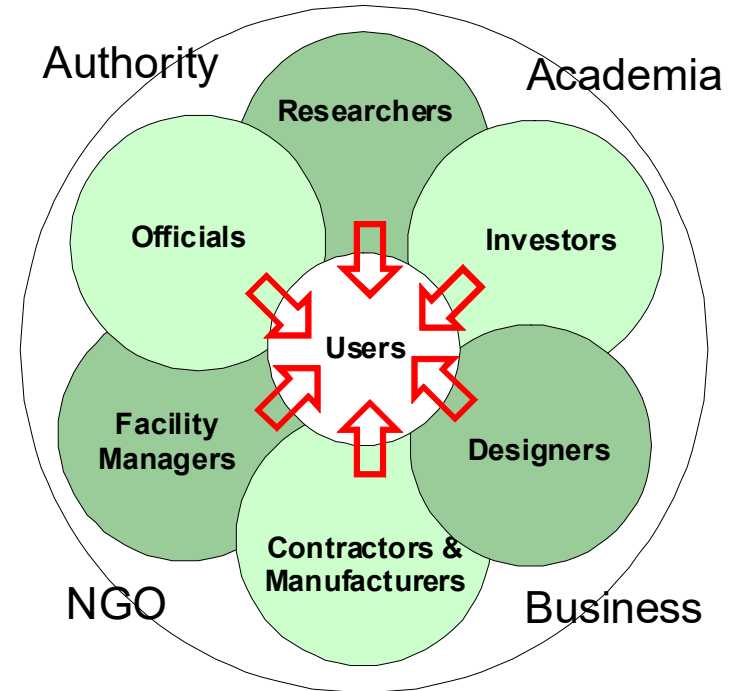


# **INCREASING THE IMPACT OF POLICIES: THE ROLE OF SUSTAINABLE BUILT ENVIRONMENT ASSESSMENT SYSTEMS**

**Andrea Moro**





**40% CO<sub>2</sub> emissions**

**50% Energy consumption**

**50% Extracted materials**

**30% Water consumption**

**30% Waste**

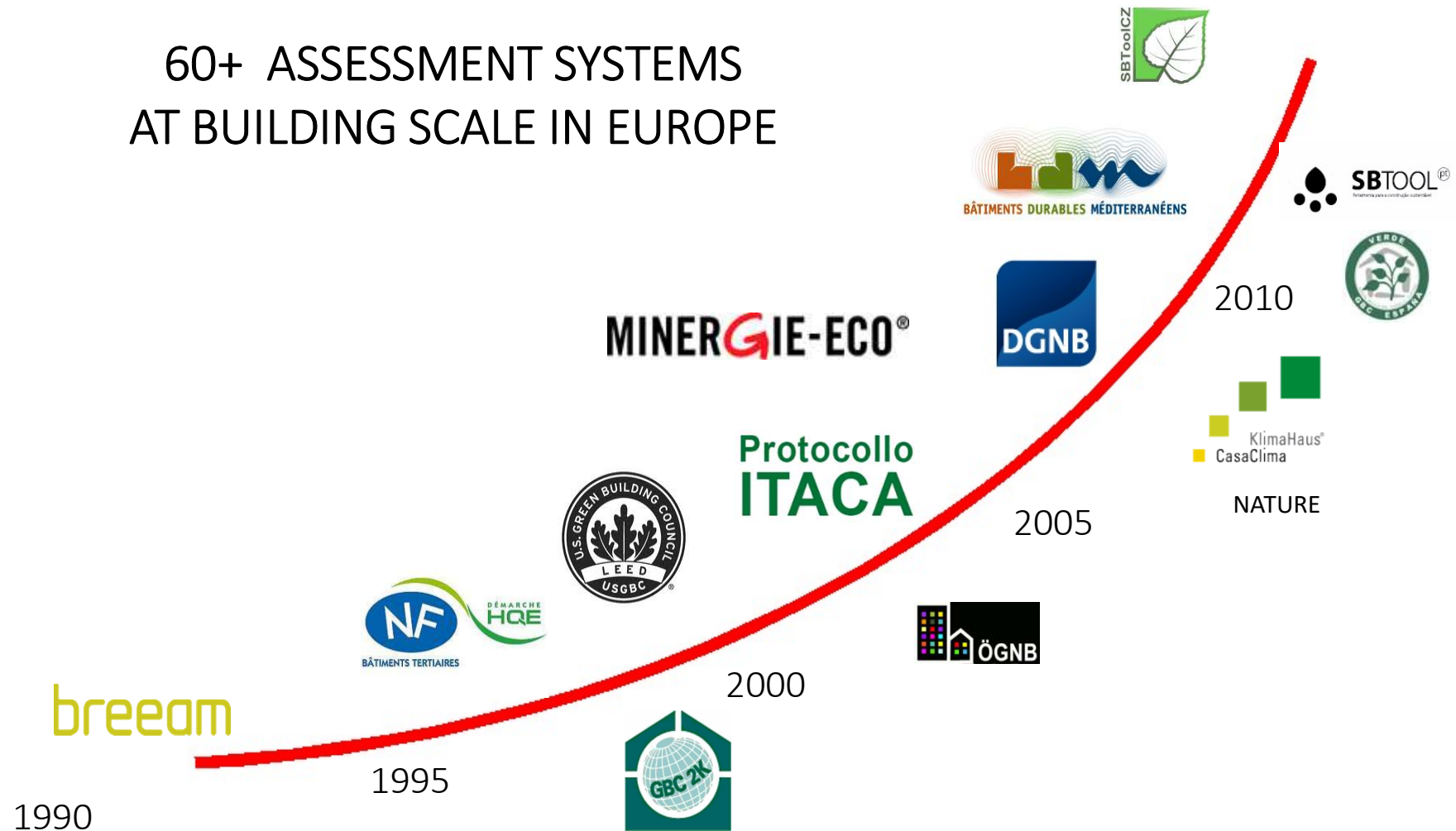
# NEED TO SET A COMMON FRAMEWORK FOR STAKEHOLDERS TO ESTABLISH

CLEAR  
RELIABLE  
MEASURABLE  
VERIFIABLE

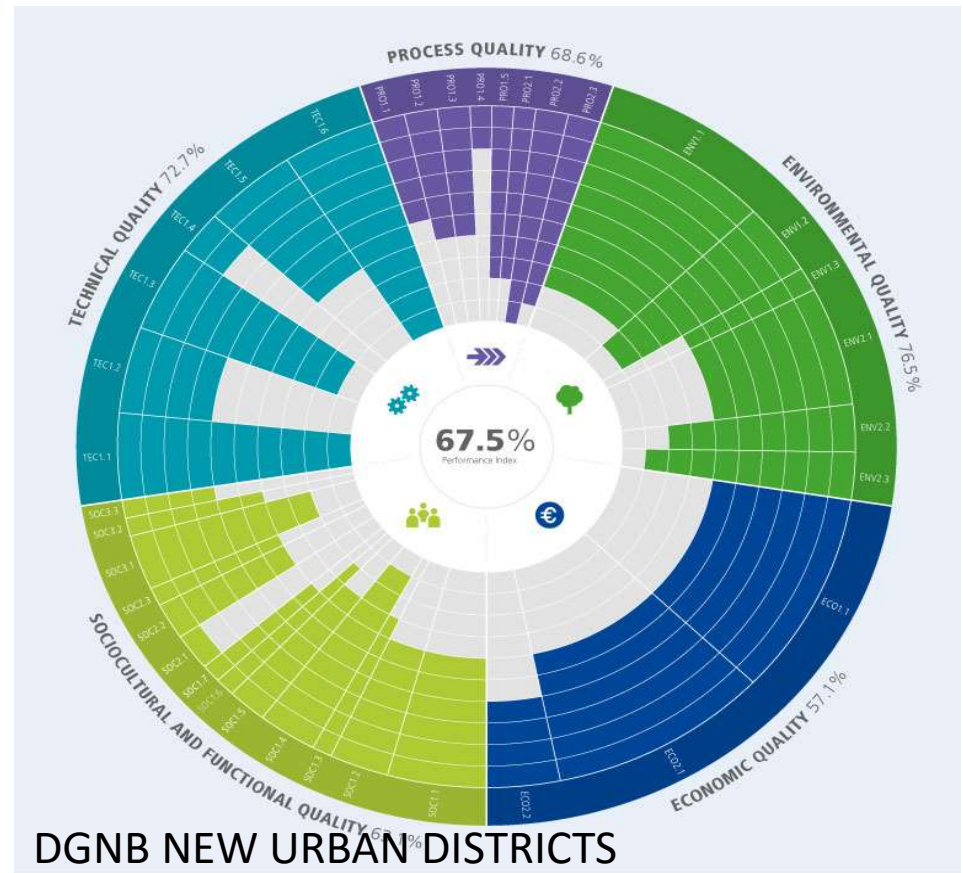
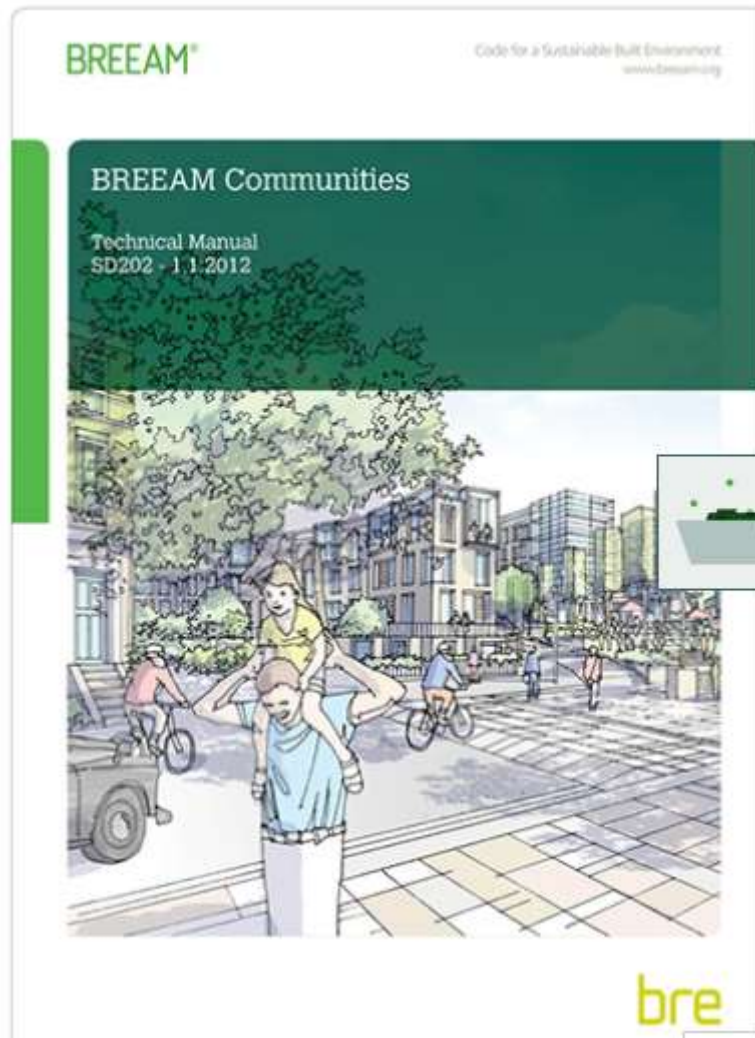


## OBJECTIVES FOR ACTION !

# 60+ ASSESSMENT SYSTEMS AT BUILDING SCALE IN EUROPE



# ASSESSMENT TOOLS AT URBAN SCALE: A NEW CHALLENGE



## A Collaborative Program



**LEED FOR NEIGHBORHOOD DEVELOPMENT**

## Public sector

REGULATIONS

INCENTIVES

GREEN PUBLIC  
PROCUREMENT



## Market

GREEN VALUE

MARKET  
ADVANTAGES

MARKET DEMAND



The public sector has to take the initiative !

REGULATIONS

BUILDING CODES

INCENTIVES

GREEN PUBLIC  
PROCUREMENT

URBAN PLANS

AUTHORIZATIONS



# PUBLIC ASSESSMENT SYSTEMS

1. User first !
2. Sustainability
3. Regional contextualization
4. Mass certification
5. Simple to use
6. Open source
7. Co-created
8. Transparent





# PUBLIC ASSESSMENT SYSTEMS: PRINCIPLES

1. User first !
2. Sustainability
3. Regional contextualization
4. Operational and affordable
5. Mass certification
6. Simple to use
7. Open source
8. Co-created
9. Transparent



Use of local standards

Use of local unit of  
measure

Alignment with the  
mandatory energy  
certification

Alignment to the local  
design and construction  
process

# Protocollo ITACA



Bewertungssystem  
Nachhaltiger  
Kleinwohnhausbau (BNK)



Bâtiments Durables Méditerranéens



**SBTOOL**<sup>pt</sup>  
ferramenta para a construção sustentável

# A case study: Protocollo ITACA, Italy

ITACA: Federal association of the Italian Regions.

**2002**

ITACA adopt the international generic framework SBTool

**2004**

The conference of the Italian Regions' Presidents formally adopt Protocollo ITACA

**2004-2014**

15 Regions adopt and implement Protocollo ITACA in their policies.

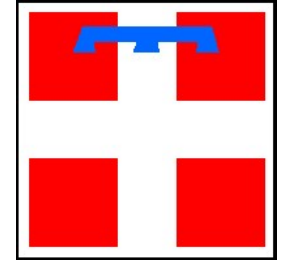
**2015**

Protocollo ITACA as national standard (UNI PdR13:2015) + national accreditation system

**2016**

Protocollo ITACA at urban scale finalized

# INCENTIVE BASED POLICY: 10.000 Apartments by 2012



Social Housing funding program launched in 2007

Available funds: 700.000.000 euro

Incentives: 50.000.000 euro

Requested a minimum mandatory level of performance assessed by means of a building rating system (Protocollo ITACA)



# INCENTIVE BASED POLICY: 10.000 Apartments by 2012

Level of performance – Incentives

New constructions

Score 2 = + 5.000 euro per apartment

Score 2.5 = + 10.000 euro per apartment

Existing buildings

Score 1 = + 5.000 euro per apartment

Score 1.5 = + 10.000 euro per apartment



# BUILDING REGULATIONS

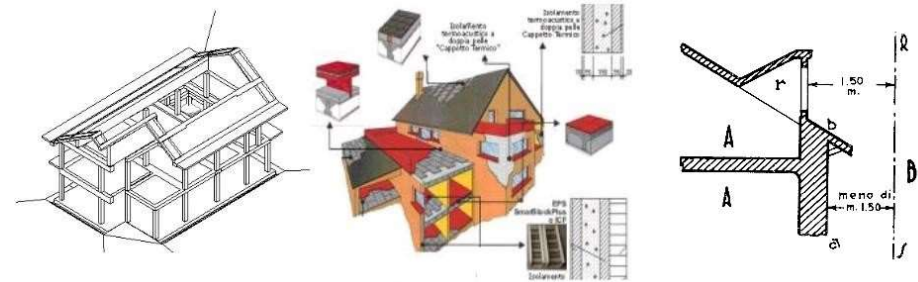
Additional voluntary based requirements beside the base requirements.

Possible incentives:

-Tax reduction (construction phase)

-Tax reduction in use

-Additional volume



# Shopping centres: commercial authorization

## **Regional Decree 12 July 2013, nr.44-6096**

The certification is mandatory for retail buildings with an area  $>4.500 \text{ m}^2$

If the minimum requested performance is not reached, the commercial authorization is not given. The shopping center is not allowed to “open”.

Impact of the usual design concept of commercial organizations.

The target score changes for:

- . New constructions
- . Refurbishment
- . Expansions
- . Modification of the commercial area



# New Regional offices: the skyscraper

Quality control:

- . Design stages
- . Construction
- . As Built
- . In use

Special version of Protocollo ITACA





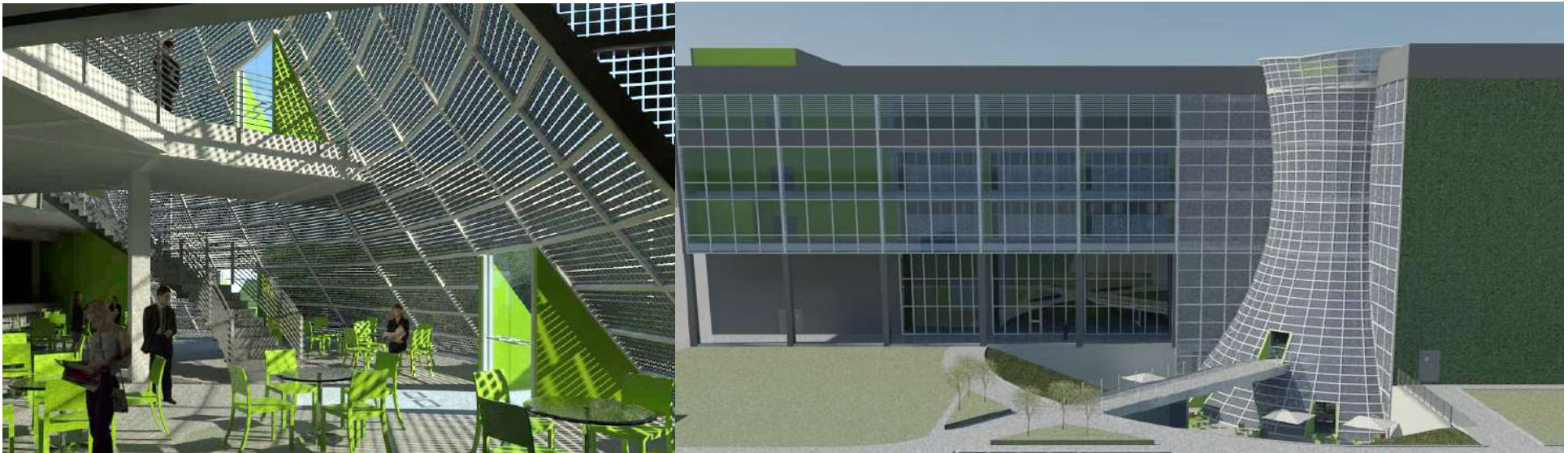
# ENERGY CENTER – CITY OF TORINO

Science and Technology pole on energy  
R&D, knowledge transfer, incubator, services

New construction: 9.000 sqm  
Offices + Laboratories



CITTA' DI TORINO



## ENERGY CENTER – PUBLIC TENDER

Requested a minimum performance with regards to Protocollo ITACA (2.8).

If not achieved: 5% reduction of the tender value.

Requested an improvement of specific performances: energy, BACS, etc..

Requested the specific qualifications “Expert Protocollo ITACA” for designers and construction companies.

# City of Torino Urban Plan

Mandatory minimum performance requested in the “Variante 200” area

Former 1.000.000 industrial area: urban transformation

Mandatory calculation of urban scale indicators + building scale assessment of each building (public and private)

Indicators come from a EU project (CLUE – Interreg IVC)

# Protocollo ITACA Urban Scale

URBAN SYSTEM	ENVIRONMENT	SOCIETY & ECONOMY
Urban Form	Water	Equity
Mobility	Biodiversity	Economy
Accessibility	Impacts	Culture & Wellbeing
	Energy	
	Outdoor Environmental Quality	

# OUTDOOR ENVIRONMENTAL QUALITY

## AC1 – THERMAL COMFORT OF OUTDOOR AREAS

### INTENT

Reduce the discomfort at ground level during summer

### ASSESSMENT METHOD

To assess this criterion, calculate the area of all the surfaces in the cluster. Assign to each surface an albedo value, considering green areas and areas that are shaded in summer days as having an albedo of 1. Multiply all surfaces for their albedo value, and divide their sum area by the total area of all surfaces of the cluster

### SCALE

Neighborhood – Cluster

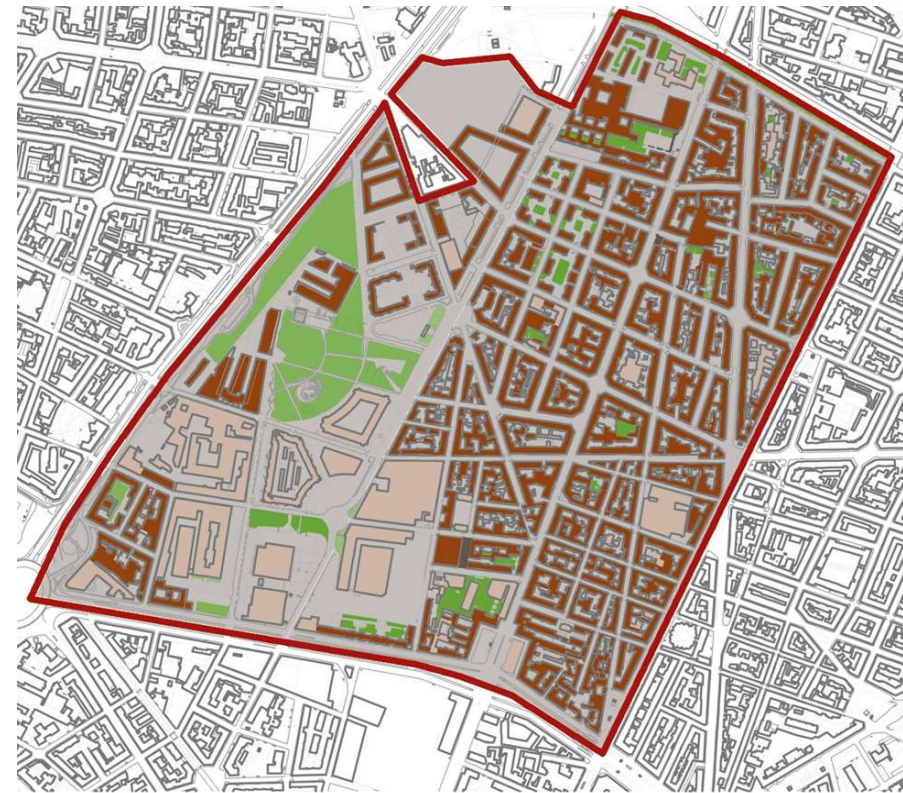
### APPLICATION

New construction/ Renovation

### CALCULATION

19.6 %

**URBAN RENOVATION**  
**19.6%**



### Calcolo Area in Trasformazione:

Bitume  $595611 \text{ m}^2 \times 0.10 = 5961.1 \text{ m}^2$

Verde  $84144 \text{ m}^2 \times 1 = 84144 \text{ m}^2$

Cemento  $23806 \text{ m}^2 \times 0.35 = 8332.1 \text{ m}^2$

Tetto scuro  $273181 \text{ m}^2 \times 0.27 = 73758 \text{ m}^2$

Tetto chiaro  $113818 \text{ m}^2 \times 0.35 = 39836.3 \text{ m}^2$

$212031.5 \text{ m}^2 / 1079560 \text{ m}^2 = 19.6\%$

### LEGENDA

BITUME - ASFALTO coefficiente di riflessione 0.10

VERDE - PRATO coefficiente di riflessione 1

CEMENTO coefficiente di riflessione 0.35

TETTO CHIARO coefficiente di riflessione 0.35

TETTO SCURO (tegole) coefficiente di riflessione 0.27

# MOBILITY AND ACCESSIBILITY

## SM4 – CYCLOMATIC COMPLEXITY OF THE STREET NETWORK

### INTENT

Create many possible paths, allowing a more fluid traffic

### ASSESSMENT METHOD

To assess this indicator, it is necessary to add up all the roads links and subtract them the number of intersections.

Links - Nodes + 1

### SCALE

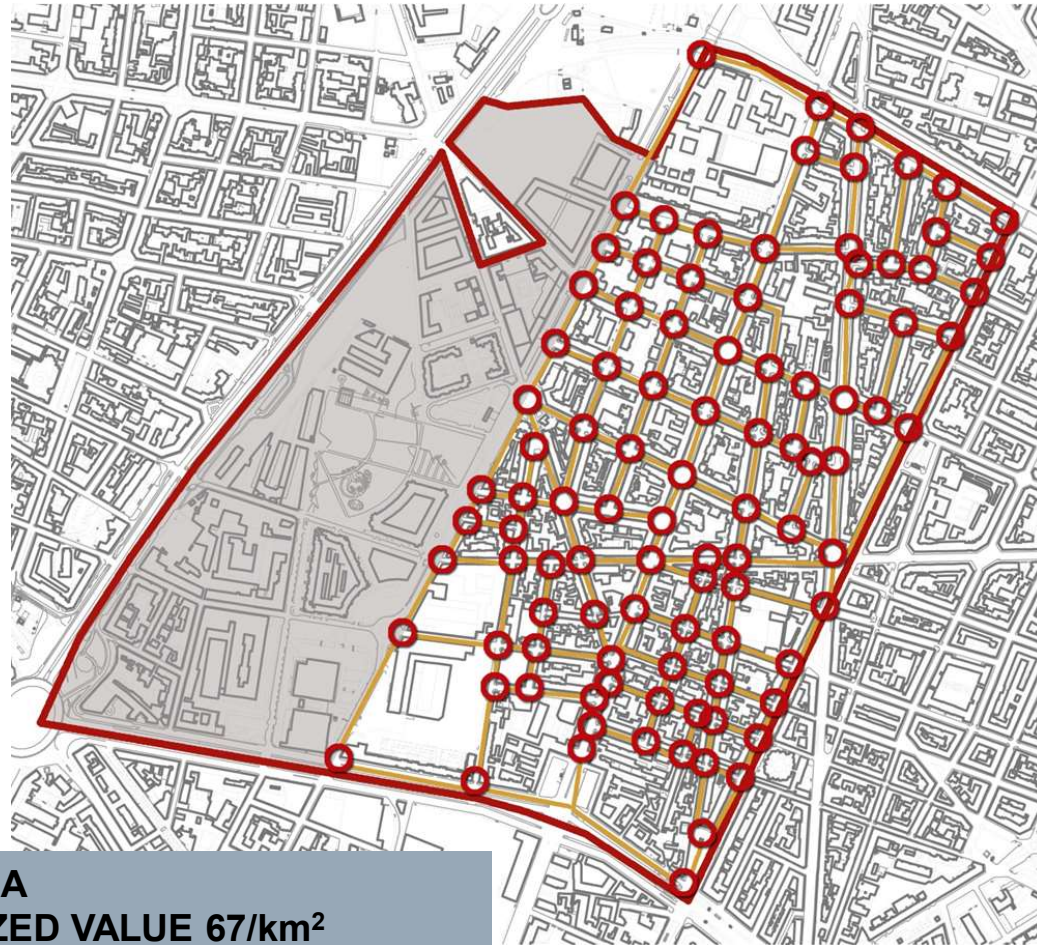
Neighborhood

### APPLICATION

New construction/ Renovation

### CALCULATION

46



**EXISTING AREA**  
**46\_ NORMALIZED VALUE 67/km<sup>2</sup>**

# ENERGY

## AE1 – PRIMARY ENERGY FOR HEATING

### INTENT

Reduce the need of energy for heating

### ASSESSMENT METHOD

Calculate the demand of primary energy for heating of every building in the area. Aggregate these values through a weighted mean over the floor surfaces, to obtain a cluster value. Divide the cluster primary energy requirement by the local limit and multiply by 100 to obtain a percentage ratio

### SCALE

Neighborhood

### APPLICATION

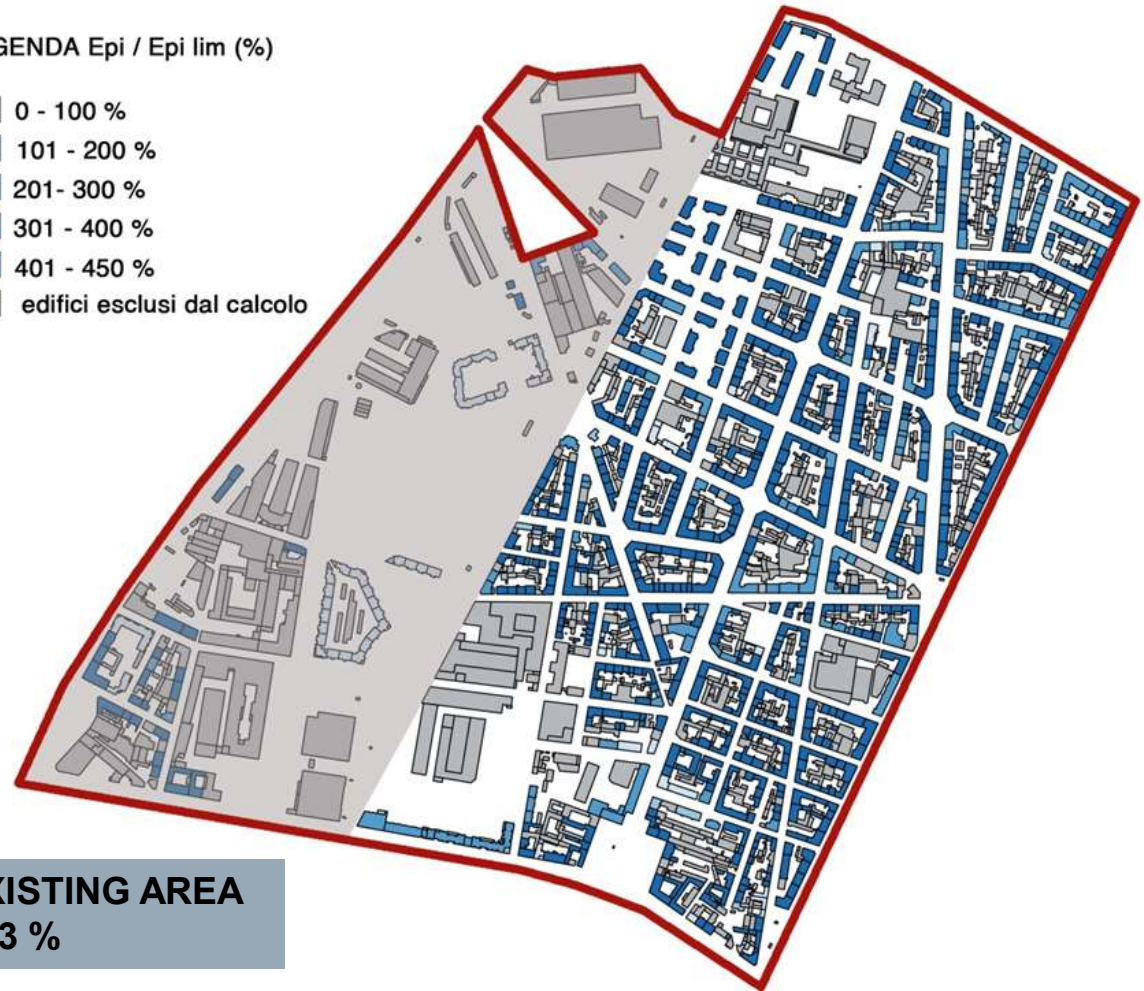
New construction/ Renovation

### CALCULATION

323 %

### LEGENDA Epi / Epi lim (%)

- 0 - 100 %
- 101 - 200 %
- 201 - 300 %
- 301 - 400 %
- 401 - 450 %
- edifici esclusi dal calcolo



**EXISTING AREA**  
323 %

COMMON ISSUES AND CHALLENGES  
COMMON STRATEGIES AND POLICIES

NEED

A COMMON WAY  
TO MEASURE AND ESTABLISH  
SUSTAINABILITY TARGETS  
FOR BUILDINGS

**TO AVOID**

**UNCERTAINTY AND CONFUSION**



# Too **many** differences !!

Physical boundaries

Time boundaries

Scoring and weighting systems

Number of criteria

Issue taken in account

Priorities

Labels





A Collective Initiative for a New Culture of  
Built Environment in Europe

## CESBA harmonization strategy for public assessment systems

- No ONE assessment tool for all
- But a common denominator composed by a core set of criteria to allow the comparison of assessments performed with LOCAL tools
- Common challenges and local solutions – different contexts in Europe
- Core set of criteria = EU Building Passport

## Harmonization: European Passport for Buildings

Harmonized assessment results have to be visualized and presented in a understandable way without neglecting the scientific and technical value of the assessment.

European Building Passport: immediate readability and comparison of results.

Common annex to certificates issued by local harmonized systems.

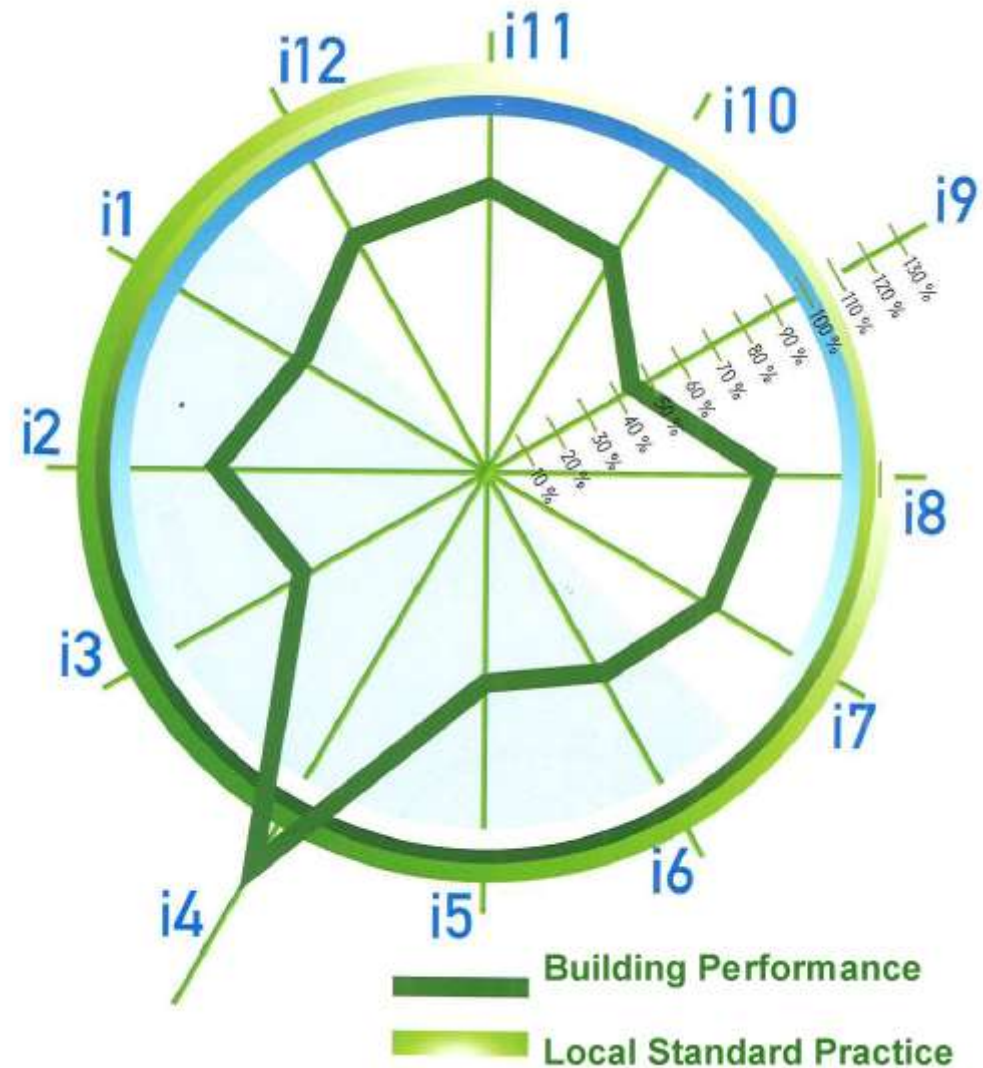


Image: BTP France

## EU Passport for buildings

System A  
Germany  
60 criteria  
Building+Site  
Process/Design/As Built  
Environmental, Social  
and Economic criteria  
DIN Standards  
German weights

SCORE 85  
LABEL GOLD

System B  
Italy  
35 criteria  
Building+Site+Location  
Design/As Built  
Environment and Social  
criteria  
UNI Standards  
Italian weights

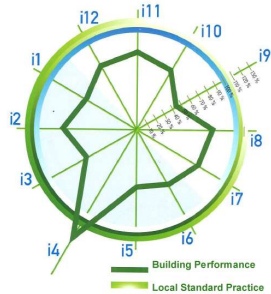
SCORE 2.5  
LABEL VERY GOOD

**RESULTS NOT COMPARABLE !**

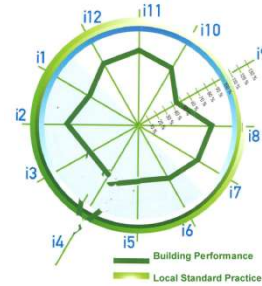
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System A  
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60 criteria  
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German weights

System B  
Italy  
35 criteria  
Building+Site+Location  
Design/As Built  
Environment and Social  
criteria  
UNI Standards  
Italian weights



Comparable !



# Advantages

- Common understanding about key sustainable building issues in Europe
- Measurement of the progress towards common objectives
- Best practice transferring
- Easier to learn from each other
- Facilitated transnational activities and processes
- More effective common regulations and directives
- Etc.....

# EC Communication 445 (2014)



Definition of a set of core indicators for buildings' life cycle resource efficiency + implementation guide

.. .the Commission "will propose approaches to mutual recognition or harmonisation of the various existing assessment methods, also with a view to making them more operational and affordable for construction enterprises, the insurance industry and investors".



# Resource Efficient Buildings WG

Issues considered:

Environmental  
IEQ – Productivity

Paper on core indicators for public consultancy expected to be issued in August 2016.



## **Next step: core of urban scale indicators**

Transnational indicators at urban scale already developed or under development in EU projects (i.e. FADUIR, Ecodistrict-ITC...)

Joint capitalization of projects to propose a set of indicators to the EC with a bottom up approach.

CESBA WG in collaboration with iiSBE

Common Metrics and Passport for Urban Districts

Major event in 2017. Please Join !

**MERCI !**

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