

Incontri di  
formazione



Resilienza urbana e  
territoriale

1 aprile 2014 | APPROCCI E STRUMENTI DI RESILIENZA URBANA

# GLI APPROCCI ALLA RESILIENZA URBANA E TERRITORIALE

*Angela Colucci*

## Premessa

### Quale resilienza

Resilienza ecosistemica

### Approcci

Approcci | Resilienza e sostenibilità

Approcci | Resilienza e Rischi

Approcci | Resilienza e Adattamento

Confronti tra approcci | qualche conclusione

### Pratiche

Dagli Approcci alla Pratiche | Resilienza e Rischi

Dagli Approcci alla Pratiche | Resilienza e Adattamento [TT]

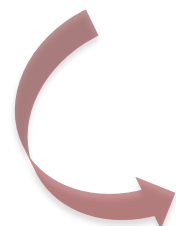
Dagli Approcci alla Pratiche | Resilienza e Adattamento [CC]

Confronti tra pratiche | prime note

## Riferimenti

## Premessa

**Resilienza**



**Resilienza  
ecologica/ecosistemica**

[ampio dibattito teorico su  
definizioni e concetto di  
resilienza]

[Resilience recovery,  
transition,  
adaptation,  
evolutionary ....]

**"definizione generale"**  
**Capace di accogliere I differenti approcci**

**Quale sguardo:  
pianificazione/progettazione  
urbana/territoriale**



**Sistemi urbani/regionali**

[definizione di "urbano"]

**Approccio complesso [sistemi  
territoriali complessi]**

## Premessa

(2002>2006)

2007 >> 2012

>> 2012/13

[letteratura | confronti]

[pratiche | confronti]



**Resilienza e  
Sostenibilità**



**Resilienza e  
adattamento**



**Resilienza e  
Rischio**

**Definizione di  
resilienza**

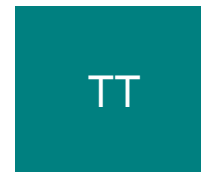
Concetto di  
resilienza

Strategie di  
resilienza

Modelli urbani /  
territorio

**Principi  
condivisi**

- Diversità creativa e ridondanza
- Riconoscimento delle variabili lente
- Adattabilità
- Flessibilità e innovazione
- Conoscenza e comunità
- Interconnession e tra scale spaziali e temporali
- Interdipendenza e modularità
- Solidi circuiti di feedback



**Temi**

[resiliente per cosa???



**Processi**

+  
[proposte/programmi/progetti]

**Quali dimensioni  
[spazio]**

**Quali principi di  
Resilienza**

**Quali soluzioni e  
iniziative/azioni**

## Quale resilienza

in **ingegneria**, la resilienza è la capacità di un materiale di resistere a forze impulsive senza spezzarsi e ripristinando lo stato iniziale

in **informatica**, la resilienza è la capacità di un sistema di adattarsi alle condizioni d'uso e di resistere all'usura in modo da garantire la disponibilità dei servizi erogati (disaster recovery) o capacità di adattamento attivo e flessibilità necessaria per adottare nuovi comportamenti una volta che si è appurato che i precedenti non funzionano

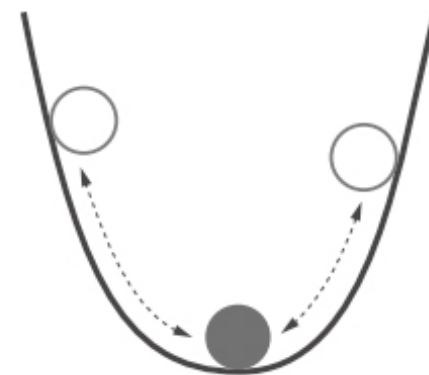
in **psicologia**, la resilienza viene vista come la capacità dell'uomo di affrontare le avversità della vita, di superarle e di uscirne rinforzato e addirittura trasformato positivamente

## Quale resilienza

### engineering resilience

*La resilienza dei materiali è la proprietà di tornare alla forma precedente dopo una deformazione*

*Holling and Gunderson 2002*



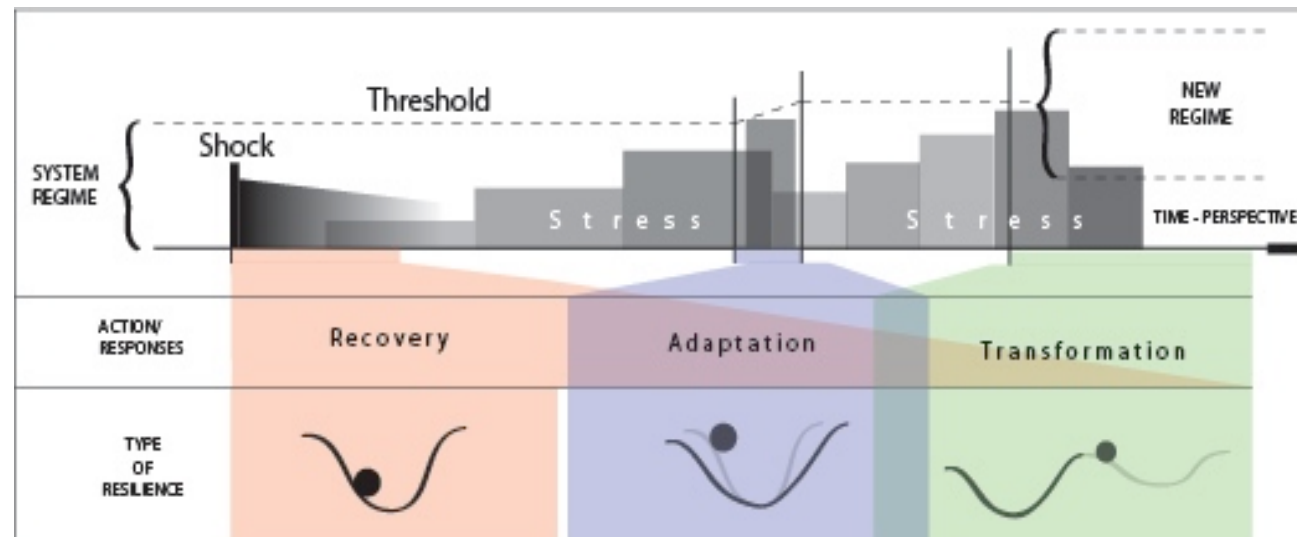
Engineering resilience concept

## Resilienza ecosistemica

la **resilienza ecosistemica** si basa sui concetti di **persistenza**, **cambiamento/impredittibilità**, **adattabilità** e **variabilità**, enfatizzando le condizioni lontane da ogni equilibrio.

La resilienza è quella **proprietà** dei sistemi complessi di reagire ai fenomeni di stress, attivando strategie di risposta e di adattamento al fine di ripristinare i meccanismi di funzionamento. I sistemi resilienti, a fronte di uno stress, reagiscono **rinnovandosi** ma mantenendo **la funzionalità e la riconoscibilità** dei sistemi stessi" (Holling C.S., Gunderson Lance, 2002, Holling 1996).

La resilienza non implica quindi il ripristino ad uno stato iniziale, ma il ripristino della funzionalità attraverso il mutamento e l'adattamento.



## Resilienza ecosistemica

- Diversità (biodiversità/diversità creativa)
- Ridondanza (variabilità ecologica)
- Cicli di adattamento (multipli stati di equilibrio/Panarchia)
- Meccanismi di feedback (informazione) e memoria ecosistemica
- Interazione tra scale spaziali ("gerarchie" /modularità) e temporali (attivazione di risposte con tempi differenti)



- Diversità creativa e ridondanza
- Riconoscimento delle variabili lente
- Adattabilità
- Flessibilità e innovazione
- Conoscenza e comunità
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- Interdipendenza e modularità
- Solidi circuiti di feedback

## Resilient cities

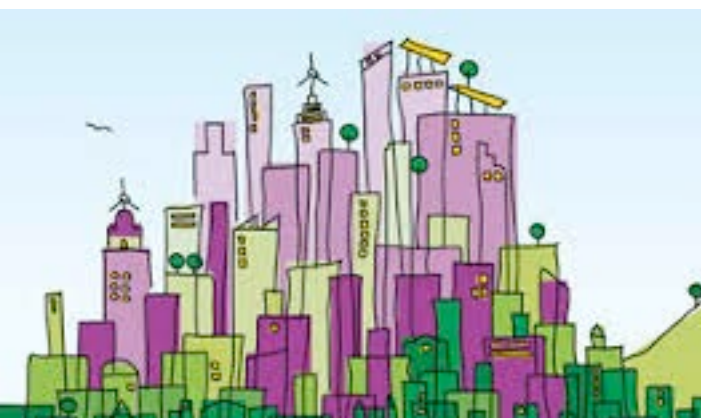
*"A Resilient City is one that has developed capacities to help absorb future shocks and stresses to its social, economic, and technical systems and infrastructures so as to still be able to maintain essentially the same functions, structures, systems, and identity."*

*"una città resiliente è quella che ha sviluppato le capacità per assorbire gli shocks futuri e gli stress alle componenti sociali, economiche, dei sistemi tecnologici e infrastrutturali attraverso processi di "evoluzione/adattamento" mantenendo riconoscibili le sue funzioni, strutture e identità"*

ResilientCity.org

## Resilienza ecosistemica

### Resilient cities



**CENTER FOR  
RESILIENT  
CITIES**

*Good Living Well Grounded*

Resilienza e  
sostenibilità

## RESILIENCE & SUSTAINABILITY

Resilienza e  
adattamento

## RESILIENCE & ADAPTATION



## RESILIENCE & RISKS

Resilienza e rischi territoriali

Angela Colucci  
Le città resilienti: approcci  
e strategie

<http://www.jeanmonnet-pv.it>

ÉTUDES - STUDIES

Le città resilienti:  
approcci e strategie

Angela Colucci



# Research framework

## Approcci

(2002>2006)

2007 >> 2012

>> 2012/13

[letteratura | confronti]

[pratiche | confronti]



**Resilienza e  
Sostenibilità**



**Resilienza e  
adattamento**



**Resilienza e  
Rischio**

**Definizione di  
resilienza**

Concetto di  
resilienza

Strategie di  
resilienza

Modelli urbani /  
territorio

**Principi  
condivisi**

- Diversità creativa e ridondanza
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- Interdipendenza e modularità
- Solidi circuiti di feedback



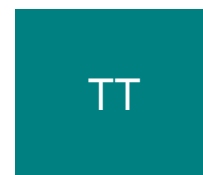
**I.C.L.E.I.  
Resilient  
Cities series**

**CENTER FOR  
RESILIENT  
CITIES**  
*Good Living Well Grounded*



**Transition  
Network.org**

**UNISDR**  
*The United Nations Office for Disaster Risk Reduction*



**Temi**

[resiliente per cosa???

**Processi**

+  
[proposte/programmi/progetti]

**Quali dimensioni  
[spazio]**

**Quali principi di  
Resilienza**

**Quali soluzioni e  
iniziative/azioni**



## Approcci | Resilienza e sostenibilità

L'ottimizzazione non è la soluzione o, meglio, non deve essere l'unica soluzione: non bisogna considerare l'ottimizzazione dei meccanismi di funzionamento come la strategia con cui i sistemi complessi operano a lungo



...a basis for sustainable

'Resilience, the capacity to lead to a continued existence by Incorporating change' (Folke, Colding and Berkes 2003, p.352)

## Approcci | Resilienza e sostenibilità

Diversità e stabilità

Organizzazione ecosistemica

Cicli di adattamento

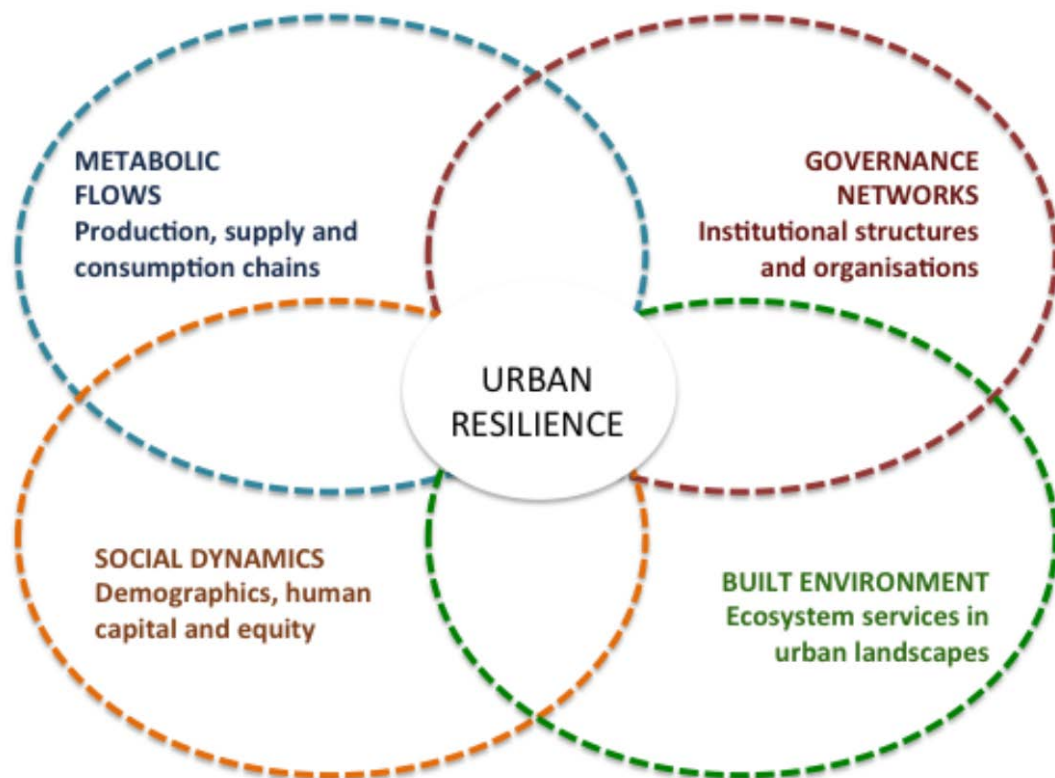
Life is full of surprises | strategie di resilienza

Imparare dall'incertezza e dal cambiamento

Nutrire la diversità per il rinnovo e la riorganizzazione

Combinare differenti tipi e sistemi di conoscenza e creare opportunità di auto-organizzazione

## Approcci | Resilienza e sostenibilità



### Esperienza e casi

Causse Méjan, France  
Coral reefs of the Caribbean  
Dry Spiny Forests, Southern Madagascar  
Everglades, Florida, USA  
Gorongosa National Park, Mozambique  
Goulburn-Broken Catchment, Australia  
Kristianstads Vattenrike, Sweden  
Mae Ping River Basin, Thailand  
Maine Fisheries, USA  
Malinau Region, Borneo  
Northern Highland Lakes District, Wisconsin, USA  
Phoenix, Arizona, USA  
Rangelands of New South Wales, Australia  
South-East Lowveld, Zimbabwe  
Western Australian Wheatbelt, Australia

> Database CSIRIO (aus)

## Approcci | Resilienza e Rischi

Per resilienza ecosistemica si intende la capacità e l'abilità di uscire, a seguito di un evento calamitoso, da una fase di stallo, in una condizione non necessariamente uguale a quella iniziale pre-evento.

La capacità di un territorio di essere resiliente consiste in gran parte dall'organizzazione e dalle relazioni esistenti prima dell'evento, quanto più il sistema sarà flessibile tanto più sarà rapida la ripresa alle normali attività in un'ottica di miglioramento e consapevolezza.

Diffusion and diversity, the Rapid responses proprieties, the Redundance circuit, the Storage capacity and the scale / hierachy connection (time and space).

## Approcci | Resilienza e Rischi

Un sistema, in generale, per essere resiliente dovrebbe tendere ad essere:

- **Ridondante** – con un numero di componenti funzionalmente simili in modo che l'intero sistema non collassi quando un singolo componente si guasta;
- **Diversificato** – con un numero di componenti con funzionalità diverse in modo da proteggere il sistema contro diverse pericolosità;
- **Efficiente** – con una larga disponibilità di energia prodotta da un sistema dinamico;
- **Forte** – con la capacità di resistere ad eventi/attacchi esterni di diverso genere;
- **Indipendente** – con diverse componenti dei diversi sistemi connesse, in modo da supportarsi vicendevolmente;
- **Adattabile** – con la capacità di imparare dalle esperienze e la necessaria flessibilità per cambiare;
- **Collaborativo** – con multiple opportunità ed incentivi che consentano la più ampia partecipazione degli attori coinvolti.

## Approcci | Resilienza e Adattamento

### Transition cities

### Climate change and peak oil



**CITIES IN  
TRANSITION**

**METROPOLIS 2011**

10<sup>th</sup> WORLD CONGRESS OF METROPOLIS  
..... 23-26 NOVEMBER 2011 .....

PORTO ALEGRE



**Topics   Data and maps   Indicators   Publications   Multimedia**

You are here: [Home](#) / [Press room](#) / [News](#) / Europe's future depends on cities resilient to climate change

### Europe's future depends on cities resilient to climate change

Published : May 14, 2012 Last modified : May 14, 2012 11:05 AM

Topics: [Climate change](#) [Environmental scenarios](#) [Urban environment](#)

**Around three quarters of Europeans live in cities. Most of Europe's wealth is generated in cities, and urban areas are particularly at risk due to climate change. Europe should seize the opportunity of improving quality of life while adapting to climate change in cities, according to a report from the European Environment Agency (EEA). The report also warns that delaying adaptation will be much more costly in the long-term.**

|                                                       | Resilience and sustainability                                                                                                                                                                               | Resilience and adaptation                                                                                                                                                                                                                                                                                    | Resilience and risks                                                                                                                                             |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disciplinary backgrounds                              | Natural sciences, biology, ecology, economy and social and political sciences                                                                                                                               | Planning, architecture, natural science, sociology                                                                                                                                                                                                                                                           | Engineering, Building architecture, planning, social science                                                                                                     |
| Resilience definition                                 | R. as the capacity to lead to a continued existence by 'Incorporating change'                                                                                                                               | <b>Planner approach</b><br>No definition of R. <b>Transition cities</b><br>R. as the ability of complex system to absorb the stress using adaptation strategies                                                                                                                                              | R. as the capacity and ability, after a disaster, to emerge from stalemate in a condition that is not necessarily the same as the initial pre-existing condition |
| Research and experiences<br>Focus (scales and places) | - Theoretical / theoretical modelling<br>- Development of local communities and regional development<br>- Management of natural resources (linked to development of local community / regional development) | - Models / strategies applied to city / urban and metropolitan<br>- Development of neighbourhoods and local communities                                                                                                                                                                                      | - I<br>- I<br>- I<br>- pl                                                                                                                                        |
| Cities model (components)                             | - Social-ecological systems<br>- Urban areas is the result of the interaction of four system (that have the same relevance): metabolic flows, governance networks, social dynamics, built environment.      | <b>Planner approach</b><br>Cities system composed by the build env. supported by the interaction of four systems (Transportation, Energy, Water, Natural environment, Food production, agriculture, Solid waste, Economic) <b>Transition cities</b><br>Community process of changing (not structured models) | - I<br>- tr<br>- I<br>- or                                                                                                                                       |
|                                                       | Resilience and sustainability                                                                                                                                                                               | Resilience and adaptation                                                                                                                                                                                                                                                                                    |                                                                                                                                                                  |
| Disciplinary backgrounds                              | Natural sciences, biology, ecology, economy and social and political sciences                                                                                                                               | Planning, architecture, natural science, sociology                                                                                                                                                                                                                                                           | E pl                                                                                                                                                             |
| Resilience definition                                 | R. as the capacity to lead to a continued existence by 'Incorporating change'                                                                                                                               | <b>Planner approach</b><br>No definition of R. <b>Transition cities</b><br>R. as the ability of complex system to absorb the stress using adaptation strategies                                                                                                                                              | R d<br>ce<br>si<br>ca                                                                                                                                            |
| Research and experiences<br>Focus (scales and places) | - Theoretical / theoretical modelling<br>- Development of local communities and regional development<br>- Management of natural resources (linked to development of local community / regional development) | - Models / strategies applied to city / urban and metropolitan<br>- Development of neighbourhoods and local communities                                                                                                                                                                                      | - I<br>- I<br>- I<br>- pl                                                                                                                                        |
| Cities model (components)                             | - Social-ecological systems<br>- Urban areas is the result of the interaction of four system (that have the same relevance): metabolic flows, governance networks, social dynamics, built environment.      | <b>Planner approach</b><br>Cities system composed by the build env. supported by the interaction of four systems (Transportation, Energy, Water, Natural environment, Food production, agriculture, Solid waste, Economic) <b>Transition cities</b><br>Community process of changing (not structured models) | - I<br>- tr<br>- I<br>- or                                                                                                                                       |

## Confronti tra approcci | qualche conclusione



## Principi/aspetti condivisi (e innovativi)

- Rafforzamento delle interconnessioni tra aspetti sociali, ecosistemiche/ambientali e di governance (o organizzativi);
- Rilevanza della comunità locale e degli aspetti sociali
- Servizi ecosistemici e flussi dei metabolismi urbani
- Forti innovazione nei PROCESSI
- Rilevanza delle dinamiche di processo (flessibilità...)

## Confronti tra approcci | qualche conclusione

(diversità creativa) e ridondanza

Riconoscimento delle variabili lente

Adattamento, flessibilità e innovazione

Conoscenza e comunità (eco-sociali)

Interconnessioni tra variabili spaziali e temporali

Solide catene di feedback



## Confronti tra approcci | qualche conclusione

Aspetti complessi

Innovazione di strumenti e processi di  
governance

Precessi VS strumenti/metodi

Capacità di resilienza di  
costruire VISIONI positive  
strategiche

Scale spaziali e temporali

Differenti temporalità  
(Recovery/adaptation/transition/evolution)

Equità  
Relazioni tra sostenibilità ambientale e equità  
sociale

## Confronti tra pratiche

Chiara Cortinovis + Nassim Azadegan, Davide Riva

## Confronti tra pratiche | prime note

*“iniezioni di resilienza”*

**Complessità e trasversalità**  
[ecosistemi/sociali]

**modularità**  
[sistemi/sub-sistemi]  
[scale spaziali]  
[temporalità]

**Dinamici/flessibilità**  
[incorporare i cambiamenti]  
[feedback]  
[riconoscimento delle  
variabili lente]

**Coinvolgimento/responsabi-  
lizzazione delle comunità  
locali**

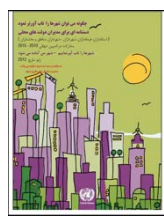
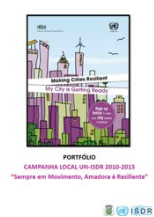
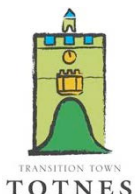
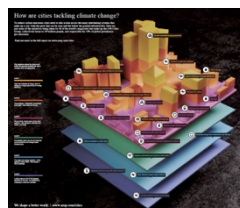
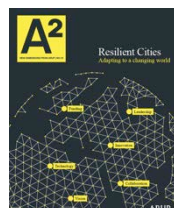
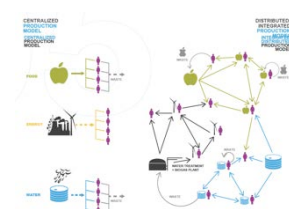
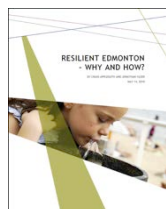
**Diversità creativa e  
ridondanza**

CC

AdD

TT

RR



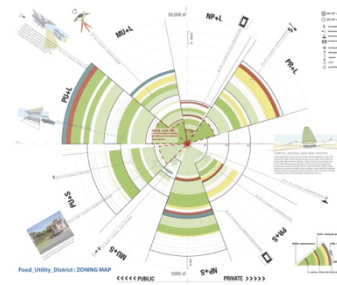
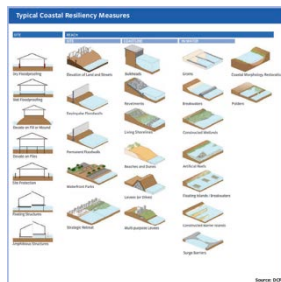
## Confronti tra pratiche | prime note

CC



*“punti di opportunità e di rischio”*

AdD



Visione strategica  
[&diffusione]

TT

Continuità / innovazione  
[nuovo termine]

RR

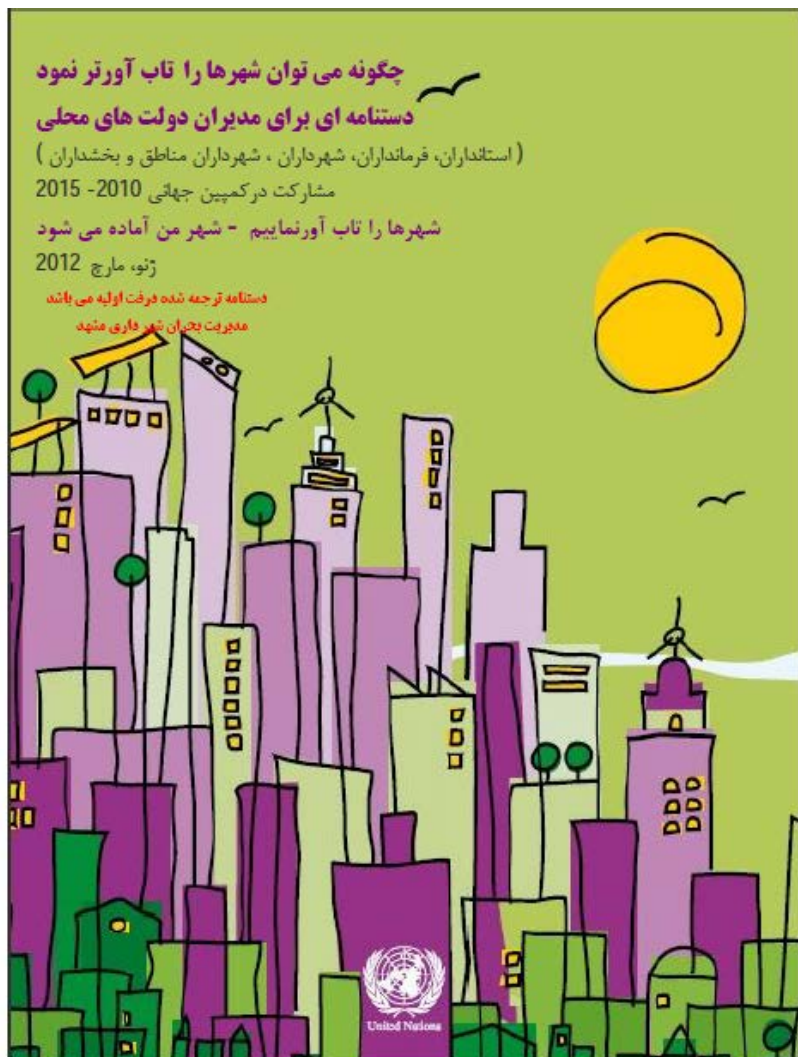


Pratiche bottom up e  
locali  
[fragilità di esperienze]

## Dagli Approcci alla Pratiche | Resilienza e Rischi



## Dagli Approcci alla Pratiche | Resilienza e Rischi



TDDMO Plan for Tehran Areas – Sasakawa Report

2013

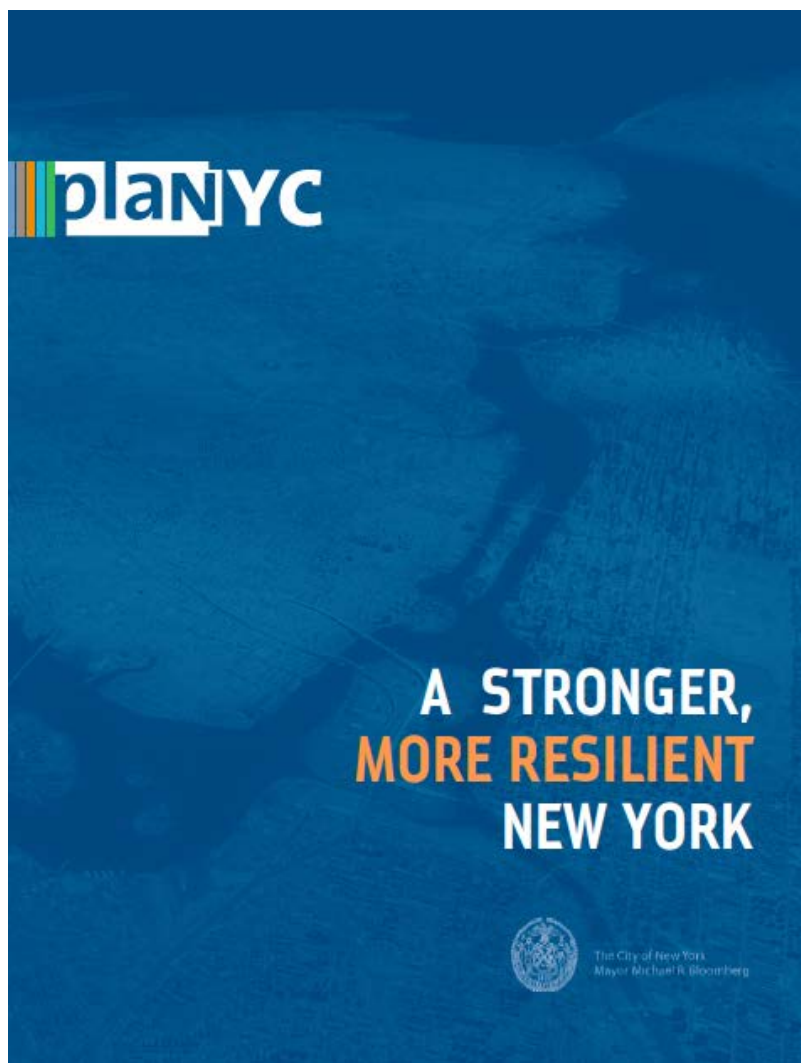


\* Amaken is a Farsi plural word with a general concept for city buildings inclusive of all types of premises, living residentials, working offices and other public facilities.

## Dagli Approcci alla Pratiche | Resilienza e Rischi



## Dagli Approcci alla Pratiche | Resilienza e Rischi



|    |                                                          |     |
|----|----------------------------------------------------------|-----|
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## Dagli Approcci alla Pratiche | Resilienza e Rischi

### Protect Against Storm Surge

#### Integrated Flood Protection System

- 19 Hunts Point, Bronx
- 20 East Harlem, Manhattan
- 21 Lower Manhattan / Lower East Side
- 22 Hospital Row, Manhattan
- 23 Red Hook, Brooklyn
- L Brooklyn-Queens Waterfront
- M West Midtown, Manhattan

#### Floodwalls / Levees

- 24 East Shore, Staten Island
- 25 Farragut Substation, Brooklyn
- N Astoria Generating Station, Queens

#### Local Storm Surge Barrier

- 26 Newtown Creek
- O Rockaway Inlet
- P Gowanus Canal, Brooklyn

#### Multi-purpose Levee

- Q Lower Manhattan

### Increase Coastal Edge Elevations

#### Beach Nourishment

- 1 Coney Island, Brooklyn
- 2 Rockaway Peninsula, Queens
- 3 East and South Shores, Staten Island
- A Orchard Beach, Bronx

#### Armor Stone (Revetments)

- 4 Coney Island Creek, Brooklyn
- 5 Annadale, Staten Island
- B South Shore, Staten Island

#### Bulkheads

- 6 Citywide Program
- 7 Belt Parkway, Brooklyn
- 8 Beach Channel Drive, Queens

#### Tide Gates / Drainage Devices

- 9 Oakwood Beach, Staten Island
- 10 Flushing Meadows, Queens
- C Coney Island Creek, Brooklyn
- D Mill Creek, Staten Island

### Minimize Upland Wave Zones

#### Dunes

- 11 Rockaway Peninsula, Queens
- 12 Breezy Point, Queens
- A Coney Island, Brooklyn

#### Offshore Breakwaters

- 13 Great Kills Harbor, Staten Island
- A South Shore, Staten Island
- B Rockaway Extension
- A City Island, Bronx

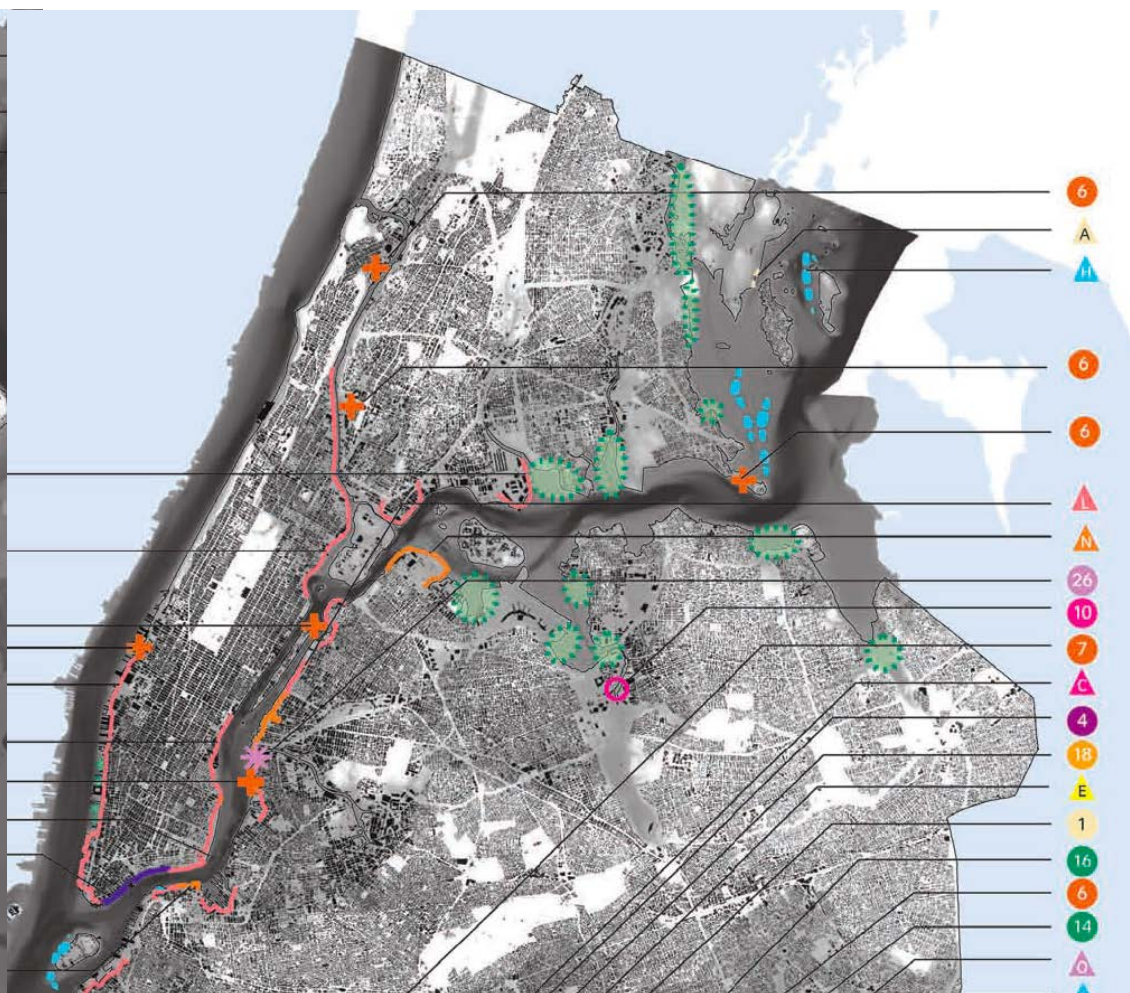
#### Wetlands, Living Shorelines and Reefs

- 14 Howard Beach, Queens
- 15 Tottenville, Staten Island
- 16 Plumb Beach, Brooklyn
- 17 Brant Point, Queens
- J Jamaica Bay
- J Bay Ridge Flats
- K Saw Mill Creek, Staten Island

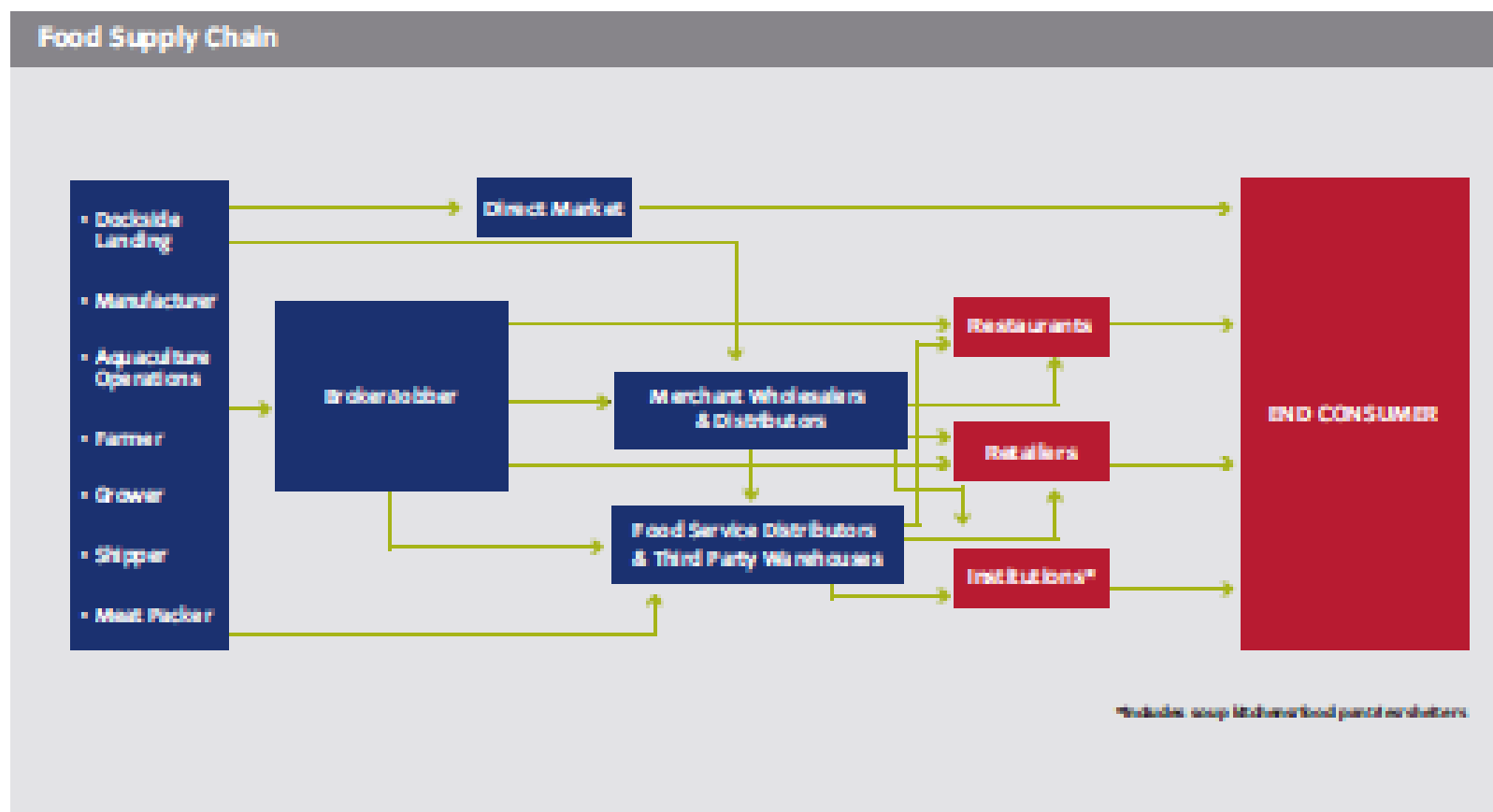
#### Groins

- 18 Sea Gate, Brooklyn

## Dagli Approcci alla Pratiche | Resilienza e Rischi

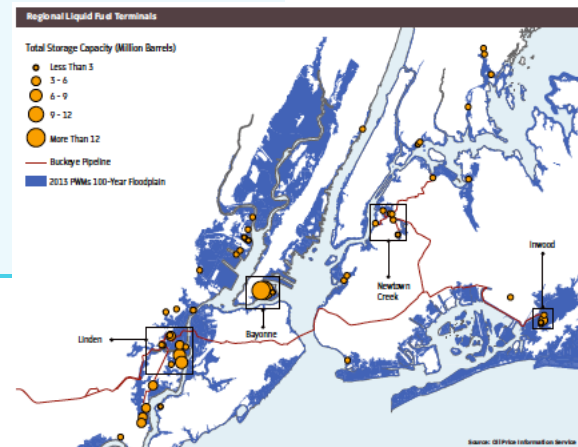
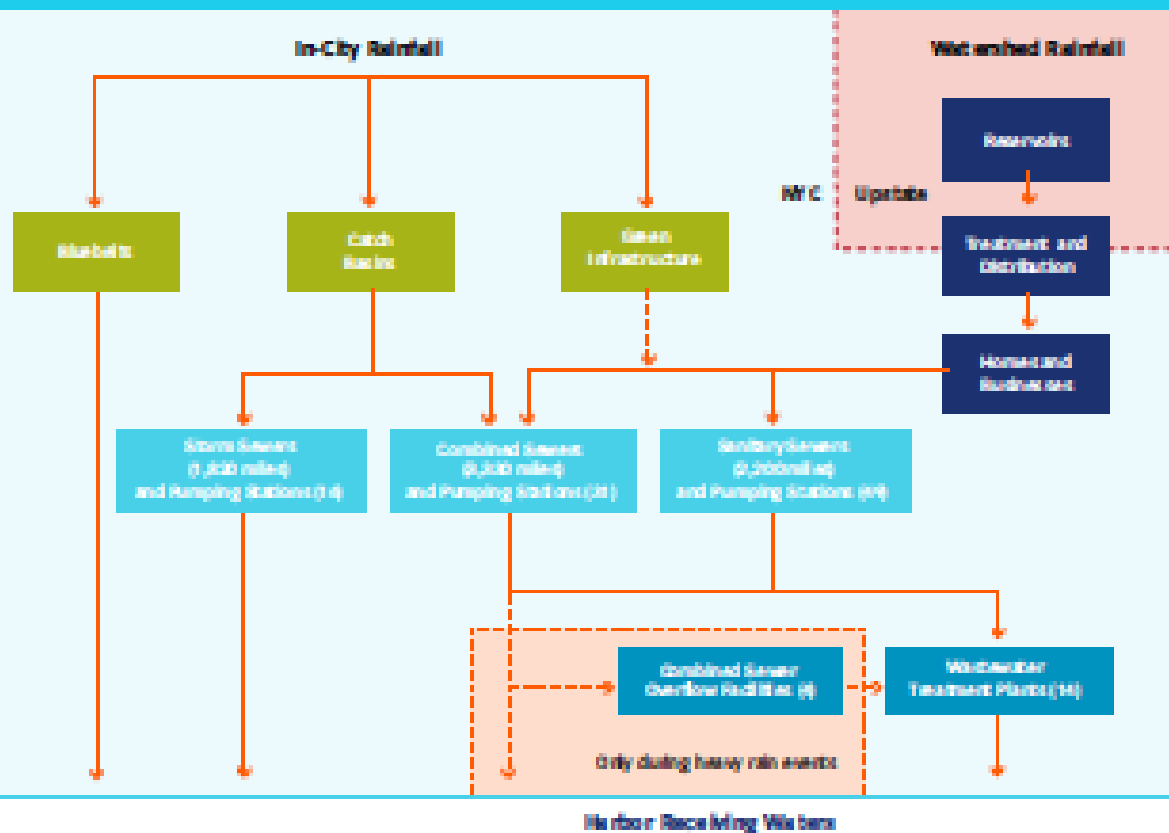


## Dagli Approcci alla Pratiche | Resilienza e Rischi



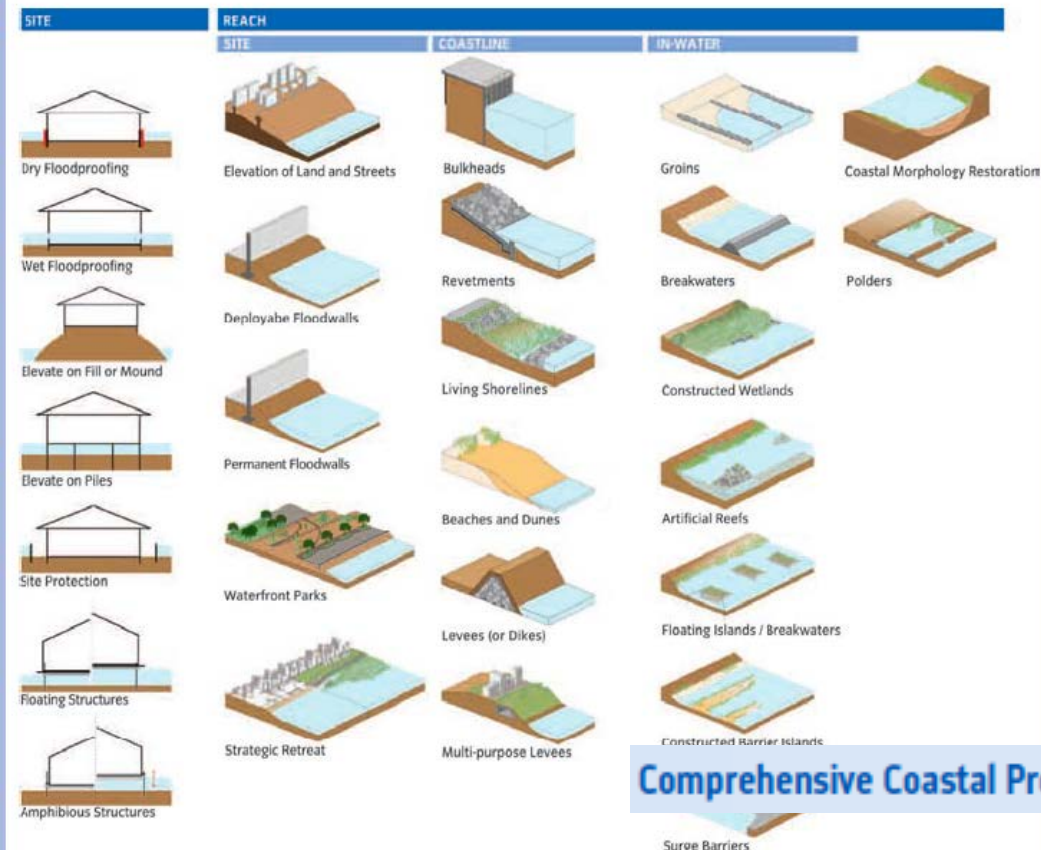
## Dagli Approcci alla Pratiche | Resilienza e Rischi

### The Water and Wastewater System in New York City



# Dagli Approcci alla Pratiche | Resilienza e Rischi

## Typical Coastal Resiliency Measures



Source: DCP

## Designing for Flood Risk: Urban Design Principles

FEMA and Building Code standards for flood-resistant construction require new or substantially improved buildings in flood zones to be flood-proofed or elevated above projected flood levels. However, elevating buildings more than a few feet above the sidewalk can have negative effects on streetscape, building access, public safety, ground floor activity, architectural quality, and neighborhood character. DCP has worked with representatives of the local design community to develop a set of urban design principles to guide the design of flood-resilient buildings.



### VISUAL CONNECTIVITY

Having the windows and front door of a building face the public street can create a sense of security and comfort for pedestrians. These architectural elements also provide visual interest, which in turn promotes a walkable neighborhood. Elevating the first floor of a building can limit this visual connectivity. In residential neighborhoods, porches, stoops, and generous access elements can be designed in order to help to mitigate this disconnection. On commercial streets, this visual connectivity is important to the viability of local retail. A common best practice would be to dry flood-proof the commercial space so that it can be closer to sidewalk level and therefore maximize visual and physical connectivity.



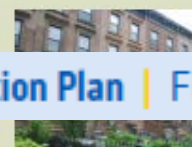
### FACADE ARTICULATION

Buildings often contribute to the character of a place by offering human-scale architectural elements, particularly on first floors. Elevated buildings with crawl spaces, parking, or storage can create blank walls at grade. Setting a building back from the property line slightly and using landscaping and/or other creative design solutions could help to buffer these voids in an active streetscape. If ground-level parking is the only feasible option, then garage doors and curb cuts should be designed to minimize their impact on the pedestrian realm.



### INVITING ACCESS

Elevated buildings pose challenges for accessibility. Ramps can be difficult to accommodate, particularly on smaller lots. Even smaller buildings that are not required to meet Americans with Disabilities Act (ADA) standards have the challenge of integrating longer runs of stairs into building or landscape design. Introducing a 90-degree turn or landing, and paying careful attention to overall stair design could make a long run of stairs easier to climb and appear more inviting for pedestrians.



### NEIGHBORHOOD CHARACTER

Some neighborhoods exhibit a relative uniformity of building form. Elevating buildings will necessarily involve variations in building height and form, which can

## Comprehensive Coastal Protection Plan | Full-Build Recommendations

Adapting to higher standards of flood resistance is both a challenge and an opportunity for architects to achieve higher standards of design. The opportunity exists to innovate and produce buildings that contribute to the public realm and have a positive long-term effect on those neighborhoods recovering from Sandy.

Source: DCP

## Dagli Approcci alla Pratiche | Resilienza e Rischi



Final Draft, October, 2013  
An initiative of the City of Alexandria



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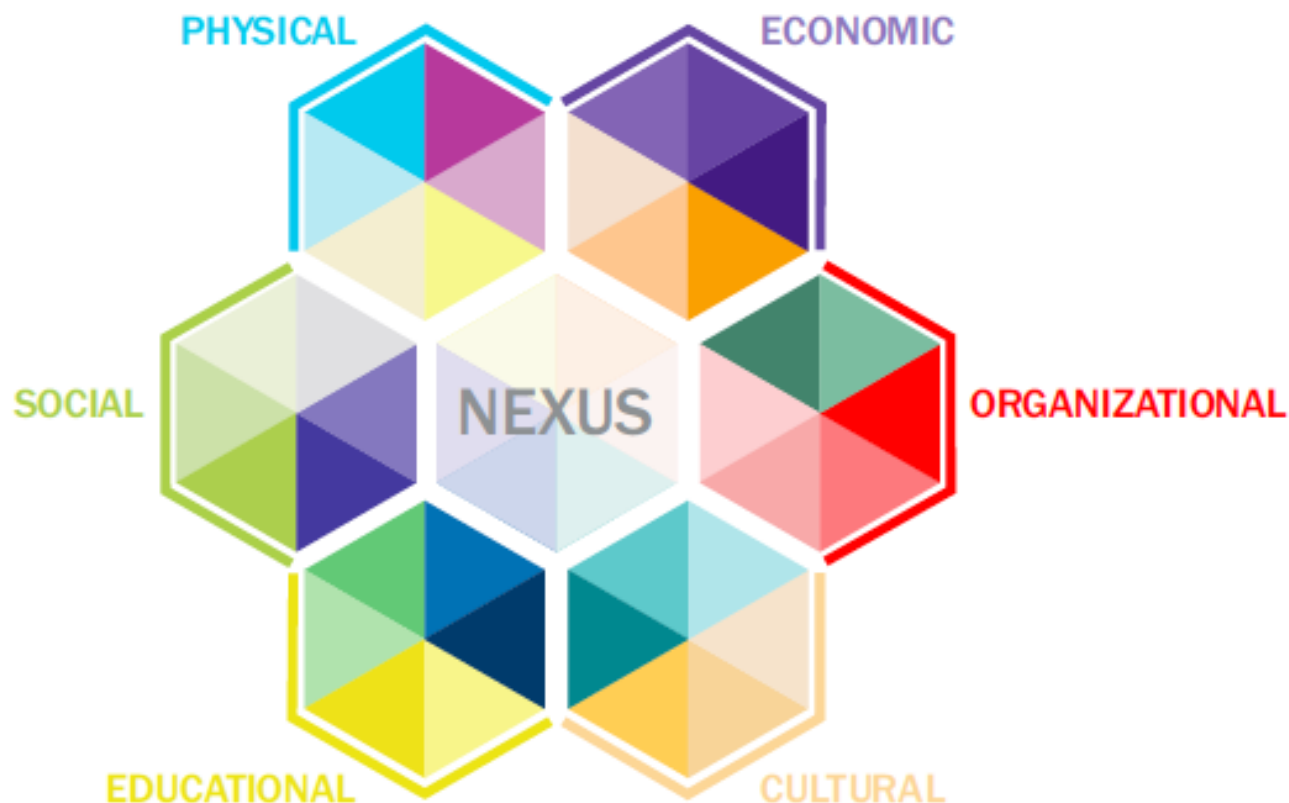
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## Dagli Approcci alla Pratiche | Resilienza e Rischi



The THINKAlex process was organized by the Nexus framework

## Dagli Approcci alla Pratiche | Resilienza e Rischi

THINKAlex Resiliency Plan: Housing  
Horseshoe Drive at Sterks Road



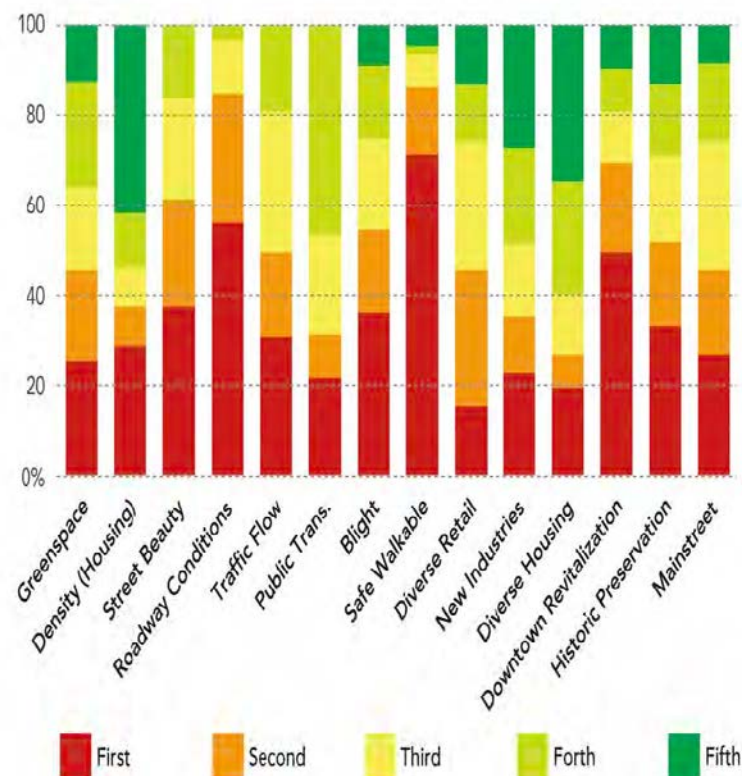
Meeting | Draft Housing Principles Typology Exercise



Meeting | Transportation Investment Exercise

### THINKAlex Resiliency Planning Online Survey Results Ranked Priorities

Walkable communities, roadway conditions, downtown revitalization, eliminating blight, are listed as first priorities among respondents. Density and diversity in housing ranked fifth (last) priority among respondents.



THINKAlex non | Priort Mahita

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ TT ]



Transition Network supports community-led responses to climate change and shrinking supplies of cheap energy, building resilience and happiness.

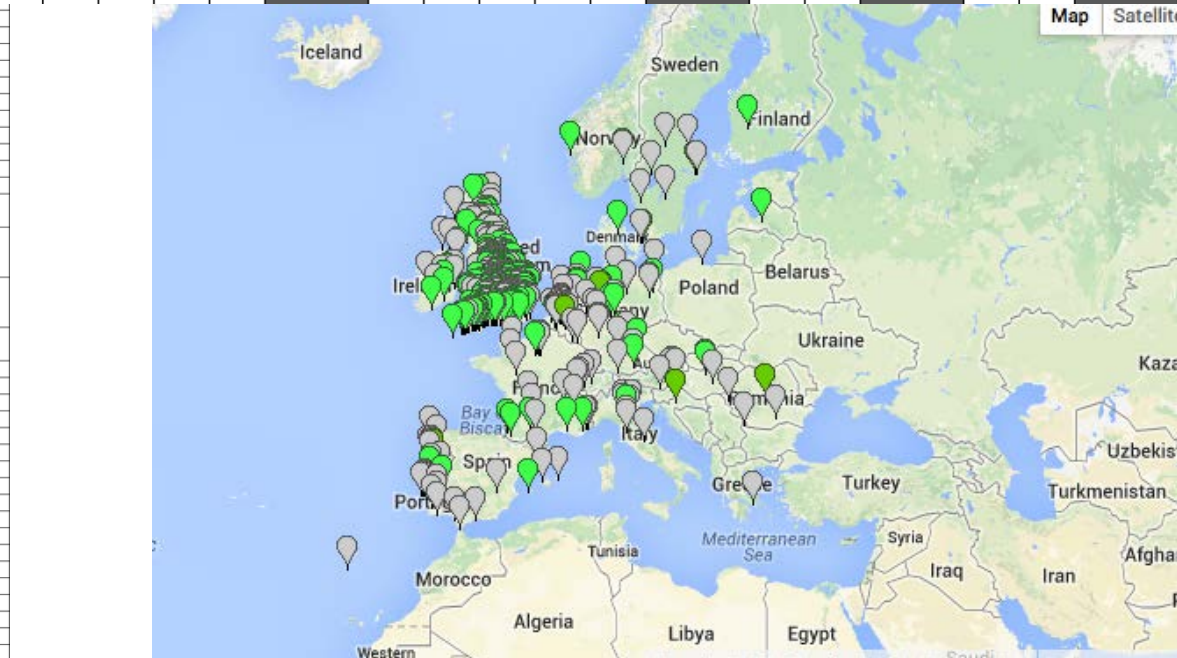
### Transition Projects Map



## CI E STRUMENTI NA



|                                                                              |
|------------------------------------------------------------------------------|
| densità abitativa, cohousing                                                 |
| riqualificazione, recupero, bonifica                                         |
| riuso, riciclo dei materiali da costruzione                                  |
| ottimizzazione del ciclo di vita dei materiali                               |
| ottimizzazione delle prestazioni energetiche                                 |
| <b>transports and facilities</b>                                             |
| accesso ai trasporti pubblici, sistemi di interscambio                       |
| organizzazione delle reti                                                    |
| razionalizzazione del trasporto privato                                      |
| fonti alternative legate alla mobilità e spazi pubblici                      |
| bike-sharing                                                                 |
| <b>food</b>                                                                  |
| strutturazione di piani legati all'apprendimento di tecniche metodi agricoli |
| Incentivi all'autoproduzione                                                 |
| <b>cultural sphere</b>                                                       |
| salvaguardia dell'identità locale e delle forme legate alla tradizione       |
| organizzazione di seminari, corsi, workshop                                  |
| <b>local economy</b>                                                         |



## Dagli Approcci alla Pratiche | Resilienza e Adattamento [TT]



### Food-growing groups

Most Transition groups start with growing food, whether on an allotment, community garden or garden share scheme, as well as by setting up new food-related enterprises.



### Community-owned breweries

Community-owned breweries: one of the ways we can keep money local while innovating and creating employment. Oh, and really good beer.



### Building community relationships

Transition groups pay attention to how they work together as groups, to supporting each other and avoiding the burnout which can often happen with volunteer activities.



### Community-owned bakeries

Every community needs (or kneads?) one, a vital piece of the local infrastructure, sadly no longer common on our high streets, often replaced by out-of-town supermarkets.



### Transition Streets projects

Transition Streets shows how change can happen on a street-by-street basis, reducing household costs and energy use while also rebuilding a sense of community.



### Community-owned energy

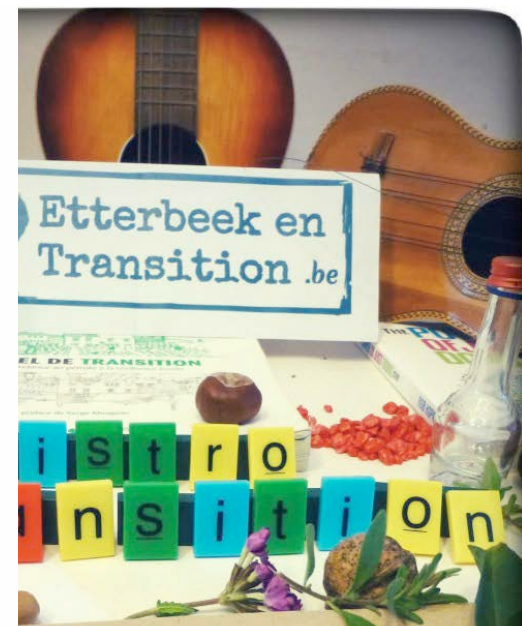
Renewable energy offers huge potential for communities to create cleaner electricity for homes, schools and businesses – generating income and providing a safer place for investments.



### REconomy projects

All these projects are making a real difference in their communities. Increasingly, Transition groups are creating new jobs and livelihoods and vibrant, viable new enterprises that keep money local and boost resilience. These groups are also mapping their local economies to measure the potential benefits of this process. Transition Network's REconomy project offers the tools, networking and support to enable this.

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ TT ]



## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC ]

Newman propone delle strategie ed azioni per la resilient city:

- **renewable energy city,**
- **carbon neutral city, distributed city,**
- **photosintetic city,**
- **eco-efficient city,**
- **pace-based city,**
- **sustainable transport city**

In queste strategie chiave vi sono alcuni principi derivanti dal dibattito disciplinare sulle “città sostenibili” (come la densificazione, mobilità sostenibile) ed alcune strategie derivanti da matrici più ingegneristiche (come l'utilizzo di sistemi di gestione sostenibile delle acque – LCD e/o soluzioni per incrementare l'efficienza energetica).

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC]

1. diversità:
2. Ridondanza:
3. Modularità e indipendenza:
4. Feedback:
5. Capacità di adattamento
6. integrazione di aspetti ambientali  
(responsabilità):

[ResilientCity.org](http://ResilientCity.org)

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC ]

### 1. Density, Diversity and Mix

Resilient Cities and neighbourhoods will need to embrace density, diversity and mix of uses, users, building types, and public spaces.

### 2. Pedestrians First

Resilient cities and neighbourhoods will prioritize walking as the preferred mode of travel, and as a defining component of a healthy quality of life. Reducing car-dependency is a key objective and imperative

### 3. Transit Supportive

Resilient cities and neighbourhoods will develop in a way that is transit supportive. After walking and cycling, transit is the most sustainable mode of transportation. Resilient cities will need to re-orient their way of thinking, by shifting from car oriented urban patterns to transit oriented urban patterns and developments (mobility hubs, intensified corridors, and TODs).

### 4. Place-Making

Resilient cities and neighbourhoods will focus energy and resources on conserving, enhancing, and creating strong, vibrant places, which are a significant component of the neighbourhood's structure and of the community's identity (public realm, pedestrian scale (a 500 m radius), Heritage resources )

### 5. Complete Communities

Resilient neighbourhoods will provide the needs of daily living, within walking distance (a 500 m radius) (destinations must be accessible within a pleasant walking distance , enjoyable to walk)

### 6. Integrated Natural Systems

Resilient cities and neighbourhoods will conserve and enhance the health of natural systems (including climate) and areas of environmental significance, and manage the impacts of climate change. The health and integrity of wildlife and vegetation are also a priority. Protecting existing biodiversity, indigenous or endangered species, wetlands, the tree canopy, connectivity, are all a necessary aspect of securing healthy natural systems.

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC]

### 7. Integrated Technical and Industrial Systems

Resilient Cities and neighbourhoods will enhance the effectiveness, efficiency and safety of their technical and industrial systems and processes, including their manufacturing, transportation, communications and construction infrastructure and systems to increase their energy efficiency, and reduce their environmental footprint.

### 8. Local Sources

Resilient regions, cities, and neighbourhoods will grow and produce the resources they need, in close proximity (200 kilometre radius)

### 9. Engaged Communities

The development of resilient cities and neighbourhoods will require the active participation of community members, at all scales.

### 10.Redundant and Durable Life Safety and Critical Infrastructure Systems

Resilient Cities and neighbourhoods will plan and design for redundancy and durability of their life safety and critical infrastructure systems. Planning and design of these systems will aim for levels of redundancy and durability that are commensurate with the increasing environmental, social, and economic stresses associated with the impacts of climate change and peak oil.

### 11. Resilient Operations

Resilient cities and neighbourhoods will develop building types and urban forms with reduced servicing costs, and reduced environmental footprints



# Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC ]

## 6 CHALLENGES TO RESILIENCE

- Population growth + migration
- Climate change
- Energy scarcity
- Income disparity
- Socio-political
- Environmental degradation



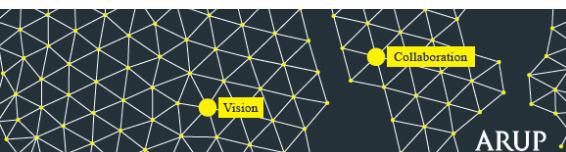
## 6 ATTRIBUTES OF RESILIENCE

- Flexibility
- Redundancy
- Diversity
- Decoupling
- Decentralization
- Environmental integration

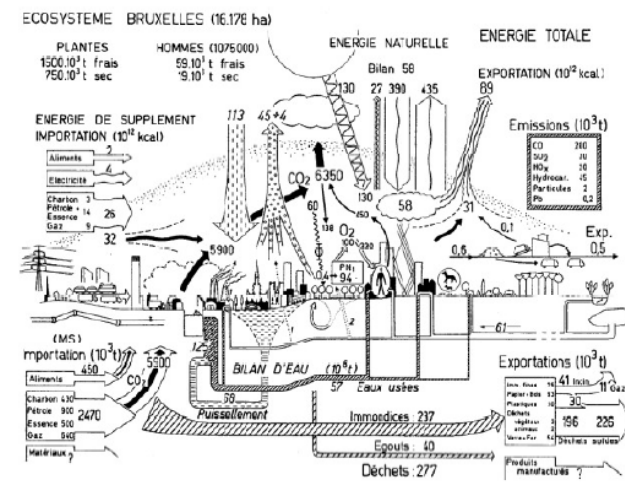


## 6 APPROACHES FOR RESILIENCE

- Growth + Density
- Energy Performance
- Local Food Production
- Modularization Key Infrastructure
- Integrated Metabolism
- Infrastructure 'Hardening'



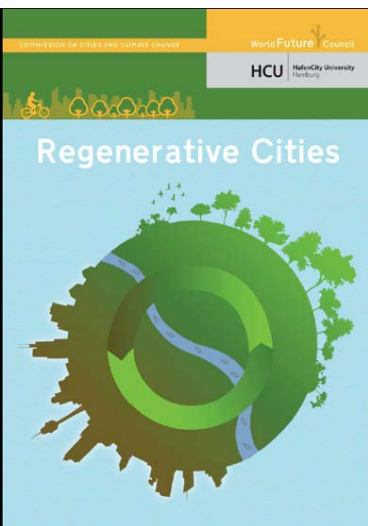
### Integrated Systems City Scale



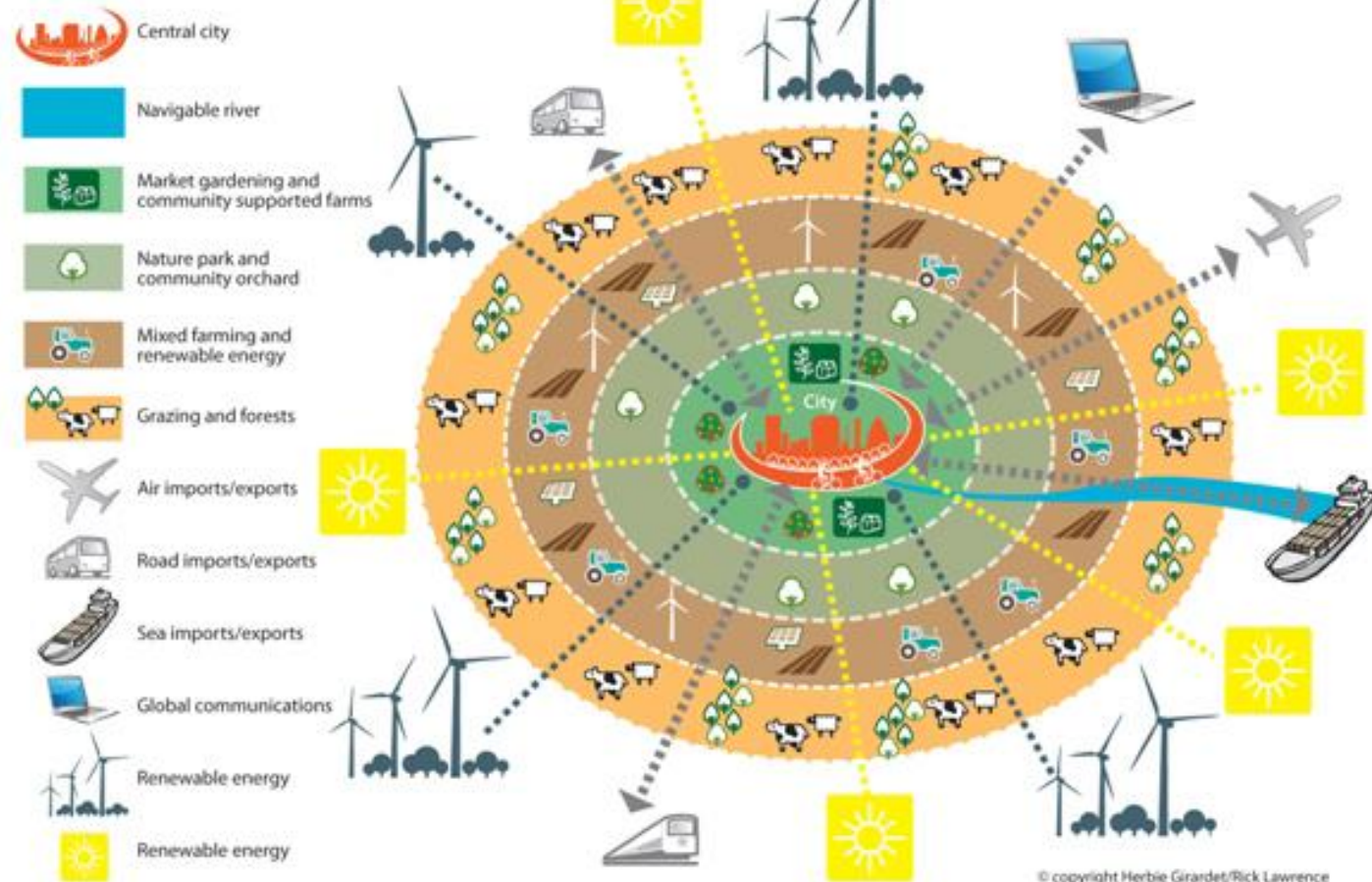
Duvigneaud, P. et Denayer-de Smet, S. (eds.) (1975) L' Ecosystème Urbain.



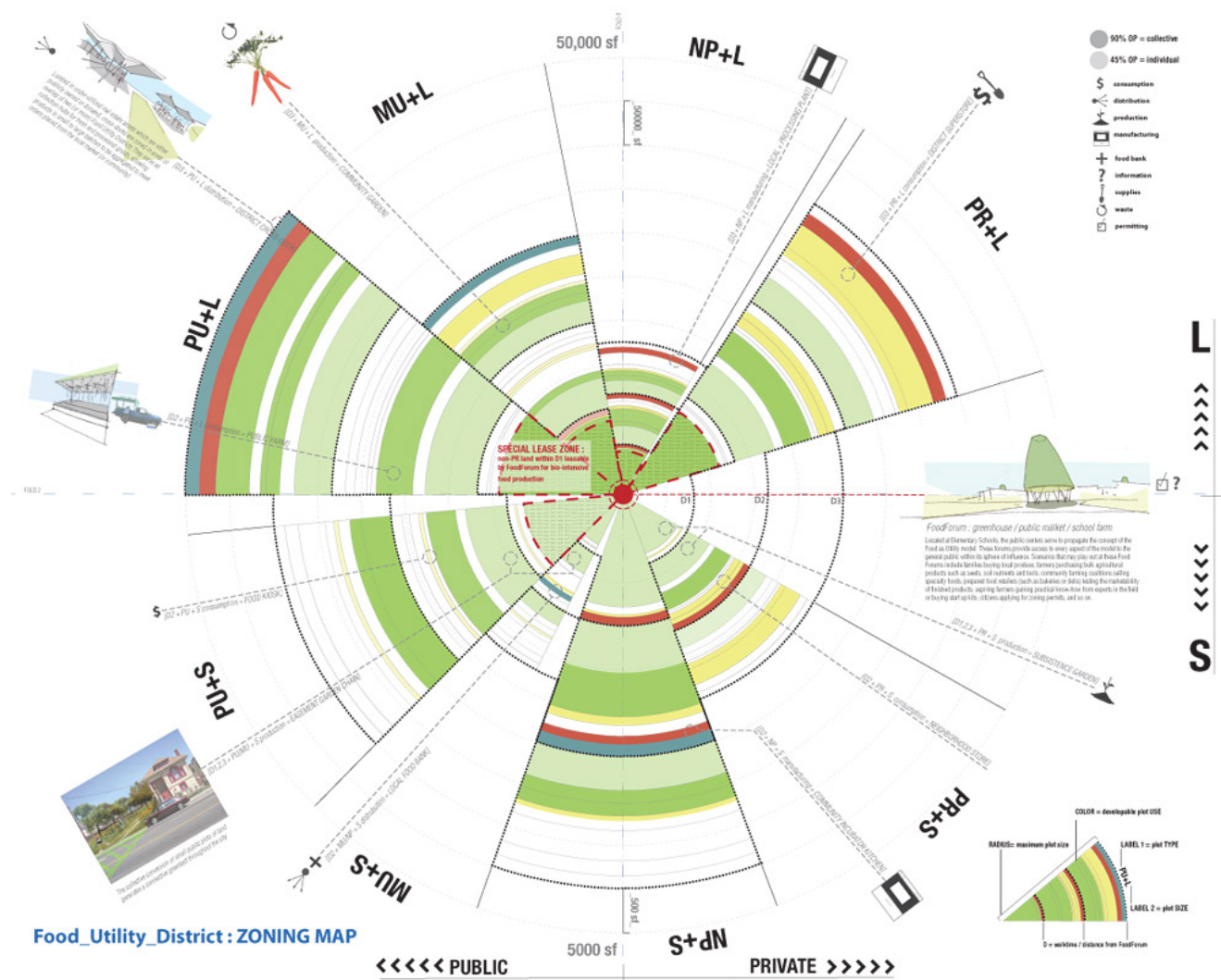
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### "Ecopolis"



# Città resilienti (cambiamenti climatici e peak oil)



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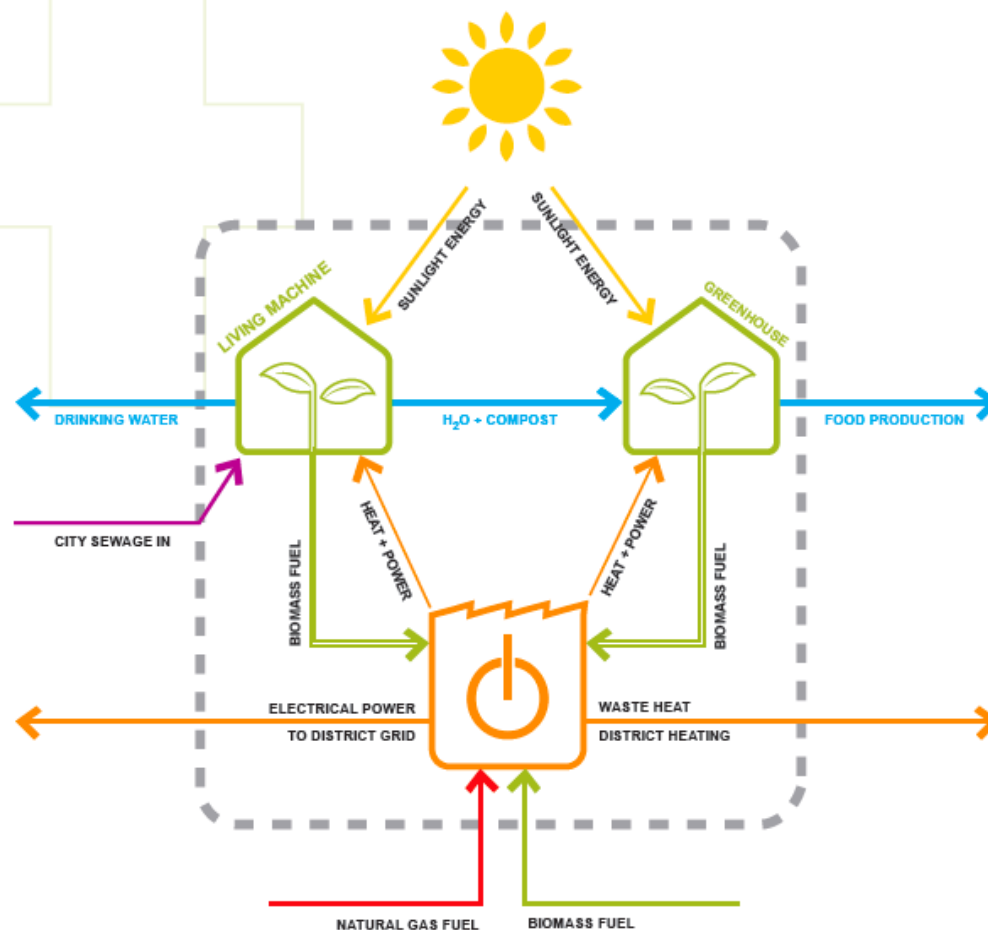
### MODULARIZATION KEY INFRA STRUCTURE SYSTEMS

BY CRAIG APPLGATH  
BASED ON IDEAS OF JOHN  
TODD AND GORDON GRAFF



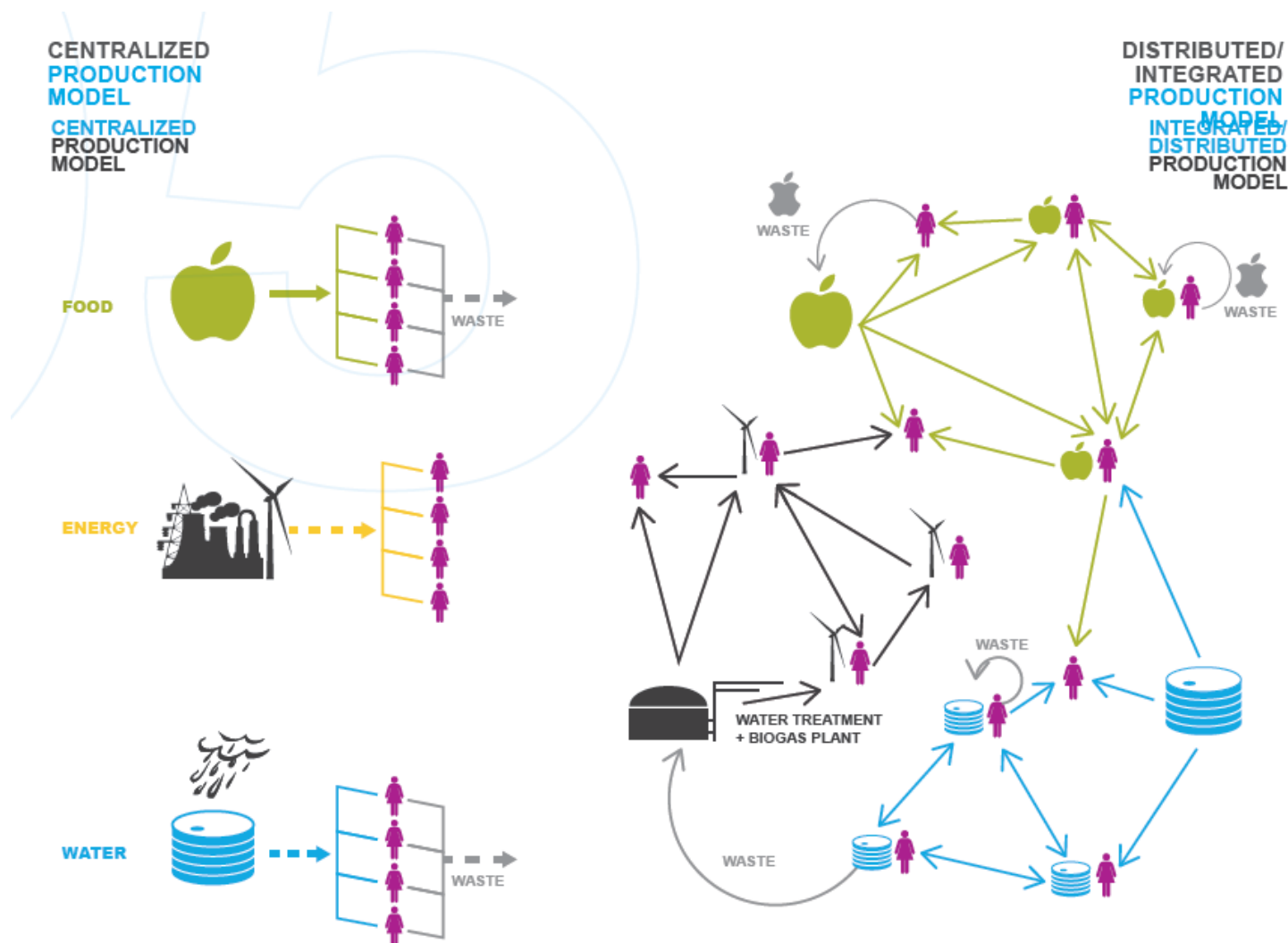
#### THE RESILIENCE CENTRE

COMBINED DISTRICT  
POWER, HEAT, WASTE,  
WATER RECOVERY, FOOD  
PRODUCTION CENTRE.  
THIS PLAN WOULD BE  
SCALABLE - FROM  
NEIGHBOURHOOD  
CENTRES TO  
DISTRICT CENTRES.



Modularity

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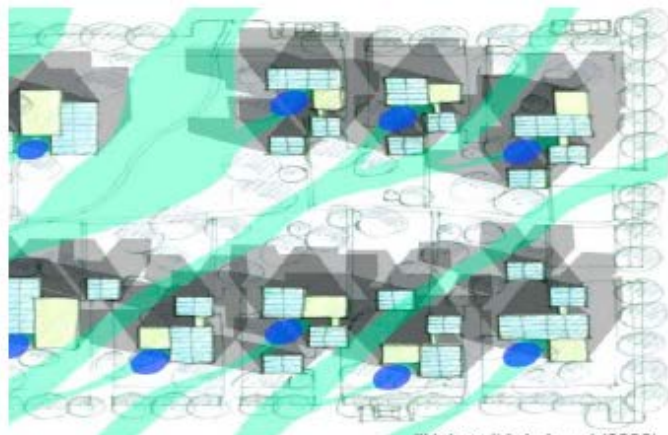


### 3. Modularity

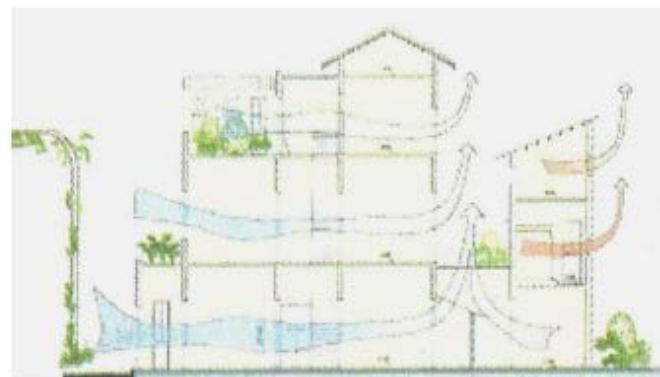
## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC ]

### Climate-Resilient Urban Design Urban Ventilation + Green Infrastructure

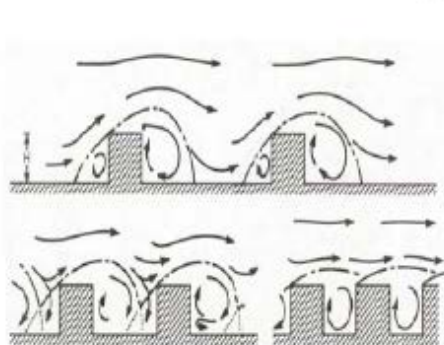
Climate-Resilient Urban Design  
Resilient Cities Congress  
Bonn, May 2010



l'Université de Laval (2006).



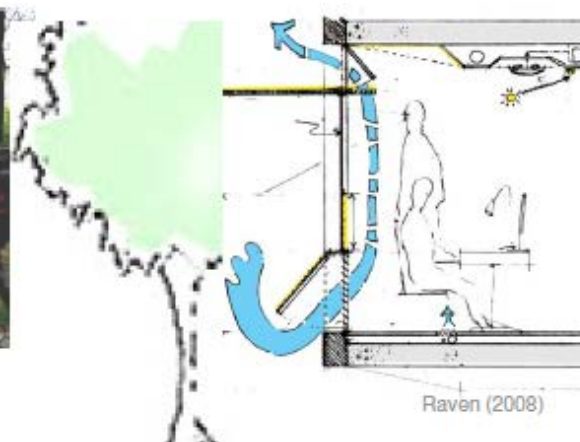
l'Université de Laval (2006).



TR Oke (1987).



Vauban, Germany (<http://graphics8.nytimes.com/images/blogs/greeninc/vauban.jpeg>) (2009).

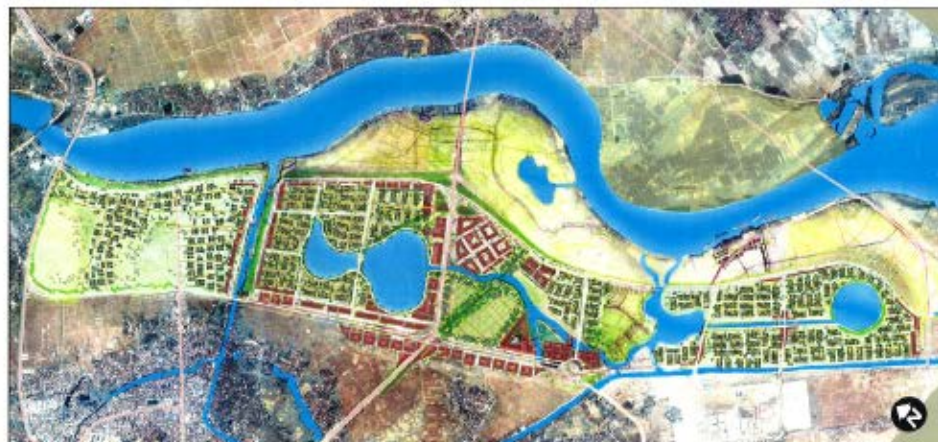


Raven (2008)

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### Climate-Resilient Urban Design Urban Ventilation + Green Infrastructure

Climate-Resilient Urban Design  
Resilient Cities Congress  
Bonn, May 2010



**Green and blue “fingers”:**  
Passive strategies:  
Natural Cooling,  
Stormwater Retention,  
Canals and Connected  
Green Corridors aligned  
with prevailing summer  
breezes



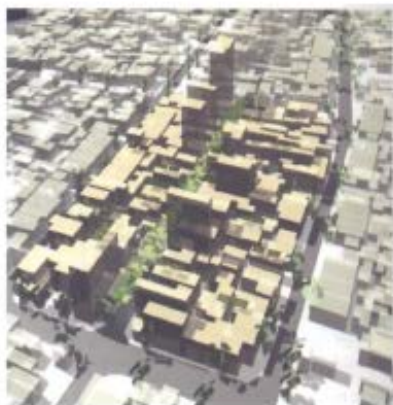
Thanh Hoa Capital Plan, Vietnam, Raven-LBG, 2008

Jeffrey D. Raven AIA LEED AP

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### Climate-Resilient Urban Design Urban Ventilation + Green Infrastructure

Climate-Resilient Urban Design  
Resilient Cities Congress  
Bonn, May 2010



l'Université de Laval (2006).



Masdar City Model Detail , Fosters + Partners

**“Green fingers”**  
through dense,  
energy-efficient,  
pedestrian-  
friendly  
neighborhoods of  
cool streets,  
urban squares  
lower building  
cooling loads



Rendering Detail, Thanh Hoa Capital Plan, Vietnam, Raven-LBG, 2008

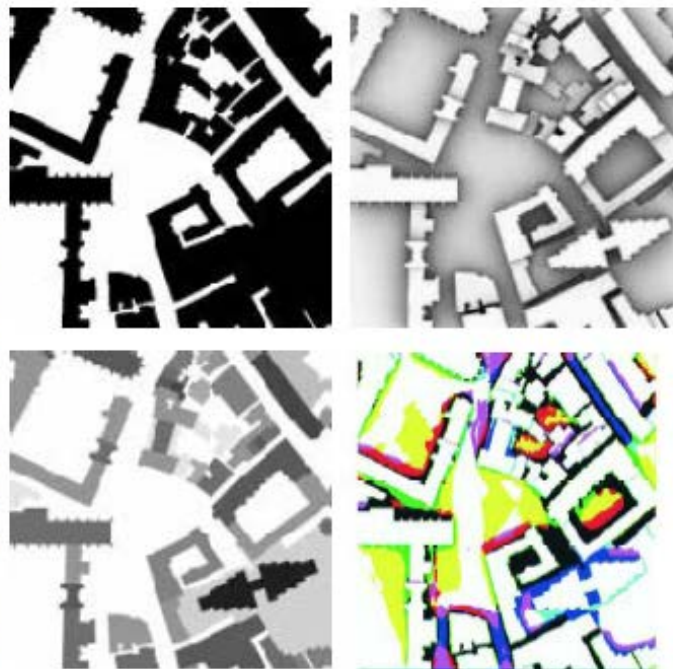
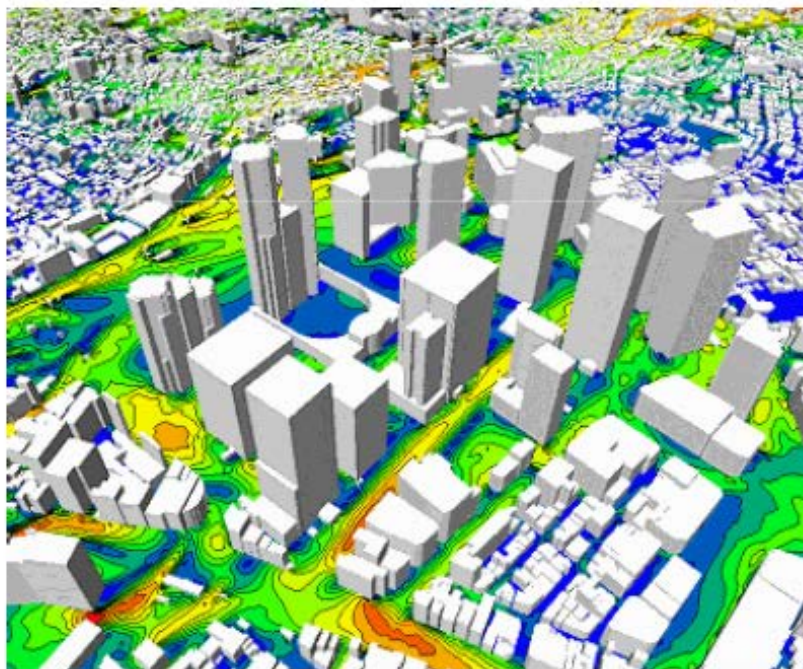
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### Climate-Resilient Urban Design Morphological Indicators

Climate-Resilient Urban Design  
Resilient Cities Congress  
Bonn, May 2010

Computational fluid dynamics  
(CFD) in Urban Design

Suite of tools, determining  
comfort or “desirability” factor in  
the public realm



## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC]



### 1. Manage Heat

Update the heat response plan, focusing on vulnerable populations, complete further research into urban heat island effect and pursue ways to cool hot spots

### 2. Pursue Innovative Cooling

Launch an effort to seek out innovative ideas for cooling the city and encourage property owners to make green landscape and energy efficiency improvements.

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### 3. Protect Air Quality

Intensity efforts to reduce ozone-precursors through mitigation programs that reduce driving and emissions from power plants.

### 4. Manage Stormwater

Collaborate with the Metropolitan Water Reclamation District on a Chicago Watershed Plan that factors in climate changes and uses vacant land to manage stormwater.

### 5. Implement Green Urban Design

Implement key steps in Chicago's Green Urban Design plan to manage heat and flooding. These steps will enable Chicago to capture rain where it falls and reflect away some of the intensity of the sun on hot days.

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### 6. Preserve Our Plants and Trees

Publish a new plant-growing list that focuses on plants that can thrive in altered climates. Also draft a new landscape ordinance to accommodate plants that can tolerate the altered climate. View the list of recommended trees for Chicago's changing climate.

### 7. Engage the Public

Share climate research findings with groups most affected – social service agencies, garden clubs, etc. Help individual households to take their own steps to reduce flooding and manage heat waves, such as installing rain barrels and back-up power for sump pumps and planting shade trees.

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### 8. Engage Businesses

Work with businesses to analyze their vulnerability to climate change and take action.

### 9. Plan for the Future

Use the Green Steering Committee of City Commissioners to oversee City implementation efforts and the Green Ribbon Committee of business and community leaders to assess how the plan is being implemented, recommend revisions, and report to the Mayor and all Chicagoans on our progress.

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC]

# Climate Adaptation Strategy Ho Chi Minh City

moving towards the sea with climate change adaptation

Climate adaptation strategy for Ho Chi  
Minh City officially handed over by  
Rotterdam City

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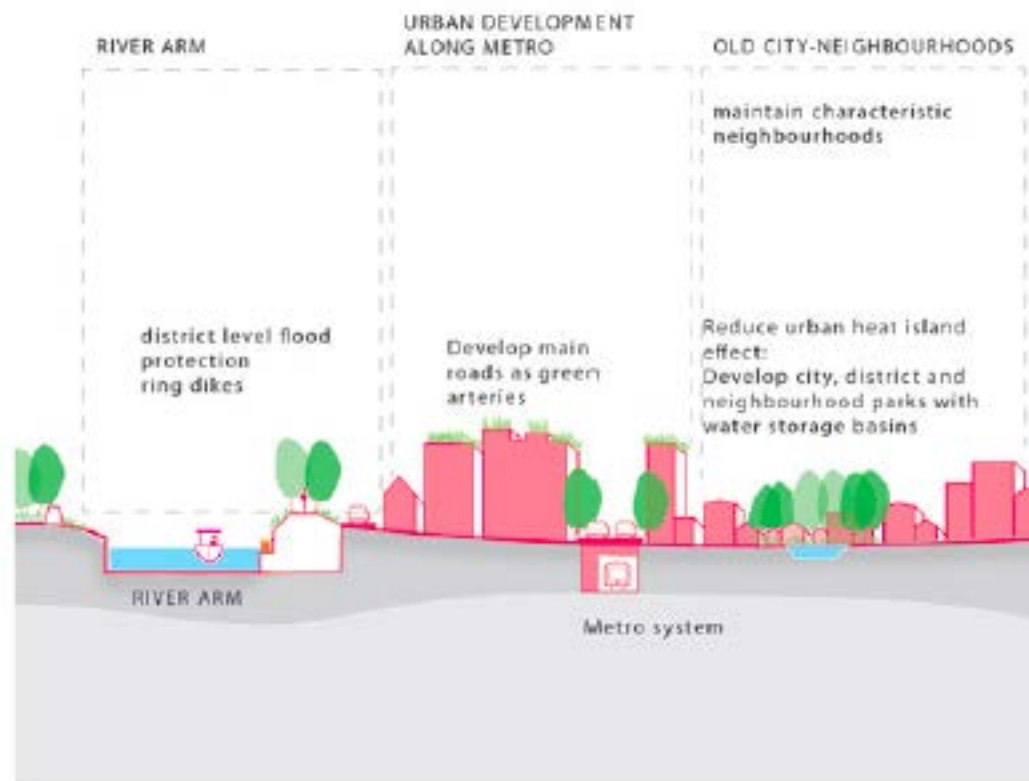
# Climate Adaptation Strategy Ho Chi Minh City

moving towards the sea with climate change adaptation

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# Climate Adaptation Strategy Ho Chi Minh City

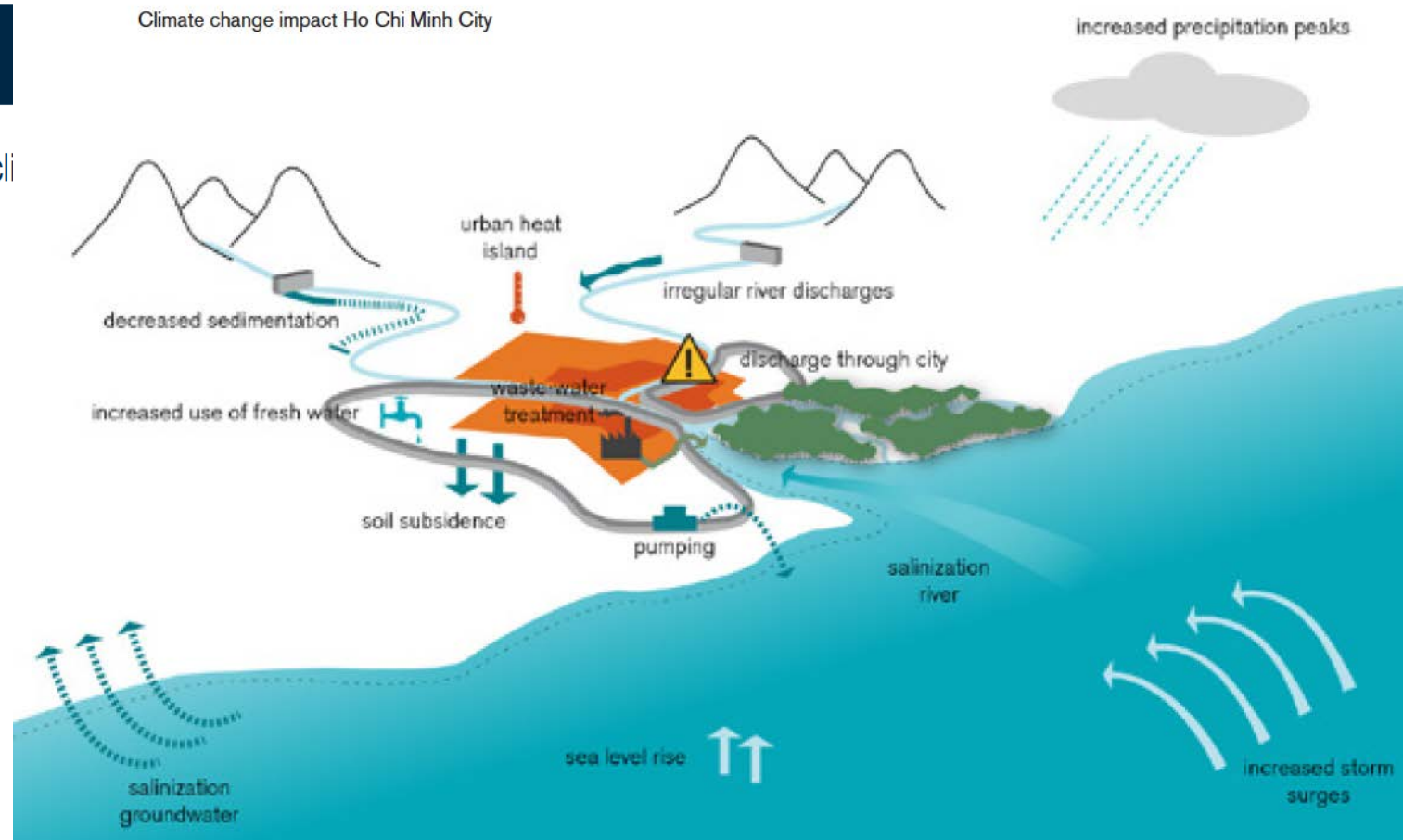
moving towards the sea with climate change adaptation



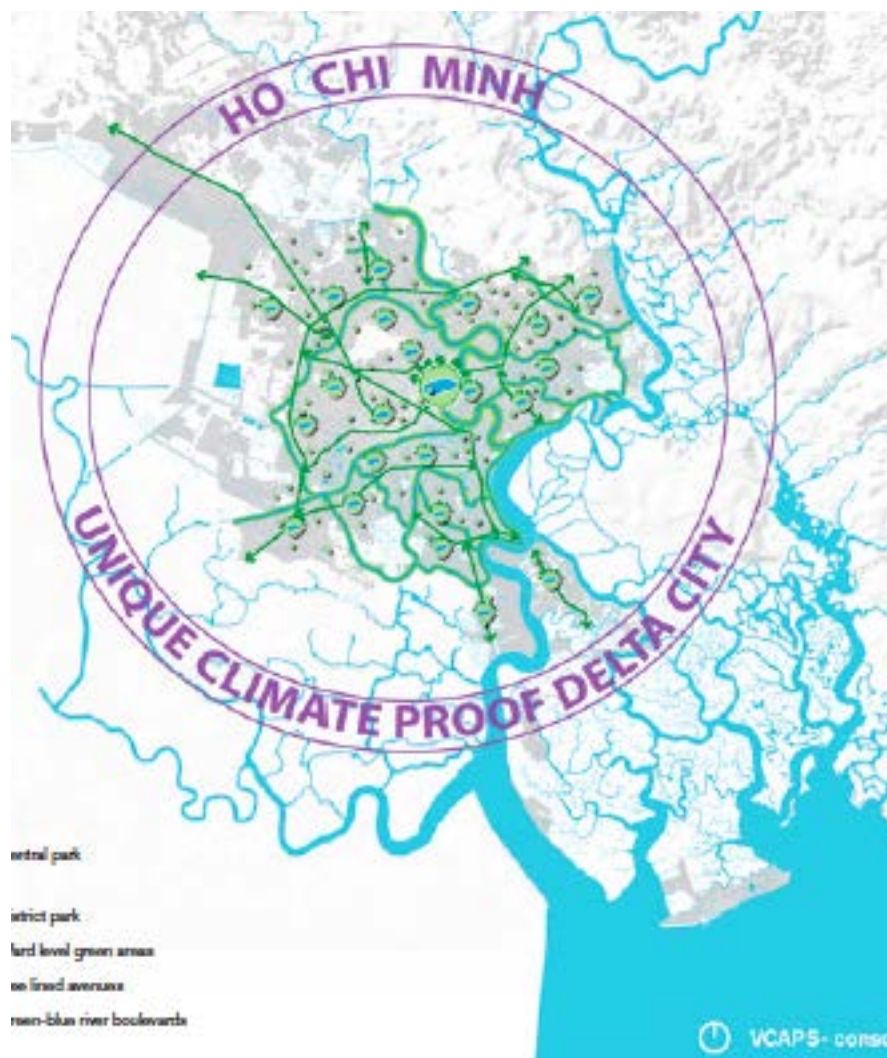
# Climate Adaptation Strategy

## Ho Chi Minh

moving towards the sea with cli



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Central park



District park



Ward level green areas

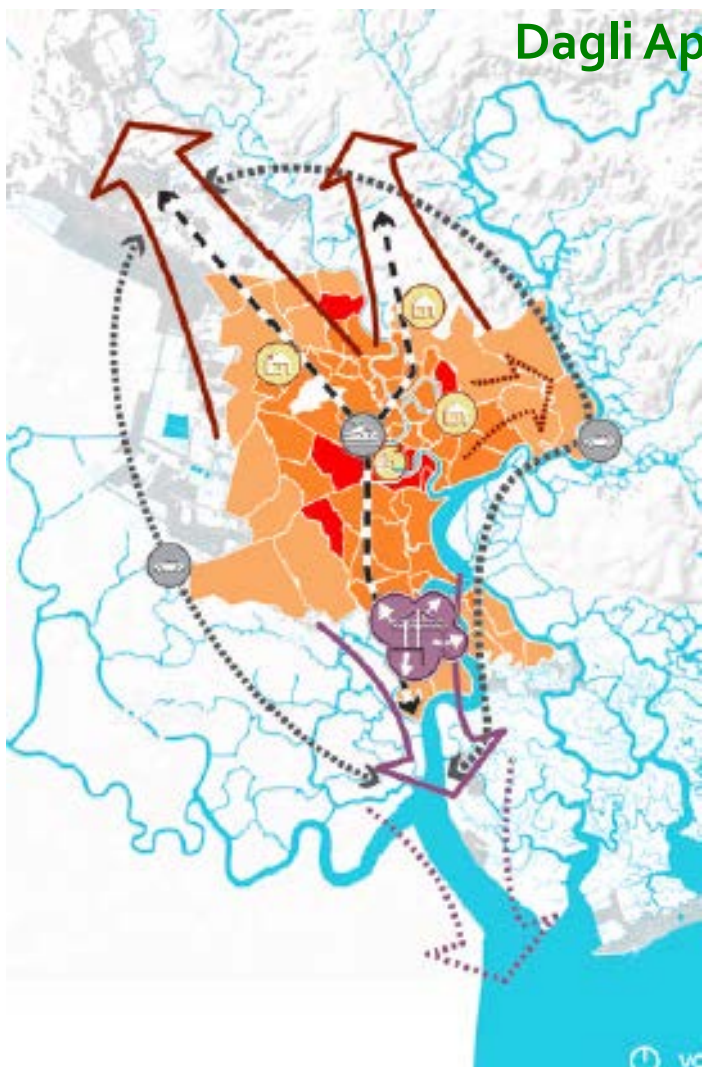


Tree lined avenues



Green-blue river boulevards

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC ]



**Direction 1: Base development direction  
on soil and water conditions**

|                                                                                                                                                                                  | Strategic Intervention                                                          | Term                                          | Type                               |                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1A<br>                                                                                          | Develop new residential areas towards the northwest and east                    | Short term                                    | No-regret                          | In all scenarios space is needed for urban expansion. From a climate adaptation point of view the northwest and east are the best locations. Developing towards the south will require large investments in water safety in the future.                                          |
| 1B<br>                                                                                          | Develop harbours towards the south using adaptive measures                      | Short term, outplacement has already started. | Safety margin, include flexibility | Develop capital intensive harbour areas with a surplus height anticipating future sea level rise. Where possible, leave room for future adjustment. In case of lower economic growth, not all of the proposed locations may be necessary so don't develop too much land at once. |
| 1C<br>                                                                                          | Redevelop old harbours, combining flood protection with attractive water fronts | Short term, outplacement has already started. | Win-win                            | Developing a delta dike is in some inner-city locations a win-win situation as more space for development becomes available.                                                                                                                                                     |
| 1D<br>                                                                                          | Increase urban density in the inner-city                                        | Short term                                    | No-regret                          | In all scenarios the population of the city grows at least until 2025. Increasing density as a solution means that less new ground will be urbanized, a process that normally is irreversible.                                                                                   |
| 1E<br><br> | Develop north-south infrastructure                                              | Short term                                    | Robust                             | Build infrastructure robust, taking into account sea level rise. Measures are necessary for the success of the harbour and industrial areas in the south. The connections are clearly more profitable in high growth scenarios.                                                  |
| 1F                                                                                                                                                                               | Avoid encroachment on waterways                                                 | Short term                                    | No-regret                          | In all scenarios there will be a need to avoid encroachment.                                                                                                                                                                                                                     |

## Dagli Approcci alla Pratiche | Resilienza e Adattamento [ CC ]

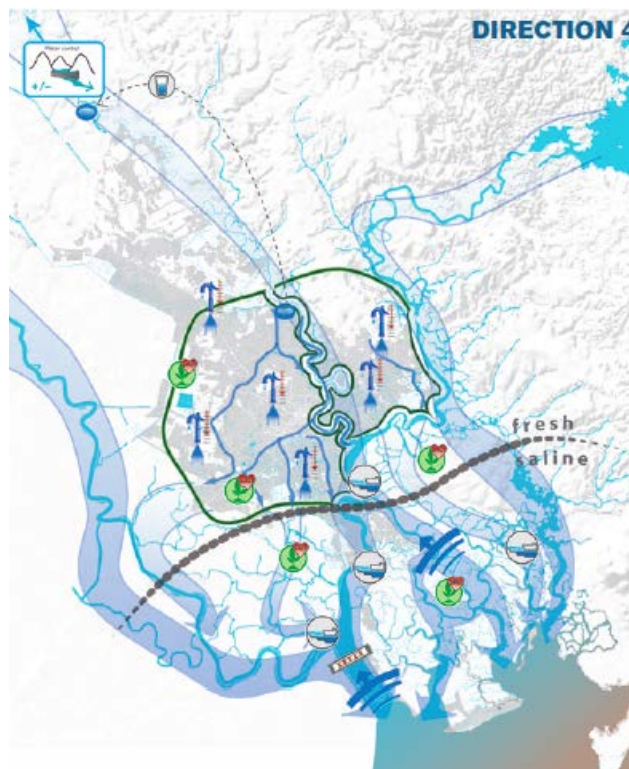


|    | Strategic Intervention                                          | Term       | Type              |                                                                                                                                 |
|----|-----------------------------------------------------------------|------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 2A | Develop flood risk maps and flood risk standards                | Short term |                   | Flood risk maps form the basis for standards                                                                                    |
| 2B | Protect the inner city with ring dike                           | Short term | Win-win           | Combination with the development of ring road 3 saves costs.                                                                    |
| 2C | Optimize reservoir management for flood protection              | Short term | No-regret         | Optimizing reservoir operation from a floods perspective will reduce the risks of inundation north of HCMC.                     |
| 2D | Tidal barrier                                                   | Long term  |                   | Measure only necessary in case of extreme sea level rise.                                                                       |
| 2E | Develop district adaptation pathways                            | Short term | No-regret         | A bottom-up approach is expected to contribute to resilience at the district level.                                             |
| 2F | Adaptive building towards the south                             | Short term | Flexible          | Building in smaller quantities and on mounds leaving space for future adaptation makes it possible to grow with sea level rise. |
| 2G | Identify and protect the vital and the vulnerable areas in HCMC | Short term | No-regret, robust | Create extra robust solutions for vital and vulnerable functions.                                                               |
| 2H | Protect the riparian zones along the rivers                     | Short term | No-regret         | In all scenarios, safeguarding riparian zones leads to the reduction of flood risks.                                            |
| 2I | Strengthen emergency management                                 | Short term | No-regret         | Helps to reduce victims and economic damage also in the existing situation.                                                     |

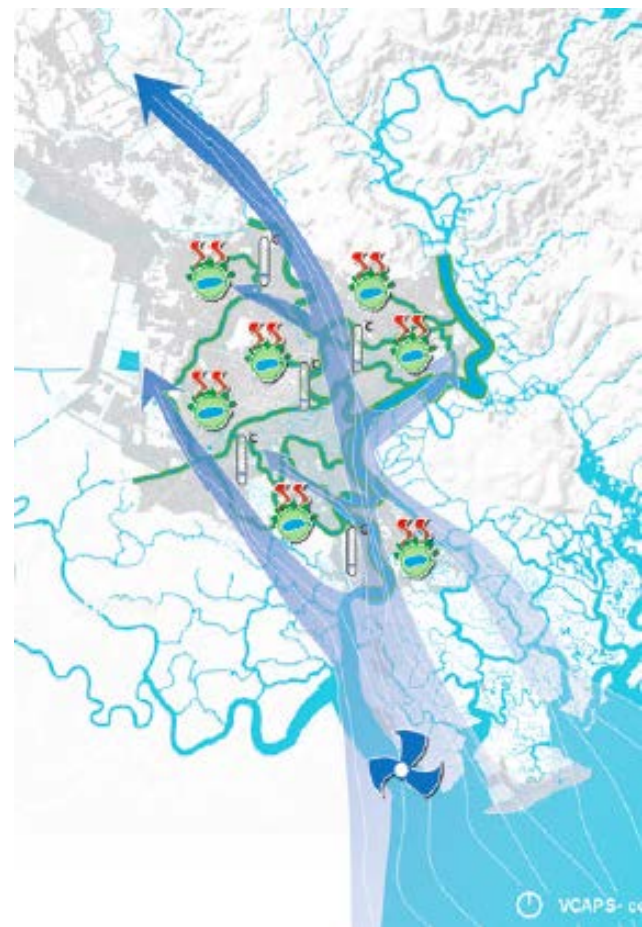
**Direction 2: Use a stepwise approach for flood protection**



**Direction 4: Prevent salinisation where possible, adapt where necessary**



**Direction 5: Create alternatives for groundwater use**



**6.7 Direction 6: Strengthen the blue-green network and 'urban ventilation'**

## Riferimenti

<http://www.resalliance.org/>

<http://www.transitionnetwork.org/>

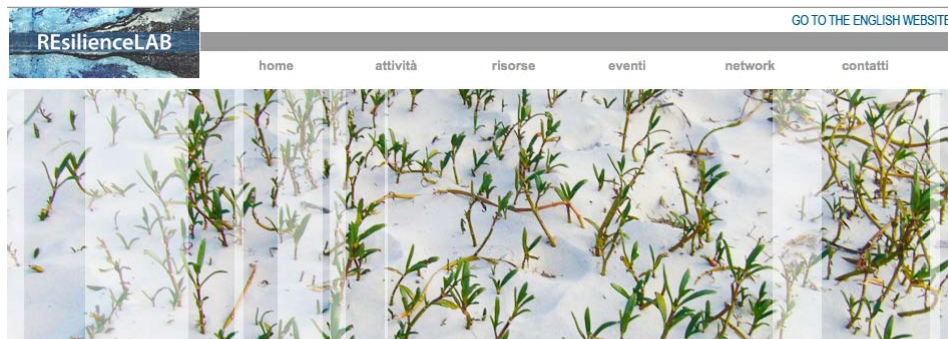
<http://resilient-cities.iclei.org/>

<http://www.resilientcity.org/>



<http://www.unisdr.org/campaign/resilientcities/>

## Riferimenti



### Appuntamenti

#### RESilienceLAB

#### 28-29.03.2014 - NEXUS

Workshop internazionale sul tema PERI URBAN AREAS AND FOOD-ENERGY-WATER NEXUS. SUSTAINABILITY AND RESILIENT STRATEGIES IN THE AGE OF CLIMATE CHANGE organizzato dal Laboratorio di Cooperazione Internazionale del DASIU in collaborazione con RESilienceLAB e con il Laboratorio di Simulazione

RESilienceLAB si costituisce come una rete di persone che con approcci e sguardi differenti hanno lavorato e lavorano sui temi della sostenibilità, dell'adattamento e della resilienza urbana e territoriale.

La rete si propone come supporto della promozione di azioni e strategie di resilienza.

#### I motivi

Negli ultimi anni i concetti di RESILIENZA e di CITTA' RESILIENTE si sono largamente diffusi a livello politico, accademico e comunitario sia in Europa che nel mondo. Nel contesto italiano, questi concetti hanno avuto una diffusione

[www.resiliencelab.eu](http://www.resiliencelab.eu)

Angela Colucci  
Le città resilienti: approcci  
e strategie

<http://www.jeanmonnet-pv.it>



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