

Integral development and new combinations of functions at stone factory terrains in floodplains

Sara Eeman^{a*}, Jeroen Rijke^{a,b}, Jacomien den Boer^b

^aVan Hall Larenstein University of Applied Sciences, Larensteinselaan 26a, Velp

^bHAN University of Applied Sciences, Ruitenberglaan 26, Arnhem

Introduction

In the floodplains of the Rhine branches in the Netherlands, many so called 'flood free' areas can be found (fig. 4). These areas remain dry during extreme river discharges. In the province of Gelderland alone, over 80 of such areas exist (Fig. 1&3). The province of Gelderland and Rijkswaterstaat have formally agreed to investigate the possibilities to redevelop these (mainly) former stone brick factory terrains (BO-MIRT 2015). In this project, multiple stakeholders combine their views on the redevelopment of these areas: flood safety (Rijkswaterstaat), economic development (KNB, for the ceramic industry), nature and maintenance (Staatsbosbeheer, owner of several areas), cultural heritage (RCE, government institution for cultural heritage) and three educational institutes (VHL/HAN Universities of Applied Sciences, MBO Helicon Velp).



Figure 1. Stone brick factory terrains in the province of Gelderland.

Goals

This project will provide policy makers, land owners and water managers with an adaptive development strategy for the flood free areas in floodplains in the Province of Gelderland. An integral approach is used to combine flood safety, natural values, economic perspectives and cultural heritage, which will result in a widely supported development strategy. The research question formulated for this goal is:

How can stakeholders in the riverine area of Gelderland be enabled to make considered choices for the development of flood free areas, aiming at long term integral solutions for both the local and regional perspective?

Methods

The ADCD-method, developed by The Natural Step (2011) will be employed to arrive at the intended results (fig. 2). To secure the scientific character of the project step E(valuation) was added.

- Visioning: stakeholders determine common goals and guiding principles for redevelopment;
- Baseline: gathering data on the current status of the areas and identify the gaps with the vision developed under A;
- Creative solutions: joint identification of possible development pathways;
- Decide on priorities: jointly decide on the most feasible pathways;
- Evaluation: joint evaluation of the approach followed, as well as the suitability of these tools for educational purposes.

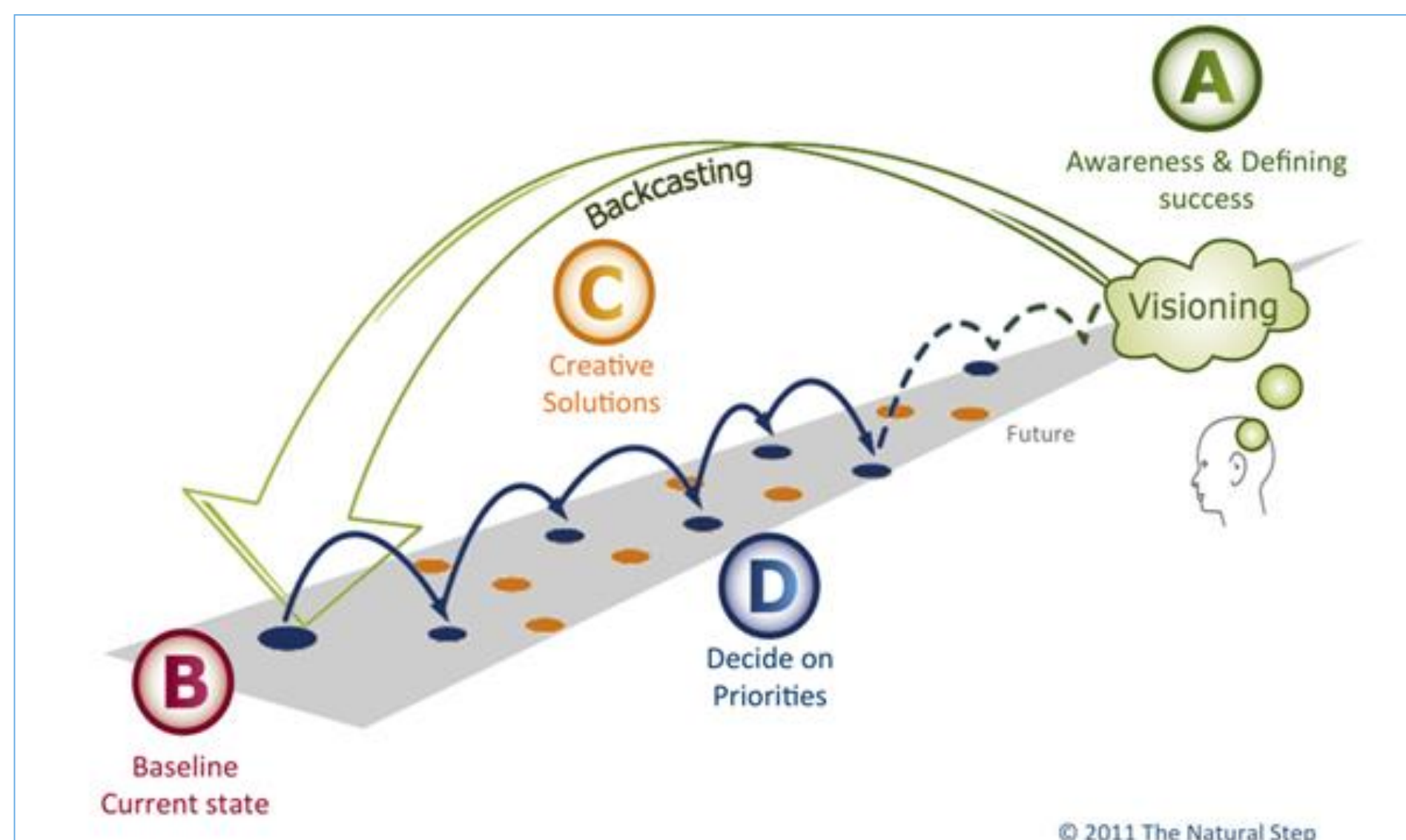


Figure 2. Visualisation of the ABCD-method adopted for this research.



Figure 3. Former stone brick factories in the province of Gelderland. From T. Langwerden, 2016.

Deliverables

- An **adaptive strategy** for a coherent redevelopment of 'flood-free' areas;
- Connection** between national and regional issues and local developments (i.e. flood safety and spatial quality);
- An **extensive database** with information on flood free areas in the Province of Gelderland;
- Decision tools** for stakeholders;
- Business cases** for redevelopment;
- Curricula improvement** on integral riverine development for VHL/HAN and Helicon programs through involvement of lecturers/researchers in the project.

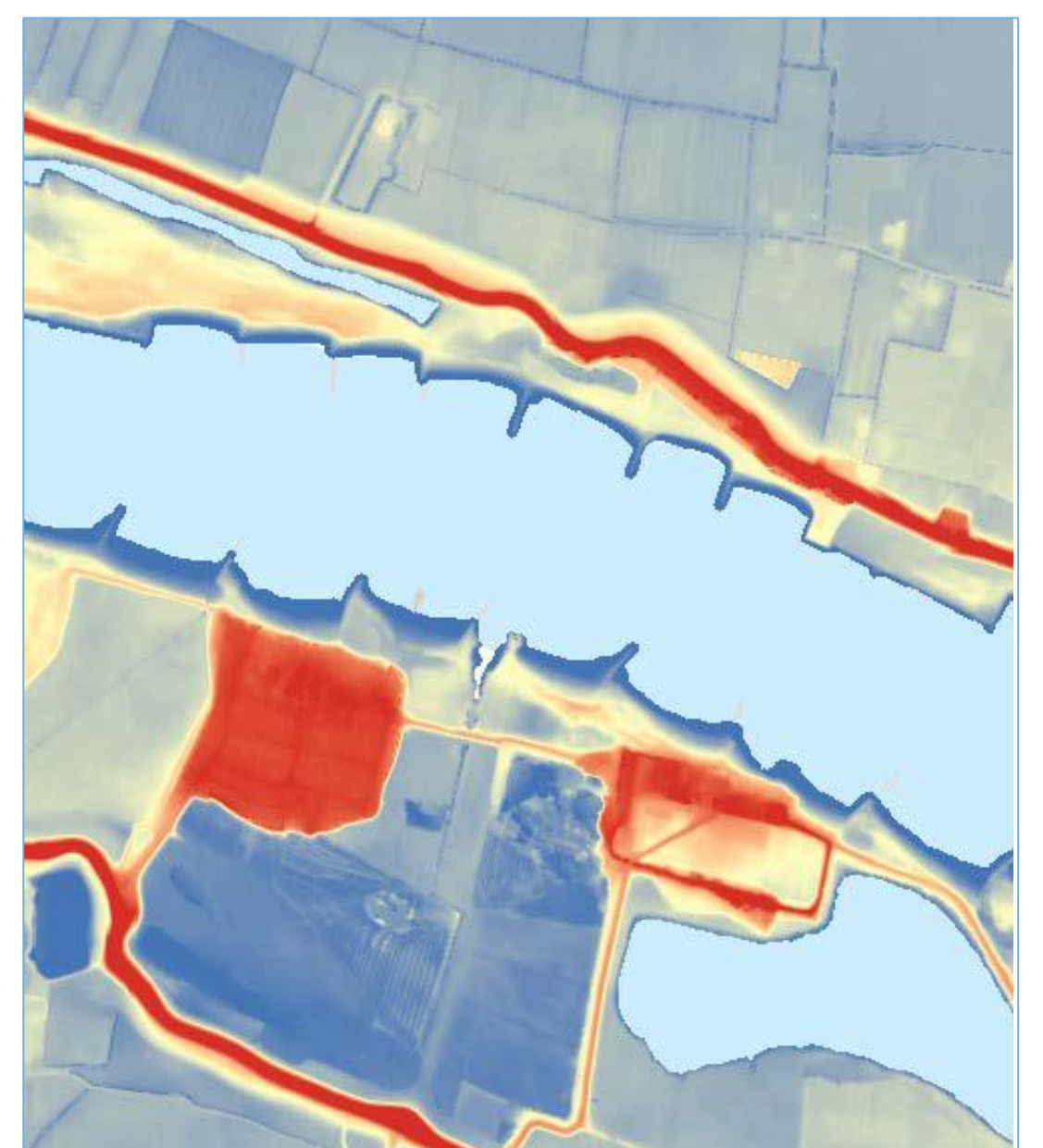


Figure 4. Contour map of former stone brick factories (red) in the Waal floodplains near Beuningen, Gld. From T. Langwerden, 2016.

*Corresponding author

Email address: sara.eeman@hvhl.nl (Sara Eeman)

References

- Deltaprogramma Rijn (2017). <https://www.deltacommissaris.nl/deltaprogramma/gebieden-en-generieke-themas/rivier-rijn>, Last accessed Oct. 2017.
- The Natural Step (2011) www.thenaturalstep.org/our-approach/, Last accessed Mar. 2017.
- Langwerden T. (2016). Een baksteentje bijdragen. *Een onderzoek naar het herbestemmen van (voormalige) steenfabrieksterreinen aan de Gelderse rivieren*. Student graduation report, Van Hall Larenstein University of Applied Sciences, Velp