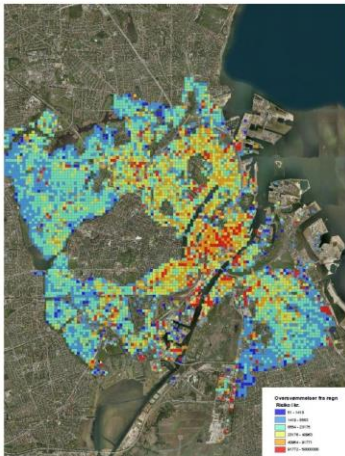
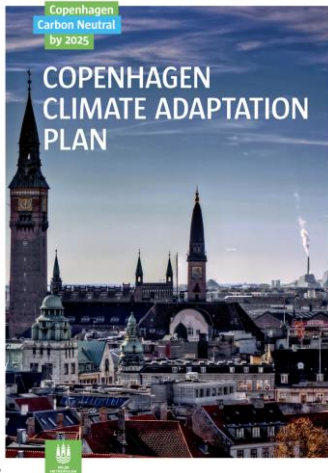




MAIN CHALLENGES

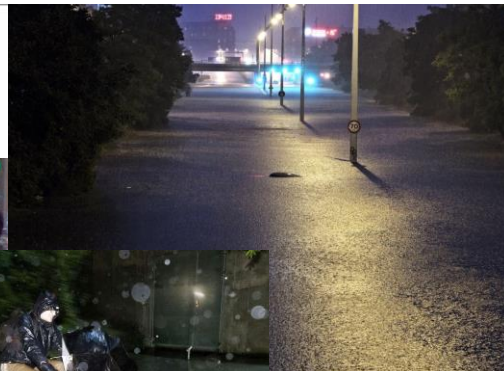


CLIMATE ADAPTATION PLAN - AND CLOUDBURST MANAGEMENT PLAN

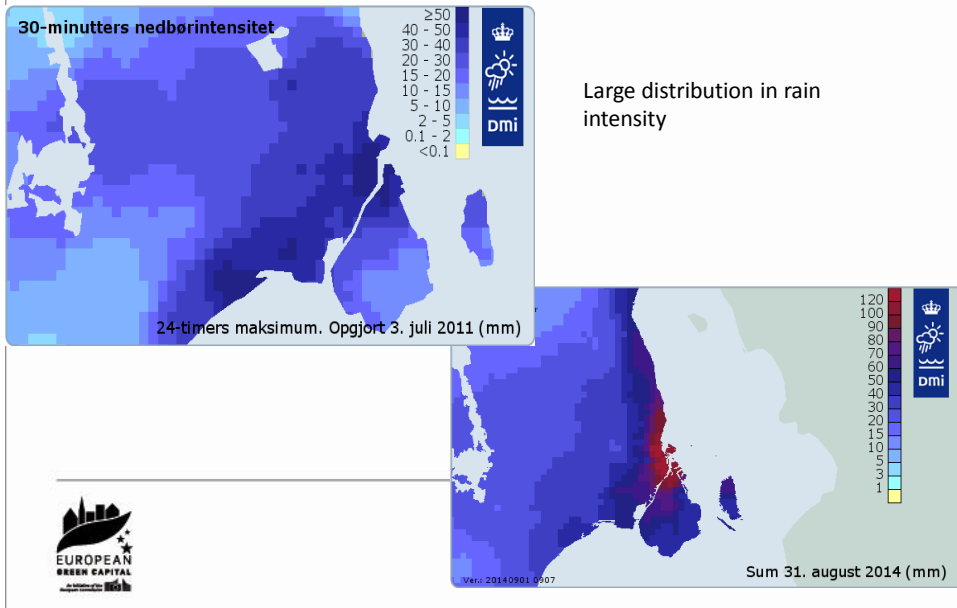


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14th of August 2010
2nd of July 2011
14th of August 2011
31st of August 2014



CLOUDBURST OVER COPENHAGEN



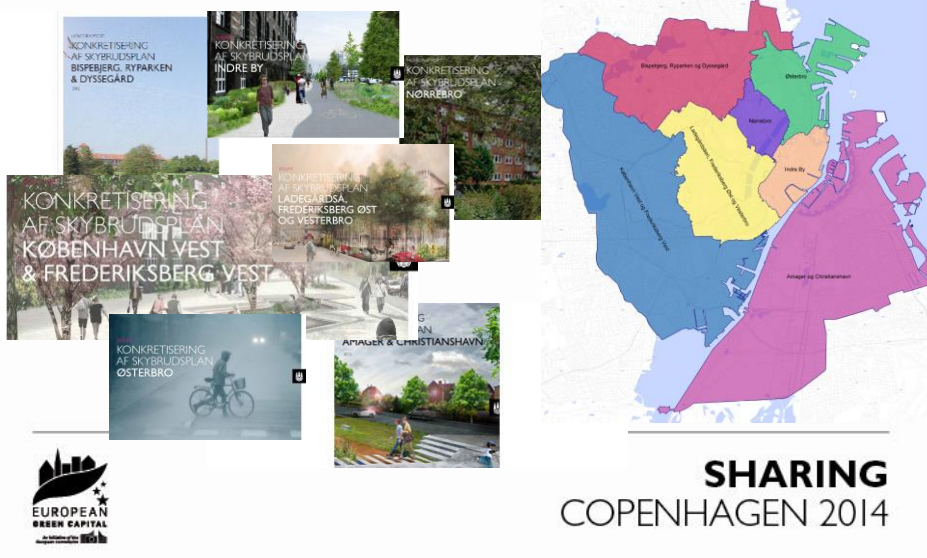
THE CITY IS VULNERABLE

- July 2011 – 150 mm of rain in two hours
- Insurance claims close to 1 bill. euros
- Damage on critical infrastructure
- Hospitals – nearly had to be evacuated
- Emergency services in trouble
- And it keeps happening – it is estimated that the total costs are now around 1,4 billion euros



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7 WATER CATCHMENT PLANS



A GREEN AND BLUE CITY- ADAPTED TO THE FUTURE CLIMATE AND WITH A HIGH QUALITY OF LIFE

- Adaptation is not just negative – it gives us possibilities
- We can create more recreative areas, new urban spaces and more quality of life for the copenhageners.
- We can increase the health of people in the city
- We can utilise the synergies with other urban development plans
- We can increase biodiversity in the city.

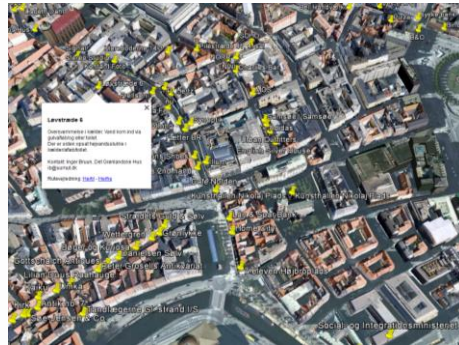


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MODELLING AND DATA

- The important partnership between the Greater Copenhagen Water Utility and the city
- Analysing data – and modelling to come up with specific solutions for each water catchment
- Moving from the big picture to the single project
- Finding room in the dense urban space for measures
- Selecting spaces for urban improvement



MORE THAN ONE SOLUTION FOR EACH CATCHMENT AREA



CONTENTS OF THE IMPLEMENTATION PLAN

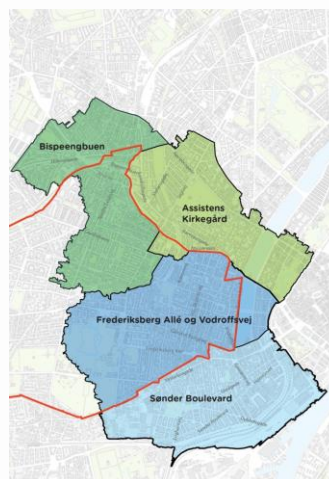
- Break down of water catchments into projects
- Investment statement
- Prioritisation of projects
- Time-schedule



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FINANCING, IMPLEMENTING COOPERATING

- The implementation of the cloudburst management plan is a close partnership with Greater Copenhagen Water Utility according to national regulations for financing climate adaptation works.
- The major part of the works is paid through the water fees, but there is a need for continuous municipal co-financing to secure progress.
- The establishment of a cooperation and coordination forum that can coordinate the work – also regarding other initiatives in the city.
- Cooperation and coordination with neighbouring municipalities



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THE PROJECTS

- Breaking down of the 7 water catchment areas into projects (only of the main structures – the backbone of the new storm water management infrastructure)
- About 300 different projects
- All have been described and collected



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THE PROJECTS

- Some will be traditional projects (underground reservoirs, pipes etc)
- Some will be surface solutions (cloudburst boulevards, parks, green roads etc). Here we want to have a number of signature projects highlighting the possibilities for improving the city through green and blue solutions



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INVESTMENT STATEMENT

- Recalculation of the construction costs
- Socio-economic figures – as part of the wider picture of the investment costs
- Synergies with other projects



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TIME SCHEDULE AND PRIORITISATION OF PROJECTS

- Where do we start?
- Water management issues – combined with other issues (synergies with other projects, urban development other political priorities)
- Time frame – how long does implementation take?
- In the meantime??



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POLITICAL PROCESS AND PUBLIC COMMUNICATION

- Implementation of the cloud burst management plan is one of the biggest political decisions in many years
- High investment costs and transformation of the city in many aspects – high political attention
- We have had a public hearing period with a lot of public meetings
- Local prioritisations to be presented for politicians – as part of the political process
- Local involvement in projects as we develop them in the city



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IMPLEMENTED PROJECTS

8 new outlets to the harbour, 4 cloudburst gates in old main sewer outlets

Investments : Eur 10 mill.

New outlets tested during extreme high water event 6. Dec. 2013. No sea water entered through new holes in sea wall

- During extreme rain event 31 Aug 2014 (120 year event) no flooding near the 8 new outlets and the 4 gates opened automatically, reducing local flooding.



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SIMPLE MEASURES LOCALLY

- Non return valves in basements
- Flood protection of cellars
- Raised car park ramps



THANKS FOR YOUR ATTENTION

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