



Achieving Spatial Quality in Integrated Planning

Tim Busscher
Stefan Verweij

Jelte van den Broek
Margo van den Brink



t.busscher@rug.nl



s.verweij@rug.nl



@Stefan_Verweij



@FRW_RUG

Room for the River

- › An Evaluation of the Dutch 'Room for the River' Program Using **Qualitative Comparative Analysis**



Room for the River: Background

How we are making room for the river



Deepening summer bed

The river bed is deepened by excavating the surface layer of the river bed. The deepened river bed provides more room for the river.



Water storage

The Volkerak-Zoommeer lake provides for temporary water storage when exceptional conditions result in the combination of a closed storm surge barrier and high river discharges to the sea.



Dyke relocation

Relocating a dyke land inwards increases the width of the floodplains and provides more room for the river.



Strengthening dykes

Dykes are strengthened in areas in which creating more room for the river is not an option.



High-water channel

A high-water channel is a dyked area that branches off from the main river to discharge some of the water via a separate route.



Lowering of floodplains

Lowering (excavating) an area of the floodplain increases the room for the river during high water levels.



Lowering groynes

Groynes stabilise the location of the river and ensure that the river remains at the correct depth. However, at high water levels groynes can form an obstruction to the flow of water in the river. Lowering groynes increases the flow rate of the water in the river.



Depoldering

The dyke on the river side of a polder is relocated land inwards and water can flow into the polder at high water levels.



Removing obstacles

Removing or modifying obstacles in the river bed where possible, or modifying them, increases the flow rate of the water in the river.

Research Aims

- › Assessing **the extent to which** the Room for the River program has been able to **achieve the spatial quality** objective
- › Identifying the **context conditions and instruments that are effective** in achieving spatial quality
- › Research commissioned by **Rijkswaterstaat** (Ministry of Infrastructure and the Environment)



Data and Method

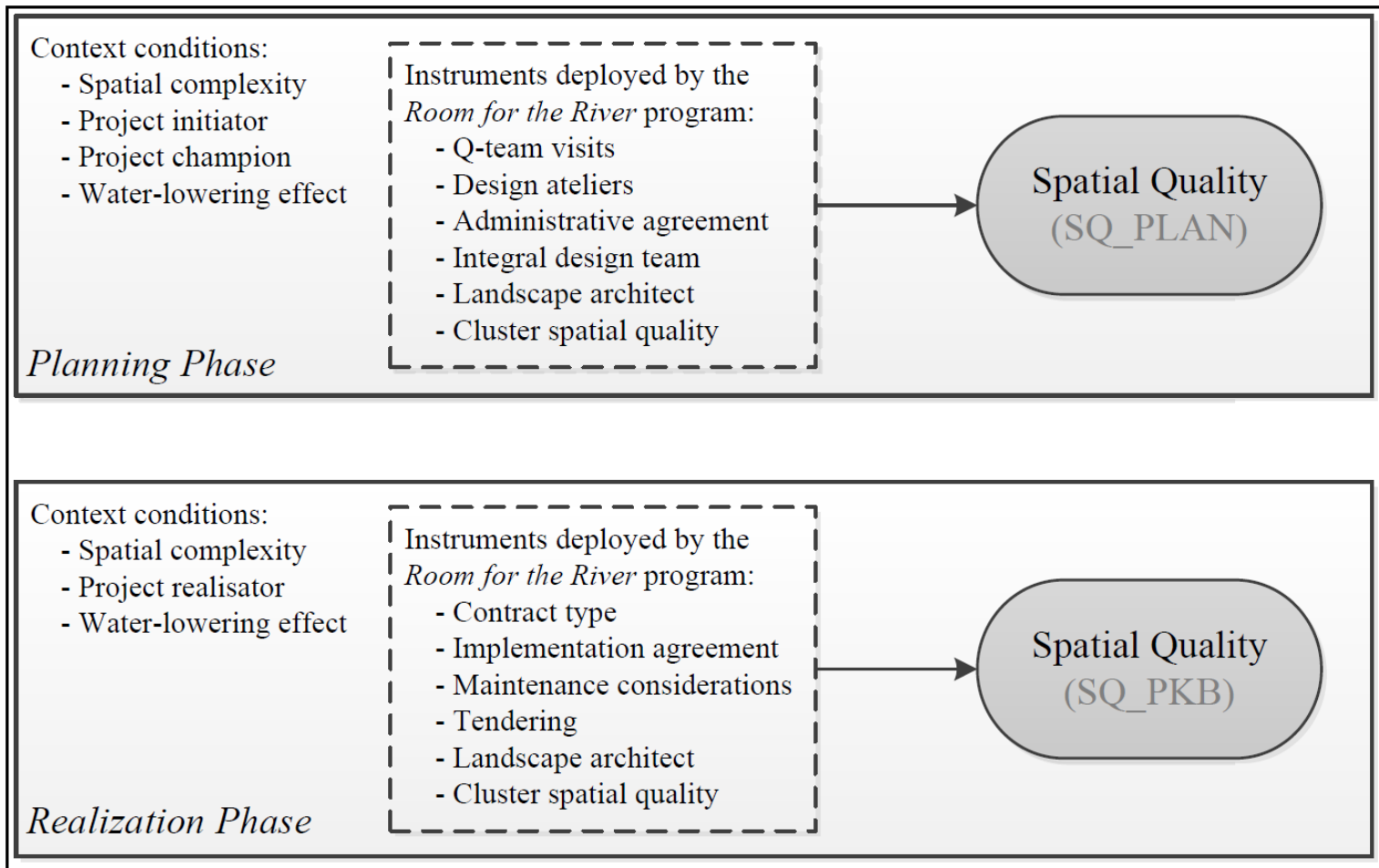
- > Data:
 - **Archives** of the Room for the River program management
 - **Small survey** amongst project managers

- > **Cases: 20 projects** in the Room for the River program

- > Method: **Qualitative Comparative Analysis (QCA)**

The Room for the River Program

> Analyzing program theory of Room for the River with QCA



QCA in a Nutshell (2/3)

- > In the **calibrated data matrix**, each row is a case
- > In the **truth table**, each row is now a **logically possible configuration** of conditions and each case is assigned to the configuration it belongs to

Data Matrix

CaseID	A	B	C	Y
1	1	0	0	0
2	1	0	0	0
3	1	1	0	1
4	0	1	0	1
5	0	0	0	1
6	1	0	1	0
7	0	0	1	0
8	1	0	1	0
9	1	0	1	0

Truth Table

A	B	C	Y	Number
0	0	0	1	1
0	0	1	0	1
0	1	0	1	1
0	1	1	?	0
1	0	0	0	2
1	0	1	0	3
1	1	0	1	1
1	1	1	?	0

QCA in a Nutshell (3/3)

#

- > Truth table minimization: pairwise comparison of truth table rows that have the same outcome and differ in but one condition

CaseID	A	B	C	Y
1	1	0	0	0
2	1	0	0	0
3	1	1	0	1
4	0	1	0	1
5	0	0	0	1
6	1	0	1	0
7	0	0	1	0
8	1	0	1	0
9	1	0	1	0

A	B	C	Y	Number
0	0	0	1	1
0	0	1	0	1
0	1	0	1	1
0	1	1	?	0
1	0	0	0	2
1	0	1	0	3
1	1	0	1	1
1	1	1	?	0

$$A\{1\} * B\{0\} \rightarrow Y\{0\}$$

Results (1/2)

- › Effective configurations of **instruments in planning phase**

	Path 1	Path 2	Path 3
PLAN_QT	○	○	
PLAN_DES	○	●	●
PLAN_AGR	○	●	●
PLAN_LAND	○	●	●
PLAN_CLUS	●	●	●
Raw coverage	0.125	0.300	0.212
Unique coverage	0.125	0.175	0.087
Consistency	0.769	1.000	1.000
Cases	Case 23	Case 06, Case 17; Case 04	Case 04; Case 16
Solution coverage: 0.512 Solution consistency: 0.932			

- › Path 1: *Program-as-guardian strategy*
- › Path 2: *Project-as-driver strategy*
- › Path 3: *Going-all-in strategy*

Results (2/2)

> Effective configurations of instruments in realization phase

	Path 1	Path 2	Path 3	Path 4	Path 5	Path 6	Path 7	Path 8 (M1)	Path 9 (M2)
REAL_CON	○	○	●	●	○	○	●	●	●
REAL_TEN	○	○	●	●	○	○	○	●	●
REAL_MAIN	●	●	○	●	○	●	○	●	○
REAL_LAND		○	○	●	○	○	●	●	○
REAL_CLUS	○				○	○	○	●	●
Raw coverage	0.118	0.118	0.241	0.082	0.182	0.171	0.082	0.082	0.241
Unique coverage (M1)	0.041	0.041	0.241	0.041	0.106	0.094	0.082	0.041	0.041
Unique coverage (M2)	0.041	0.041	0.041	0.082	0.106	0.094	0.082	0.082	
Consistency	1.000	1.000	0.872	1.000	0.939	0.967	1.000	1.000	0.872
Cases	Case_16; Case_08	Case_16; Case_04	Case_13; Case_09, Case_10, Case_11, Case_12	Case_01; Case_19	Case_21, Case_23; Case_16	Case_16; Case_07, Case_20	Case_14, Case_15	Case_06; Case_19	Case_09, Case_10, Case_11, Case_12; Case_06
Solution coverage Model 1: 0.806 Solution consistency Model 1: 0.938									
Solution coverage Model 2: 0.806 Solution consistency Model 1: 0.938									

- > Paths 4,8: *Going-all-in strategy*
- > Path 5: *Laissez-Faire strategy*
- > Paths 1,2,6: *Maintenance strategy*
- > Paths 3,7,9: *Contract strategy*

In Conclusion

- > The Room for the River:
 - Frontrunner in area oriented planning and integrated water management

- > Spatial quality was achieved in project plans (planning phase) in 11/23 projects (48%)
 - Three strategies (combinations of instruments) were effective

- > Spatial quality had improved compared to baseline (realization phase) in 20/23 projects (87%)
 - Four strategies were effective

- > QCA
 - Novel method, recently introduced in research on Spatial Planning (Verweij et al., 2013) and Water Management (e.g., Huntjens et al., 2011)
 - Well-suited to systematically and comparatively analyze a medium-n of cases in order to identify conditions that explain a certain outcome of interest

Referenced Sources

- › Huntjens, Pahl-Wostl, Rihoux, ... Nabide Kiti (2011). Adaptive water management and policy learning in a changing climate: A formal comparative analysis of eight water management regimes in Europe, Africa and Asia. *Environmental Policy and Governance*, 21(3), 145–163.
- › Ruimte voor de Rivier (2016a). *Ruimte voor de rivier: Samen werken aan een veiliger en mooi rivierengebied.* Ruimte voor de Rivier.
- › Ruimte voor de Rivier (2016b). *Dutch water programme Room for the River.* Ruimte voor de Rivier.
- › Verweij, Klijn, Edelenbos & Van Buuren (2013). What makes governance networks work? A fuzzy set qualitative comparative analysis of 14 Dutch spatial planning projects. *Public Administration*, 91(4), 1035–1055.
- › Website: <http://www.ruimtevoordewaal.nl>