

Rain and the City: Mainstreaming rainwater harvesting in Berlin

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Urban rainwater harvesting from niche to mainstream:
challenges and opportunities for planning

Structure

1. Urban rainwater harvesting (URWH): from niche to mainstream?
2. Research methods
3. Institutional incentives for URWH in Berlin
4. Berlin's project landscape of URWH

1. Rainwater harvesting: from niche to mainstream?

Rainwater harvesting (cf. SUDS etc.): part of standard repertoire of sustainable city

- E.g. green roofs, infiltration trenches, permeable pavements, artificial wetlands
- Retaining, collecting, percolating & using rainwater locally >>> multiple benefits
- Successful pilot projects across globe

BUT: Leap from niche to mainstream largely elusive

- How far are RWH techniques and practices being upscaled or replicated at urban level?

Berlin: early pioneer of RWH with continuous and varied experience since late 1980s

- What has / has not changed to sociotechnical configuration of urban rainwater management there over last 30 years?

2. Research methods

UrbanRain: Formas-funded project (2014-2017) with case studies in Stockholm, Barcelona and Berlin

Research design for Berlin case:

- Policy analysis of 100+ instruments (policies, plans, programmes) supporting URWH in Berlin, 1985-2015 (document analysis, city-level interviews)
- Online research of URWH projects in Berlin, 1985-present >>> database of ca. 250 projects
- Case studies of three emblematic URWH projects in Berlin: public, commercial, grassroots (ca. 20 interviews, questionnaires)



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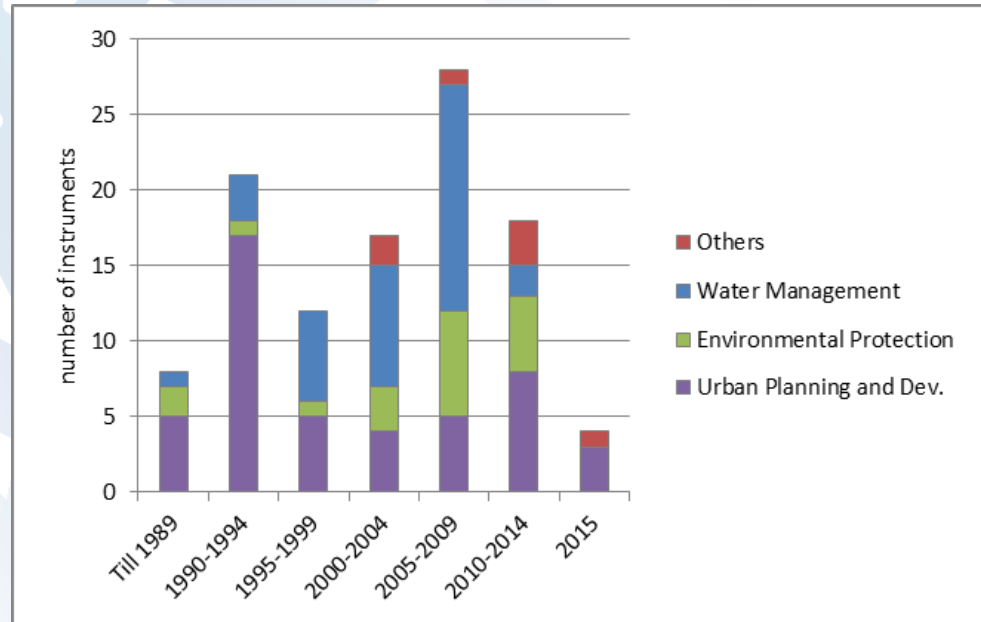
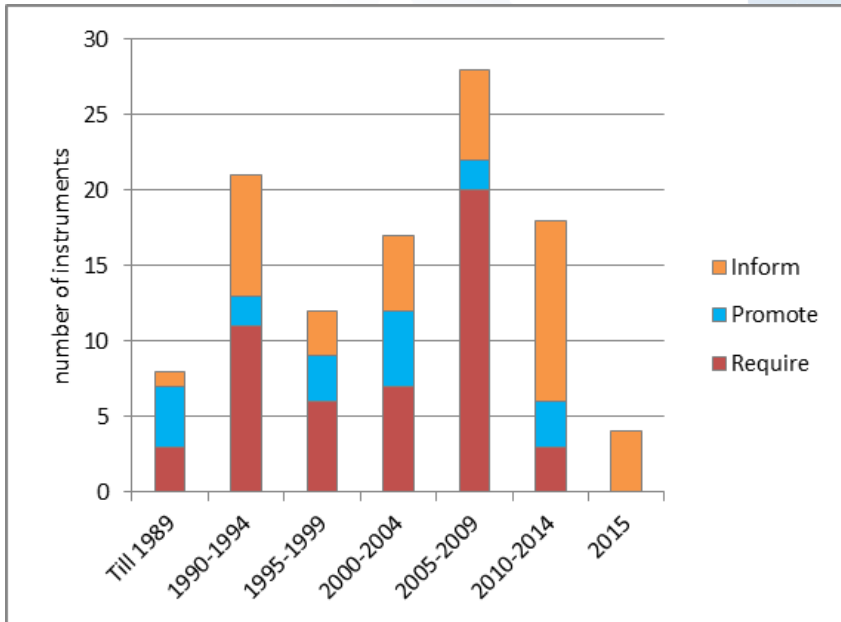
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3. Institutional incentives in Berlin

1. Identified 108 instruments supporting URWH in Berlin:
 - **Types:** laws, municipal statutes, urban development plans, water management plans, policy guidelines, funding programmes, financial incentives, competitions, ...
 - **Scales:** EU, federal, city-state, borough
 - **Sectors:** water management, urban planning & development, nature conservation / environmental protection, 'other' (e.g. climate change)
2. Indicative quantitative analysis
 - According to a) mode of support ('require', 'promote', 'inform'); b) policy sector addressed and c) timing of instrument (5-year periods)
3. Explanatory qualitative assessment
 - In terms of urban development trends and events

3. Institutional incentives in Berlin

Indicative quantitative analysis:



3. Institutional incentives in Berlin

Contextualizing URWH incentives:

- 1980s: URWH emerging from housing and urban renewal programmes: strong public funding & pilot projects (IBA)
- 1990+: Reunification and concern at water supply >>> shift in emphasis to water quantity issues and ecology in social housing: strong funding for greening projects & pilots
- Mid-1990s+: Budget crisis, neoliberal policies, drop in water consumption, partial privatisation of BWB, WFD >>> shift to regulatory and informative instruments targeting water quality; split wastewater/rainwater tariff; rainwater retention requirement for urban development / renewal projects
- 2005+: URWH enrolled in broader range of instruments: for biodiversity, climate adaptation, urban quality of life; renewed (EU) funding schemes
- 2016+: URWH high priority for new red-red-green coalition government: planned rainwater agency, 1% annual reduction target for rainwater retention to combined sewer system

3. Institutional incentives in Berlin

To summarize:

1. URWH has been promoted by a range of policy sectors, often as a complementary side-effect
2. Major shifts in types of instruments predominant at particular times:
 - from pro-active state, executing and funding projects, in early years towards 'require' and 'inform' instruments delegating responsibility to private initiatives from mid-1990s
3. Co-existence of instruments promoting URWH and sustaining conventional rainwater disposal via sewers:
 - URWH encouraged where it complements existing network

4. Berlin's project landscape

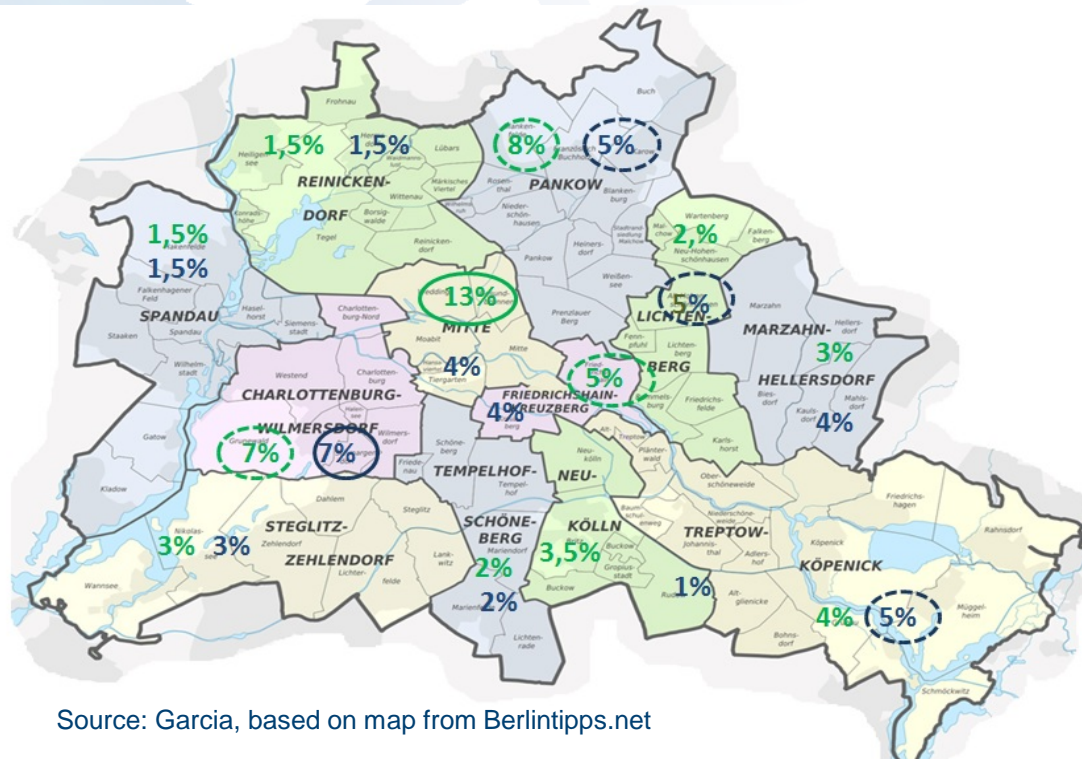
Online-based research of URWH projects in Berlin since 1980

- database of 272 projects, documented according to year of construction, location, size, technologies applied, actors involved, funding sources
- Data analysis using map and graphs

4. Berlin's project landscape

272 RWH projects identified in Berlin (1980-2015)

- 'Blue' infrastructure projects: rainwater retention, infiltration and/or use, including greening (ca. 43%)
- 'Green' infrastructure projects: Greening (unsealing) without explicit rainwater management component (ca. 57%)

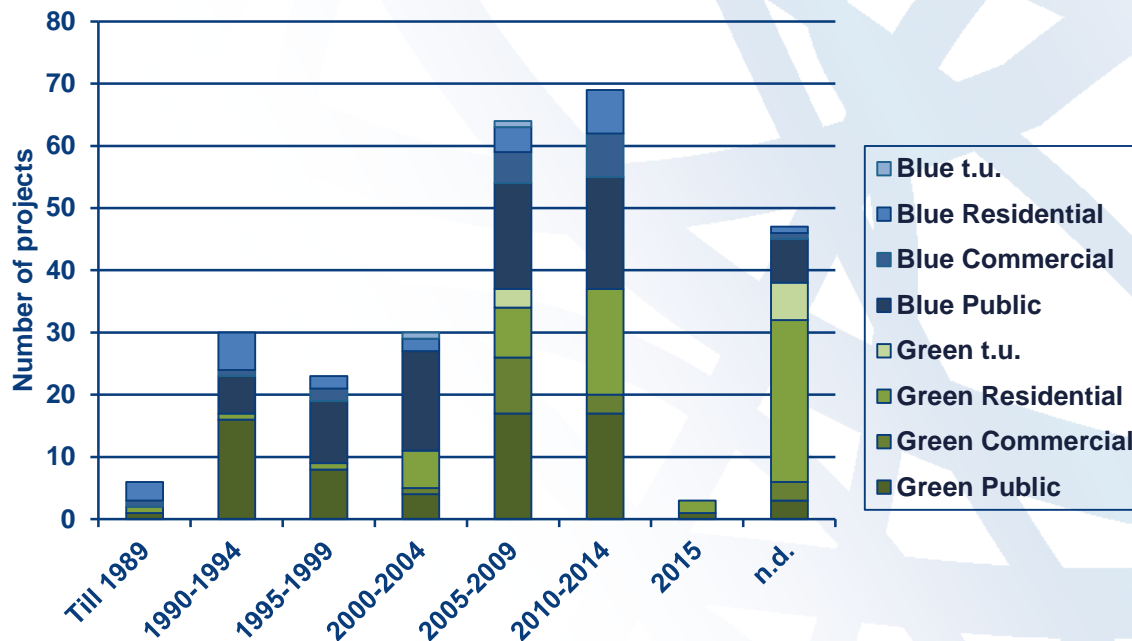


Source: Garcia, based on map from Berlintipps.net

Note: Percentages are of all projects, but map excludes projects with no given location or covering more than one borough

4. Berlin's project landscape

Analysed projects in terms of timing, infrastructure, type of building/site:



Source: Own calculation

Note: n.d. column = no data on starting date; t.u. in key = building type unknown



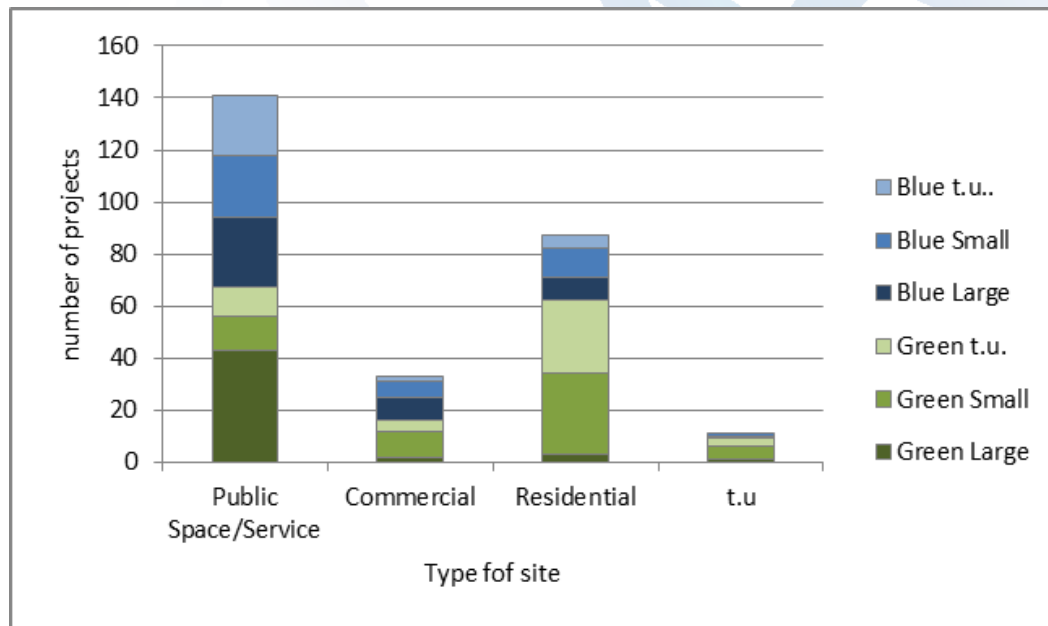
Blue infrastructure in residential areas, small and large-scale; Source: García



Greened yard, before and after; Source: Wilhelmstadt-bewegt, n.d.

4. Berlin's project landscape

... and in terms of size, infrastructure and type of building/site:



Source: Own calculation

Note: t.u. in key = building type unknown