### Prof. Dr. Antje Bruns

### **Governance and Sustainability Lab**







# WATERPOWER Collision of mega-trends in a west-African coastal city

## **The Project**



Urbanisation on the coast puts pressure on ecosystems and shapes vulnerability

- How will a collision of megatrends such as urbanisation, climate change and weak governance capacities – affect freshwater security in a city of the global south?
- In what way does the cumulative interplay between human and non-human factors trigger the collapse (or sustainability) of urban water dynamics and how can this interplay be analysed and explained?
- When are sustainability problems such as the water crisis too big to manage and what are related tipping points for societies or vulnerable groups?
- What kind of science do we need in order to be able to address these societal sustainability challenges?

The project fosters an integrated and reflexive understanding of sustainability challenges that go beyond global-local, urban-rural or nature-society binary concepts. By drawing on water we try to contest simplistic framings of crisis narratives that dominate much of the global change discourse (e.g. the water crisis).



### WaterPower's Analytical Takes



Interlinkages between insecure water supply and the degradation of aquatic systems

We will carry out in-depth research, including mapping and modelling of urban development, analysing infrastructure regimes, governance mechanisms and (discourses about) socio-spatial conditions of urban water security, while also exploring the dynamics between urbanization and the water system.

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. Contribute	significantly	to		Freshwater Secu urbanisa

global change research from Germany		<b>Research:</b> Knowledge
2. Qualify the next generation of researchers in an interdisci-		Generation
plinary project		Interdisciplinary

3. Strengthen the science-policy interface by creating usable and applicable knowledge.

Freshwater Security in the context of climate change, urbanisation and resource allocation					
<b>Research:</b> Knowledge Generation	<b>Education and</b> <b>Qualification:</b> Knowledge Sharing	<b>Communication</b> Stakeholder Dialogues			
Interdisciplinary Research for Global Sustainability	Capacity building for a next generation of scholars	Transdisciplinary research approach: co-design and co- production of knowledge			

WaterPower

Our approach is to draw on the concept of urban metabolism and reformulate it with insights from political ecology, environmental justice and governance research in order to illuminate their relationship.

Thus, we expand the concept of urban metabolism and go well beyond the current mainstream: by using a concept of urban metabolism that consists both of political and social processes, we employ insights from the field of political ecology. The perspective of political ecology is guided by an epistemic interest about "who controls, who acts and who has the power to create what kind of socio-nature" (Swyngedouw et al., 2003: 110).

Hence, we conceptualise cities as socio-ecological systems in which nature is produced by metabolic processes. This draws particular attention to the role of infrastructures and governance regimes in shaping socio-nature (Gandy 2004) and uneven conditions within cities (Heynen et al. 2006; Monstadt 2007).

### Work packages

### WP 1 Integrative Framework and Coordination for Interdisciplinary Studies



# Transdisciplinarity

Complex socio-environmental challenges call for the integration of knowledge from both science and society to explore new strategies and opportunities towards sustainability transformations.

Transdisciplinarity in WaterPower brings together researchers and stakeholders, co-producing solution oriented knowledge and reintegrating new knowledge in science and society.

Together with the participation of local and international stakeholders, the wholly transdisciplinary approach will contribute to addressing sustainability challenges. The research will ultimately stimulate critical discussions on water resources management and urban development., between bio-physical and socio-political processes in an era of global



- People are at high risk of water transmitted diseases
- 4. Burned E-Waste in Agbobloshie a former lagoon
- - 5. Livelihood connecting water and human well being



### WaterPower Team

The WaterPower Team currently consists of five doctoral researchers - John Akubia, Rossella Alba, Lara Bartels, Fanny Frick and Maria Kondra - with expertise in different geographical and environmental fields. Prof. Dr. Antje Bruns is head of the project and Anja Hasselberg acts as project manager. Ravi Baghel and Karsten Schulz joined us as post-doctoral researchers. We are also supported by a student collaborator: Christel Weable.

For more information see <a href="http://waterpower.science/">http://waterpower.science/</a>













### Kontakt: Prof. Dr. Antje Bruns; E-Mail: waterpower@uni-trier.de

### Governance and Sustainability Lab, Fachbereich VI, Raum- und Umweltwissenschaften, Universität Trier, Campus II – Behringstraße, 54286 Trier. (Tel. +49 (0)651/201-4551)