



European Federation
of National Associations of
Water Services

Drinking water services issues in Europe

Conference 7-8 November 2013, Turin

Dr. Claudia Castell-Exner,

EUREAU 1 Drinking Water



General
Assembly

Executive
Committee

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Task
Forces



- EUREAU is the voice of Europe's drinking water and waste water service operators.
- Collectively, they provide water services to more than 400 Million people and reflect the full diversity of the European private as well as public water service industry across Europe.
- Members: national associations of water services

EUROPEAN FEDERATION
OF NATIONAL ASSOCIATIONS OF WATER SERVICES



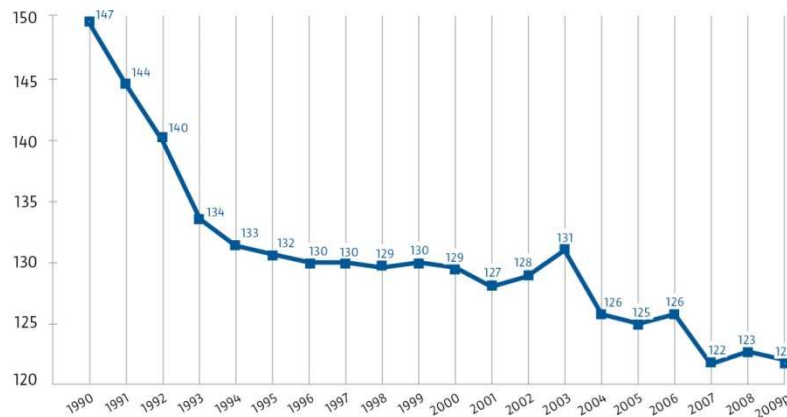
CONTENT

- Drinking water consumption
- Demographic change
- Climate change
- Pollutants: „old“ friends - future pollutants
- Biogas production
- Shale gas exploration
- Deploying of high-speed broadband



Decline in drinking water consumption

- Considerable decrease in per-capita consumption leads to under-usage of the facilities
- From operational perspective – intensive flushing of affected mains may be necessary to avoid deposits and corrosion as well as hygienic problems attributable to longer hydraulic resistance time and lower flow velocities



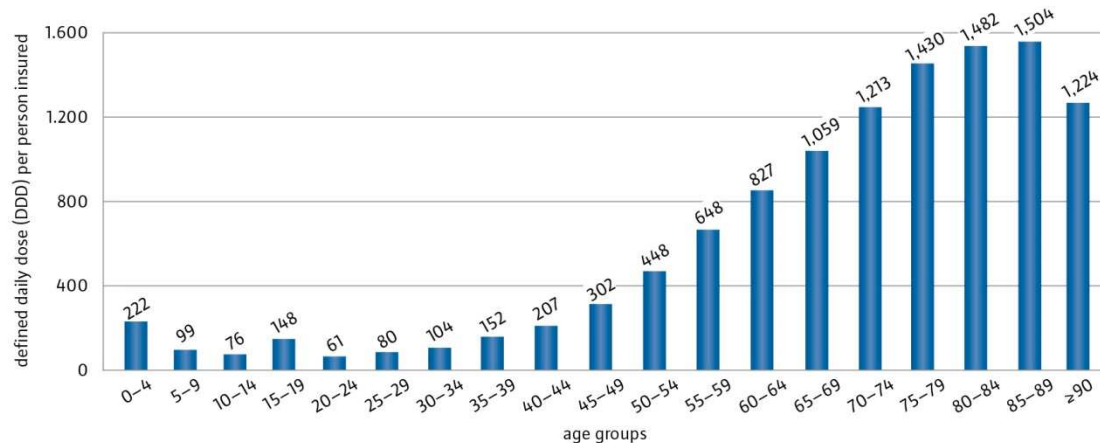
Source: BDEW Water Statistics, related to households and small trades, p = provisional

© Profile of the German Water Sector 2011

- Nevertheless, utilities need to maintain the capacities required to cover peak demand, particularly during longer droughts
- Due to climate change, peak demand is likely to continue to grow in terms of volume and duration
- => water utilities to keep the necessary infrastructure available without being able to downsize the mains, in spite of a decline in water consumption

Demographic change

- Aging, decline in population and migration movements are also a challenge to the water sector.
- According to forecasts, the population will decrease
- At the same time, the age structure will shift to elder people
- Increase in pharmaceutical consumption per person



Source: Arzneiverordnungs-Report 2010, Springer-Verlag Berlin Heidelberg 2010
DDD = defined daily dose of pharmaceutical prescriptions

© Profile of the German Water Sector 2011



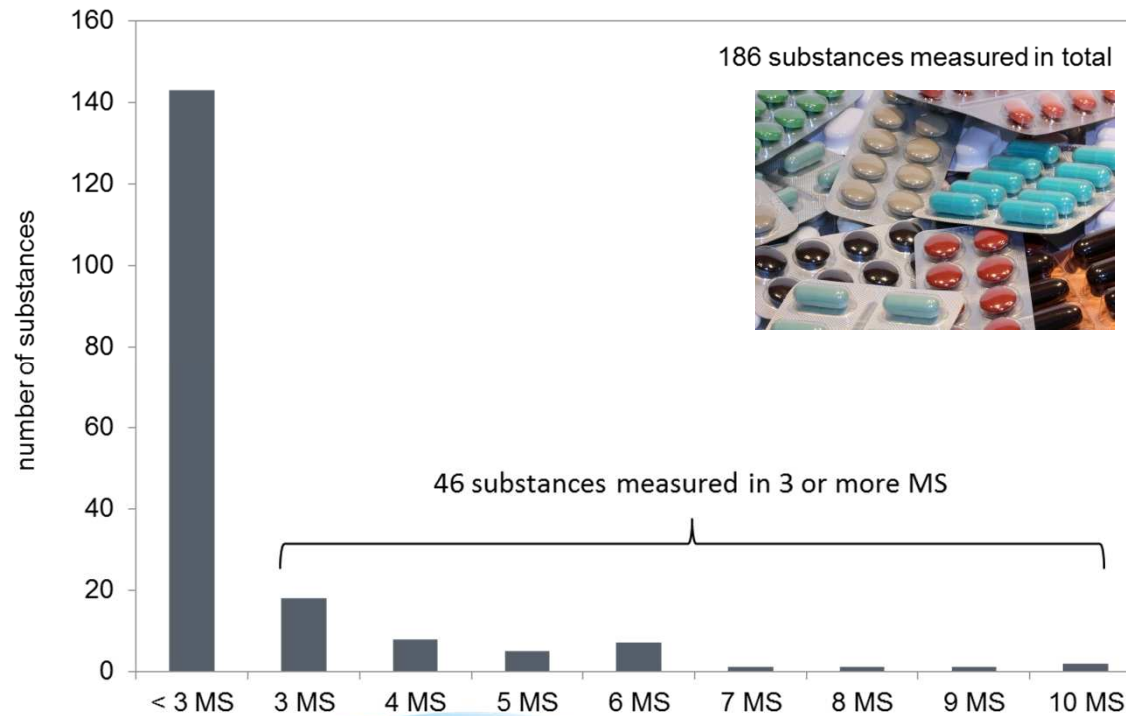
2013: 60,5 million
2030: 57,6 million
2060: 48,1 million



2060: 1 in 3 German citizen will be 65 and older while younger people under 20 years will only account for about 16 %

Demographic change

- Qualitative changes in waste water composition and drinking water resources quality
- **EUREAU commission 1 Drinking water works on an overview “Pharmaceuticals and their residues in drinking water resources”**
 - 10 national reports (SE, NL, GE, F, UK, FL, PT, BE, AT, CZ)



Demographic change

- Pharmaceuticals and their metabolites: substances most often measured in MS

Diclofenac	Analgesic
Ibuprofen	Analgesic
Carbamazepine	Antiepileptic drug
Naproxen	Analgesic
Atenolol	Beta blocker
Erythromycine	Antihypertensive drug
Bezafibrate	Lipid-lowering drug
Ethinyl estradiol	Estrogen
Ketoprofene	Antibiotic
Metoprolol	Beta blocker
Sulfamethoxazole	Antibiotic
Trimethoprim	Antibiotic



Andrea Damm/pixelio.de

Demographic change

- Pharmaceuticals and their metabolites: substances less measured but interesting

Amidotrizoic acid	X-Ray contrast medium
Caffeine	Alkaloid
Clarithromycine	Antibiotic
Clindamycine	Antibiotic
Iohexol	X-ray contrast medium
Iomeprol	X-ray contrast medium
Iopamidol	X-ray contrast medium
Iopromid	X-ray contrast medium
Metformin	Antidiabetic drug
Paracetamol	Analgesic
Primidon	Anticonvulsant
Sotalol	Beta blocker



Andrea Damm/pixelio.de



Dieter Schütz/pixelio.de

- EUREAU: Position paper on emerging pollutants in drinking water resources - A new challenge to water quality (2011)***

Climate change

According to the current forecasts:

- **Precipitation**

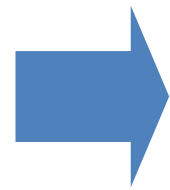
- year (+/-)
- summer (-)
- winter (+)

- **Temperature**

- year (++)
- summer (+)
- winter (+++)

- **Increase of extreme weather events:**

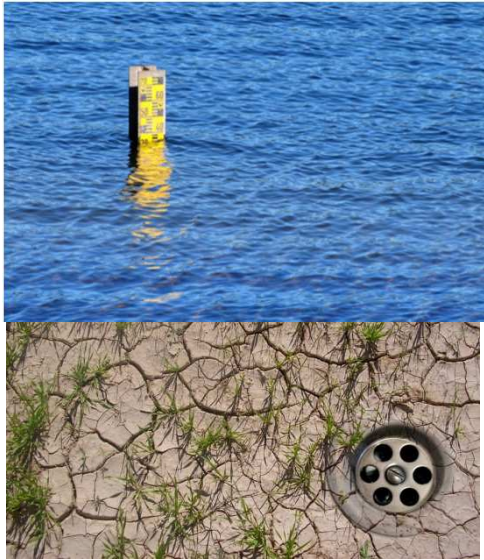
- droughts
- Heavy rainfalls
- Floods
- ...



**Impacts on
water supply?**



Climate change – water availability



- While precipitation and total runoffs increase on a multi-year average and may definitely improve the water supply situation in some regions,
- the water industry will nevertheless have to adapt to a seasonally or intermittently diminished availability of water

Having this in mind, the integrity of a water supply system depends on:

- the existence or non-existence of **alternative water sources** and sufficiently **flexible local water abstraction** facilities enabling utilities to respond to a (temporary) loss of individual abstraction types/catchment areas
- the existence of **competing water uses** and their increasing significance, if applicable (especially agricultural irrigation)
- the expected **development of water use**

Climate change – rising temperature

- **Higher air temperatures increase the vertical temperature gradient in lakes and reservoirs.**
 - Thermal stratification tends to become more stable; full circulation - required for the renewal and oxygen supply of the hypolimnion, which is generally crucial for raw water abstraction - occurs more rarely, decreases in length and may even stay away for good in some cases.
- **Higher temperatures generally accelerate biological and chemical processes in water bodies.**
- **This may foster the growth of algae, so that algal blooms and the formation of odours and flavours at the same time as well as a release of bacterial toxins may occur.**



CC – options for water utilities

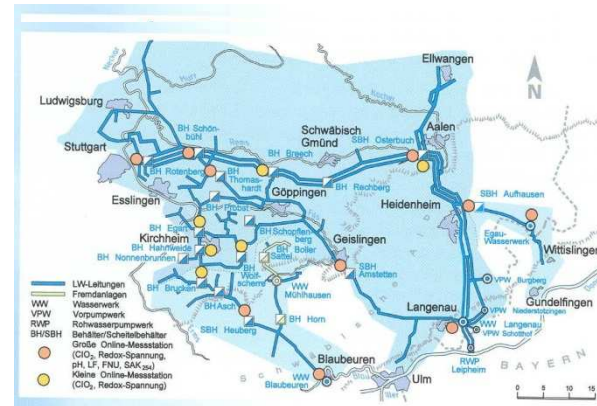
In order to identify suitable adaptation measures, water suppliers should analyse their individual situation comprehensively, focusing on the following questions:

- Which impacts and consequences will affect a supply system?
- Which assets and processes of a supply system are particularly sensitive to the expected impacts?
- Which adaptation options do the ongoing operation schemes and the established management tools offer?
- What needs to be considered with regard to future investments?



Climate change: way forward (1)

- There is no one-size-fits-all solution for climate change adaptation
- Regional differences of climate change impacts on water abstraction, treatment and distribution are huge
- Impacts and vulnerabilities differ between catchments or even within a supply system
- Need for adaptation and the scope for action always refer
 - to natural conditions, technical structure of a supply system, interaction with other factors such as societal and economic development or concurrent industrial and agricultural water uses.



Climate change: way forward (2)



... water utilities are ***willing to actively address*** climate change issues and to rely on both its own and external know-how.



... water utilities are ***planning investments to meet future predictions***. These predictions have to be robust and sound in order to match with the long investment cycles of the water industry. ***No-regret-measures*** should be prioritised.



... water utilities recognize water demands of other sectors like agriculture or energy. Therefore the question is: ***How do we get this into balance and ensure that drinking water supply is resilient?***

- ***EUREAU Position papers, position on climate change and water, Green Week 2012, Session 4.2***

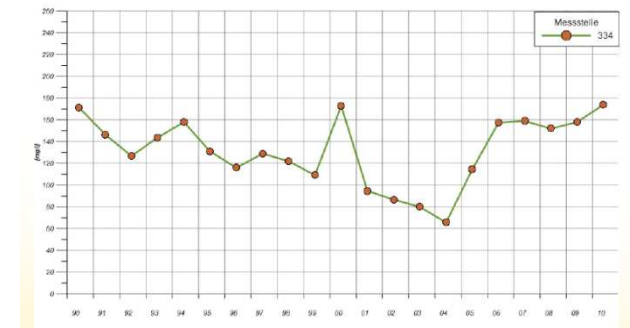
Pollutants: «old friends» – «future»?

NITRATE & PESTICIDES

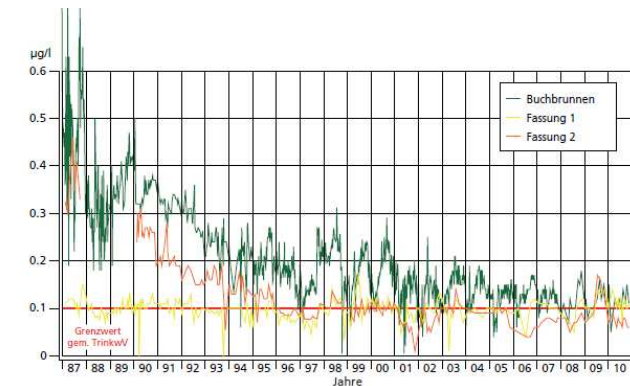
- No real improvement in drinking water resources
 - Many case studies from water suppliers underpin this statement
 - Latest EU-Nitrate report from Member States confirm the situation

■ **EUREAU:**
Revision of Common Agricultural Policy – CAP after 2013 / Greening of the 1st pillar (direct payments) - “Blueing measures” to protect drinking water resources

Position paper on the revision of the Groundwater Directive (Annexes I /II) (10/2013)



Nitrate, OOWV, 1990-2010



Pesticides., LW, Stuttgart

Future pollutants?

- ***Environmentally hazardous substances*** are increasingly released from diffuse sources and consumer-related municipal sources rather than from production-related industrial point sources
- Nowadays chemists are able to detect:
 - ***concentrations of drugs, polar personal care products*** (e.g. musk fragrances, repellents),
 - ***technical products*** (e.g. bisphenol A, tributyl tin compounds, perfluorinated compounds (PFS), lipophilic and hydrophilic pesticides, quaternary ammonium compounds, ...)
 - ***Contaminations from construction materials*** (e.g. titanium dioxide)
 - ***Contaminations from traffic*** (e.g. PAH, mineral oils, ...)
 - ***Biocides***
 - ***Nanoparticles***
 - ***Other persistent organic pollutants and their metabolites***
 - ***Transformation products and by-products***

Future pollutants?

- Although many of the new compounds are present in the aquatic environment ***at low to very low concentrations*** (picograms per litre to nanograms per litre),
- some of these contaminants show carcinogenic or mutagenic reactions or are toxic for reproduction (***CMR substances***) or are ***allergens*** or ***endocrine disrupters***;
- But others are less toxic or do not show toxic effects in the measures concentrations
- ***Therefore the best solution remains the reduction at source to avoid the introduction of emerging contaminants in the water cycle.***

***EUREAU Position paper
on Control at source, 2010***

Future pollutants?

- **Research: EU funded FP 7 Project „Solutions“**
 - Establish think tank on „future pollutants“
 - Intends to provide user-friendly set of predictive models
 - Works on guidance for early detection, identification, prioritisation and abatement of chemicals
 - Assess mixtures, metabolites and transformation products
 - 100 scientists from 39 institutions



Deltares



IVL Swedish Environmental Research Institute



Thanks for your attention!

CARL VON OSSIETZKY universität OLDENBURG

vito
vision on technology

KWR



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Institut für angewandte Ökologie
Institute for Applied Ecology

THE UNIVERSITY OF LIVERPOOL

DYNAMIC
extractions

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University of Novi Sad

Agriculture: boom of biogas plants



- ***Boom in renewable energy***, esp. the growing of biogas plants, biogas production and the application of biogas residues on farmland
- Growing of biogas plants may entail ***hazards to water resources*** due to a more intensive utilisation of land with fertilisers and pesticides
- ***Biogas residues*** earmarked for further agricultural use may contain harmful substances with detrimental effects on soils and water resources
- « ***co-substrates*** »: e.g. *municipal solid waste, slaughterhouse waste, residues from grease separators, waste grease, food leftovers and organic substrates used in the bio-technical production of pharmaceuticals, and plant matter left over after environmental remediation.*

Boom of biogas production in Italy



National biogas plant census:

- 273 plants, 74 out of which under construction
- 50% works in co-digestion livestock manure plus energy crops and agroindustrial residues
- 90% of plants are sited in the North of Italy
- About 150 MW installed



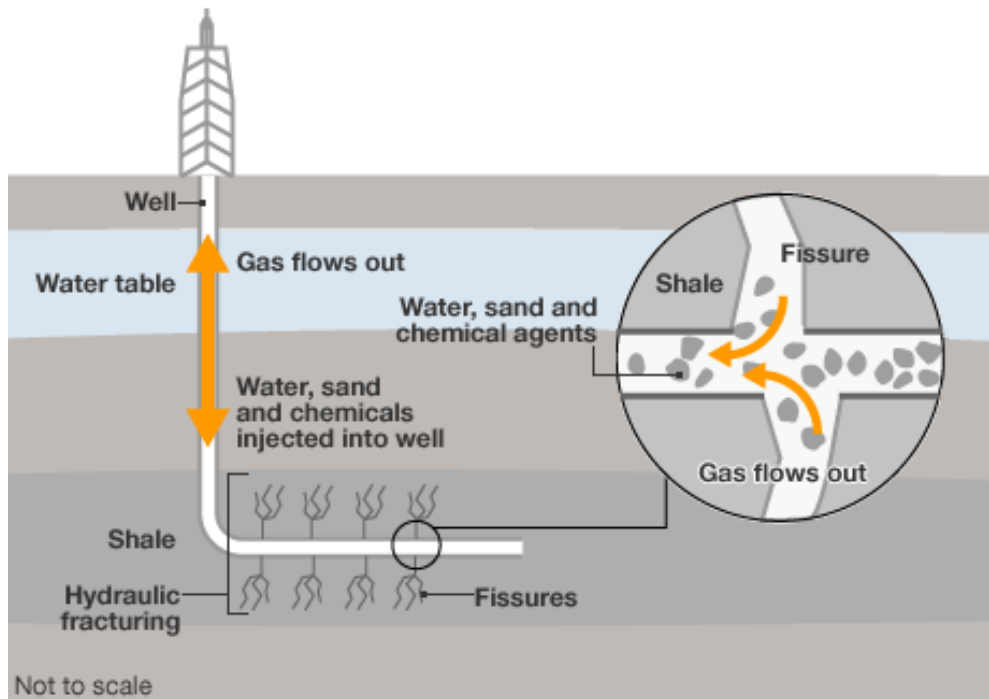
Agriculture: boom of biogas plants

- Moreover, the processing of the biogas residues exacerbates the problem of how to use organic fertiliser in a water-friendly way, especially in areas with a lot of livestock.
- Biogas production: the target limits specified by the Water Framework Directive and Groundwater Directive (50 mg/l of nitrate and/or 0.1 µg/l pesticides) shall be observed.
- Nitrates Directive has to be reconsidered and updated in the frame of the increasing cultivation of energy crops as well as the agricultural use of biogas residues.
- ***EUREAU: Position paper under preparation***



Shale gas: impacts on water resources?

Shale gas extraction



131029_ <http://www.bbc.co.uk/news/world-africa-22151746>

- Method uses water at high pressures to introduce **fluids**, which are used to ensure that the extracting routes that are created are retained during the entire extraction phase
- Methods also use **chemicals**, to reduce viscosity, reduce friction, act as a biocide and prevent corrosion, into gas rich rock strata.

Shale gas: impacts on water resources?



European Federation
of National Associations of
Water Services

24 October 2013
Position paper on shale gas

Position Paper on Shale Gas

Exploration and extraction of unconventional natural gas (shale gas)
reservoirs and the protection of drinking water resources

EUREAU:

- *full consideration is given to the **protection of drinking water resources**, and safe and healthy drinking water supply for European citizens*
- *existing legislation is updated to ensure that exploration for and extraction of unconventional gas falls under the scope of the **Environmental Impact Assessment Directive***
- *Shale gas projects to be covered by the **Environmental Liability Directive** to assure well integrity in the long-term.*



EU Digital agenda: high speed broadband

Proposal: 26th March 2013



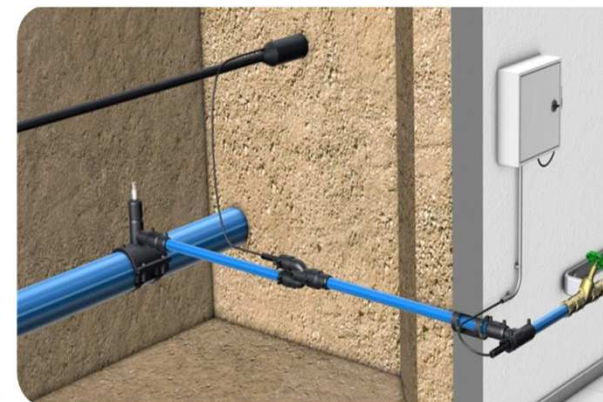
Brüssel, den 26.3.2013
COM(2013) 147 final

2013/0080 (COD)

Vorschlag für eine

VERORDNUNG DES EUROPÄISCHEN PARLAMENTS UND DES RATES

**über Maßnahmen zur Reduzierung der Kosten des Ausbaus von
Hochgeschwindigkeitsnetzen für die elektronische Kommunikation**



EU Digital agenda: high speed broadband

EUROPEAN FEDERATION OF NATIONAL ASSOCIATIONS OF WATER SERVICES



EUREAU

**EUREAU position on
Regulation of the European Parliament and of the Council on measures to
reduce the cost of deploying high speed electronic communications
infrastructure (COM(2013)147)**

(28 June 2013)



EUREAU

EUREAU positions on broadband

EUREAU considers that an amendment to Article 2 to specifically exclude the internal use of drinking water infrastructure would prevent the need for water service providers to refuse access using the exclusion criteria listed in Article 3 and discussed in Recital 13.

Article 1 § 2:

<i>Text proposed by the European Commission</i>	<i>Proposed EUREAU amendment</i>
(2) This Regulation shall apply to all civil works and physical infrastructure, as defined in Article 2.	(2) This Regulation shall apply to all civil works and physical infrastructure, as defined in Article 2, with the exception of those used for the carriage of water intended for human consumption.

Justification:

The insertion of any material into pipes used for the carriage of water intended for human consumption presents potential risks to public health and affects the safety and integrity of the network that make this infrastructure unsuitable. Furthermore such disposition might be in contradiction with art 10 of the Drinking Water Directive which obliges certain minimum requirements for the quality of materials in contact with water.

High speed broadband: latest comments

dpa Pressemitteilung EU-Kommission vom 30.07.2013:

 EU-Kommission: Keine Datenkabel in Wasserleitungen
VOR 3 STUNDEN NACHRICHTEN.DE



„It has been never intended to insert broadband in drinking water pipes:“

Brüssel (dpa) - Die EU-Kommission will keine Trinkwasserleitungen für Datenkabel nutzen. Entsprechende Medienberichte hat der Sprecher der EU-Digitalkommissarin Neelie Kroes am Dienstag in Brüssel zurückgewiesen.

High speed broadband: state of play

- 1.9.2013: Discussion in (leading) **ITRE-Committee** (industry, research and energy) **of the European Parliament**
- 2.10.2013: Hearing convened by the Social Democrats at EP
(EUREAU involvement – Barcelona case)
- 3.10.2013: Deadline for amendments
- 4.11.2013: Discussion on amendments
- 28.11.2013: Voting in ITRE-Committee
- Jan/Feb 2014: Plenary voting at EP

EUREAU

- 28.6.2013: Position paper
- 2.10.2013: contact to MEPs to table „EUREAU’s“ amendments
- 31.10.2013: Recommendations on broadband in water infrastructure
Vote in the ITRE Committee – sent to rapporteur, shadow-rapporteurs, MEPs who are in favor with EUREAU’s amendments



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Thank you for your attention!



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