water patterns of urban sustainability

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the challenges

how to prevent cities from drowning?

what makes resilient cities?

how do we balance resources in situations of unbalanced growth?

what makes water robust cities?

the story of Metropia

the story of Metropia

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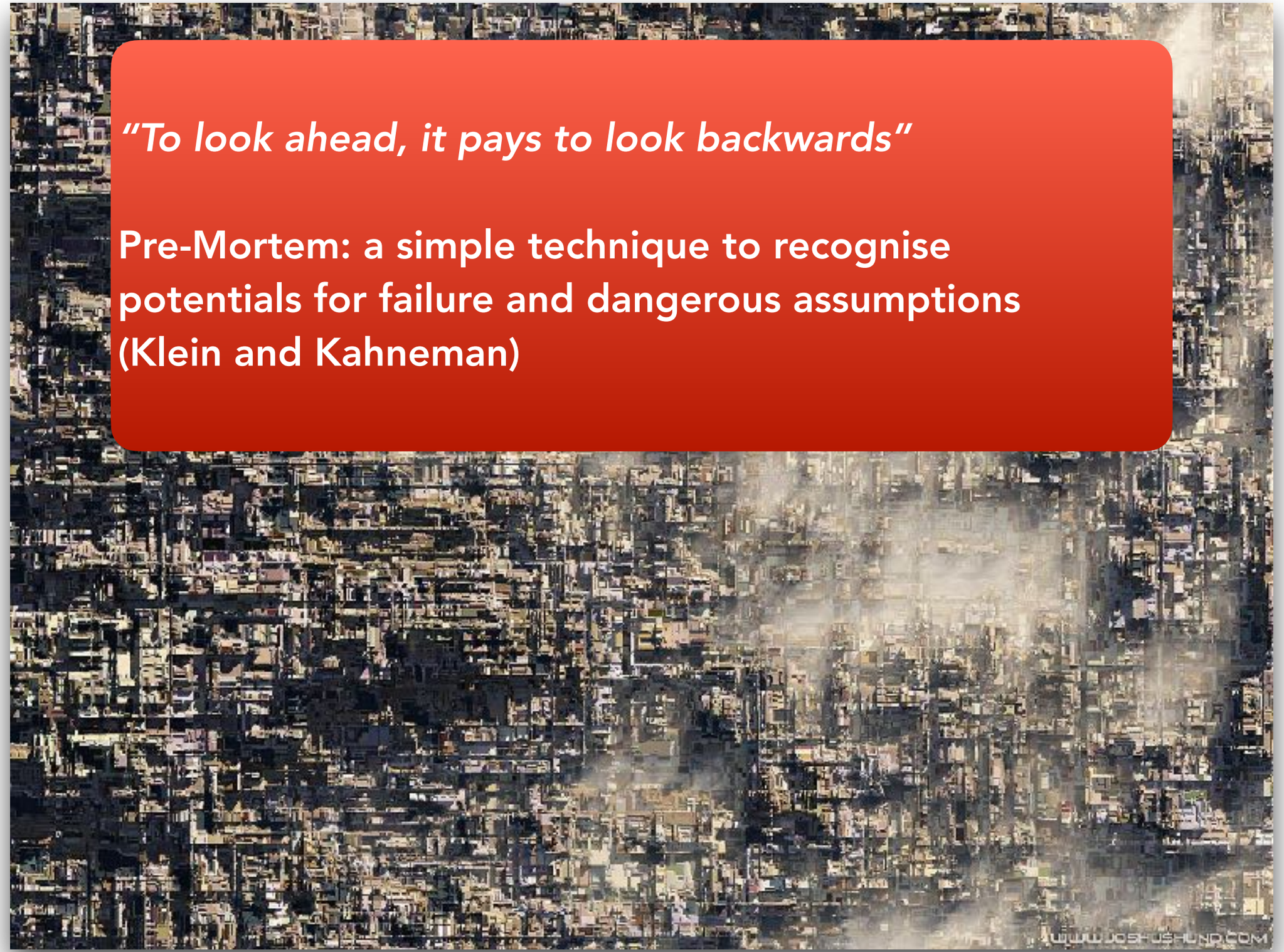

the story of Metropia

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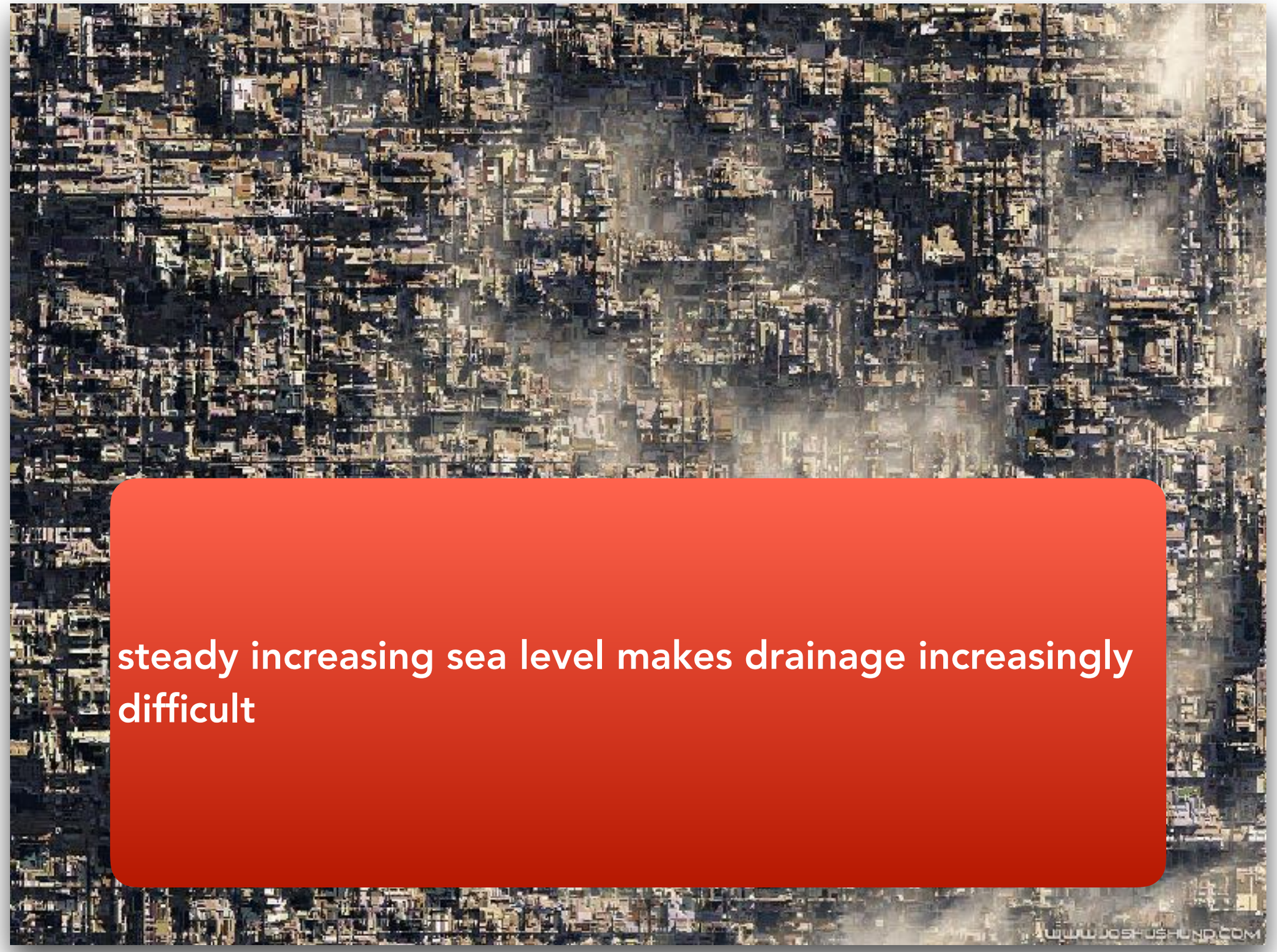
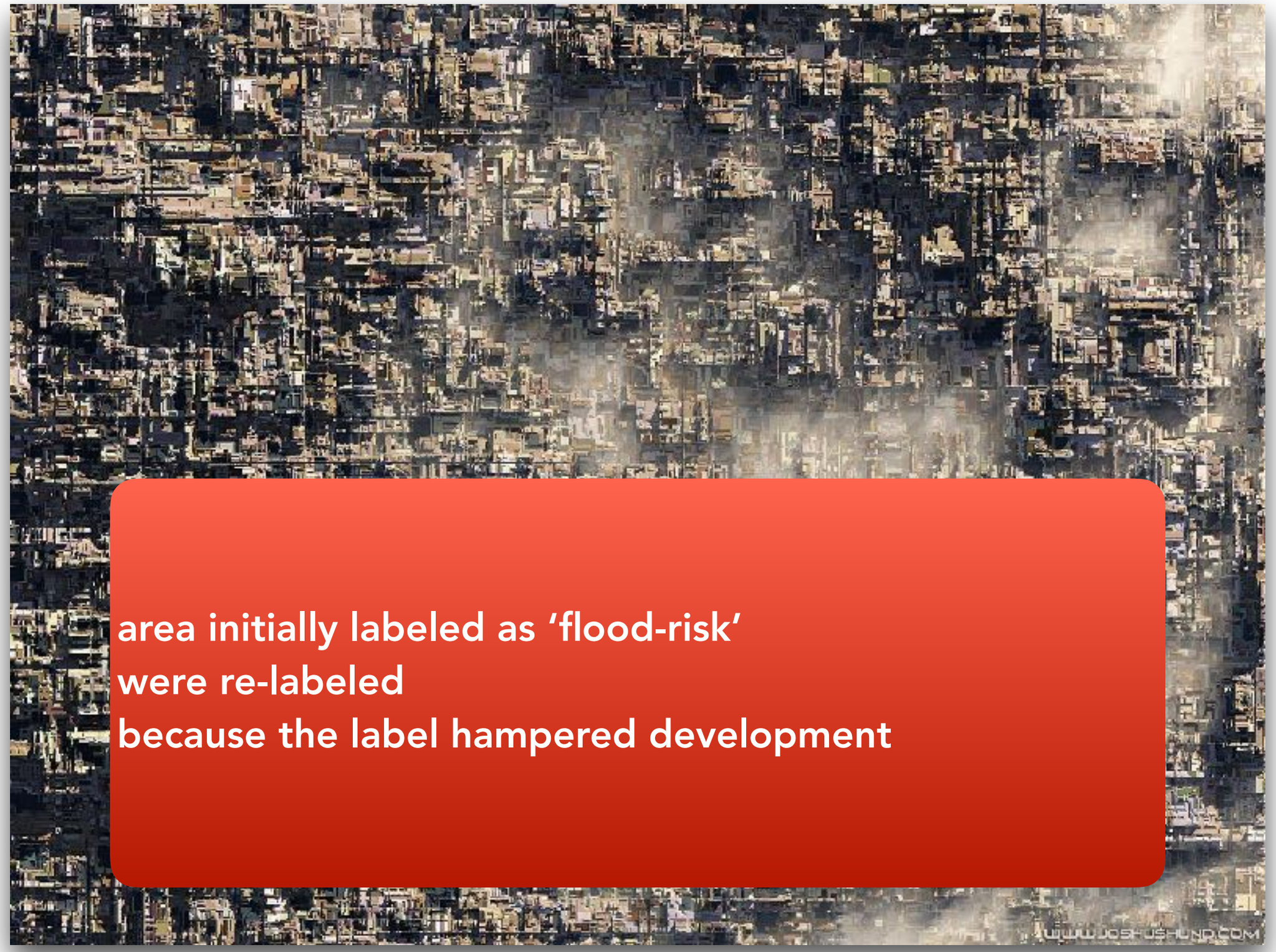
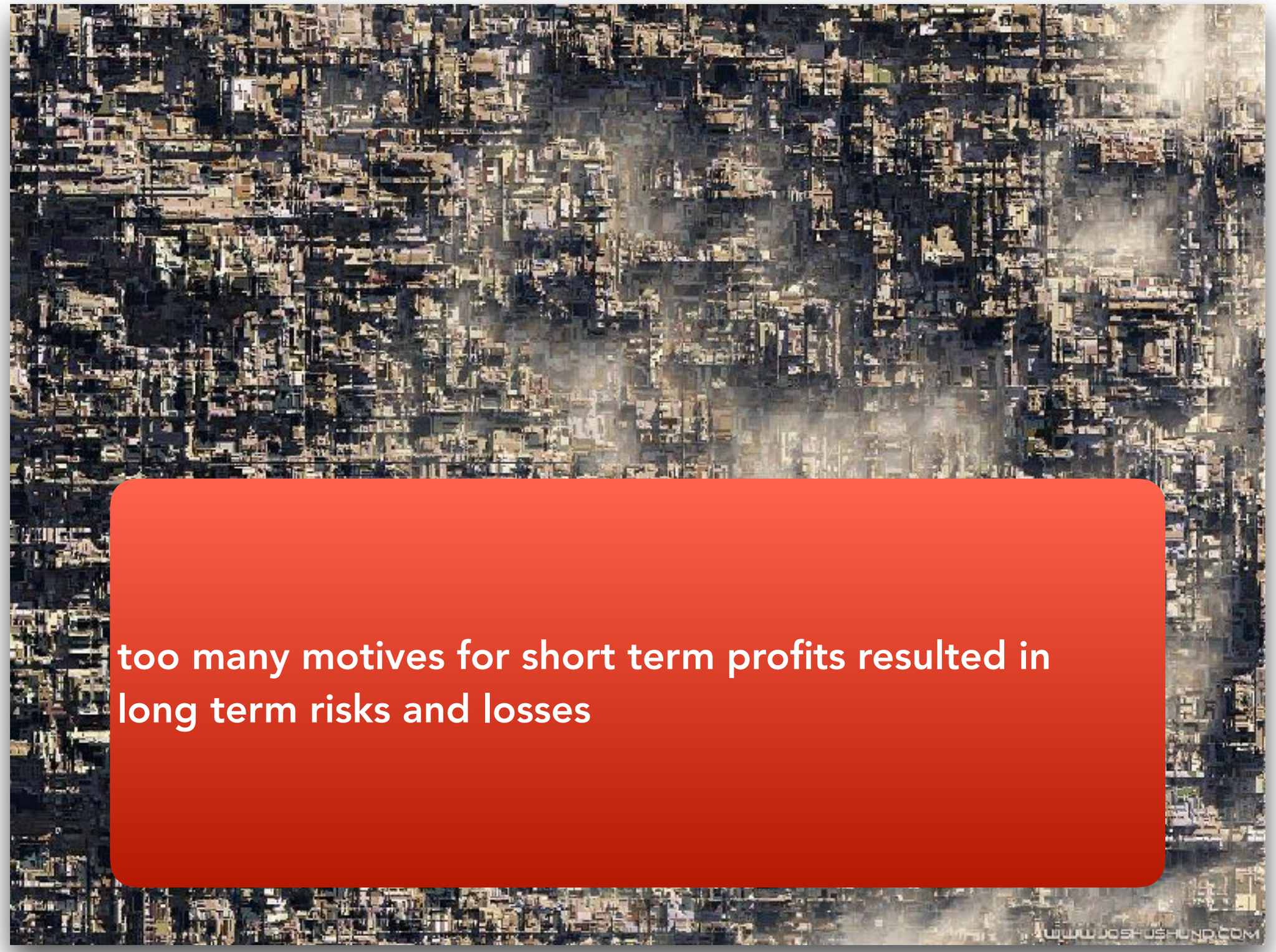


the story of Metropia



the story of Metropia



the story of Metropia

growing pains of cities

rain

temperature

sealevel

river

urban density

hard surface

green

buffer

society

economics

urban dynamics

ladder of urban water

urban dynamics	winners and losers short term and long term motives and leverages
integrated planning	masterplan coherent zoning interaction between zones ownership of costs
physical planning	regional and urban plans zoning land cover
engineering	technical interventions buffer functions infrastructure

recommendations

include urban dynamics in analysis of resilient cities

uncharted territory: find ways to explore

simulation with small models

urban laboratories

"The only source of knowledge is experience"

–Albert Einstein

recommendations

include urban dynamics in analysis of resilient cities

uncharted territory: find ways to explore

simulation with small models

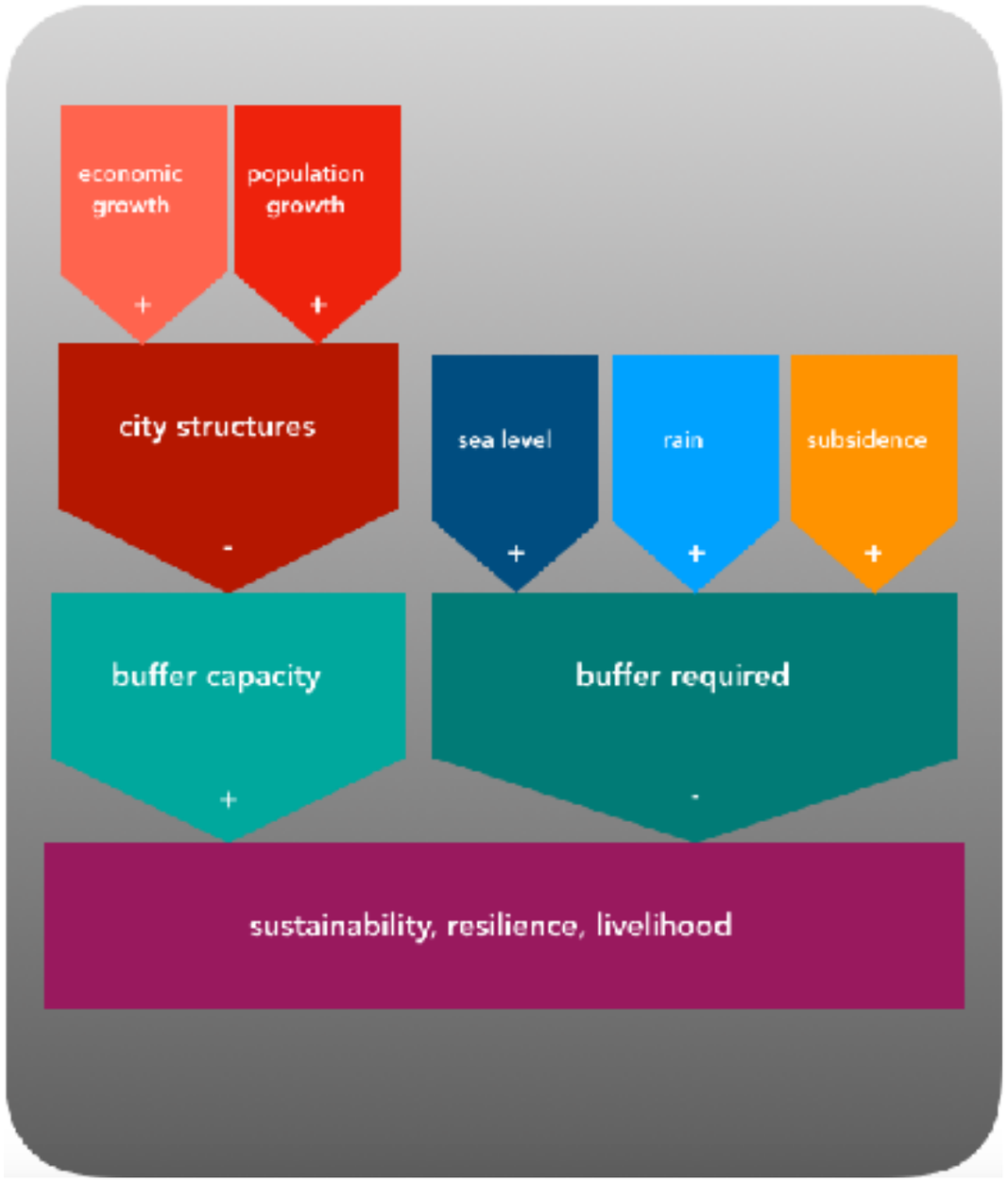
urban laboratories

small simulation models for urban dynamics

broad model, not a detailed model

integrative approach: make the link between water and urban

simple model, not a complex model



use small model as driver for urban management games

flight simulators for urban and water planners
- management simulation
- serious games
- living laboratories

focus on
- conflicting interests
- competition for resources
- competion for space

use small model as driver for urban management games

dynamics of
- long term and short term
- private gains and public loss
- winners and losers

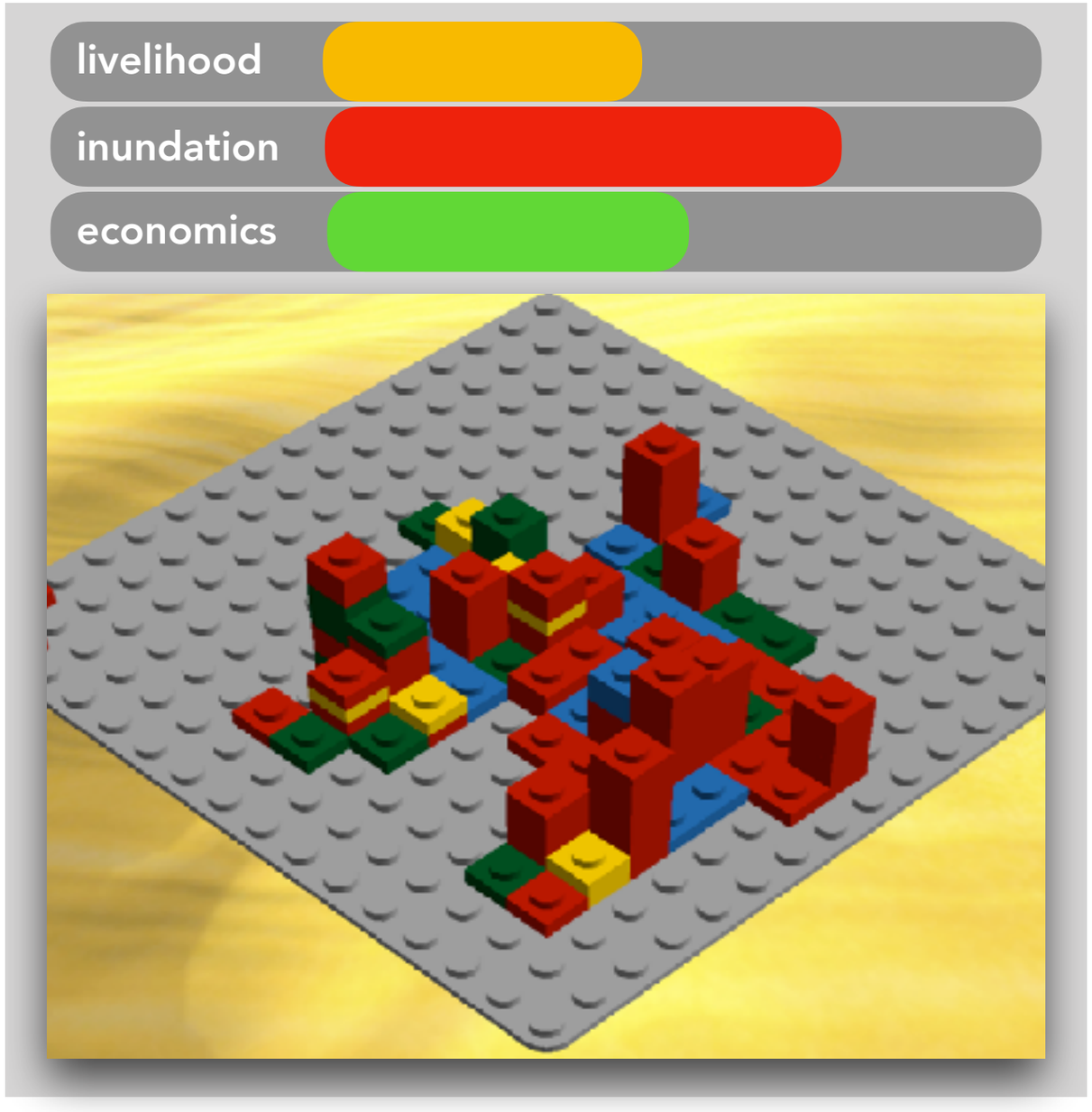
explore
- motives for (un-)sustainable growth
- leverages and control points
- mutual benefits

small model as driver for urban management games

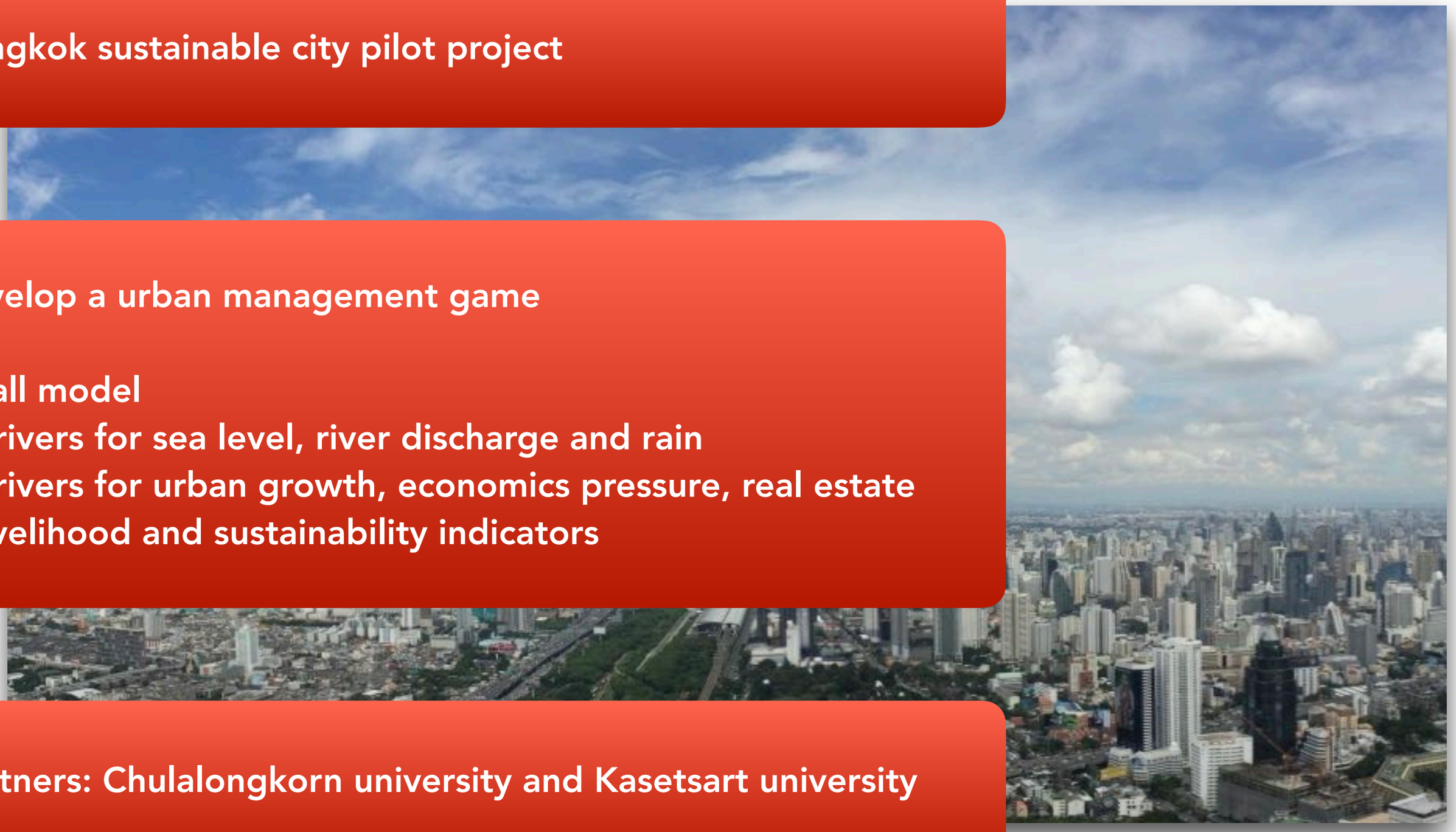
stakeholders to develop city for next 50-100 years

driven by scenarios for
- climate
- economics
- population

interventions include
- infrastructure
- zoning and permits
- taxing and funding



Bangkok sustainable city pilot project



develop a urban management game

small model
- drivers for sea level, river discharge and rain
- drivers for urban growth, economics pressure, real estate
- livelihood and sustainability indicators

partners: Chulalongkorn university and Kasetsart university

similar but not same

Rotterdam

Bangkok

Dhaka