

ALDREN ALLiance
for Deep RENovation
in buildings

Building Renovation Passport

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POLITECNICO
MILANO 1863

Final Conference
2020 09 29, Marta Maria SESANA,
POLITECNICO DI MILANO



Data has a better idea

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#1 - Context

**EU Renovation Rate
varies from 0.4% to 1.2%**

**Decarbonised building
stock by 2050** and at a
cost-effective
transformation of existing
buildings into **nZEBs**
(2018/844/EU Art 2a)



- All Building Passport initiatives cover the energy component but few cover other aspects (i.e. materials, health, etc.).
- Mostly are of the nature of certification and the reporting no feasible recommendations.

**30+ BRP Initiatives
ongoing worldwide**

**>30% in the EU
15+ EU Countries**

Commission (Directive 2018/844/EU Art 19a) shall, **before 2020** ... introduce ... **an optional building renovation passport**



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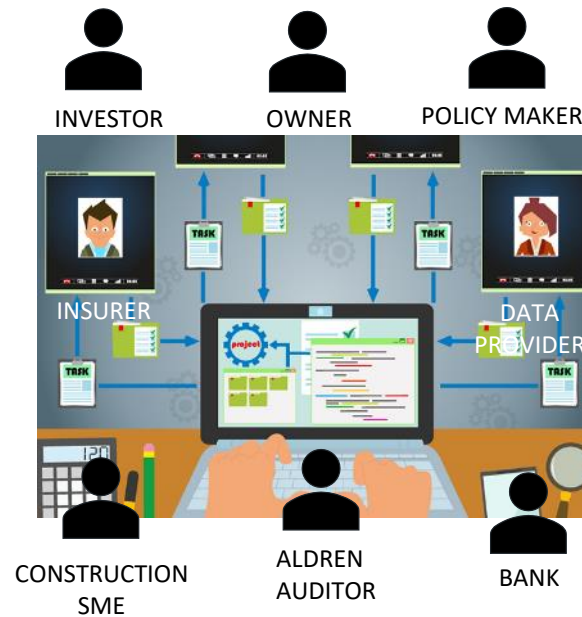
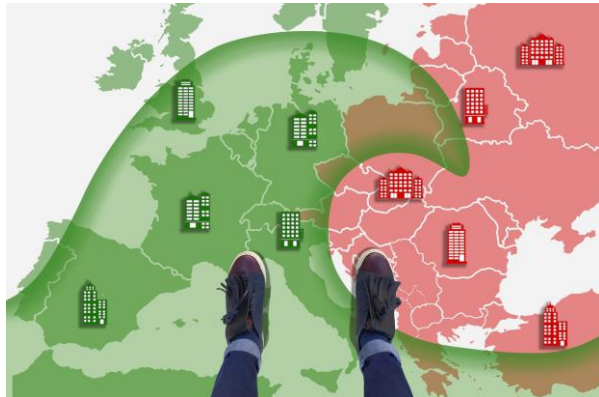
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#1 - ...and objectives



1. “2050 READY”

- Boost energy renovation on the building stock and avoid the lock-ins
- Improve health & wellbeing (indoor air quality, climate change resilient buildings)

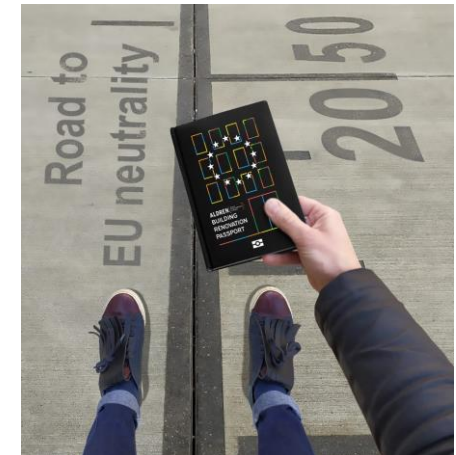


2. DATA CHALLENGE







- Storage centralized
- Common language
- Favor communication between stakeholders;
- Accessibility and quality

3. ALDREN BRP

- Comparable & reliable instrument all over EU
- Define roadmaps to nearly Zero Energy Building (nZEB)

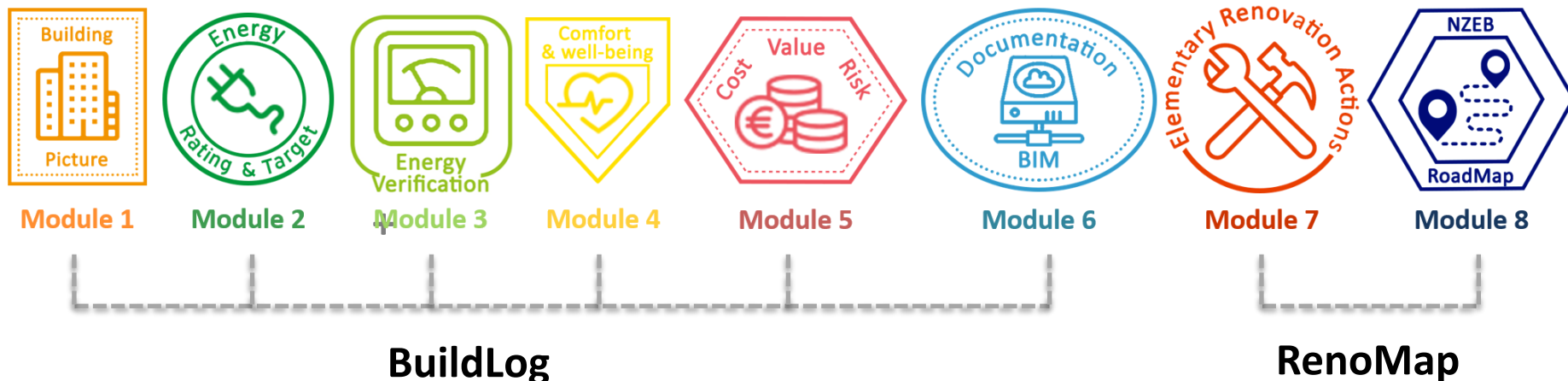


#2 - Main principles for the ALDREN BRP

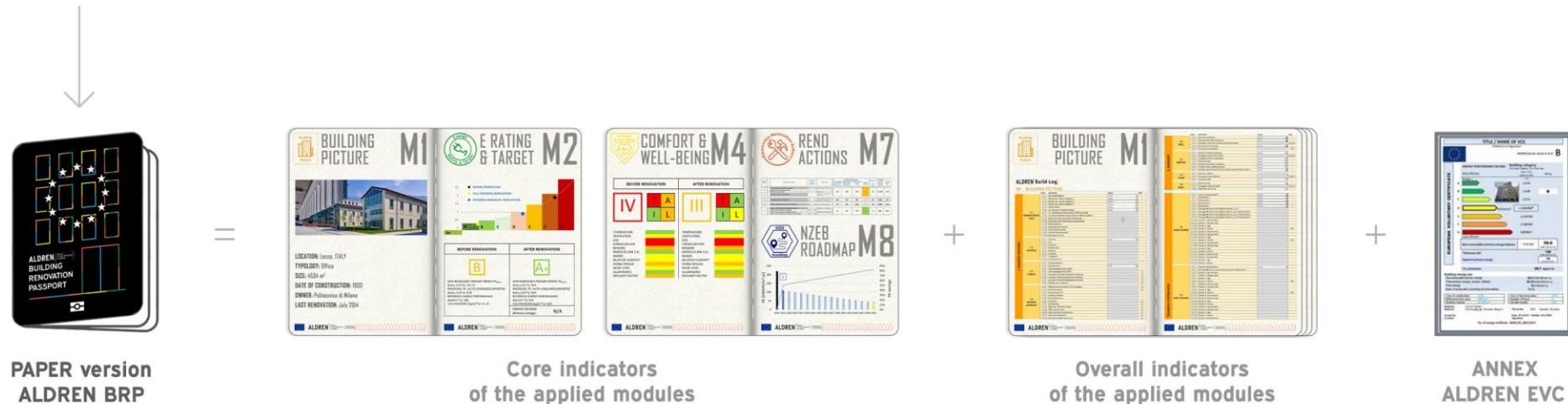
PRINCIPLES	COMPLIANCY	HARMONIZATION
	 <p>Digital - paper instrument, complementary to the EPC and structured into 2 main elements: BuildLog and RenoMap.</p>	 <p>Harmonized procedure for building data gathering through the time, with a common language in a cost-effective renovation long-term plan.</p>
	BUILDING TYPOLOGY	ENERGY TARGET
TARGET	 <ul style="list-style-type: none"> - Data sets for non- residential buildings (hotels/offices). - BRP structure suitable also for residential= BuildLog + RenoMap 	 <ul style="list-style-type: none"> - Follow the ALDREN protocols steps for BRP creation. - Collect users willing and use them for the RenoMap creation.
USERS	OWNER/ INVESTOR	ALDREN AUDITOR
	 <ul style="list-style-type: none"> - Refer to a unique instrument. - Comprehension of real current state of the building. - Awareness on the renovation actions feasibility. 	 <ul style="list-style-type: none"> - Refer to the ALDREN protocols guidance for the BRP creation based on step by step procedure. - Collect users willing and use them for the RenoMap creation.

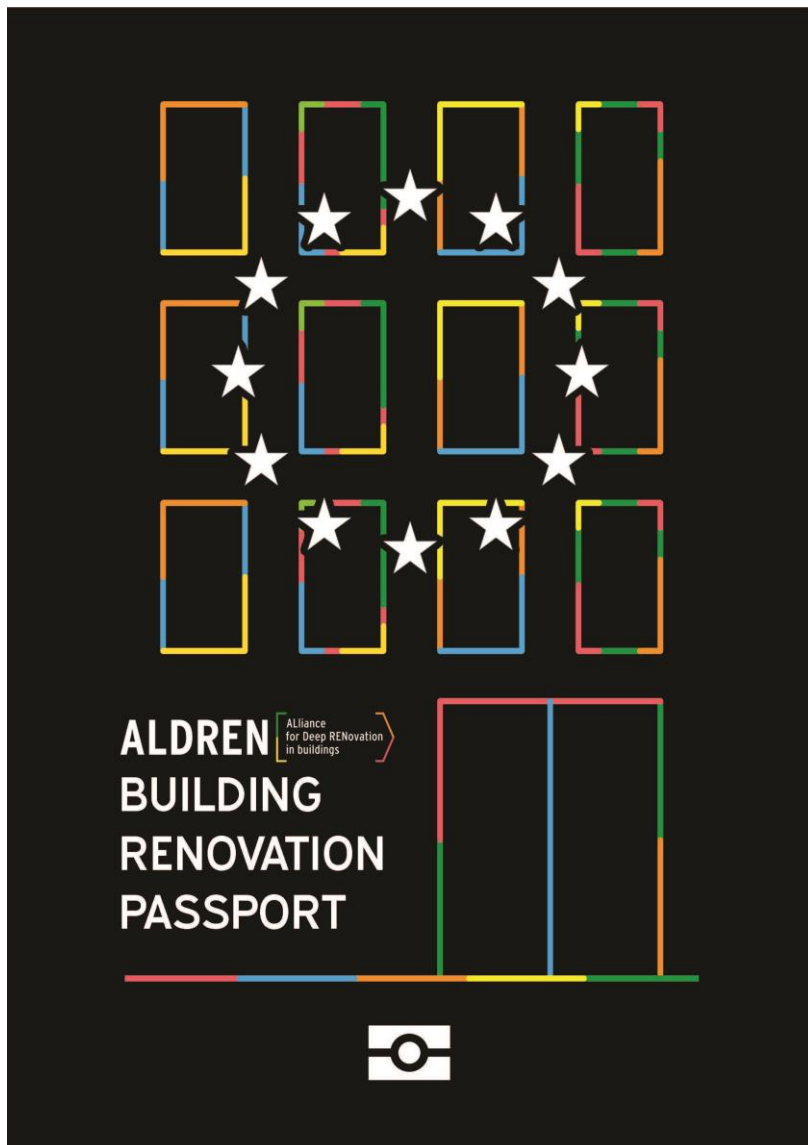
#2 - Main principles for the BRP protocol

- The ALDREN BRP has been developed for **non-residential buildings**, in particular for **office** and **hotel** typologies.
- The whole ALDREN approach foreseen different calculation protocols for each of the modules in which the ALDREN BRP is structured and rendered in a **unique instrument**.
- This modular structure could be implemented or modified in future according to new upcoming needs, target, indicators, etc.



#3 - ALDREN BRP format and versions





ALDREN [Build Log]

M1 - BUILDING PICTURE

BUILDING NAME	BUILDING 8 - POLITECNICO DI MILANO, LECCO CAMPUS
OWNER NAME	POLITECNICO DI MILANO
LOCATION	LECCO, IT
TPOLOGY	OFFICE
REFERENCE FLOOR AREA	4534 m ²
YEAR OF CONSTRUCTION	1900
YEAR OF LAST RENOVATION	2014

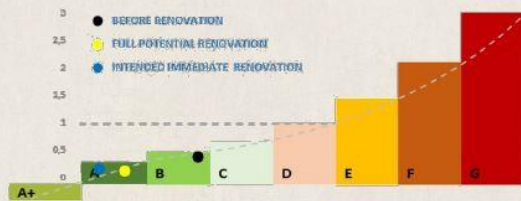
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M2 - ENERGY RATING & TARGET



BEFORE RENOVATION	AFTER RENOVATION
<p>NON-RENEWABLE PRIMARY ENERGY $P_{E,RENH}$ (kWh/m²·y): 61.42 PRODUCED PE AUTO-CONSUMED (kWh/m²·y): 0.62 REFERENCE ENERGY PERFORMANCE (kWh/m²·y): 130 CO₂ EMISSIONS (kg/m²·y): 1.68</p>	<p>NON-RENEWABLE PRIMARY ENERGY $P_{E,RENH}$ (kWh/m²·y): 30.93 PRODUCED PE AUTO-CONSUMED (kWh/m²·y): 0.62 REFERENCE ENERGY PERFORMANCE (kWh/m²·y): 130 CO₂ EMISSIONS (kg/m²·y): 1.68</p>
	ENERGY SAVINGS (Primary energy): 29.60
<p>FINAL ENERGY (kWh_{HE}/m²·y): 34.29 HEATING FE (kWh_{HE}/m²·y): 51.01 COOLING FE (kWh_{HE}/m²·y): 10.80 VENTILATION FE (kWh_{HE}/m²·y): 5.20 DHW FE (kWh_{HE}/m²·y): 10.41 LIGHTING FE (kWh_{HE}/m²·y): 5.49</p>	<p>FINAL ENERGY (kWh_{HE}/m²·y): 17.28 HEATING FE (kWh_{HE}/m²·y): 21.47 COOLING FE (kWh_{HE}/m²·y): 4.57 VENTILATION FE (kWh_{HE}/m²·y): 2.64 DHW FE (kWh_{HE}/m²·y): 10.41 LIGHTING FE (kWh_{HE}/m²·y): 3.91</p>
	ENERGY SAVINGS (Final energy): 48 %

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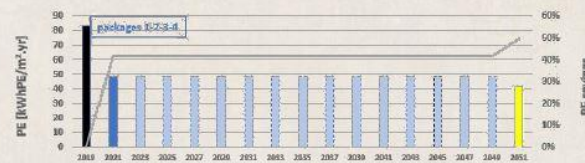
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M7 - ELEMENTARY RENOVATION ACTIONS



ACTION ID	ACTION DESCRIPTION	START DATE	END DATE	ACTION STATUS	Energy performance (kWh/m ² ·y)										Standard evaluation		
					heating	cooling	ventil.	dhw	lighting	elec.	other	total	CO ₂	PE	Score	Label	
34-38	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
39	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
40	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
41	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
42	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
43	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
44	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0
	Thermal insulation external walls	2014	2014	Completed	10	0	0	0	0	0	0	0	0	0	0	0	0

M8 - NZEB ROADMAP



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JOIN US TO TEST

THE ALDREN BRP

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