

ClimateCafé: transdisciplinary and international knowledge exchange on climate change adaptation for groundwater recharge

F.C. Boogaard^{1,2}, * R.Stuurman³, J.Koning¹, R.Brolsma³

¹NoorderRuimte, Centre of Applied Research on Area Development, Zernikeplein 7, P.O. Box 3037, 9701 DA Groningen, Netherlands
²Daltonlaan 600 3584 BK Utrecht Postbus 85467 3508 AL Utrecht

³Deltares, Daltonlaan 600, 3584 BK Utrecht Postbus, P.O. Box 85467 Utrecht, The Netherlands

*Corresponding author email: Floris@noorderruimte.nl

ClimateCafé is a multi-, trans-, interdisciplinary and international event of several days in which young professionals, stakeholders and scientist come together to collect data and design (potential) solutions for climate change adaptation in rural or urban areas (Boogaard et al., 2020; Restemeyer & Boogaard, 2021). Over 50 global ClimateCafés are held around the world mainly aiming to enhance resilience and reduce vulnerability of urban or rural communities by sharing knowledge, raising awareness and building capacity. ClimateCafé addresses most SDGs including a workpackage on groundwater recharge by the means of nature-based solutions (NBS). In this workpackage the systems as bio swales and raingardens are subject to both hydraulic and environmental tests. Public and private partners want to know the efficiency of NBS regarding infiltration capacity and preservation of groundwater quality related mitigation of extreme events (flooding, erosion, drought, heatstress). XRF is used to measure heavy metals in the topsoil of NBS and tank trucks are used to simulate high intensive rainfall events at locations implemented 10 -30 years ago. Over 100 green infrastructure locations are measured all over the Netherlands and Sweden and their efficiency is recorded in the open source database climatescan.org. Lessons learnt: most of the long term efficiency of NBS shows that heavy metals are trapped in the topsoil of bio swales and will therefor not effect the groundwater quality. Hydraulic performance of most swales is able to empty the storage volume within 1 or 2 days and therefor have a positive effect on groundwater recharge. Some medium size cities have over 300 NBS structures implemented and with tools as AST calculations are made to estimate the contribution to the mitigation of extreme events flooding and drought. The innovative participative method ClimateCafé with the help of tools ClimateScan and AST should help stormwater managers with testing, modelling, planning and scheduling of maintenance requirements for nature-based solutions with more confidence so that they will continue to perform satisfactorily over their intended design lifespan. Additionally, data is processed and design workshops facilitate integrated design of potential solutions which is disseminated through participants presenting their findings at conferences.

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