

# How does the Norwegian legislation affect the design of onsite wastewater treatment systems?

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## Overview

### ● Regulations

- EU regulations
- National laws and regulations,
- Local regulations
- Guidelines and recommendations

### ● Types of treatment systems in Norway

- Centralized vs. decentralized
- Onsite sanitation
- Trends

### ● Future perspectives

- Health and Environmental impact
- Resource utilization
- Economy

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## Regelverk: Lenker

- ▶ [Forurensningsloven](#)
- ▶ [Forurensningsforskriften](#)  
Om små avløp: del 4, kap. 11, 12, 13 og 16.
- ▶ [Drikkevannsforskriften](#)
- ▶ [Forskrift om miljørettet helsevern](#)  
Fra Helsedepartementet
- ▶ [Lov om helsetjenesten i kommunen](#)
- ▶ [Vannportalen](#)
- ▶ [Plan- og bygningsloven](#)
- ▶ [Lovdata](#)
- ▶ [Klima- og forurensningsdirektoratet \(KLIF\)](#)
- ▶ [Vannforskriften](#)

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## Regulations

- EU Directive on wastewater
  - National law on pollution control  
"Forurensningsloven"
  - ↓
  - Local regulations. (Municipal level)  
"Lokale forskrifter"


Can replace paragraphs in the national regulations if necessary from a pollution point of view or because of user interests.

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- **Regarding discharge of wastewater from residential houses, recreational houses (cottages), tourist resorts and similar, with less than 50 personal equivalents.**
  - The municipality is the responsible authority.
  - Receiving discharge applications, giving permissions and the requirements with respect to operation, monitoring and reporting. (within six weeks)
  - This regulation is also valid for greywater systems if water supply is installed.

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### Information required in the Discharge application

- Name and address for the responsible applicant
- Are the discharges within the limits stated by this regulation or does it exceed the limits.
- Documentation on how to install and operate
- Map showing where the treatment plant and discharge point is located
- The magnitude of the discharge (pe)
- Description of the recipient/discharge area, including possible user interests (drinking water, recreation .....).
- Listing those who have received a warning (neighbours and others that may be especially affected by the activity.- 4 weeks)
- Permission from the planning department in the municipality, if the discharge is in conflict with existing plans.

## Law on Planning and construction :

- Application for all types of construction work, wastewater treatment plants included.
  - Well defined roles, with responsibility for:
    - Planning and preparation of applications
    - Entrepreneurs
    - Plumbing
    - Work on power supply

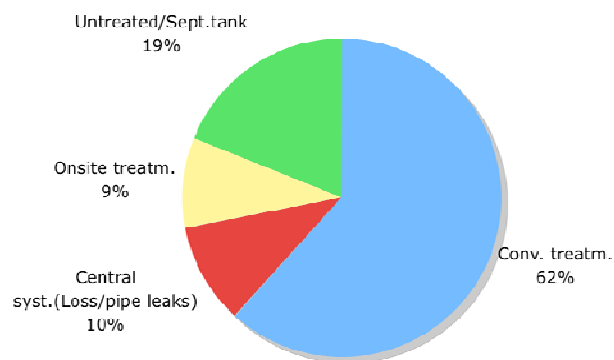
Pre-acceptance based on documented qualifications (education and practical experience)

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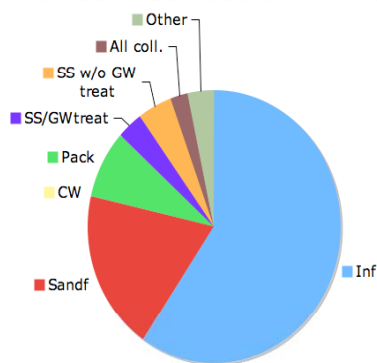
## Fosfor fra avløpsvann i Norge



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### Types of onsite treatment systems Norway.

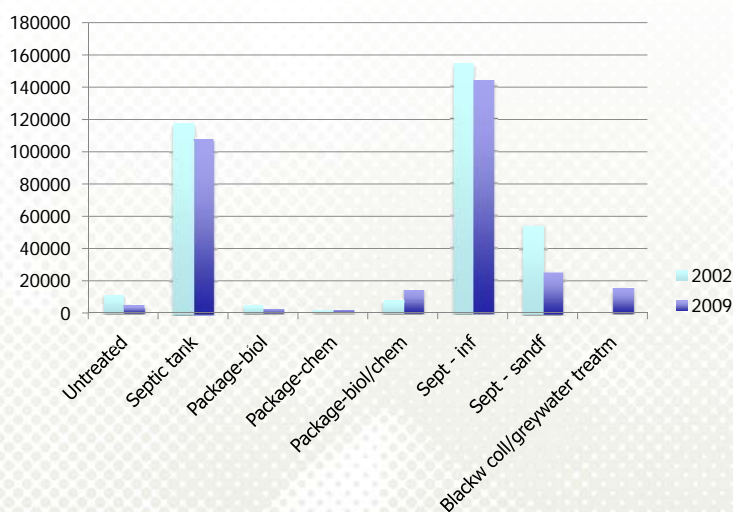


**All coll.** Collection of all wastewater to holding tank.  
**SS w/o GW:** Source separation without greywater treatment.  
**SS/GW treat:** Source separation with greywater treatment.  
**Pack:** Biological, chemical and biological/chemical package treatment plants.  
**CW:** Constructed wetlands for combined wastewater.  
**Sandf:** Sandfilter treatment with septic tank pretreatment  
**Inf:** Soil infiltration system with septic tank pretreatment

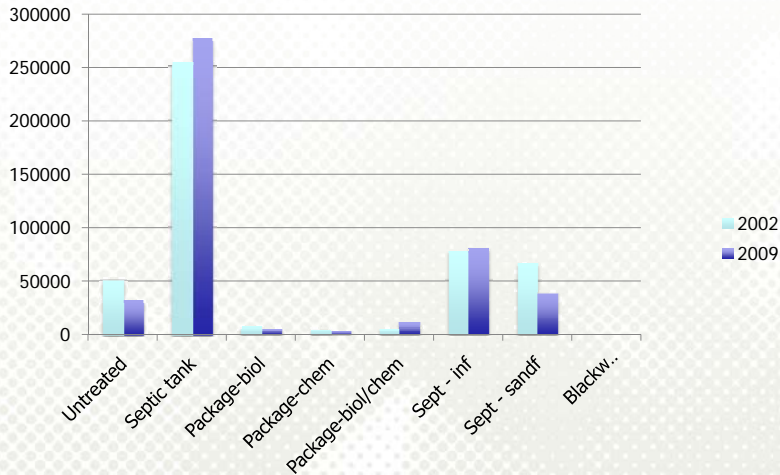
Rearranged from statistical figures in Berge et al.2007



### Discharges to the North Sea



### Discharges to other parts

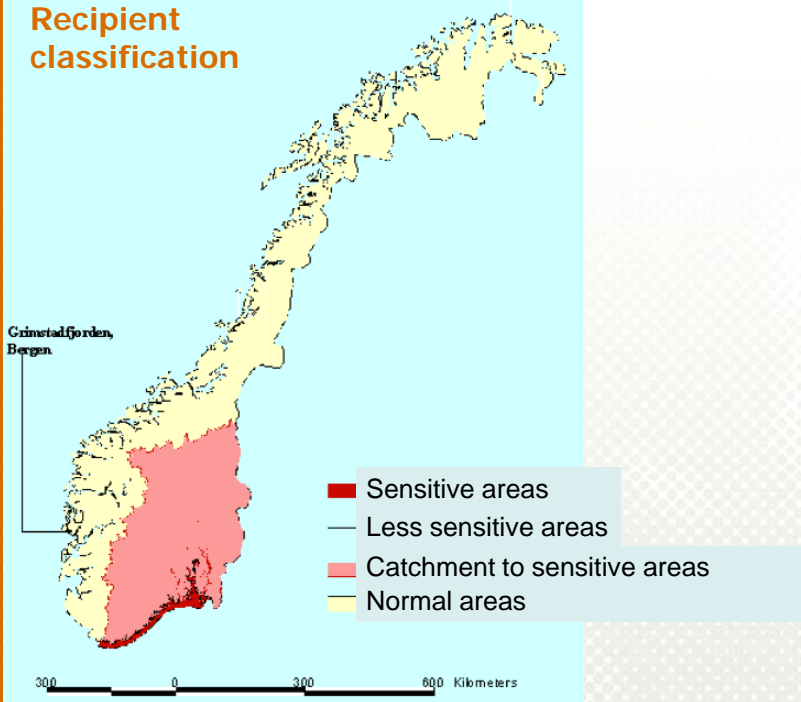


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### Recipient classification



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<b>General discharge limitations</b>	
	<b>Treatment efficiencies in Sensitive and Normal areas</b>
Res. with user interests	90 % Tot P    90 % BOD <sub>5</sub>
Res. with eutrophication risk, but without user interests	90 % Tot P    70 % BOD <sub>5</sub>
Neither user interests nor eutrophication risk	60 % Tot P    70 % BOD <sub>5</sub>
Only greywater discharge	Treatment in native soil or similar
	<b>Treatment efficiencies in Less sensitive areas</b>
	20 % SS reduction or 180 mg SS/L
Only greywater discharge	No requirement

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### Ecological/biological indicators – impact on legislation ?

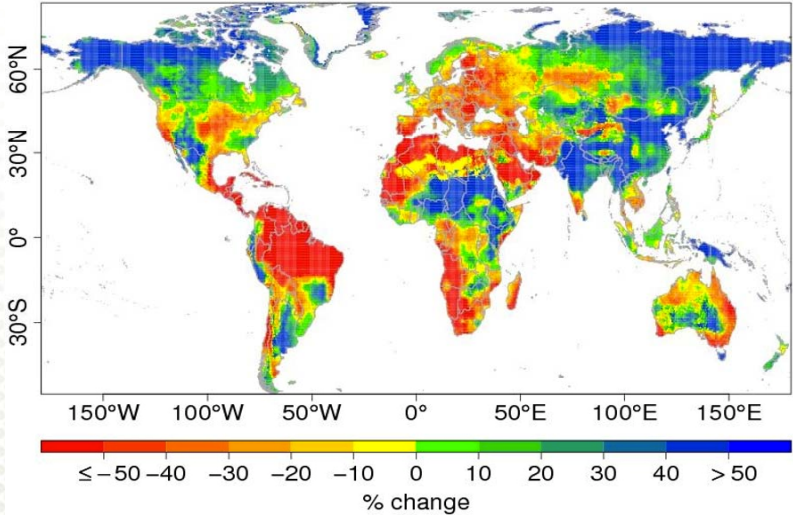
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### Changes in river flow for a 4°C temperature increase

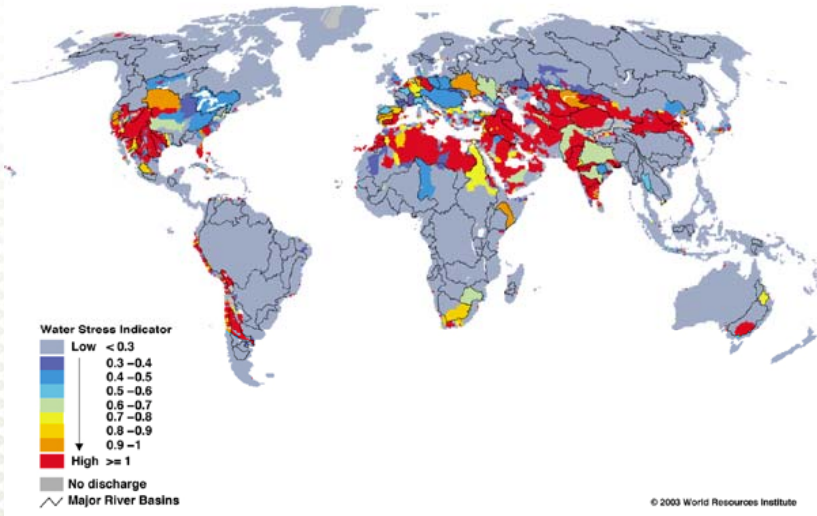


Arnell, N. W. (2006). Climate change and water resources: a global perspective. In Schellhuber, H J., Cramer, W., Nakicenovic, N., Wigley, T. and Yohe, G (Eds). *Avoiding Dangerous Climate Change*, Cambridge University Press, Cambridge 167-175.

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### Ecosystems at risk because of water scarcity

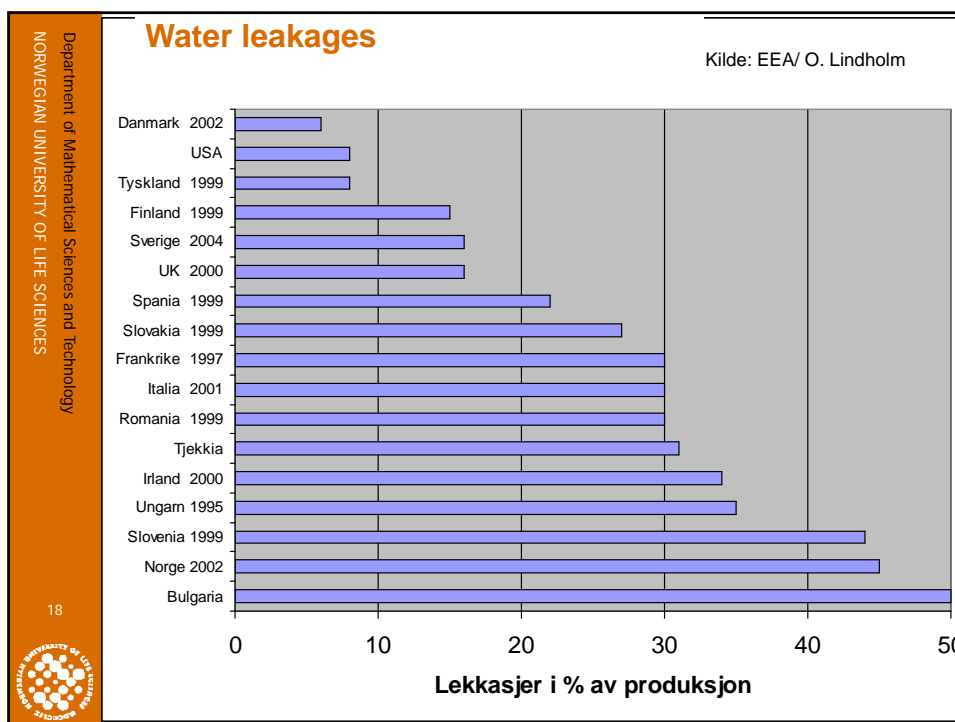
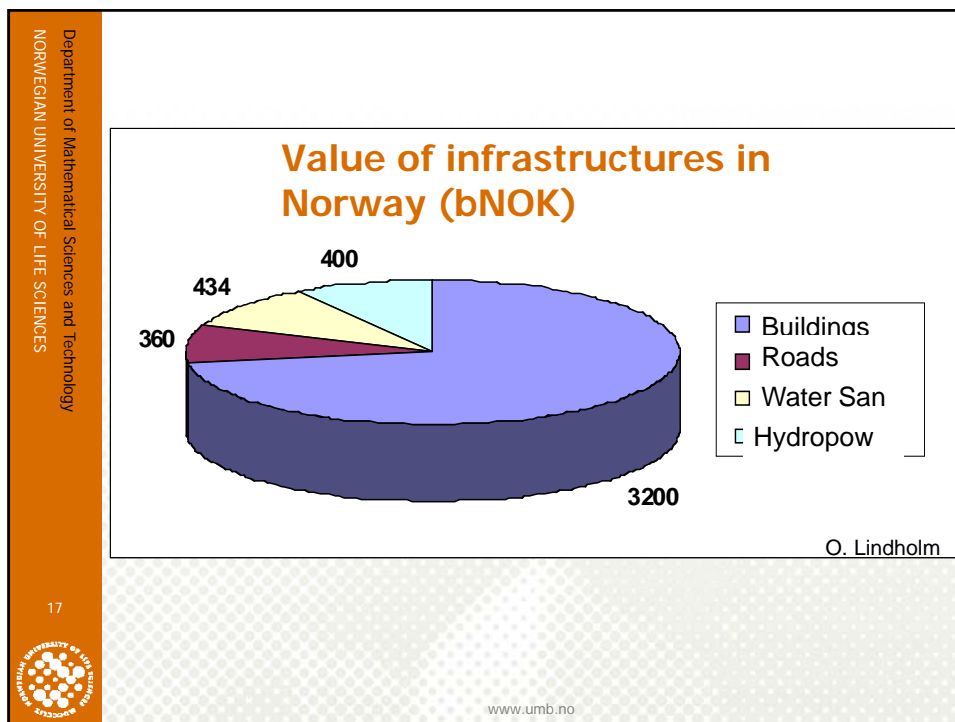


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## Conclusions

- Well developed legislation system
- The current practice, based on Norwegian legislation, stimulates centralized sewer systems.
- The trend points towards package treatment plants  
Low investment costs, easy installation.
- The engagement from national authorities have been "limited" the latest 10 years.
- Slow implementation of NS-EN 12655-3

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