Porto di Mare Eco-District via IMM Methodology

1. What?: *Can Porto di Mare be part of a new generation of Sustainable Eco-Districts?*

Ambito: Grandi Funzioni Urbane – Porto di Mare

Composizione del Team: IMMdesignlab (Politecnico di Milano, ABC Department), Depuratore di Milano Nosedo (Vettabbia Scarl), REsilienceLAB, Gruppo Ecologico Est Milano (Greem), Wageningen University and Research (WUR)

Referente proposta: Arch. Carlo Andrea Biraghi
Responsabili del gruppo di ricerca: prof. Massimo Tadi (IMMdeseignlab), prof. Gabriele Masera

IMM DesignLab

MilanoDepur S.p.A. Depuratore Milano Nosedo

REsilienceLAB

greem gruppo ecologico est milano

POLITECNICO MILANO 1863
DIPARTIMENTO DI ARCHITETTURA, INGEGNERIA DELLE COSTRUZIONI E AMBIENTE COSTRUITO

WAGENINGEN UR
For quality of life

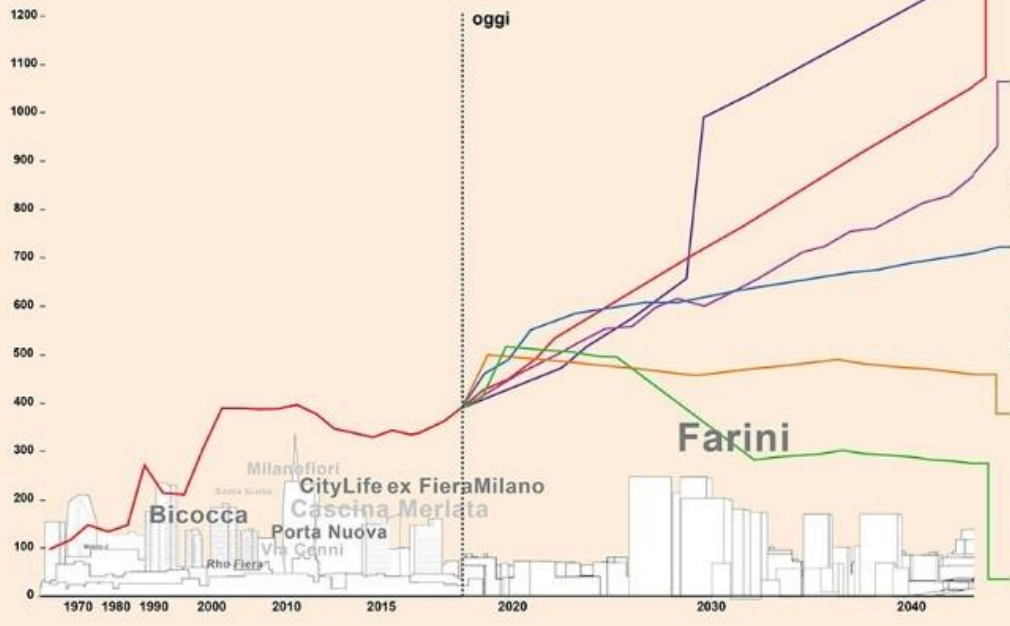
2. Why?: *a sustainable vision for investments*

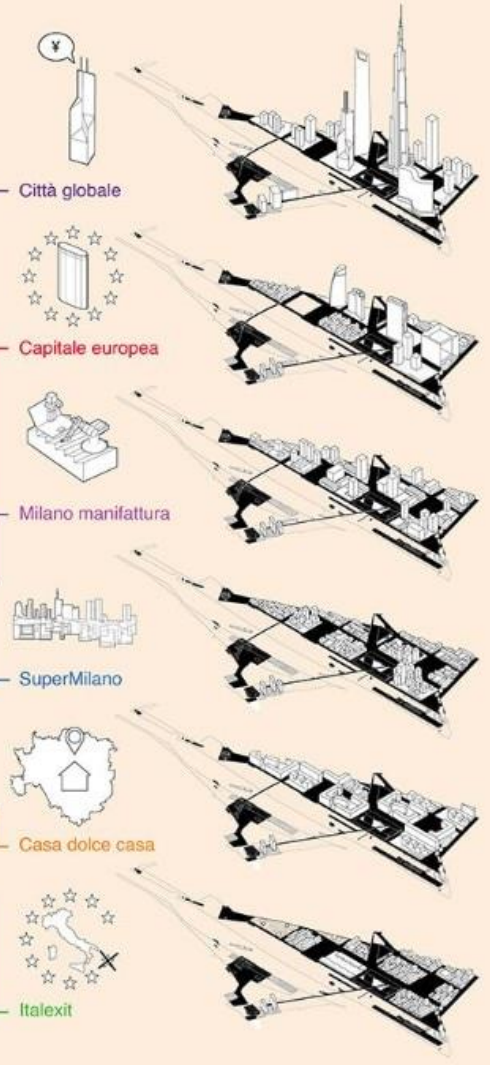
SERVIZIO | INVESTIMENTI

Milano, in arrivo 10 miliardi: così si trasformerà la città entro il 2030

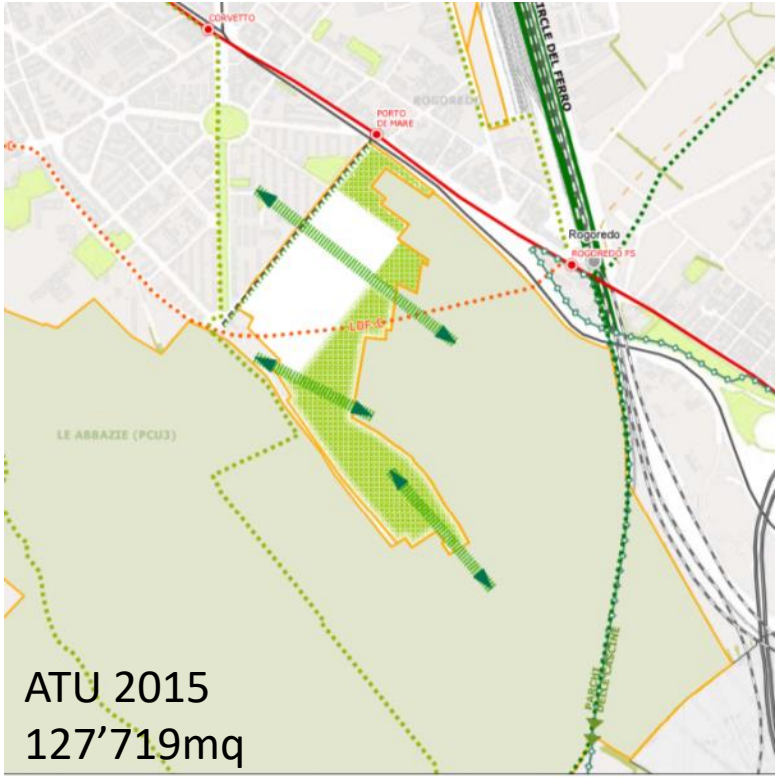
–di Paola Dezza | 06 maggio 2019

The Trust Project

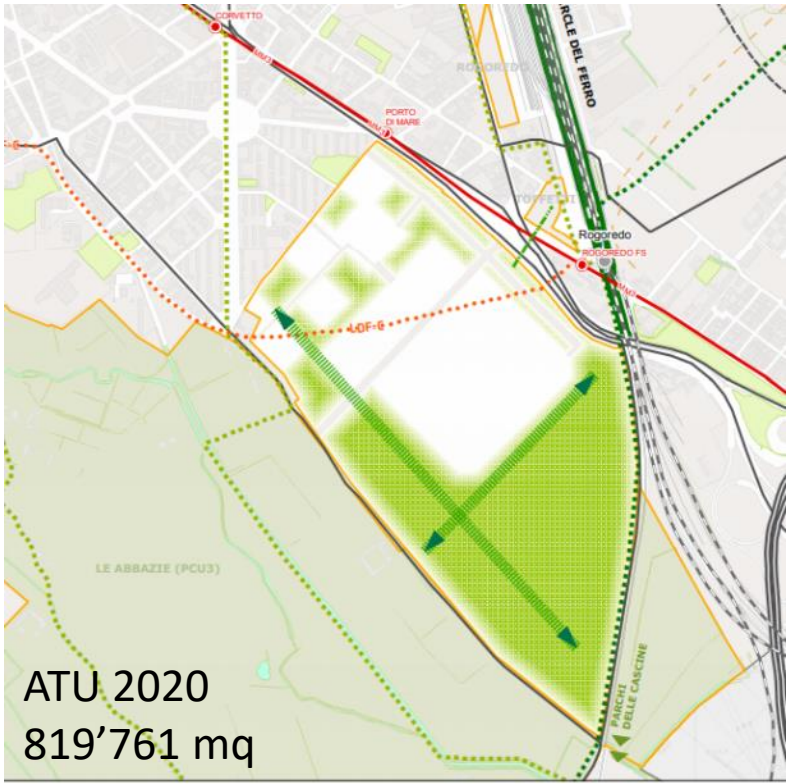




2. Why?: *a sustainable vision for investments*

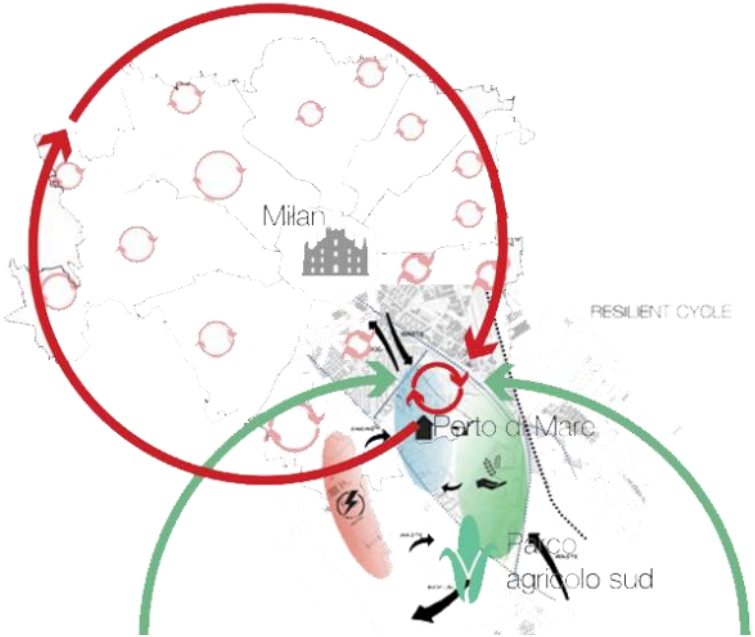


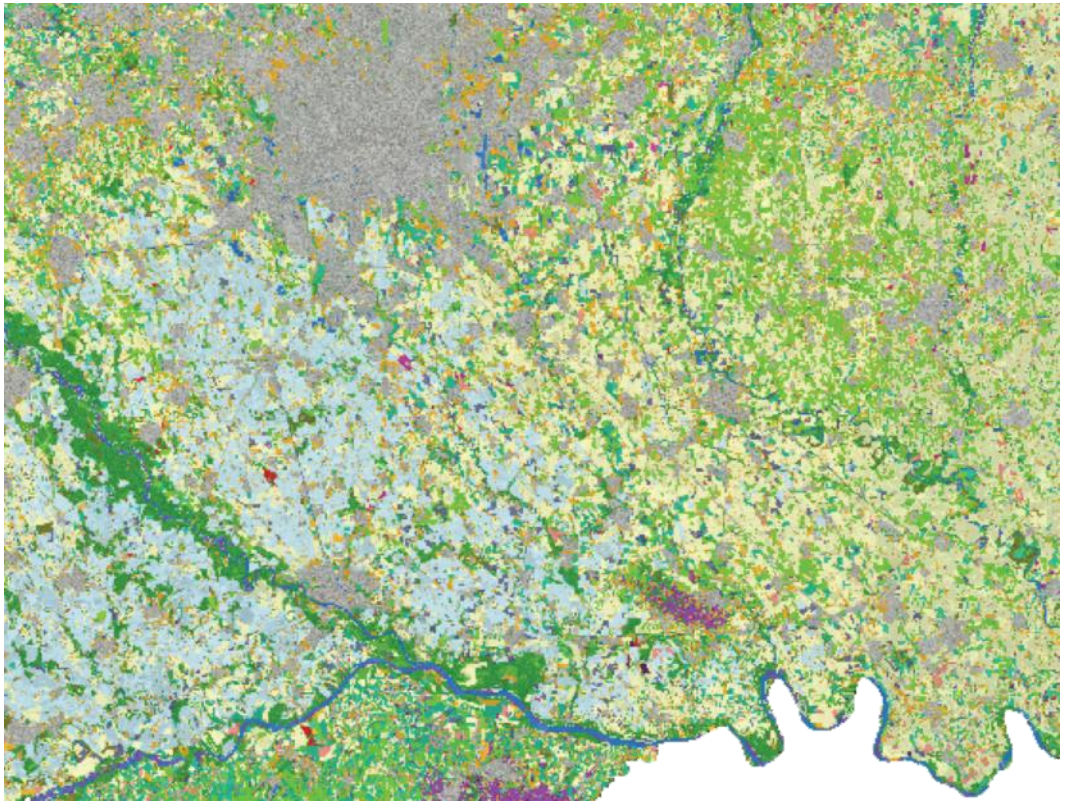
ATU 2015
127’719mq



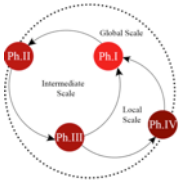
ATU 2020
819’761 mq

4. Where? *A contact point between urban and rural systems*



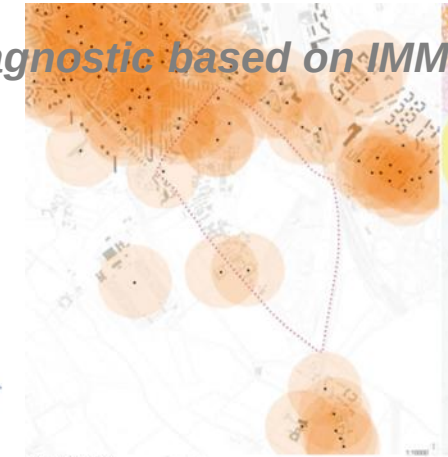


2. How?: *Urban diagnostic based on IMM*



Phasing

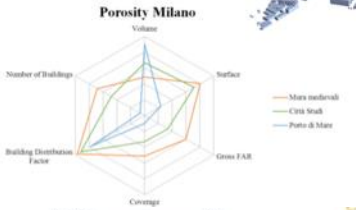
Porosity Surface	0,26
FAR	0,34
Concentration Factor	0,85
Coverage	0,08
Building Density	0,08



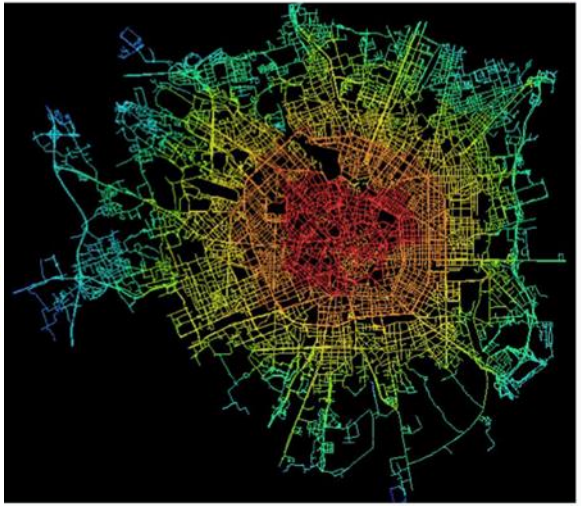
Proximity

Diversity

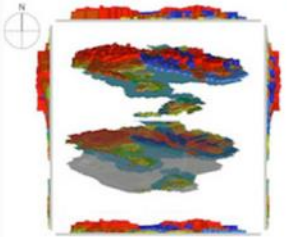
Accessibility

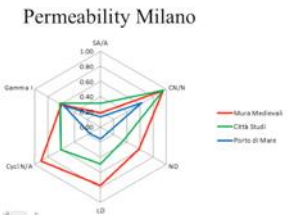


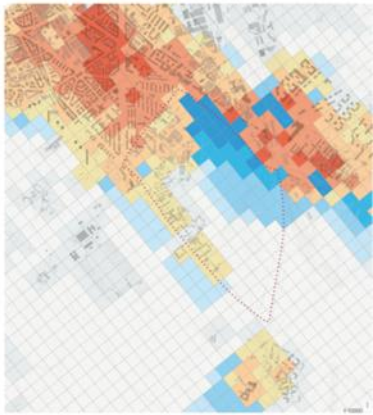
Street Area	0,13
Connected Nodes	0,63
Nodes density*	0,04
Link Density*	0,03
Gamma Index (L/N)	0,56
Cyclomatic Number*	0,25



Interface

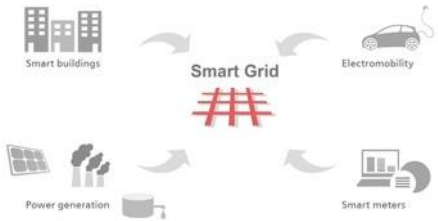


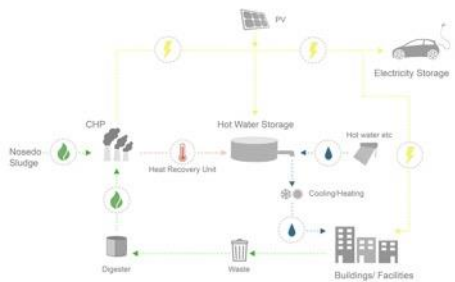


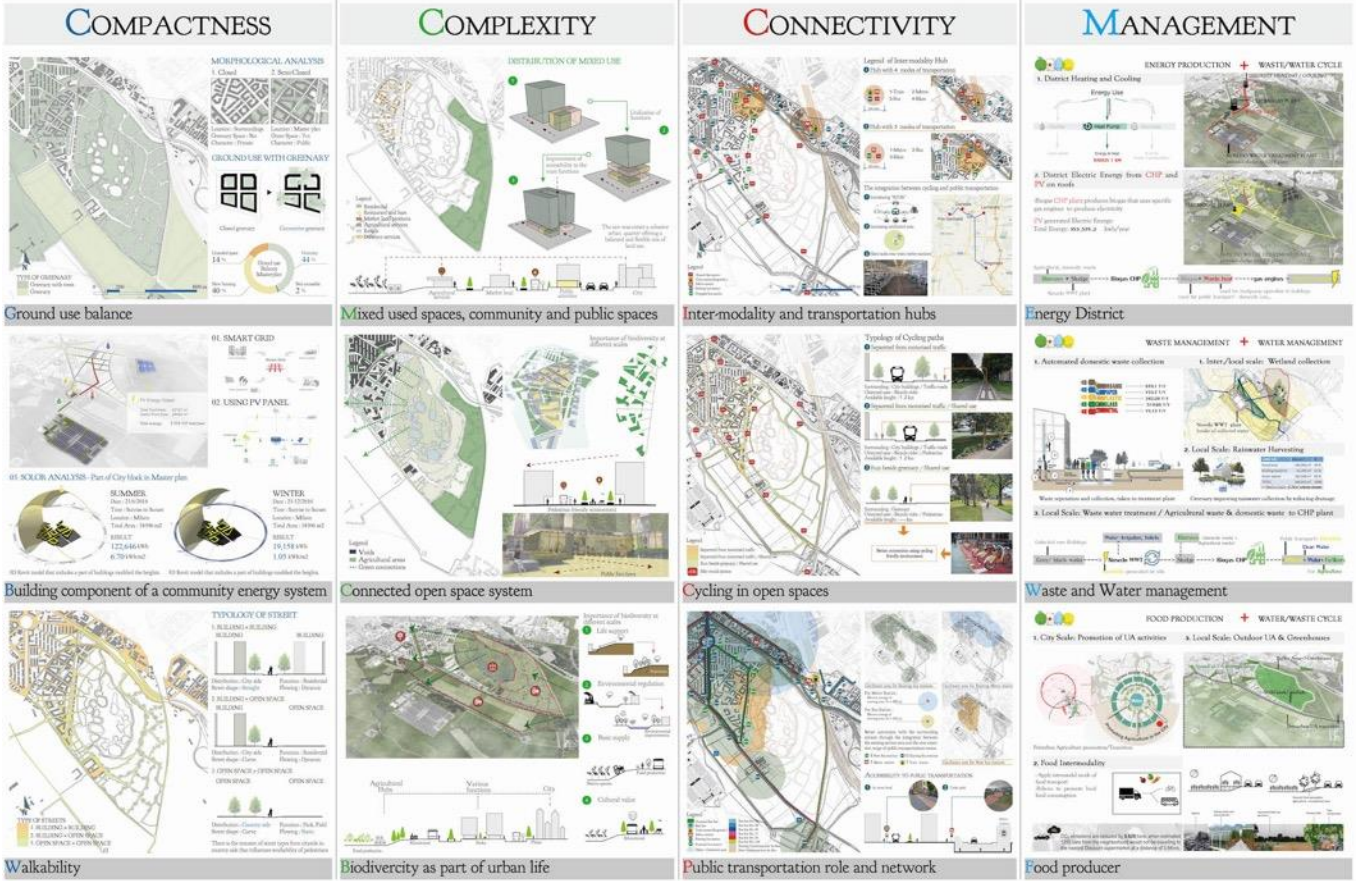


Effectiveness

3. How?: *Integrated multidisciplinary design process.*

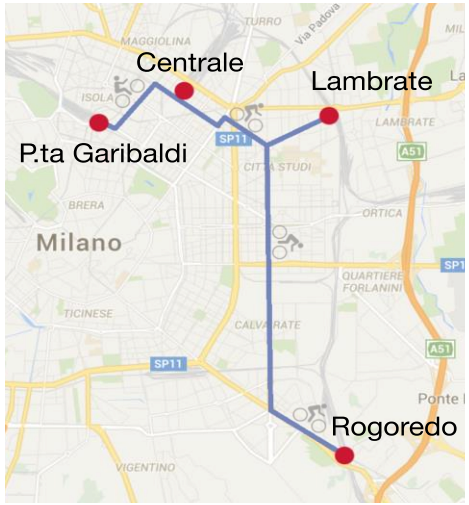


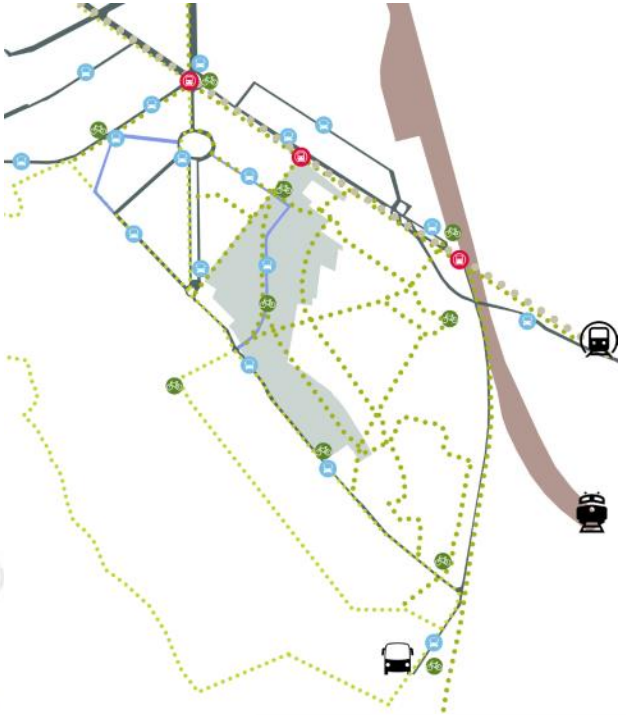




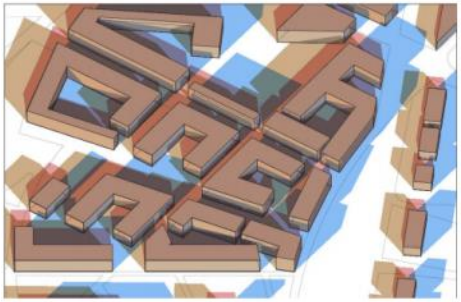
integration of infrastructure, renewable energy production, water and waste management, food policy, community engagement, smart grid reduced car commuting *to reduce the amount of energy used and which would use half of a typical new development in Milan.*

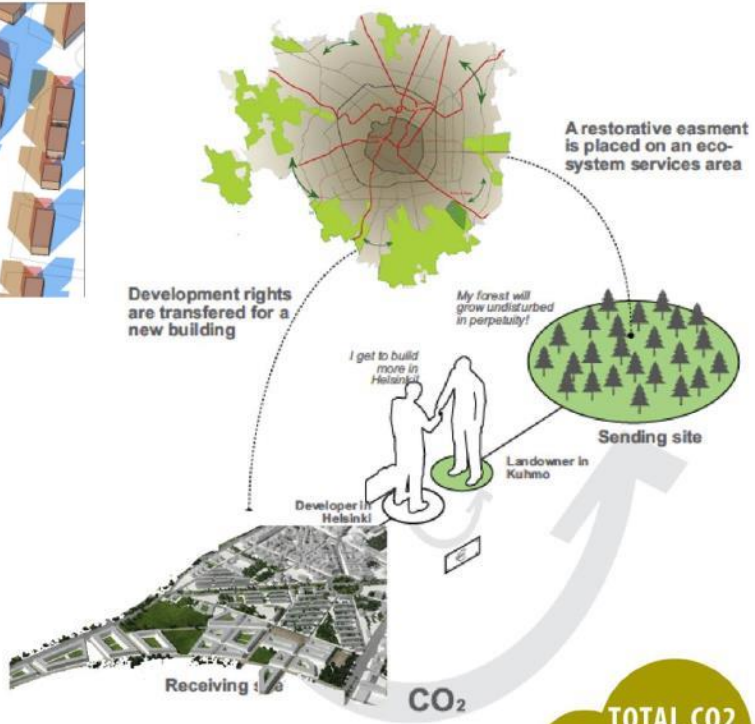
3. How?: *Walkability, Cycling and Reinforce their integration with public transportation.*





3. How?: Balance the ground use





CO2 PRODUCTION

26.213.781 kgCO2/year

CO2 ABSORPTION

-601.164 kgCO2/year

CO2 REDUCTION

-1.047.731 kgCO2/year

CONTRIBUTING SECTORS PERCENTAGE

ENERGY PRODUCTION **15%**

BUILDINGS' CONSUMPTION **58%**

ROAD TRANSPORTATION **27%**

GRASSLAND **43%**

MATURE TREES **40%**

GREEN ROOFS **17%**

CAR FREE ZONE **33%**

LOCAL PRODUCTION **67%**

RETROFITTING STRATEGIES

ENERGY EFFICIENCY INTERVENTION IN MAZZINI QUARTER

-80%

CO2 production in buildings

ELECTRIC BUS & CAR SHARING

GREEN FINGERS EXTENSION

TREES PLANTATION

USE OF ALTERNATIVE VEHICLES
CAR FREE ZONES
BIKE SHARING

-5%

CO2 production from transportation

LOCAL PRODUCTION
FARMERS MARKET
COMMUNITY GARDEN

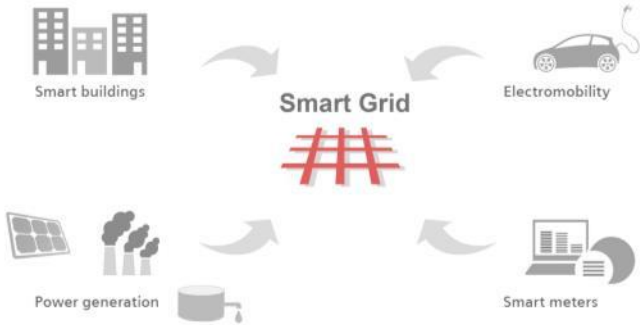
-10%

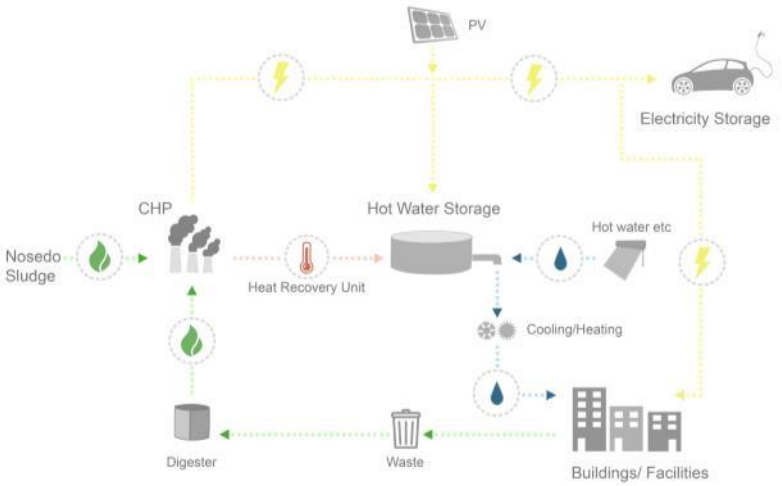
CO2 production from food transportation

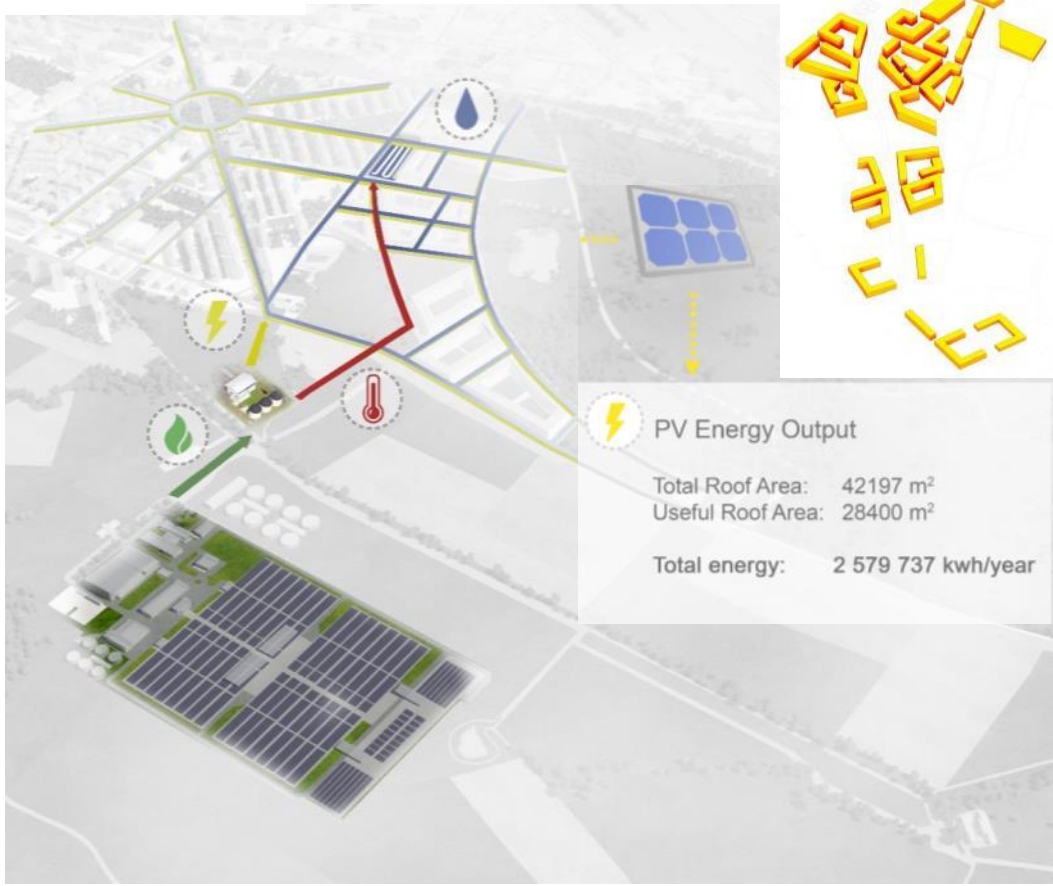
TOTAL CO2 REDUCTION

6.3%

3. How?: *Fostering the local energy production. Building as component of Smart Energy Community*



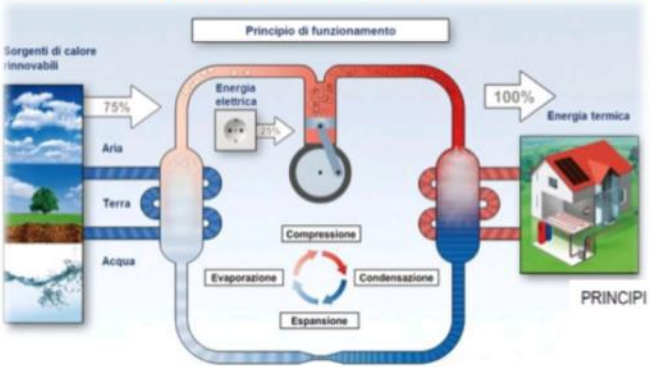




3. How?: Fostering the local energy production. Building as component of Smart Energy Community

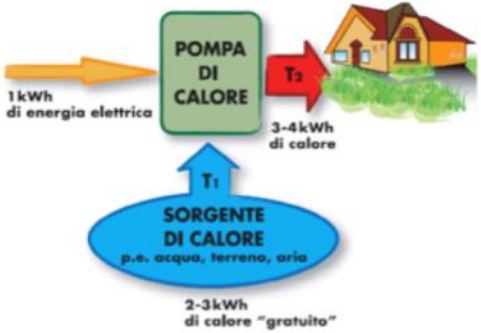
Il depuratore di Milano Nosedo

Acqua come vettore termico: le pompe di calore



L'energia termica contenuta nelle acque di scarico può essere recuperata e utilizzata mediante sistemi a pompe di calore.

PRINCIPI E TIPOLOGIE

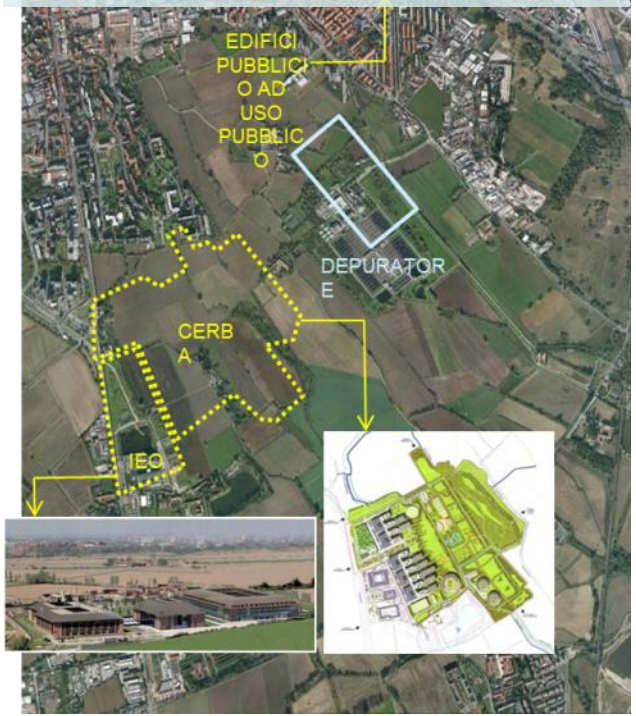


L'impiego di acque reflue depurate in questi sistemi è vantaggioso, poiché la fonte idrotermica è di facile reperibilità (acque non sotterranee), disponibile con continuità e presenta temperature ottimali.

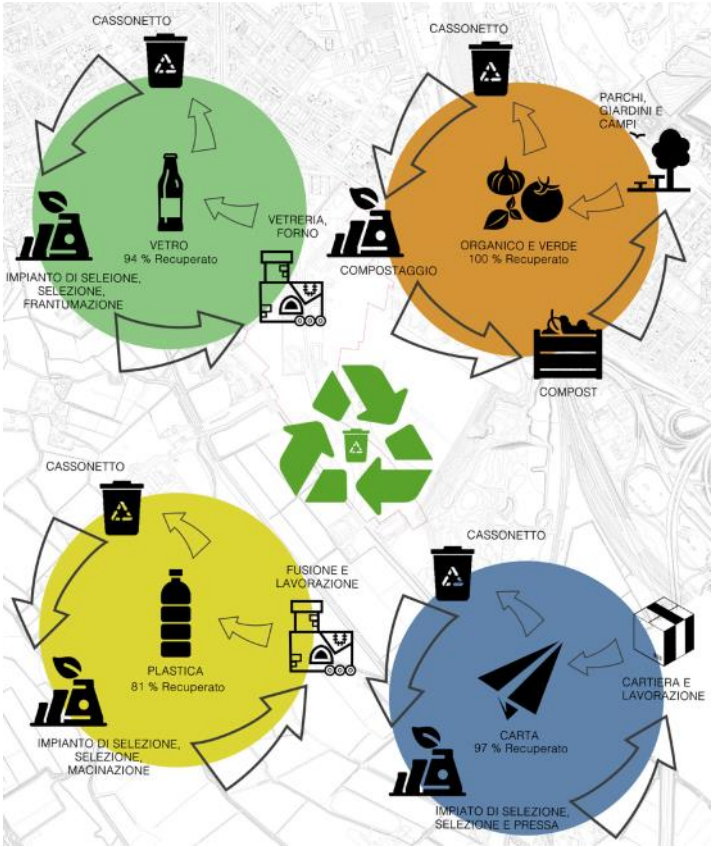
Il recupero di calore dalle acque depurate

Dott.ssa Francesca Pizza *- Processi e controlli analitici, Depuratore di Milano Nosedo*

Ing. Guido Davoglio *- Direttore tecnico Tekser S.r.l.*

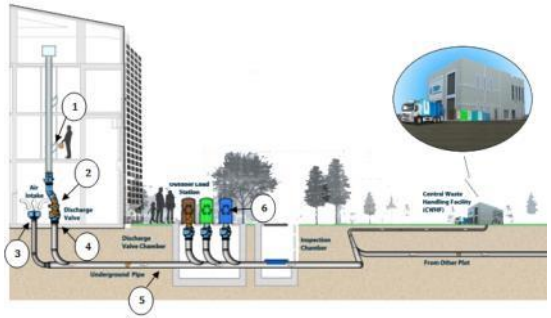


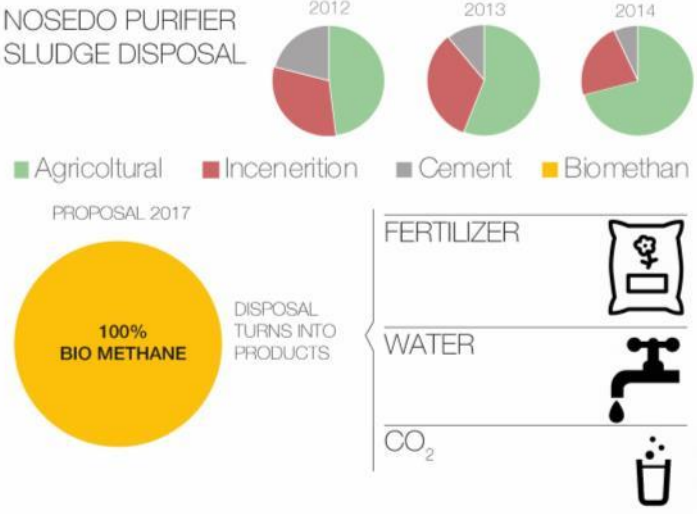
3. How?: *Prevent the negative impact of waste*



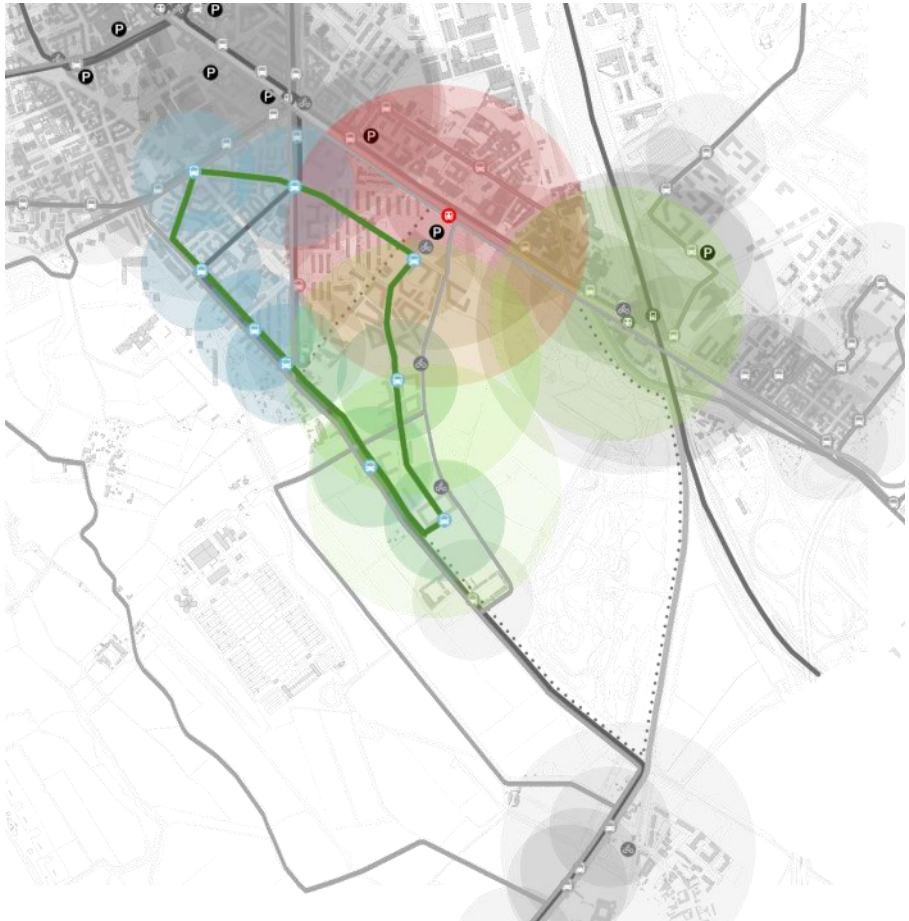
Population	11.000
Organic	979.1T/Y
Paper	733.7T/Y
Glass	519.86T/Y
Plastic	342.28T/Y
Metal	15.13T/Y
Other	148.2T/Y

Before	After
1 D/W for organic 4 times truck cycle	1 D/W for unrecoverable 1 times truck cycle
1 D/W for recyclable 5 times truck cycle	
1 D/W for unrecoverable 1 times truck cycle	
1 D/W for glass 2 times truck cycle	





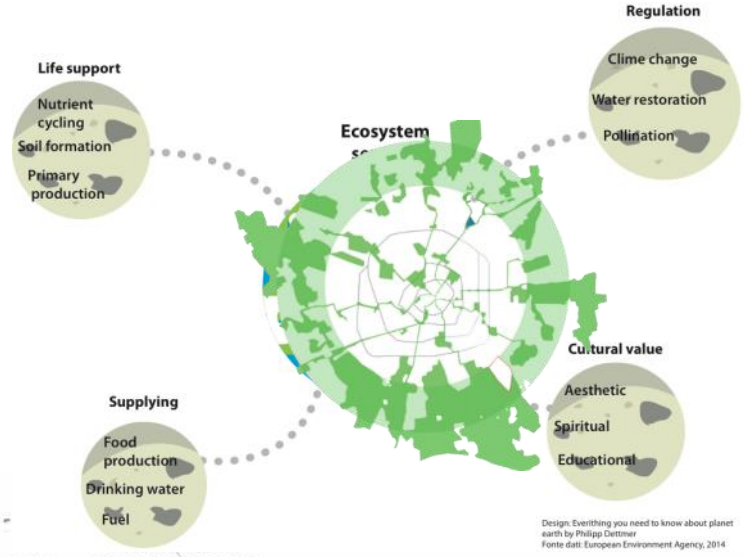
3. How?: *Balancing the public transportation potential*

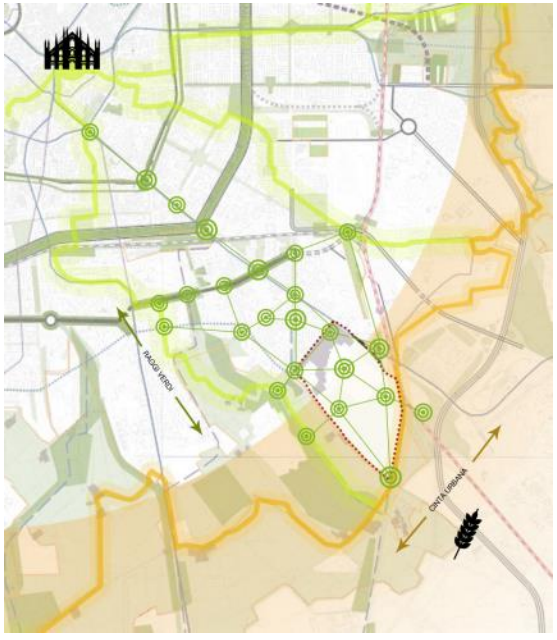


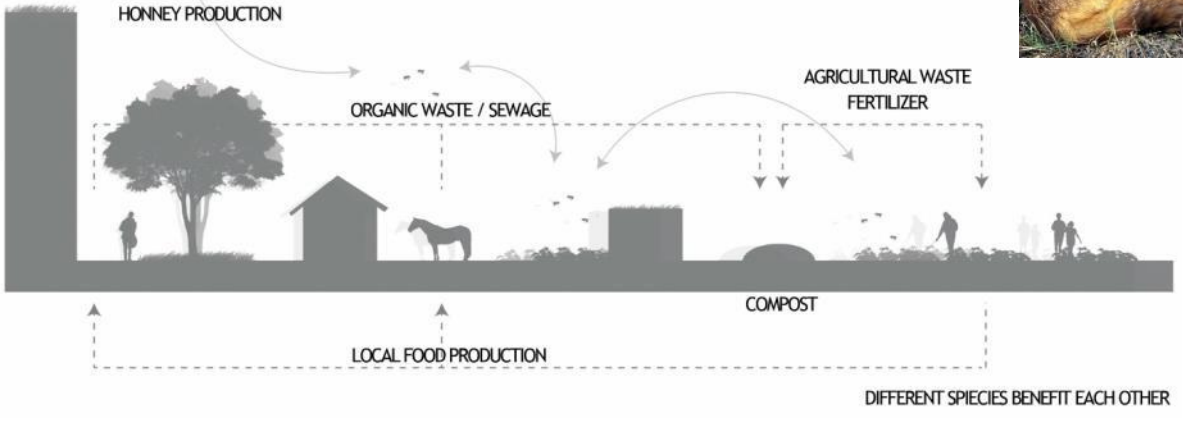
- Line Length: 3669m
- Number of Stops: 9
- Range: 400m

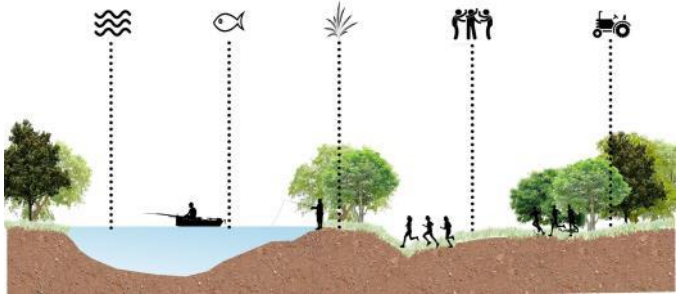
- Bus Dimensions: (LxWxH) 11.980mx2.500mx 3140m
- Bus Weight: 12500kg
- Bus Capacity: 72 people, 27 seats, 1 space for a wheelchair
- Drive motor: 120/240kW, 1100/3600Nm
- Consumption: 1.1kWh/Km
- Range: 300km/day
- Motor lifetime: 6 years (2500 recharging)

3. How?: *Makes Biodiversity an important part of urban life*



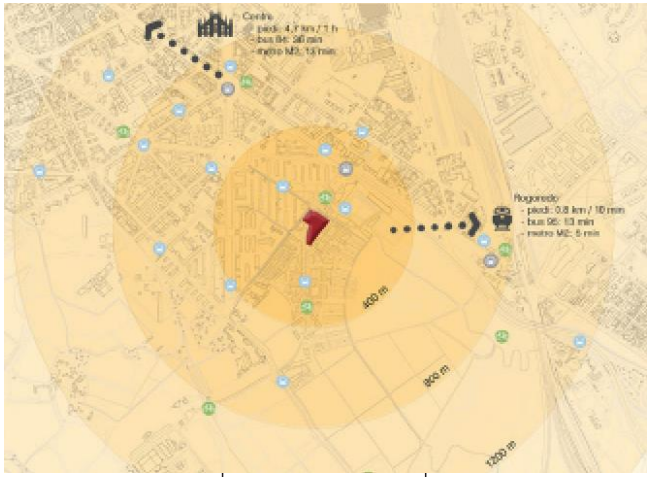






3. How?: *Convert the city into a food producer*

	Rice	Maize	Cereals (incl. wheat)	Fruits & Vegetables
Surplus	98962.119	59248.17327	10867.896	963.293
consumption	14.814	1832.41773	652.866	458.257
Production	98976.933	61080.591	11520.762	1421.55



MERCATO

Il commercio contribuisce alla definizione dell'immagine urbana, e il mercato, nel suo significato più vasto, può essere elemento di riconoscibilità sociale.

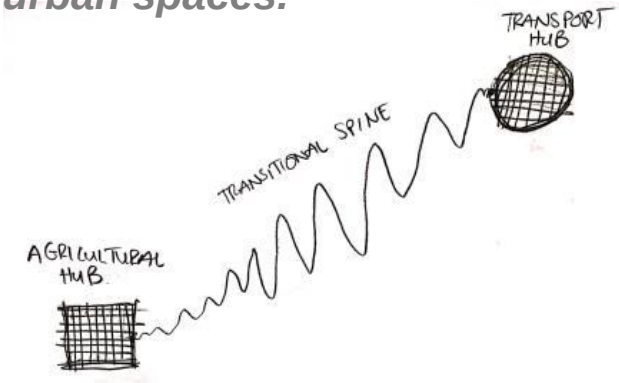
Walter Benjamin

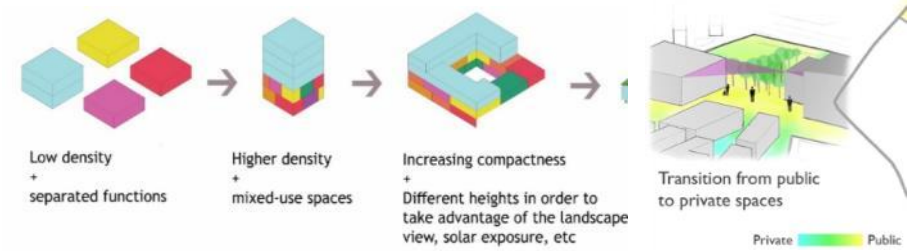
FARMERS' MARKETS

Andarono alla Vucciria. Livia era stordita e stravolta dalle voci, dagli inviti, dalle grida della mercanzia, dalla parlata, dalle contrattazioni, dalle fulminee risse, dai colori così accesi da parer finti, pittati. Il sciauro del pesce fresco si mescolava a quello dei mandarini, dalle interiora d'agnello bollite e cosparse di caciocavallo, la cosa detta meusa, dalle fritture, e l'insieme era una fusione impotibile, quasi magica.

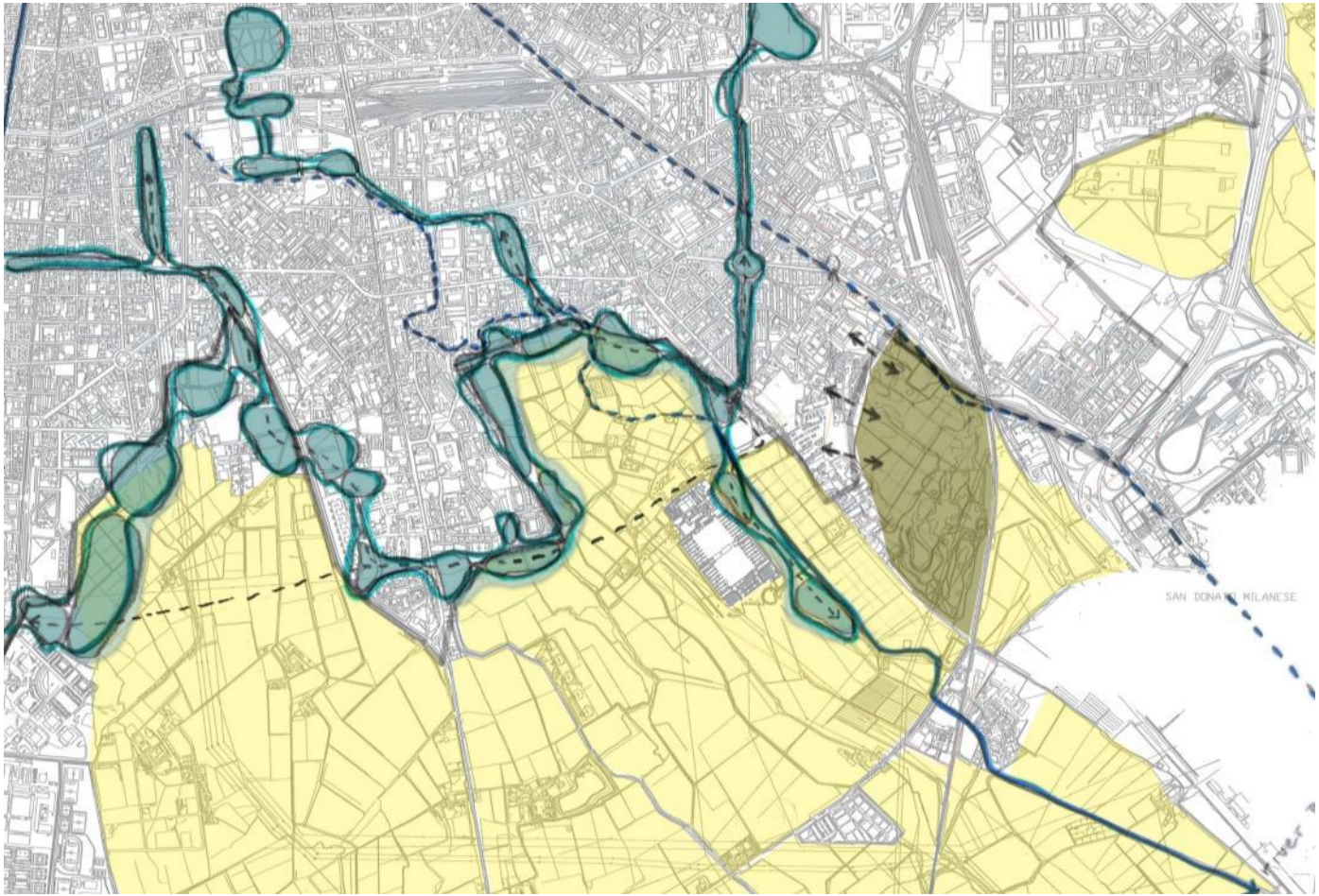
Andrea Camilleri

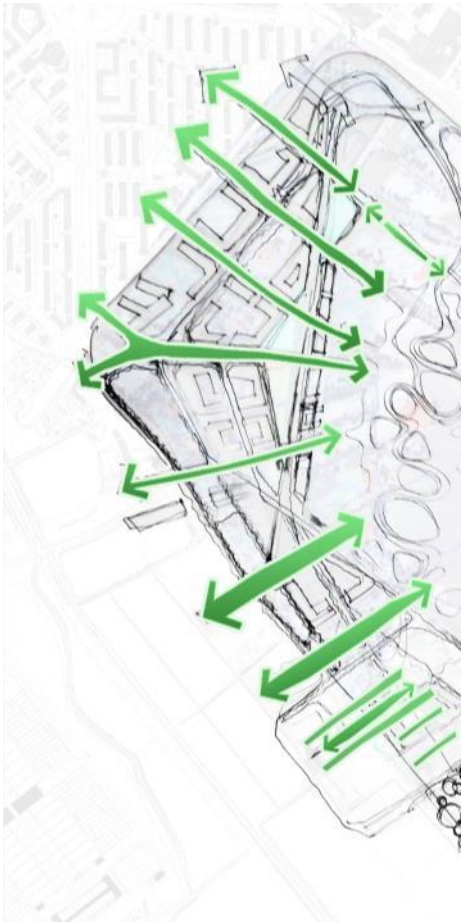
3. How?: *Balance the distribution of functions and developing multifunctional urban spaces.*





3. How?: *Create a connected open space system, activate urban metabolism*





3. How?: Create a connected open space system, activate urban metabolism

Urban

Transition

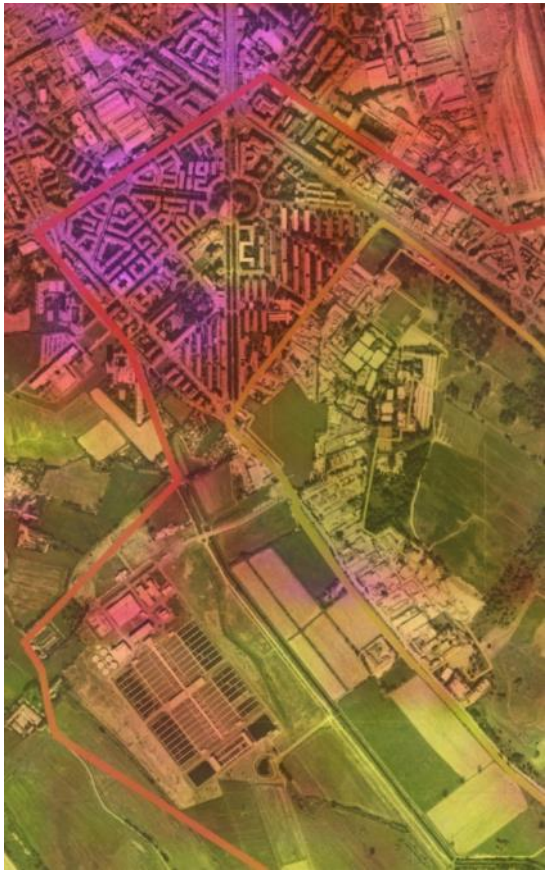
Rural

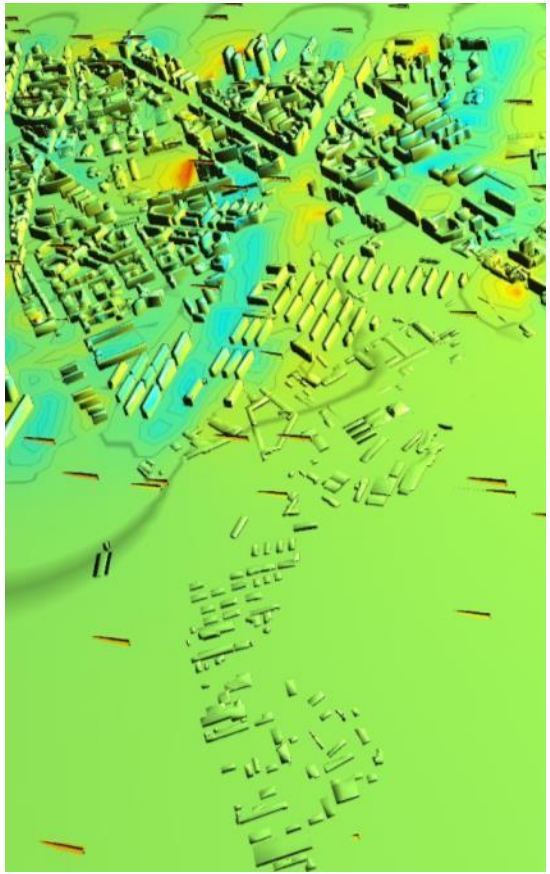
3. How?: *Create a connected open space system, activate urban metabolism*

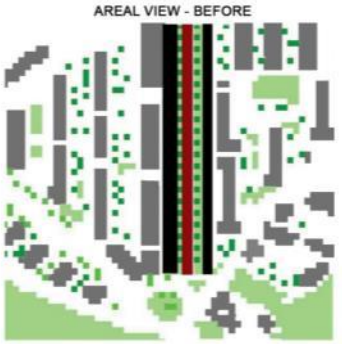
GREEN FINGERS

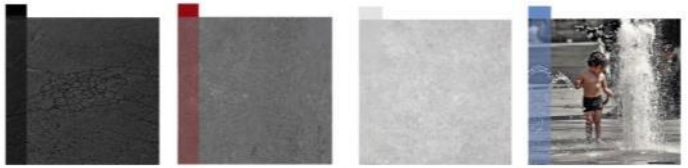
- Reduce heat island effect
- Ground water recharge
- Connects with the food production
- Improved bicycle paths and Walkability
- Easy access to the water

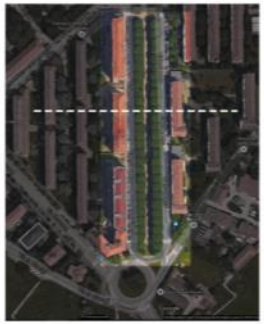
3. How?: *Create a connected open space system, activate urban metabolism*







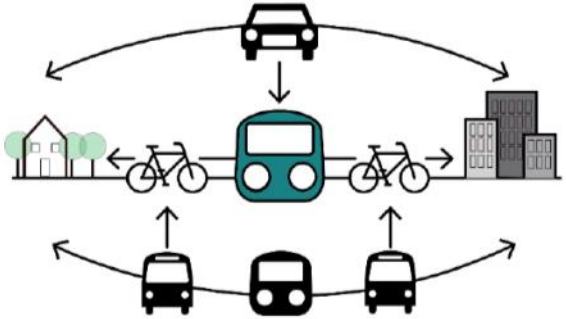


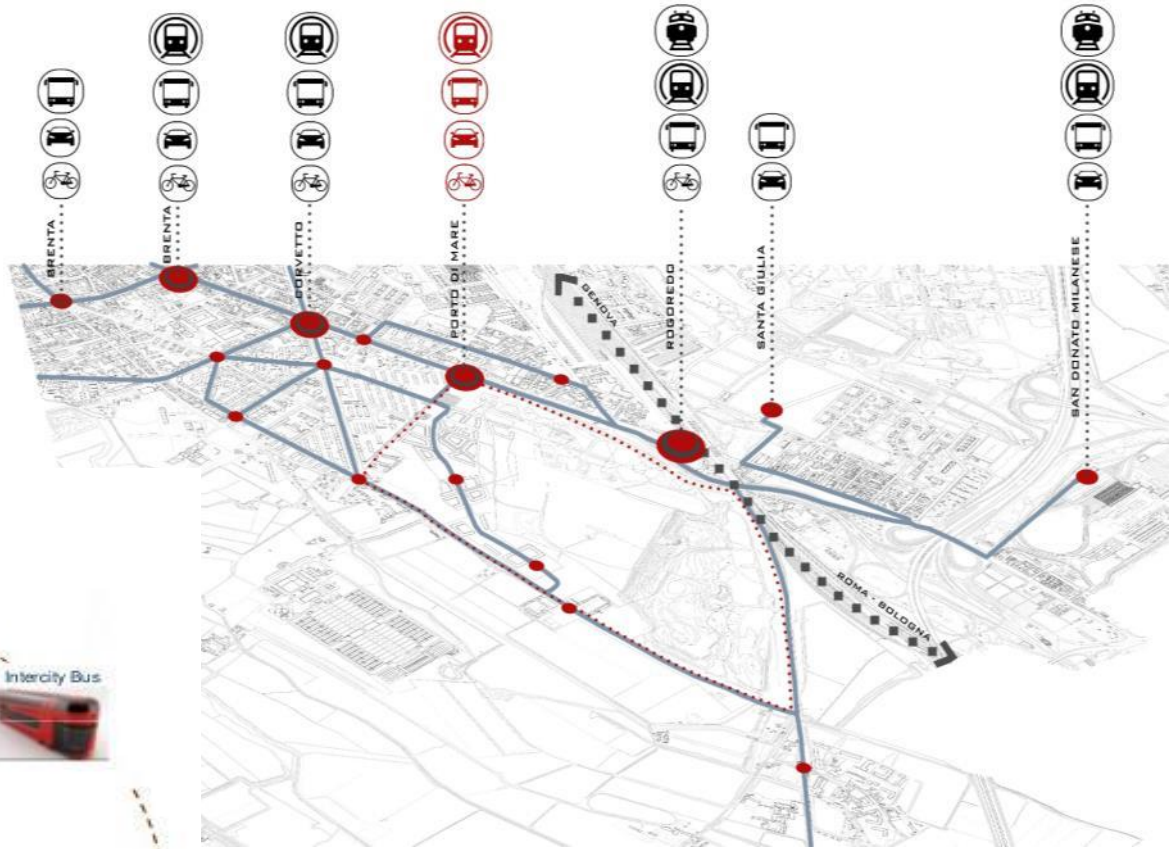


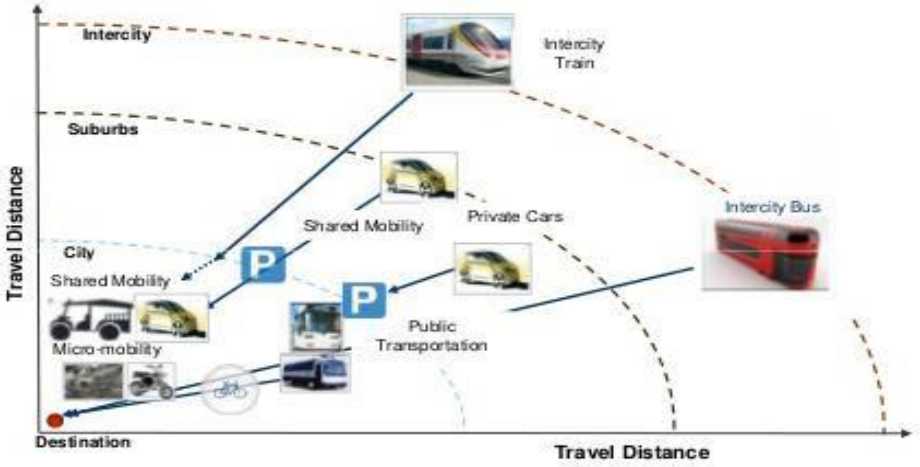
WIND TUNNEL + GREEN FINGER

KEY ROLE IN HEAT ISLAND MITIGATION

3. How?: *Change from multimodality to inter-modality concept*

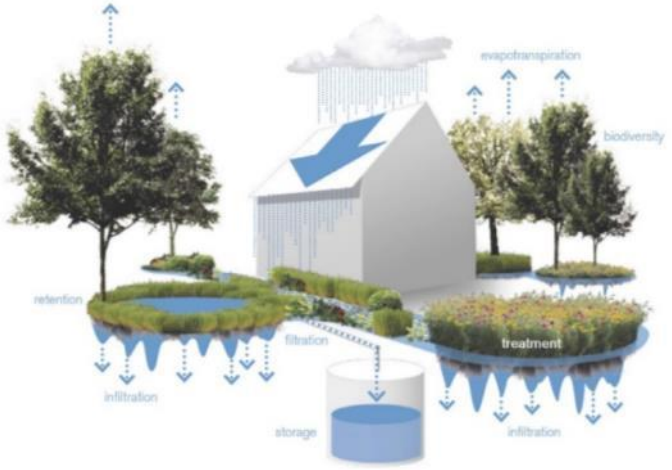




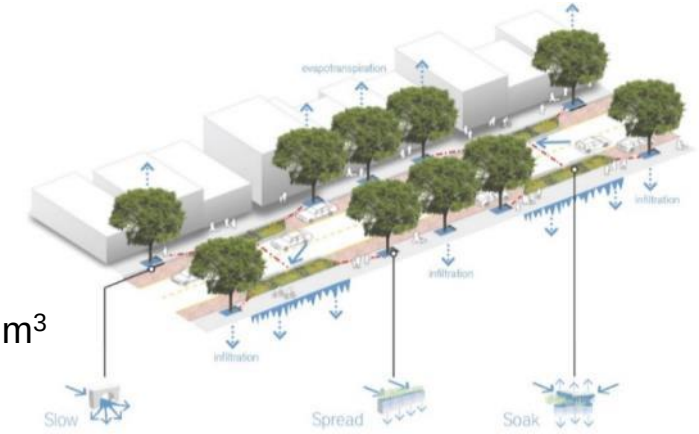


3. How?: *Implement water management*

Total roof surface area = 41,395 sqm
Average annual precipitations = 1013 mm,
10% evaporation losses
41,395x47x1.013x0.9 = **37,740 m³ collected rainwater**

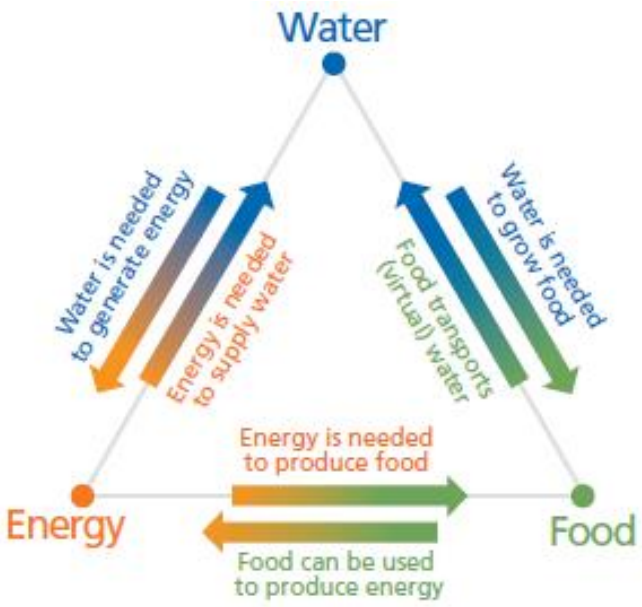


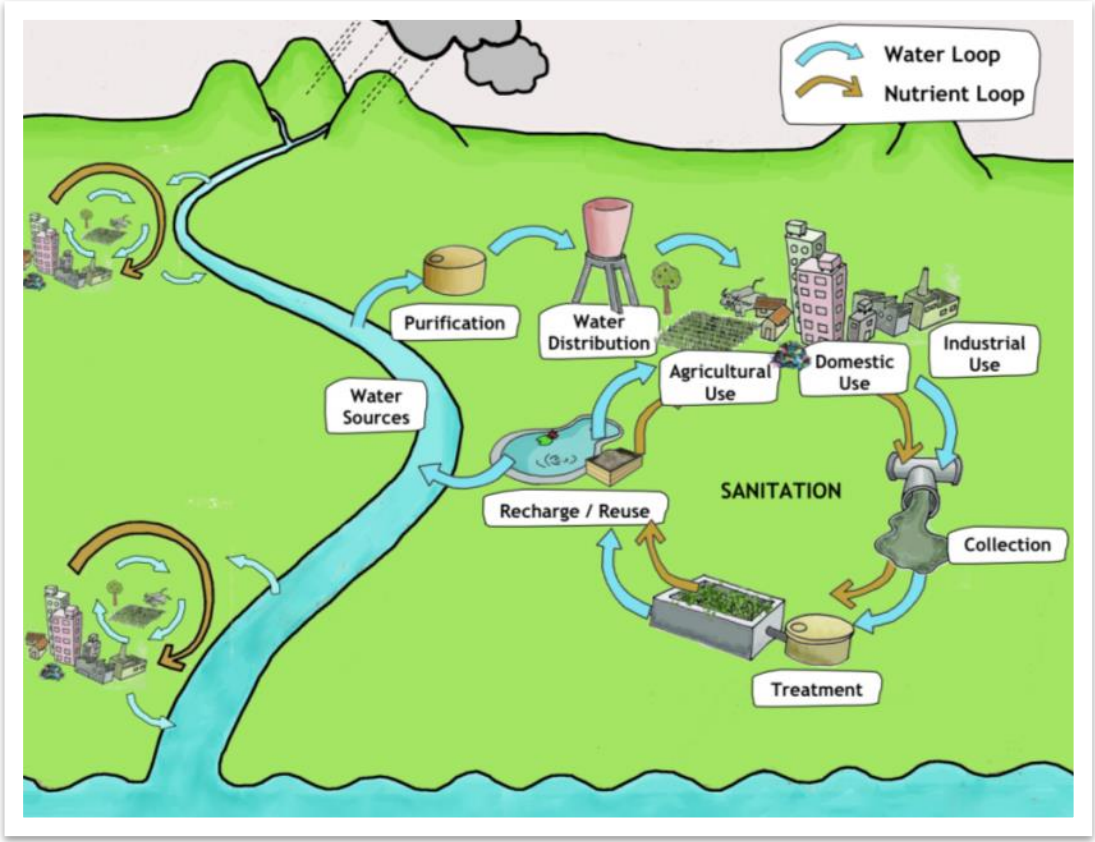
LAND USE	BEFORE		AFTER	
	Area m²	%	Area m²	%
Paved area	168,532 m²	46 %	140,966 m²	39 %
Building footprint	109,022 m²	30 %	41,395 m²	11 %
Green spaces	87,356 m²	24 %	182,549 m²	50 %
TOTAL	364,910 m²	100%	364,910 m²	100%



Drained water before (paved+building) = 227,334x1.013x0.9 = 25,3045 m³
Drained water after (paved) = 140,966x1.013x0.9 = 128,519 m³
Drainage reduction = 51%

3. How?: *Implement water management*





MilanoDepur S.p.A.
Depuratore Milano Nosedo

Cavalcavia Corvetto da demolire, primo test in agosto: verde invece del traffico

L'obiettivo è iniziare a sperimentare, in periodi di scarso traffico

di M.MIN.

Ultimo aggiornamento il 24 aprile 2019 alle 07:01

4. When? *Design suggestions*

4. Dissemination

urbanpromo

SOCIAL HOUSING
MUSEO ETTORE FICO DI TORINO
15 - 16 OTTOBRE 2015

XII EDIZIONE
LA TRENNALE DI MILANO
17 - 20 NOVEMBRE 2015

INU Istituto Nazionale di Urbanistica

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