

UN-Habitat

Future Saudi Cities Programme

**Climate compatible and resilience
cities - resilience Training**

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Introduction

This document presents the results of the discussion and role-play during the Resilience sessions that took place in the UN-Habitat Office in Riyadh the 5th and 6th of December 2017.

5th December session

The session on 5th December was organized in two presentations (both documents are delivered separately):

- The City Resilience Profiling Tool (CRPT), delivered by Esteban Leon, head of the Urban Resilience Programme.
- Barcelona Case Study: Barcelona Preliminary Resilience Profile.

The aspects that the audience pointed out as the most relevant from the two presentations were, ordered by number of assistants pointing them out:

- The organization of the information and indicators inside the tool into the 4 sets, as a starting point for organization and further analysis.
- The case study of Barcelona, and to have the knowledge that there are some other cities and organizations facing the same kind of problems and working with similar approaches.
- The systemic approach behind the tool as a useful way to understand the city as a whole as the interaction between the systems inside.
- The idea of the need of considering the links between the systems, their elements and the hazards the city is facing.
- The aim and organization of the tool reinforcing the development of sustainable and resilient cities.

In addition some of the participants asked about the possibility to organize a visit to the Control Operations Center in Barcelona. We will link them with the head of the Resilience Department of Barcelona to see if there is a possibility for this.

6th December session

Organization in teams

The session on 6th December was a role-play where the audience was divided in three working teams, each one with the theoretical assignment of the management of one element of the city system:

- Team 1 – Housing
- Team 2 – Energy and services supply
- Team 3 – Water cycle

Defining indicators

As a first exercise the three teams were asked to define 3 to 5 indicators that they considered relevant for the management and decision taking in their area of responsibility in the city. The results are listed below.

- Team 1 – Housing:
 - Demographic info (density, growth rate, birth rate, literacy rate)
 - Building regulations
 - Land Use
 - Family Income
 - Demand and offer
- Team 2 – Energy and services supply
 - Consumption per capita of the different supplies (electricity, water..)
 - Waste: % of recycled and reused
 - Water: % of treated and reused and recovered
- Team 3 – Water cycle
 - Water consumption per capita
 - % of water sources
 - % of losses in pipes
 - % of water used in electricity production
 - % of water treated through osmosis versus thermal system

The discussion after the presentation of the different sets of indicators rose up different elements interesting from the resilience thinking and included in the CRPT tool:

- The need to be specific in the definition of the indicators to make them useful for further monitoring of the performance and/or status of the city systems.
- The need to consider additional information not quantifiable but essential also for the management and action upon the system.
- The need to balance between efficiency and sustainability of the systems.

Quantifying indicators

As a second exercise we asked the three teams to set up values or ranges of values for all the indicators defined, with the objective of considering possible thresholds or ranges of values from which further actions upon the systems should be triggered.

Beyond the specific values settled up for the three teams for all the indicators, this part of the exercise triggered actions not specifically demanded to the teams:

- The settlement of a framework that fixed the objectives of the measurement. That is something that the systemic approach to the understanding of the city and the principles behind the rationale of the tool fix consider: each city and

region has its own specific conditions and dynamics, and thus the resilience profiles obtained cannot be used to compare cities in any case.

- The comparison of indicators at local level with indicators at national or global level for the consideration of the possible enhancement of the city systems.
- The immediate consideration of which would be the estimate or desired values for the indicators of the city in the next years.

Considering hazards

In the third exercise the three teams were asked to list the main hazards to take into consideration in Riyadh.

- Team 1
 - Water and energy supply
 - Increase of population
 - Flooding
 - Sand storm
 - Traffic congestion
 - Waste management
- Team 2
 - Congestion (mobility)
 - Service coverage (waste, storm system)
 - Efficiency (water leaks, thermal insulation)
- Team 3
 - Water supply for housing
 - Quality of water for housing
 - Cost of water treatment

The exercise showed that:

- The city is exposed and having impacts from natural hazards, with an increasing dimension of some of the impacts as the flooding due to heavy rain episodes.
- The city is also experimenting different stresses in the services supply, being the most concerning the water supply. This is due for a combination of natural causes and the increase of population.

Conclusion of the role-play

The role-play was supposed to include two more exercises: definition and proposal of projects, and approval of one or two of them for the Mayor of the city. The role-play could not be completed due to the lack of time, as this second session was only half a day.

Although the role-play was not completed, the overall goal of introducing the systemic approach to the city understanding as a system of system and the principles of measuring resilience through the measurement of the performance and

status of the systems composing the city and the interaction and relationship between them was reached.

The audience showed their interest in the methodology of the CRPT tool and the idea of the measurement of resilience as a way to measure and plan to reach further resilience and sustainability of the city.

The session concluded with a quick explanation about the rationale of the systemic approach that is in the origin of the CRPT tool, delivered by Esteban Leon.