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RiverCare Newsletter

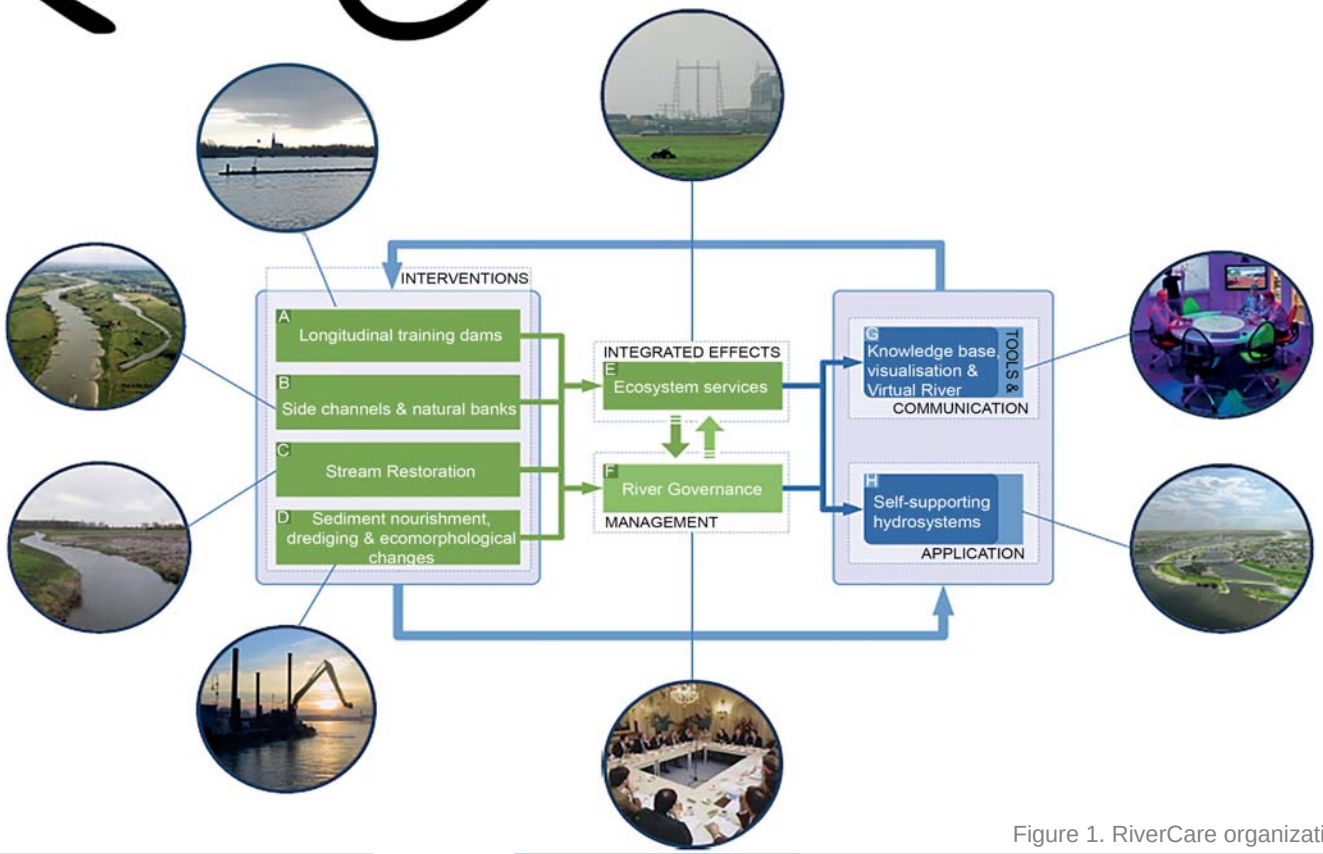

Figure 1. RiverCare organization.

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Preface

This newsletter is a publication of the River Care programme that you will receive twice per year. Every issue is prepared by the researchers involved to give an overview of our activities and to keep you informed about interesting progress or relevant results.

We hope that you enjoy our newsletters and collaborate and contribute to future editions!

Why RiverCare?

There is a growing awareness that dynamic natural river processes, such as erosion and sedimentation, should be better utilized to fulfill multifunctional objectives (e.g. safety, navigation, hydropower and water supply).

It is essential to improve the understanding of the overall effects of riverine measures that are being implemented and to manage those regulated rivers more sustainably.

Therefore, fundamental research, river engineering applications and state of the art visualization tools are combined in the RiverCare programme.

RiverCare is a research programme funded by STW (Dutch Science and Technology Foundation), running between 2014 and 2019.

The programme consists of 8 projects that can be classified into five different groups (**Fig 1**):

- Interventions (project A through D),
- Integrated Effects (project E),
- Management (project F),
- Communication (project G) and
- Application (project H)

RiverCare results will be made available via open access through a knowledge web-based platform (Wiki) and a virtual game to support collaborative decision-making.

An overview of each project is available on the website of the Netherlands Center of River Studies (NCR).

Fist RiverCare Day

JAN 30/2015, Enschede

The first RiverCare Day was held in January at the University of Twente. Suzanne Hulscher, coordinator of the project, opened the meeting with a general introduction of the different project components and the 20 researchers who will be involved in RiverCare (**Fig 2**).

RiverCare researchers are based at five different universities (Delft, Twente, Nijmegen, Utrecht and Wageningen), but will be collaborating with various research institutes, companies and governmental bodies in the Netherlands.

Figure 2. RiverCare researchers and supervisors.

The meeting continued with a visit to the Virtual Lab at the department of Industrial Design organized by Robert-Jan den Haan (Project G1: Virtual River/Serious game). All researchers were introduced to the process of designing a virtual game, which will be one of the main outputs of the programme.

> "We look forward to developing better practices that reduce maintenance costs and to increase benefits of river interventions"

SCIENTIFIC MARKET

APR 22/2015, RiverCare Excursion

By Menno Straatsma

Rivers naturally connect the upstream with the downstream, and the main channel with the floodplain. In contrast, researchers studying rivers do not automatically have this ability: it is often more natural to focus on a single aspect, to dive deep into that subject, and prioritize deepening the knowledge over connecting with the whole.

To find out how RiverCare can be more than the sum of its parts, and to let cutting edge knowledge flow, the RiverCare researchers organized a 'scientific market'.

On this market they were both buyers and sellers of ideas, data, methods, and more, to determine:

a) what links exist between the various studies,

b) dependencies between projects, and

c) how cooperation may foster new ideas and creative output.

The scientific ware was presented on a poster that showed the core idea of the subproject, and possible links with other projects. In two rounds, the posters were discussed on an individual basis.

The outcome of the discussions were put on post-its and subsequently compiled in an integration matrix (**Fig 3**) that showed all links between the various projects. In the plenary discussion, the costs and benefits of interaction were discussed.

> *"The market was a good start, now researchers will need to follow up to make it happen."*

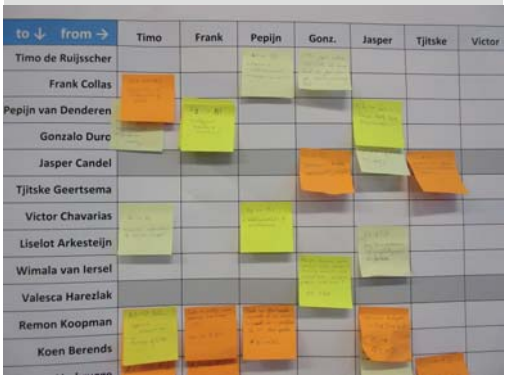

Figure 3. Cards from the 'scientific market'.

Table 1. Benefits and costs of the interaction within RiverCare.

Benefits	Costs
• Connect better, increased framework • Increased data availability • Interdisciplinarity increases and widens ones knowledge • Consistency of concepts and methods • Insights and discussion • Fun • Publish together, H-index increase • Upscaling fundamental research to significant decisions • Build a network, e.g. within NCR (Netherlands Center of River Studies)	• TIME • Distance • Timing alignment • Dependence on others • Partnership fatigue • Integration complexity • Computational complexity in integration tools/models/games • Translating output into useful input • Upscaling needs alignment/translation of ideas

Links with other projects

Examples of projects in the Netherlands that apply innovative river measures are ‘Room for the River’ (Rhine), the ‘Maaswerken’ (Meuse) and, the Delta programme.

These projects provide a unique opportunity for RiverCare to analyse the overall effect of riverine measures in pilot cases such as the **longitudinal training dam pilot** (**Location 2a in Fig 4**).

RiverCare researchers Timo de Ruijscher and Frank Collas (project A) are aiming to develop guidelines to improve the design and management of these dams from a hydrological, morphological and ecological perspective. Laura Verbrugge (researcher in Project F) will start a citizen science project in which recreational anglers will be actively involved in the ecological monitoring program to measure the effects of the dams on fish occurrence and diversity.

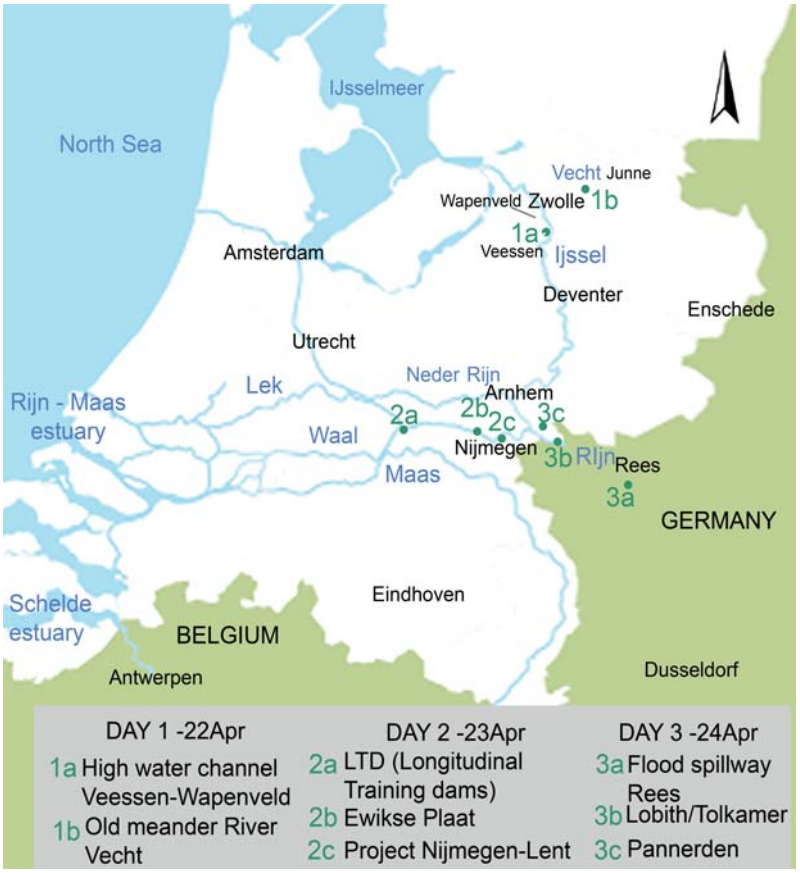

Figure 4. Sites visited during the RiverCare excursion (adapted from **Room for the river, 2015**).

RiverCare Excursion

To connect the RiverCare researchers further and to enhance the team spirit, a three-day field trip was organized. The field trip took place between April 22-24/ 2015. RiverCare researchers, supervisors and several partners visited examples of innovative riverine measures that are being implemented in the Netherlands and Germany.

By Valesca Harezlak, Frank Collas and Jan Fliervoet

DAY 1

We visited the **Veessen-Wapenveld high-water channel** in the province of Gelderland, the Netherlands (**Location1a in Fig 4**). Jos Melenhorst, of the municipality of Heerde, guided the visit to the high-water channel (**Fig 5 top**).

The Veessen-wapenveld channel is one of the most expensive measures within the Room for the River programme and will be completed by 2016. It will be formed by building two dikes of around 8 kilometers long between the villages of Veessen and Wapenveld.

In case of extreme discharges, the channel has two functions—as storage and as a bypass— and its operation will lower the level on the river Ijssel river by 71 centimeters.

Figure 5. Veessen-Wapenveld (top) and old side of the channel in river Vecht (bottom).

Later on, Pieter Jelle Damsté and his colleagues of the regional water authority of Vechtstromen showed us an **old meander near the town of Junne** (**Location1b in Fig 4**). Recently, this old meander was reconnected to the river Vecht to provide more room for the river and to improve conditions for nature restoration (**Fig 5 bottom**).

To reconnect the old meander, bank fixation in the river Vecht was removed at the connection point. To make sure that during normal flow, not too much water is diverted into the new side channel, a dam was constructed that blocks off the main channel during normal flow conditions. During peak flows and high water conditions the dam is flooded and water can also flow through the former channel.

DAY 2

Under guidance of Henk Eerden (Rijkswaterstaat) we visited the **longitudinal training dams (LTD)** that are being built in the river Waal in the vicinity of Tiel **(Location 2a in Fig 4)**. These dams divide the river into a main channel and a littoral channel allowing a regulation of water flow, sediment and ship-induced effects on biota (**Fig 6)**.

During the visit several speakers that are working on the LTD pilot, including RiverCare researchers, gave a presentation about the objectives and the expected research methodology.

The next stop was at the **Ewijkse plaat** where Gertjan Geerling (Deltares/University of Nijmegen) and Bart Peters (Bureau Drift) guided us through the floodplain rejuvenation project **(Location 2b in Fig 4)**.

Figure 6. Longitudinal trainind dams (LTD pilot).

The last stop was at **Nijmegen-Lent (Location 2c in Fig 4)**. Here the river Waal has a sharp bend that forms a bottleneck. In order to remove this bottleneck the dike has been moved 350 meters inland and a side channel was dug. Wierdy de Haan from the project coordination guided us on our visit.

Figure 7. The WSV invited us on their ship to the Flood Spillway and showed the challenges of constructing a flood spillway in this narrow point of the river (left). Group picture in front of the engineering's works at Pannerden (right).

DAY 3

We traveled to the city of Rees in Germany (**Location 3a in Fig 4**) to visit the just completed **flood spillway** (**Fig 7 left**) guided by the project managers of WSV (Wasser- und Schifffahrtsverwaltung des Bundes).

The project intended to control the soil erosion rate of 2 centimeters/year that affected the conditions for shipping and the groundwater levels in the surroundings.

The excursion continued to the border town Tolkamer in the Netherlands. Astrid Blom (Delft University of Technology), presented the large-scale nourishment field experiment in the Rhine (**Location 3b in Fig 4**). This experiment will be implemented by the State Water Agency (Rijkswaterstaat) in 2016 to stop the ongoing bed degradation in the River Rhine.

Koen Wouters (Rijkswaterstaat), explained the ins and outs of the regulation works near **Pannerden** (**Location 3c in Fig 4**). This engineering work should regulate the distribution of water during high water levels to the River Waal and 'Pannerdensch kanaal'. The field trip finished with the nice group picture on **Fig 7 right**.

Progress update

NETWORKING

For each sub-project, researchers have been appointed. Several group activities have been initiated to improve collaboration.

LAST PUBLICATIONS

- Schielen et al. (2015), RiverCare: An integrated research on self-sustaining multifunctional rivers**.** E-proceedings of the 36th IAHR World Congress.

- Straatsma, M.W., Kleinhans, M.G., Middelkoop, H. (2015) Optimizing river management: Integrated assessment om floodplain interventions. REFORM conference.

- Verbrugge, L. and van den Born, R. (2015), Why social science matters in river management: involvement of local stakeholders in monitoring the effects of room for the river measures in the Netherlands. Vol. 17, EGU2015.

COMING EVENTS

28 June – July 3 2015: Den Haag, The Netherlands:
IAHR World Congress | Deltas of the Future

30 June to 2 July 2015, Wageningen, The Netherlands:
REFORM's International Conference on River and Stream Restoration

October 1-2, Nijmegen, The Netherlands:
NCR Day 2015

NCR WEBSITE

The **NCR website** will be used to communicate about all RiverCare activities. Additionally, products of the RiverCare programme will be made available on this website.

NEXT ISSUE (DEC/2015):

Please fill in the survey to give us your feedback about this issue. In case you want to suggest a contribution for the next issue, please contact the Editorial board at: **v.j.cortesarevalo@utwente.nl**