

# Sustainable Urban Drainage Solutions SuDS Oslo 2019

## Highlights



Congrats with the successful event!  
Participants 141+

1 Norway	67	13 Kenya	2
2 Ukraine	13	14 Kazakhstan	2
3 Sri Lanka	9	15 Montenegro	2
4 Tajikistan	5	16 Canada	2
5 Serbia	5	17 South-Sudan	2
6 Denmark	5	18 China	2
7 Belarus	4	19 USA	1
8 Bosnia-Hercegovina	4	20 Great Britain	1
9 Uganda	3	21 Netherlands	1
10 Kosovo	3	22 Moldova	1
11 Bangladesh	2	23 Croatia	1
12 Belgium	2	24 Germany	1
		25 Portugal	1

### Global Temperature Rise



The planet's average surface temperature has risen about 1.62 degrees Fahrenheit (0.9 degrees Celsius) since the late 19th century, a change driven largely by increased carbon dioxide and other human-made emissions into the atmosphere. Most of the warming occurred in the past 35 years, with the five warmest years on record taking place since 2010. Not only was 2016 the warmest year on record, but eight of the 12 months that make up the year — from January through September.

### Sea Level Rise



Global sea level rose about 8 inches in the last century. The rate in the last two decades, however, is nearly double that of the last century and is accelerating slightly every year.

Image: Republic of Maldives: Vulnerable to sea level rise

### Extreme Events



The number of record high temperature events in the United States has been increasing, while the number of record low temperature events has been decreasing, since 1950. The U.S. has also witnessed increasing numbers of intense rainfall events.



## Holistic approaches – session highlights

### Adaptation



**Deliberate adaptation – water sensitive cities**  
Orchestrate the water – community engagement



Happy people – Sustainable infrastructure from grey to green



## Water is forgotten in our cities – future?



## Urgent needs in Sarajevo



Political support is important



## Holistic approaches – session highlights

Oslo is a **Green** capital, but also has an ambition to be a **Blue** capital with a comprehensive stormwater management strategy

- Under conditions of finite capacity of the underground systems
- It is wiser to spend investments above the ground
- Sustainable urban drainage systems have much more benefits than technical – social

 **Capacity & potential**

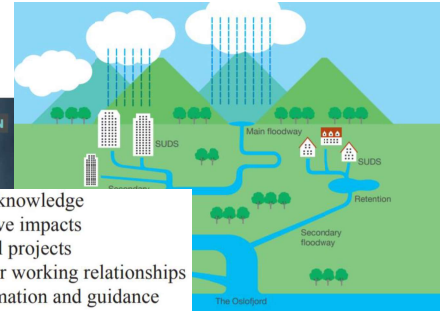


## Holistic approaches – session highlights



ACTION PLAN FOR STORMWATER MANAGEMENT IN  
The City of Oslo  
Executive summary

- Acquire more knowledge
- Prevent negative impacts
- Develop model projects
- Establish closer working relationships
- Improve information and guidance



Not only quantity, but **QUALITY** should not be left behind  
as well as thinking about **costs/investments** and **benefits/returns**

## Management of stormwater:

Raingardens – space for water and comfort



Online database of good solutions and best practices

## Management of stormwater / pollution

- Every city has potential for SuDS and historical Trondheim or metropolitan Copenhagen are good examples:
  - Green roofs
  - Permeable pavements
  - Climate modeling and simulations
  - Integrated filter systems for highways
  - [you name it]
- Climate adaptation planning & flood prediction – already existing tools to work with the challenge at the integrated level
- We add (new) pollution and multiply negative consequences of floods. Effects of some pollutants are not clear yet

## Conclusions

- Climate Change: inevitable consequences
- Adapt or be flooded
- Evolution spiral: from nature to tech and back to nature
- Hidden capacities – potential in the cities: from pavements to roofs
- Emerging challenges: micropollutants of the future
- Approach & solutions: holistic and harmonized – on the way, but still there is plenty of space for R&D

