



National Institute for Public Health
and the Environment
Ministry of Health, Welfare and Sport

Drinking water restrictions in periods of water scarcity

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Introduction RIVM



RIVM (NL):

- 1800 employees
- Team Drinking water (DrW): about 12 fte
- Main clients DrW: Ministries, DrW Inspectorate, provinces, municipalities, EU

Research/consultancy on drinking water, among others:

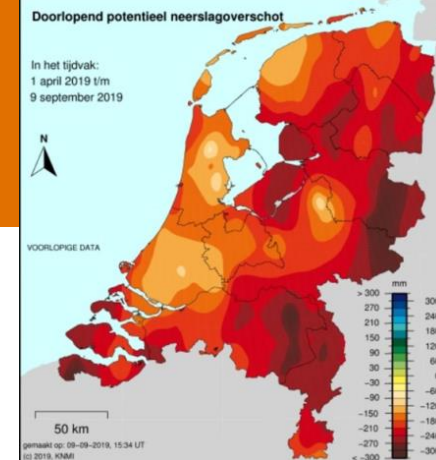
- Quality of drinking water and sources (C B RN)
- Risk based monitoring and legionella prevention
- Safety and security, a.o.
 - QMRA / CBRN response / evaluation disturbance risk analysis drw companies
- Policy advice on drinking water standards
- Climate change effects: floodings, drought

<https://www.rivm.nl/drinkwater>

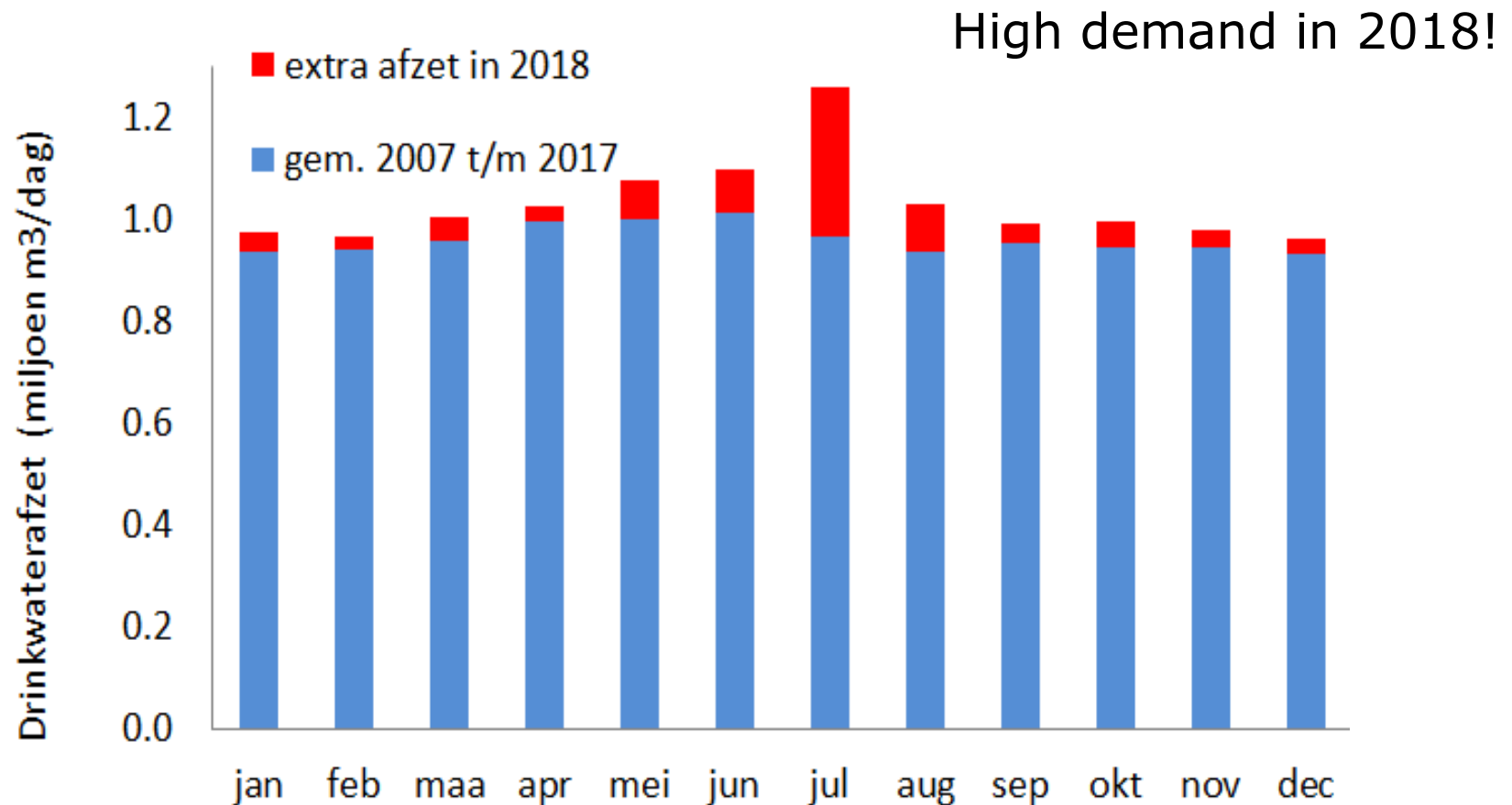
Introduction study



- Study “Drinking water restrictions in periods of water scarcity”
- By order of Ministry IenW & Decision-making Table on Drought
- Motivation:
 - Warm, dry summer in 2018. More often in future.
 - Daily drw. use close to max. prod. cap. (some Dutch dr. w. companies)
 - Drw. companies requested clients to reduce water use (during peak hours).
 - Some small effects:
 - › lower water pressure at the end of distribution systems during peak hours;
 - › ground water extraction permits slightly exceeded
 - › one region: annual limit for chloride in drinking water slightly exceeded
 - › one region: higher temperature of the drinking water



Drinking water production Vitens (NL) per month



Introduction study



- Shortage of drinking water in NL?
Only expected in extreme case - combination high demand + limited supply
(e.g. high demand during hot and dry summers combined with pollution of dr. w. source.)

Goals study

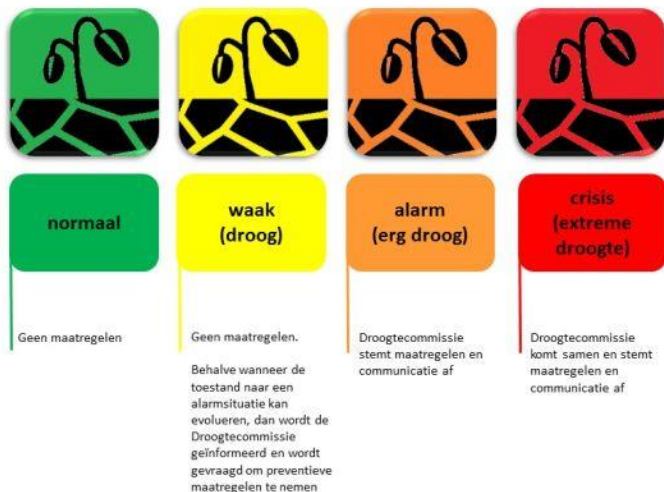
- Overview experience abroad with drinking water restrictions during hot dry periods
- Suggestions for a system of restrictions for The Netherlands based on *good practices* abroad (facilitate political decision making)

Experience abroad



- Many countries/areas face dry periods every year & restrict drinking water use during these periods.
- Cases studied: Flanders, UK, France, Spain, Australia, California, Calgary, Vancouver and Cape Town.



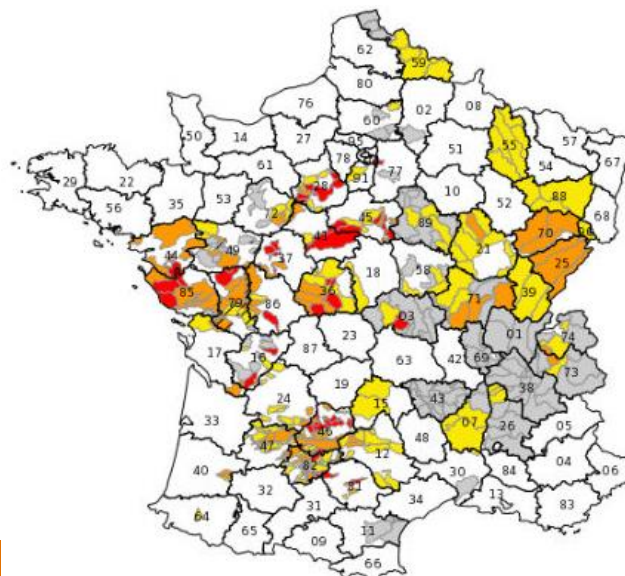


Flanders (Belgium) 2018



France 2018

red = crisis situation
orange = high alarm
yellow = alarm
grey = extra alertness
white = no restrictions





Restriction phase	Content
None	No restrictions Routine monitoring dr w sources and checks on leakages
Before restrictions	Voluntary restraints. Awareness phase
Temporary use ban (households)	Former hospipe ban, outside restrictions , e.g. watering gardens, cleaning vehicles, walls and surfaces
Drought order (all users)	Prohibited, e.g.: <ul style="list-style-type: none"> - watering outdoor plants on commercial premises; - filling non-domestic swimming pools; - cleaning vehicles; - cleaning non-domestic premisis and windows; - supressing dust.
Emergency drought order	Drought orders with additional power

HOW DOES THE BAN AFFECT YOU?





What you CAN'T do with a hosepipe from midnight tonight

- ✗ Water a garden
- ✗ Clean a private motor vehicle
- ✗ Water plants on domestic or other non-commercial premises
- ✗ Clean a private leisure boat
- ✗ Fill a swimming or paddling pool
- ✗ Draw water for domestic recreational use
- ✗ Fill a domestic pond, except those containing fish or other aquatic animals in captivity
- ✗ Fill an ornamental fountain, except when it is in a fish pond
- ✗ Clean walls or windows at home
- ✗ Clean paths or patios
- ✗ Clean other artificial outdoor surfaces



What you CAN do

- ✓ Use a hosepipe in a garden or to clean walls, windows, paths, patios or boats if necessary for health and safety
- ✓ Use a hosepipe to clean a private motor vehicle or walls, windows, paths or patios of homes if done as a service to customers by a business
- ✓ Use a hosepipe to water a garden or plants belonging to someone with severe mobility problems or who holds a Blue Badge
- ✓ Use a hosepipe to water a grass



Category	1 Low	2 Moderate	3 High	4 Very High	5 Emergency
Residential Gardens & Lawns Watering	Sprinklers restricted to 2hrs per day.	No sprinklers. Drippers & hoses restricted to 2hrs per day.	No sprinklers or drippers. Buckets restricted to 2hrs per day. Hoses restricted to 15min per day (in a 2hr window)	No watering at any time	No watering at any time
Washing Down (including vehicles)	Wash down hard / paved surfaces with high pressure hose only.	Hoses restricted to 2hrs per day.	No hoses. Buckets restricted to 2hrs per day.	No washing down at any time	No washing down at any time
Swimming Pools & Spas	Permit required for filling pools over 2,000L.	Permit required for filling pools over 2,000L. Top up via hoses only 2hrs per day.	No filling of pools over 2,000L. Top up via buckets only 2hrs per day.	No filling or topping up pools	No filling or topping up pools
Residential Consumption Target (% reduction)	5%	15%	25%	35%	50%



Experience abroad



Competent authority:

- Minister /secretary of state
- Province
- Drinking water company
- Local authorities / city council

Surveillance and enforcement:

- municipal officials
- police forces
- "water police"
- drinking water company

Sanctions:

- Oral and written warnings
- Fines
- Installing water saving equipment on own costs





Reason for scaling up and down restrictions

Restriction phase based on balance between water demand and supply.

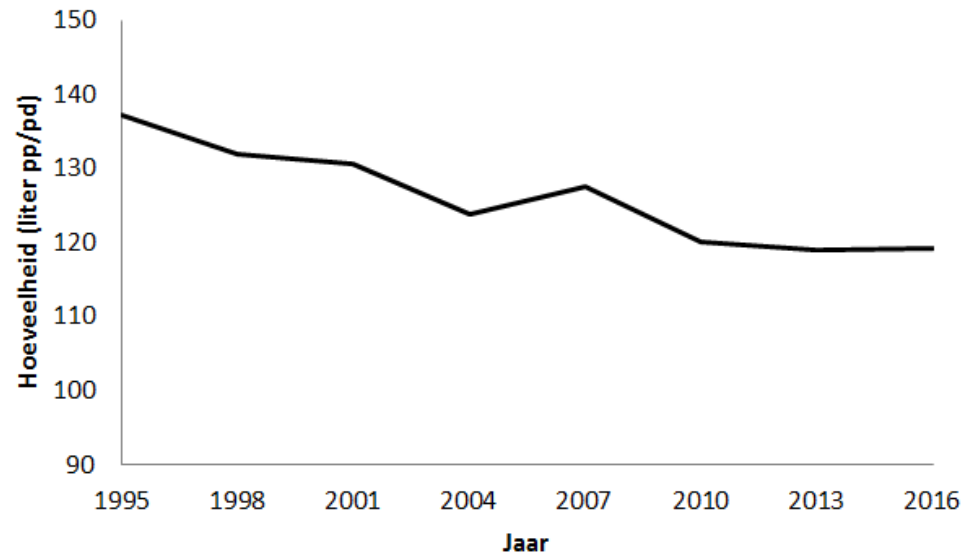
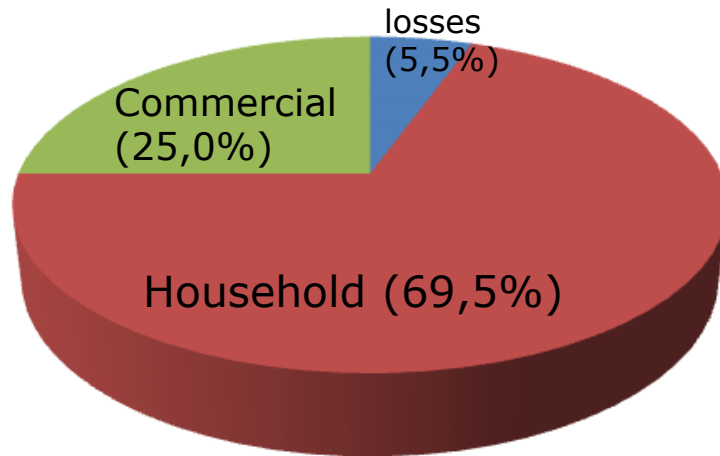
Supply indicators:

level of reservoirs, river flows, ground water levels

Other factors:

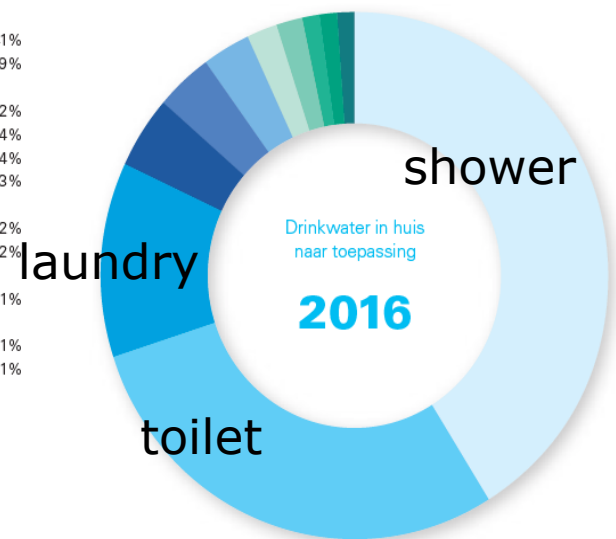
- Weather predictions (temperature, rain, melting of snow)
- Historical trends in water demand per season
- Current compliance with restrictions
- Possibility of transporting water to dry areas





- Production 1200 milion m³/year
- Household: 120 l pppd
- Total use in household stable since 1990 despite population growth

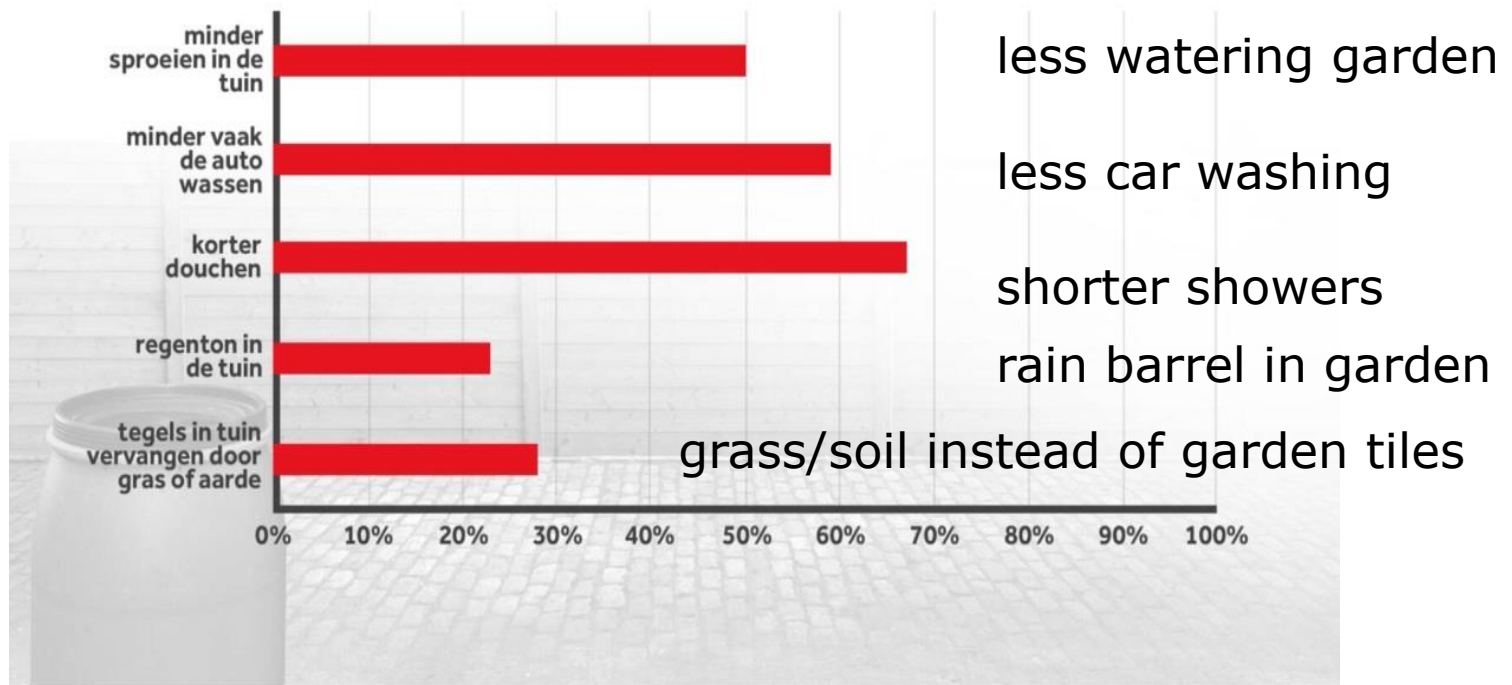
Met de klok mee	
Douche	41%
Toiletspoeling	29%
Kleding wassen, machine	12%
Wastafel	4%
Overig	4%
Afwassen, hand	3%
Afwassen, machine	2%
Bad	2%
Kleding wassen, hand	1%
Koffie, thee en water drinken	1%
Voedselbereiding	1%





bereidheid om aanpassingen te doen

Willingness to adapt



Nederlands en hun bereidheid om aanpassingen te doen NOS



- Escalation model for NL based on experiences abroad:
- 4 phases with increasing restrictions suggested.
- Report (in Dutch) published December 19 (www.rivm.nl)
- Dutch government still has to decide if they want to introduce system of drw restrictions.



Rijksinstituut voor Volksgezondheid
en Milieu
Ministerie van Volksgezondheid,
Welzijn en Sport

Ervaringen met drinkwaterrestricties in het buitenland en verkenning van de mogelijkheden voor Nederland

RIVM Briefrapport 2019-0116
R.C. van Leerdam





Thank you for your attention!

