	100.00
Eutrophication	g PO4	1	25.00	0	0.00	3	75.00	0	0.00	4	100.00
Persistent Organic Pollutants (POP)	ng i-Teq	neg		neg		neg		neg		neg	

Task 3 Draft Report, p. 42

## Preliminary results of base case assessment - Improvement potential

A conservative assumption – applying water-saving devices can result in 20% reduction of water consumption

Table 1 Estimated water and energy saving potential in EU 27

	Taps		Showerheads	
	Domestic	Non-domestic	Domestic	Non-domestic
Water [Mio. m <sup>3</sup> /year]	2 100	720	650	70
Energy [TWh/ year]	70	24	27	3

## Preliminary results of the base case assessment - Improvement potential

Table 2 Estimated savings from the first nine Ecodesign measures\*

Ecodesign Measure	Adoption	Estimated savings (annual by 2020)
Standby	December 2008	35 TWh
Simple set top boxes	February 2009	6 TWh
Street & Office Lighting	March 2009	38 TWh
Domestic Lighting	March 2009	37 TWh
External power supplies	April 2009	9 TWh
Electric motors	July 2009	140 TWh
Circulators	July 2009	27 TWh
Domestic refrigeration	July 2009	6 TWh
Televisions	July 2009	43 TWh
<b>Total</b>		<b>341 TWh</b>

**The joint energy saving potential of taps and showerheads is estimated higher than most of other energy using products.**

\*DG Enterprise and Industry, Ecodesign Your Future - How Ecodesign can help the environment by making products smarter

## Content

- Preliminary results of base case assessment
- **Criteria in other ecolabelling schemes**
- Proposed criteria areas

## Criteria in other ecolabelling schemes

The EU Ecolabel Regulation EC 66/2010 advises to take into consideration *"criteria established for other environmental labels, particularly officially recognised, nationally or regionally, EN ISO 14024 type I environmental labels, where they exist for that product group so as to enhance synergies"*.

## Criteria in other ecolabelling schemes

- EU MS, with additional criteria than only water flow
  - Austrian ecolabel
- Non-EU
  - WaterSense
  - WELS – Water Efficiency Labelling and Standards scheme
- Industry
  - WELPS – Water Efficient Product Labelling Scheme
  - WELL – Water Efficiency Label

## Austrian ecolabel

Criteria:

- Maximum flow rates:
  - 6 l/min for bathroom/toilet taps
  - 9 l/min for kitchen taps
  - 12 l/min for bathtub taps and showerheads
  
- Additional devices:
  - a built-in resistance to limit the flow rate to 60% of the maximum flow rate for single-lever mixer taps
  
  - a flow limiter preset at max. 60% of the maximum flow rate for thermostatic wall mixers
  
  - hot water barrier



Source: <http://www.umweltzeichen.at>

## WaterSense

Criteria:

- Water-efficiency criteria
  - maximum flow rate (5.7 l/min for taps, 7.6 l/min for showerheads)
  - minimum flow (3.0 l/min for taps, at least 60% of the max flow rate for showerheads)
  - non-adjustability criteria
  - criteria concerning the flow marking
  
- Performance criteria (for showers):
  - spray force
  - spray coverage



Source: <http://www.epa.gov/WaterSense/>

## WELS – the Water Efficiency Labelling and Standards scheme

- Mandatory scheme
- Criterion – flow rate



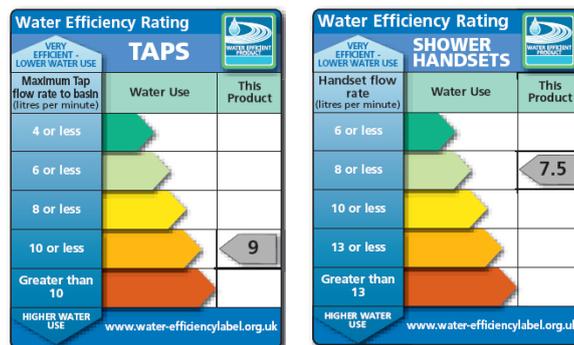
Source: <http://www.waterrating.gov.au/>

Table 3 Rating specification of the WELS scheme - flow rates [l/min]

Labelling class	Tap equipment, flow controllers	Shower
0.Stars	> 16 or failing the performance requirements	> 16 or failing the performance requirements
1 star	> 12 but not > 16	> 12 but not > 16
2 stars	> 9 but not > 12	> 9 but not > 12
3 stars	> 7.5 but not > 9	> 7.5 but not > 9
4 stars	> 6 but not > 7.5	not currently available
5 stars	> 4.5 but not > 6	not currently available
6 stars	< 4.5	not currently available

## WELPS - The Water Efficient Product Labelling Scheme

- Rating water efficiency scheme functioning in the UK
- Criterion – flow rate
- Supported by United Kingdom Bathroom Manufacturing Association's (BMA)



Source: <http://www.water-efficiencylabel.org.uk>

## WELL – Water Efficiency Label

- Recently developed water efficiency rating scheme, intended to be awarded EU-wide
- Criteria:
  - volume (max and min flow rates)
  - time (for non-domestic premises)
  - temperature



Table 5 WELL classification scheme regarding the flow rate

	Wash basin valves		Kitchen valves		Shower valves/shower heads/shower hoses	
	Pressure-dependant solutions	Pressure-independent solutions	Pressure-dependant solutions	Pressure-independent solutions	Pressure-dependant restrictive solutions	Pressure-independent volume-regulating solutions
Max flow rate [l/min]	9	6	12	9	12*	6
Min flow rate [l/min]	6	4	9	6	9	4.5
Pressure [bar]	3	3	3	3	3	3
Number of stars	1	2	1	2	1	2

\*at 2 bar flow pressure

## Content

- Preliminary results of base case assessment
- Criteria in other ecolabelling schemes
- **Proposed criteria areas**

## Key criteria

- Water efficiency is the most important criterion in other ecolabels
- Practically no other criteria are covered by the existing ecolabelling schemes (with the exception of energy efficiency)

### Proposed key criteria related to water and energy efficiency:

- Water flow rate
- Design for hot/cold water management/Energy efficiency
- Time limit/volume limit (for non-domestic products)

## Additional criteria

*EU Ecolabel EC 66/2010 states that the label criteria shall be determined on a scientific basis considering the whole life cycle of products, thus, additional criteria may be required.*

### Proposed additional criteria:

Criteria related to recycling and maintenance:

- design for recycling
- design for repair/warranty and spare parts

Corporate criteria:

- packaging
- consumer information
- information appearing on the ecolabel

## Summary - Proposed key and additional criteria

### 1. Key criteria

Criteria related to water and energy efficiency:

- water flow rate
- cold/hot water management
- time limit/volume limit (for non-domestic products)

### 2. Additional criteria

a) Criteria related to recycling and maintenance:

- design for recycling
- design for repair/warranty and spare parts

b) Corporate criteria:

- packaging
- consumer information
- information appearing on the ecolabel

**Thank you for the attention**

## Joint Research Centre (JRC)

### Development of ecological criteria for Water-using-Products – taps and showerheads



#### 1<sup>st</sup> criteria area – Water and Energy Efficiency

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## Content

### Criteria related to water and energy efficiency

- Water flow rate
- Design for hot/cold water management / Energy efficiency
- Time limit/Volume limit (for non-domestic products)
- Swedish energy efficiency test standards

## Content

### Criteria related to water and energy efficiency

- **Water flow rate**
- Design for hot/cold water management / Energy efficiency
- Time limit/Volume limit (for non-domestic products)
- Swedish energy efficiency test standards

### Criteria related to water efficiency – Water Flow Rate

- Maximum flow rate
  - most commonly used criterion and in many schemes – the only one
  - balance needed between environmental aspect (lower flow rate) and other issues, e.g. hygienic requirements, consumer's acceptance
  - application of water-efficient solutions, e.g. aerators, flow restrictors, etc.
  - flow rate and pressure
- Minimum flow rate (for consideration)

## Criteria related to water efficiency – Water Flow Rate

Table 1 Maximum flow rates set for taps in EU Member States schemes and legal regulations

	bathroom /toilet taps	kitchen taps	showerheads
Austrian Ecolabel for water efficient sanitary tapware	6 l/min	9 l/min	12 l/min
Regulation in the city of Sassari in Sardinia [1]	8 l/min	-	-
Latvian Green Certificate for tourist accommodation services	8 l/min	8 l/min	10 l/min
Luxembourgian Ecolabel for tourist accommodation services	10 l/min	10 l/min	12 l/min
Dutch Ecolabel for campsites	8.5 l/min	9 l/min	8.5 l/min
Nordic Swan Ecolabel for hotels and youth hostels [2]	8 l/min	8 l/min	10 l/min
Slovak Ecolabel for accommodation services	12 l/min	12 l/min	12 l/min
Catalan Ecolabel	8 l/min (1-3 bar) 9 l/min (3-5 bar)	-	10 l/min (1-3 bar) 12 l/min (3-5 bar)

<sup>[1]</sup> Requirement to install aerators in all taps, except of bathtub taps

<sup>[2]</sup> 90% of mixer taps for wash basins should fulfil this requirement. Additionally for guests rooms 90% of the showerheads should be consistent with this criteria and 90% of the taps should be single-lever taps or sensor equipped.

## Criteria related to water efficiency – Water Flow Rate – Points for discussion

- Values necessary for different types/applications of products, which will allow for water saving, though not impeding user's satisfaction
- Best technical ways of achieving water efficiency restricting the water flow
- Establishing common EU 27 criterion of the maximum flow rates for taps and showerheads considering the regional and national differences in water supply systems, i.e. various pressures

## Criteria related to water efficiency – Water Flow Rate – Test methods

### EN standards: descriptions of test methods for measuring the flow rate

- **EN 200:2008** Sanitary Tapware – Single taps and combination of taps for water supply systems of type 1 and type 2 – General technical specification
- **EN 816:1997** Single and mixer taps with automatic shut-off valves
- **EN 817:2008** Mechanical mixing valves (PN 10) - General technical specifications
- **EN 1111:1998** Sanitary tapware – Thermostatic mixing valves (PN 10) – General technical specification
- **EN 1112:2008** Sanitary tapware. Shower outlets for sanitary tapware for water supply systems type 1 and type 2– General technical specification
- **EN 1286:1999** Low pressure mechanical mixing valves – General technical specification
- **EN 1287:1999** Low pressure thermostatic mixing valves – General technical specification
- **EN 15091** Electronic opening and closing sanitary tapware

## Criteria related to water efficiency – Water Flow Rate – Test methods – Points for discussion

- Which methods can suit best for measuring the maximum flow rate of a tap and a showerhead?
- Is it necessary to conduct testing by a third party (accredited laboratory) or should the compliance with the Ecolabel requirement should be confirmed by a producer's 'Declaration of Compliance' supported by results of tests conducted within a company?

## Content

### Criteria related to water and energy efficiency

- Water flow rate
- **Design for hot/cold water management / Energy efficiency**
- Time limit/Volume limit (for non-domestic products)

### Criteria related to water efficiency – Design for hot/cold water management / Energy efficiency

- Majority of tap use durations is very short (below one minute), e.g. for washing hands
- Hot water does not actually reach the tap then, even in a well designed plumbing systems
- According to some stakeholders' feedback:
  - one of the most effective ways to reduce “wastage” of energy for heating up the unused water is to design the one-lever taps in the way that the mid-position will not allow the flow of warm water

**Criteria related to water efficiency**  
**– Design for hot/cold water management / Energy efficiency**

- One of the parameters influencing the use of water is the time necessary to establish the desired temperature of water
- If the required temperature is principally set independently of the flow (minimal adjustment time) higher energy efficiency can be obtained
  - Single-lever valves allow for temperature setting by moving the lever without increasing the flow output
  - On thermostat valves, a scale is used to set the desired temperature
  - Double-handle products require additional adjustment by mixing of cold and hot water

**Criteria related to water efficiency**  
**– Design for hot/cold water management / Energy efficiency**  
**– Points for discussion**

- Should all kinds of valves be covered by the Ecolabel or should double-lever products be excluded?
- What is the stakeholders' opinion concerning the mid-position for cold water?
  - Do you have any information what is the current share of the products designed in the abovementioned way?
  - Is there a trend to design taps in this manner?

## Content

### Criteria related to water and energy efficiency

- Water flow rate
- Design for hot/cold water management/ Energy efficiency
- **Time limit/Volume limit (for non-domestic products)**

### Criteria related to water efficiency – Time limit/Volume limit (for non-domestic products)

- Annual water consumption in the non-domestic sector in the EU 27 exceeds 3 600 Mio. m<sup>3</sup> through using taps and 360 Mio. m<sup>3</sup> for showering  
→ High potential for saving due to Ecolabel and GPP criteria
- Water saving devices considered for the non-domestic premises refer to limiting the time of single water usage (i.e. the volume of water used)
  - devices which stop the water flow after certain time if they are not used or after certain time of use
  - include e.g. timers or sensor controls

## Criteria related to water efficiency – Time limit/Volume limit (for non-domestic products) - Points for discussion

- What is the stakeholder's opinion concerning inclusion application of these solutions as an ecological criteria for non-domestic sanitary tapware?
- Which parameters (e.g. flow time for a timer, sensor's response time) should be considered for these devices?

## Content

### Criteria related to water and energy efficiency

- Water flow rate
- Design for water management
- Time limit/Volume limit (for non-domestic products)
- **Swedish energy efficiency test standards**

## Energy efficiency

A voluntary labelling system to indicate the energy efficiency of sanitary tapware based on standardised test methods have been developed under the leadership of the Swedish Standards Institute

Test methods and scheme rules for energy labeling of tap water devices



SS 82 00 00 Sanitary tapware – Method for determination of energy efficiency of mechanical basin and sink mixing valves (February, 2010).

SS 82 00 01 Sanitary tapware – Method for determining the energy efficiency of thermostatic mixing valves with showers (December, 2010)

Certification rules for energy classing and labelling of sanitary tapware (22th February 2011).

Source: Åsa Wahlström, CIT Energy Management AB, February 2011

## Energy efficiency

Different water and energy savings techniques  
User behavior technique



Eco-effect



Which one will give the same comfort while using less energy?

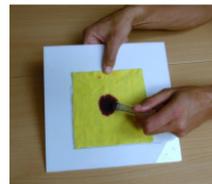
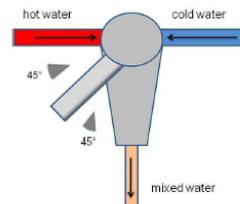
Source: Åsa Wahlström, CIT Energy Management AB, February 2011

## Energy efficiency – Measuring energy use

### Series of activities

Use of water during 60 seconds at defined pressure, flow, temperature and set position of the control stick

Time for rinsing a spot of coloring



Source: Åsa Wahlström, CIT Energy Management AB, February 2011

## Summary

- High water and energy saving potential of sanitary tapware
- Proposed criteria related to water and energy efficiency
  - Water flow rate
  - Design for hot/cold water management / Energy efficiency
  - Time limit/Volume limit (for non-domestic products)
- Energy efficiency testing for sanitary tapware – a new approach

**Thank you for the attention**

## Joint Research Centre (JRC)

### 2<sup>nd</sup> criteria area Criteria related to material composition, recycling and maintenance



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## Content

- Material composition
- Recycled material content
- Design for repair / warranty and spare parts
- Design for recycling

## Content

- **Material composition**
- Recycled material content
- Design for repair / warranty and spare parts
- Design for recycling

## Considerations concerning material composition

- Ecolabel Regulation EC 66/2010 states that *'the substitution of hazardous substances by safer substances, as such or via the use of alternative materials or designs, should be considered wherever it is technically feasible'*.
- Drinking Water Directive requires that materials used for drinking water supply/distribution shall not cause harmful effects on human health (limits for heavy metal contents, e.g. lead, copper, nickel in drinking water).
- Contact between materials of sanitary tapware and water can result in substances releases to drinking water
  - from the surface
  - from the bulk material

## Considerations concerning material composition

### Release from the bulk material of the product

- Depends on the material composition
- Can be a long-term behaviour, dependant on the formation of protective layers on the surface of the material
- Materials can be tested to assess their behaviour in releasing metals from bulk material:
  - EN 15664-1:2008 Influence of metallic materials on water intended for human consumption - Dynamic rig test for assessment of metal release - Part 1: Design and operation;
  - EN 15664-2:2010 Influence of metallic materials on water intended for human consumption - Dynamic rig test for assessment of metal release - Part 2: Test waters;

## Considerations concerning material composition

### Release from the surface

- Efforts on standardising/harmonising test methods for materials in contact with drinking water
- The following two standards are under development to test release of certain metals from surfaces are under development:
  - prEN 16057 - Influence of metallic materials on water intended for human consumption - Determination of residual surface lead (Pb) - Extraction method
  - prEN 16058 - Influence of metallic materials on water intended for human consumption - Dynamic rig test for assessment of surface coatings with nickel layers - Long-term test method

## Considerations concerning material composition

- Chromium-plated brass – the main material used for sanitary tapware
- Stainless steel use is growing; but the market share is still low
- Additionally, various plastics are used
- Scarcity of information concerning composition of representative products
- The result of the environmental assessment show, that the environmental impacts from the production and manufacturing phase are much lower than the impacts caused by the use phase
- The issue of material composition is also not considered in any other ecolabelling scheme for this product group

## Considerations concerning material composition

**Nickel** is a heavy metal which raises particular concerns

- Contained in both: taps made of chromium-plated brass or of stainless steel
- Classified as follows in the EU CLP classification :
  - H351 (R45): Suspected of causing cancer (Carcinogenic - category 2)
  - H317 (R43): May cause an allergic skin reaction (Skin sensitisation – category 1)
  - H372 STOT RE 1: Causes damage to organs through prolonged or repeated exposure

**Lead** – another heavy metal of concern,

- Contained in leaded brass, used typically for manufacturing of tap bodies to ensure water-tightness of the manufactured products

## Considerations concerning material composition – For discussion

Should the issue of material composition of sanitary tapware be included in the process of ecological criteria development?

## Content

- Material composition
- **Recycled material content**
- Design for repair / warranty and spare parts
- Design for recycling

## Recycled material content

- Recovery of copper and brass amounts approximately 42%
- No exact data could be identified on the brass recovery from end-of-life sanitary tapware
- In every batch of stainless steel produced in the EU approximately 50% of scrap is used
- There is a high variety of steel grades (more than 200) and the share of scrap in different grades varies

## Recycled material content - For discussion

Should the issue of the recycled content in the sanitary tapware be considered as a potential EU Ecolabel criterion?

## Content

- Material composition
- Recycled material content
- **Design for repair / warranty and spare parts**
- Design for recycling

## Design for repair/warranty and spare parts Life-time extension

The Ecolabel regulation states that *'in the process of determining the criteria among others the potential to reduce environmental impacts due to durability and reusability of products shall be considered'*.

- In order to ensure that product can be appropriately maintained and, if needed, repaired, spare parts for the products should be available for purchase several years after the production of certain models is stopped
- In order to ensure that products not fulfilling set quality requirements (i.e. working improperly) can be repaired or exchanged, the warranty terms should be given and valid for a given amount of years

## **Design for repair/warranty and spare parts Life-time extension – Points for discussion**

Which aspects, e.g. materials, technical solutions, can positively influence the durability and appropriate functionality of the product group under study and could be considered in the criteria development process?

How long should warranty be valid?

How long should the producer ensure that spare parts are available after the production has been ended?

*Assessment and verification:* A sample of the product packaging/attached leaflet containing information on warranty terms and spare parts availability shall be provided when submitting the application, together with a corresponding declaration of compliance with this criterion.

## **Content**

- Material composition
- Recycled material content
- Design for repair / warranty and spare parts
- **Design for recycling**

## Design for recycling

- Little evidence exists about the end-of-life of taps and showerheads
- An ecolabelled tap or a showerhead should be designed in a way that it can be dismantled with simple tools in order to recover most of the material, which can be then recycled and used again for production processes

*Assessment and verification:* A declaration of compliance with this criterion shall be provided by the producer.

## Design for recycling - Points for discussion

- Which aspects of the product design should be particularly considered in this point?
- Are there any established best practices on the easy of dismantling of sanitary tapware products and their suitability for recovery?
- Do you have any information referring to the products made of plastics?

**Thank you for the attention**

## Joint Research Centre (JRC)

### Development of ecological criteria for Water-using-Products – taps and showerheads



#### 3<sup>rd</sup> criteria area – Corporate criteria

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## Content

### Corporate criteria

- Packaging
- Consumer information
- Information appearing on the Ecolabel

## Content

### Corporate criteria

- **Packaging**
- Consumer information
- Information appearing on the Ecolabel

## Corporate criteria – Packaging

- Predominately supplied in cardboard packaging
- Additionally some smaller amounts of plastics, e.g. LDPE bags, are used
- Long lifetime of the product group under study, estimated as:
  - 16 years for taps and 10 years for showerheads in the domestic sector
  - in the non-domestic sector – 10 and 7 years, respectively
- General measures concerning the management of packaging and packaging waste are regulated in the Directive 94/62/EC on packaging and packaging waste

## Corporate criteria – Packaging – For discussion

Should additional requirements concerning packaging of sanitary tapware be included in the Ecolabel and GPP criteria sets?

## Content

### Corporate criteria

- Packaging
- **Consumer information**
- Information appearing on the Ecolabel

## Corporate criteria – Consumer information

- Rational water consumption is to a large extent dependant on the user behaviour
  - thus, the product shall be sold with relevant user information, which provides advice on its proper environmentally friendly use
  - appropriate consumer information, including e.g. installation, and maintenance instructions are of importance

## Corporate criteria – Consumer information

- The following shall appear on the packaging or an attached leaflet:
  - appropriate installation instruction
  - information on the correct use to minimise water consumption
  - information concerning replacement of washers if taps drip water
  - advice on cleaning taps and showerheads with appropriate materials in order to prevent damaging its surface
  - ‘For more information as to why this product has been awarded the Flower please visit the web-site: <http://ec.europa.eu/environment/ecolabel>.’

## Corporate criteria – Consumer information – For discussion

Should additional issues be covered by consumer information appearing on the leaflet attached to a product's packaging?

*Assessment and verification:* A sample of the product packaging shall be provided when submitting the application, together with a corresponding declaration of compliance with this criterion.

## Content

### Corporate criteria

- Packaging
- Consumer information
- **Information appearing on the Ecolabel**

### **Corporate criteria – Information appearing on the ecolabel**

- The ecolabel shall contain information on advantages related to the purchase and use of the ecolabelled products
- The following text is proposed to be placed on the packaging

'improved water efficiency'

### **Corporate criteria – Information appearing on the ecolabel – For discussion**

The stakeholders are encouraged to comment on and propose other issues, which should, in their opinion, appear on the ecolabel.

*Assessment and verification:* The applicant shall provide a sample of the product packaging showing the label, together with a declaration of compliance with this criterion.

**Thank you for the attention**

## Joint Research Centre (JRC)

### Development of ecological criteria for Water-using-Products – taps and showerheads



### Conclusions of the meeting

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## Session 3: Background information

- Change the wording from 'taps' to 'sanitary tapware/taps'

## Session 4: Criteria area – General overview

- Agreement on the key criteria:
  - Water flow rate
  - Design for hot/cold water management and energy efficiency
  - Time/volume limit (non-domestic products)
- Agreement on looking at other criteria:
  - Material composition
  - Recycling and maintenance
  - Corporate criteria (packaging, consumer information)

## Session 5: Criteria area – Water efficiency

- We will look at:
  - Different values for different applications (all products covered)
  - Maximum and minimum flow rate. European testing methods are available
  - Pressure issue
  - Third party certification
  - Warm water management options (including user behaviour)
  - Options to reduce water consumption in non-domestic tapware (clear definition required)
- We will share information on the Swedish Standards

## Session 6: Criteria area – Materials

- Emissions from production of taps/showerheads should be taken into account for EU Ecolabel and information will be shared
- Release of inorganic and organic compounds from tapware will be considered and information will be shared (e.g. information from the 4 MS group related to harmonization of the testing methods)

## Session 6: Criteria area – Recycling, maintenance

- Recycled content should not be a criterion for Ecolabel
- Durability (product lifetime, spare parts availability) should be taken into account
- Dismantling should be taken into account for criteria with adequate wording

## Session 7: Criteria area – Corporate criteria

- Packaging should be included
- Consumer information
- We will collect your input on the information appearing on the label
- Fitness for purpose should be taken into account