

CapaCity

from Concepts to Actions for a Proactive Adaptation of Cities

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ICUC9

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Plan of the presentation

1. Context
2. The CapaCity Project
3. Review of urban designers' practice

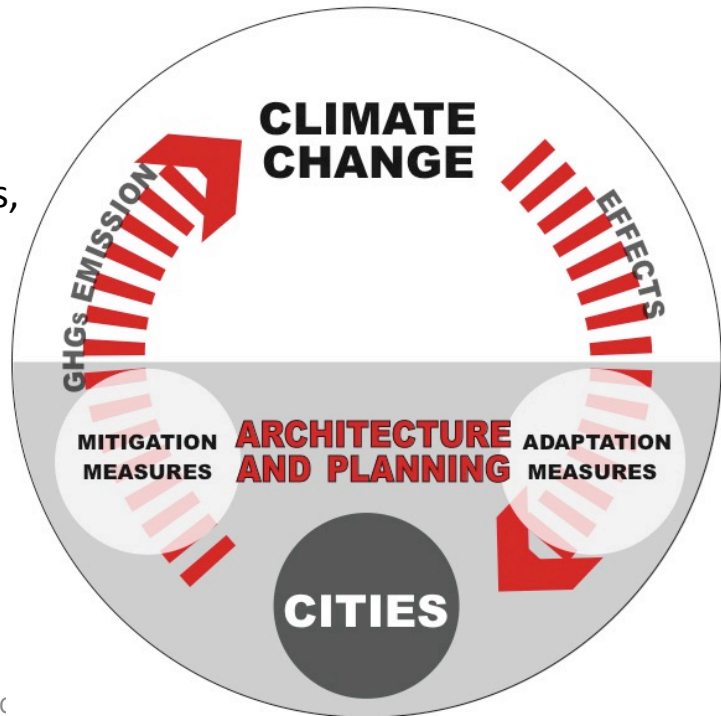


1. Context

Architecture, Urban Design and adaptation

Cities:

- Climate change agents,
- Climate change victims,
- Climate change solutions,



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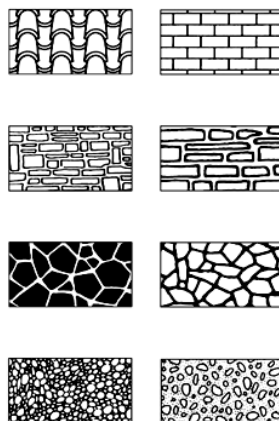
1. Context

Architecture, Urban Design and adaptation

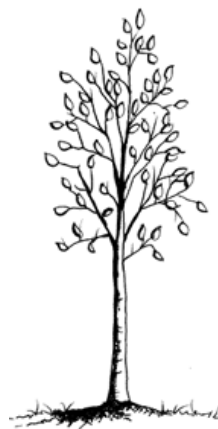
4 levers for Architects and Urban Designers in order to implement mitigation and adaptation measures:



Urban form



Materials



Vegetation /
Water



Heat release



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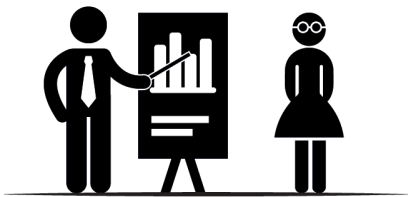
1. Context

Adaptation is little known by Urban Designers

Mains reasons:

- Urban Microclimate is a rather new and complex discipline
- Microclimate modeling tools, typically designed by researchers, are not suited to the Urban Designers' needs.

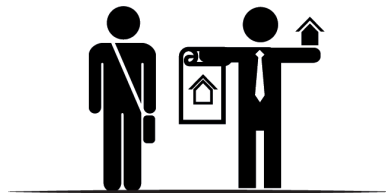
Despite this, Urban Designers are expected to take action quickly to adapt the cities to climate change.



On the one hand, scientific knowledge



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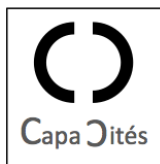


On the other hand, urban planners insight

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2. The CapaCity project

Research objective



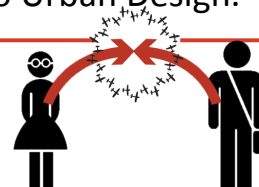
from **C**oncepts to **A**ctions for a **P**roactive **A**daptation of **C**ities

A three year project funded by ADEME ...

... crossing **scientific and professional** knowledge.



Research objective: A prototype version of a multicriteria design-aid-tool to help integrate climate adaptation and mitigation in to Urban Design.



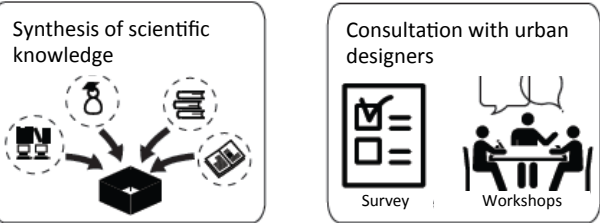
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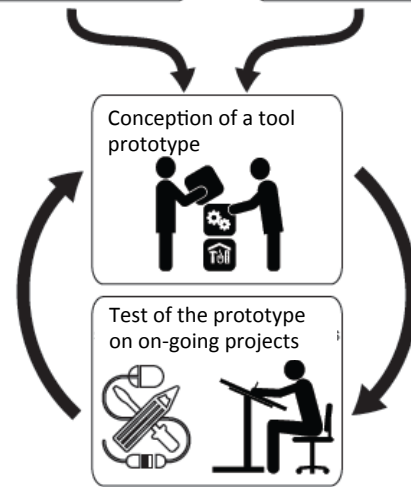
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2. The CapaCity project

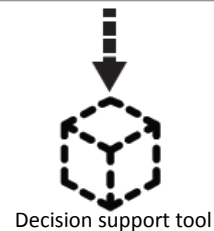
Year 1



Year 2



Year 3



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3. Review of urban designers' practice

Method

A two-step method:

- A survey to assess the use of existing tools by Urban Design professionals, as well as their expectations towards a design-aid-tool.
- Workshops to deepen the analyses of how tools are used in the design process, and which data is required by the professionals to address the issue of adaptation



The method has been designed and implemented by Catherine Dubois from Laval University within the CapaCity team.



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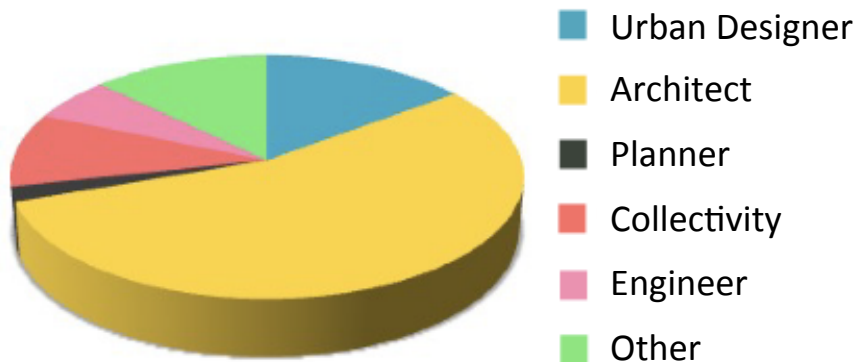
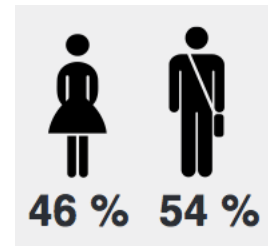
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3. Review of urban designers' practice

Survey

- 200 professionals answered the survey:



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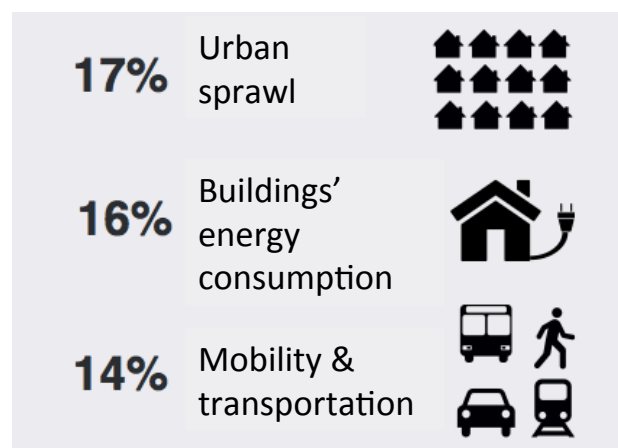
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Survey

- The environmental issues mostly address by Urban Designers are:



- Microclimate and Outdoor Comfort came 4th (11%).
- Renewable Energy was classified last.



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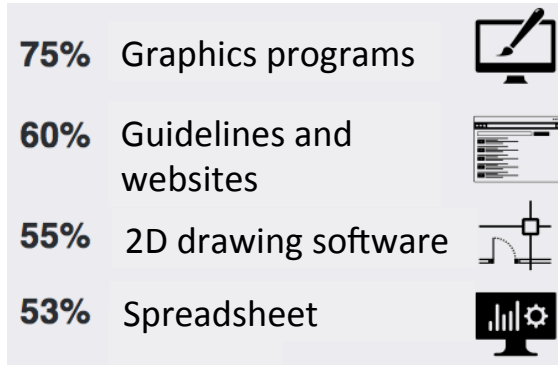
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Survey

- The tools mostly used by Urban Designers and by Design Teams throughout the design process are:



- The majority (74%) **never use advanced modeling software**



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3. Review of urban designers' practice

Workshops

Main objective: Understand the way existing design-aid-tools and available data are used (or not) in the design process.

Method: A game where Urban Design professionals are asked to work as a team **to conceive a project** (real case-study) while addressing the **adaptation** of the neighborhood to climate change.

- 2 half a day workshops
- 5 design teams of 4 to 5 professionals



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3. Review of urban designers' practice

Workshops



The case study: 400 housings must be built by on the site “La Cité Blanche”, a renovation project lead by Toulouse Métropole.



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3. Review of urban designers' practice

Workshops

The Game Rules:

Each team has some basic data on the project (maps, aerial views, ...)

Each team has 6 “resources cards” to play:

- 3 cards to use a technical or a technological resource of their choice (thematic maps, software, guidelines ...).
- 3 cards to consult an expert of their choice for 15 minutes.



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3. Review of urban designers' practice

Workshops

The Game Rules – Resources cards

Technical resources	Technological resources	Human resources
<ul style="list-style-type: none">• Guidelines• Technical books• Architectural or Urban reference books• Maps (location, topography, transportation network, etc.)	<ul style="list-style-type: none">• GIS software• 2D design software• 3D design software• Simplified energy consumption software	<ul style="list-style-type: none">• Urban Climatologist• Building Energy engineer• Sustainable Urban Design expert• Representative from Toulouse Metropole



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3. Review of urban designers' practice

Preliminary results

Findings:

- The technical and technological resources were little used by the teams.
- The human resources were consulted but not as much as they could have been.
- The professionals use “rules of thumb” in the early design stages, and expect to have *quick fix solutions* for environmental design.
- The typology choice is one of the first to be made and has a strong environmental impact.
- Architectural or Urban references are often used by designer as starting points for environmental design.



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Outlooks:

- A design-aid tool is essential in the early design stage where each decision has a heavy environmental impact.
- The design tool cannot be as complex as existing ones, if so it will only be used in the advanced design stage, where crucial choices already are set in stone.
- A typology based tool, giving references and quick fix solutions seems accurate but the work we are leading is still in progress.



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Thank you for your attention!



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