

Circular economy and regeneration of building stock in the Italian context: policies, partnerships and tools

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analysis of Italian traditional buildings' renovation process

?

existing **obstacles** and the **levers** towards circular and sustainable practices

Italian policies improvement

environmental - economic life cycle assessment tools to support decision

strategic partnerships for circular networks

METHODOLOGY

Direct interviews to operators



investor



designer



manufacturer



constructor



demolisher



waste manager



waste treatment

Questions:

Which are the decision steps in requalification process?

Which are the decision steps in waste management?

Which are the legislative obstacles for reuse/recycling?

Which are the policies in the Italian context?

Are there incentives on requalification or reuse/recycling?

Where you can identify potential avoidable waste during the regeneration process?

Is your company interested in new business models, such as supply a service rather than sell a product?

Results

Operators relationships and the decision-making steps

Obstacles for reuse/recycling of materials

Levers for reuse / recycling of materials

Potential avoidable waste

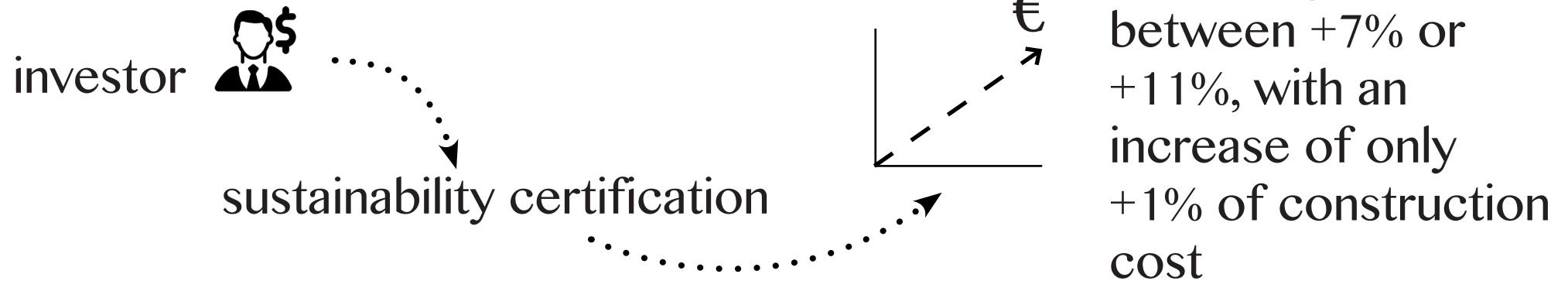
Operators' interest to new Business models

Operators relationships and the decision-making steps

OBSTACLES:

relationships are not continuative

difficult information sharing



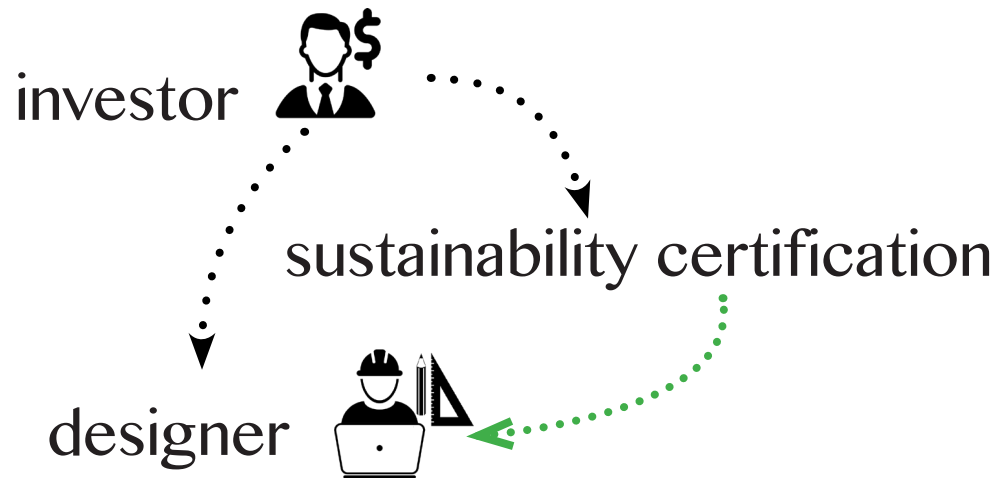
**key-operator and decision steps
fundamental to evaluate the sustainability**

Operators relationships and the decision-making steps

OBSTACLES:

relationships are not continuative

difficult information sharing



- how to obtain the certification
- materials choice
- building's image and utility spaces

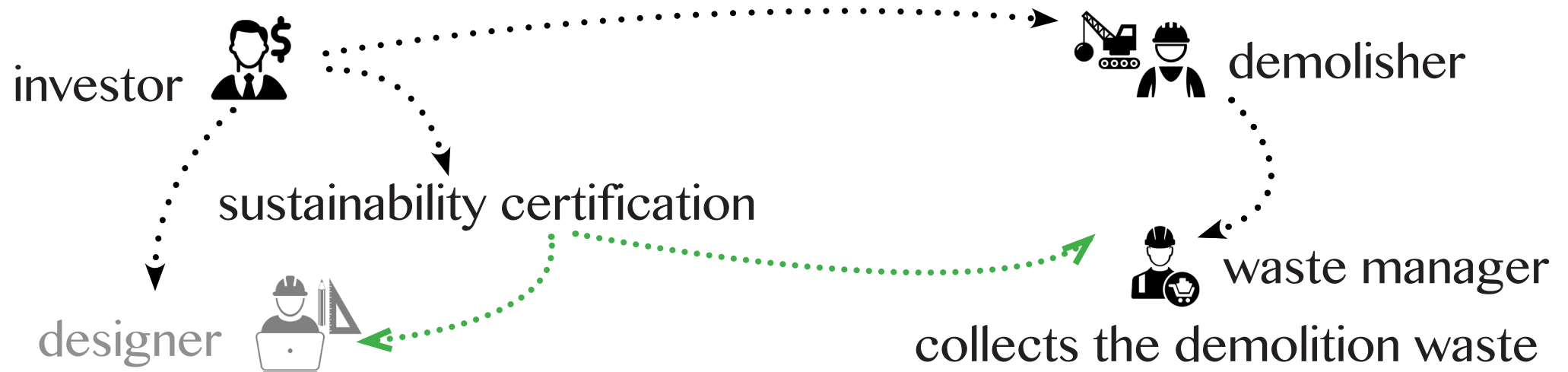
Operators relationships and the decision-making steps

OBSTACLES:

relationships are not continuative

difficult information sharing

- demolition techniques (selective demolition or deconstruction)
- the demolition-yard
- waste destination



- how to obtain the certification.
- materials choice
- building's image and utility spaces

collects the demolition waste
transports the waste to landfill
or sorting plant

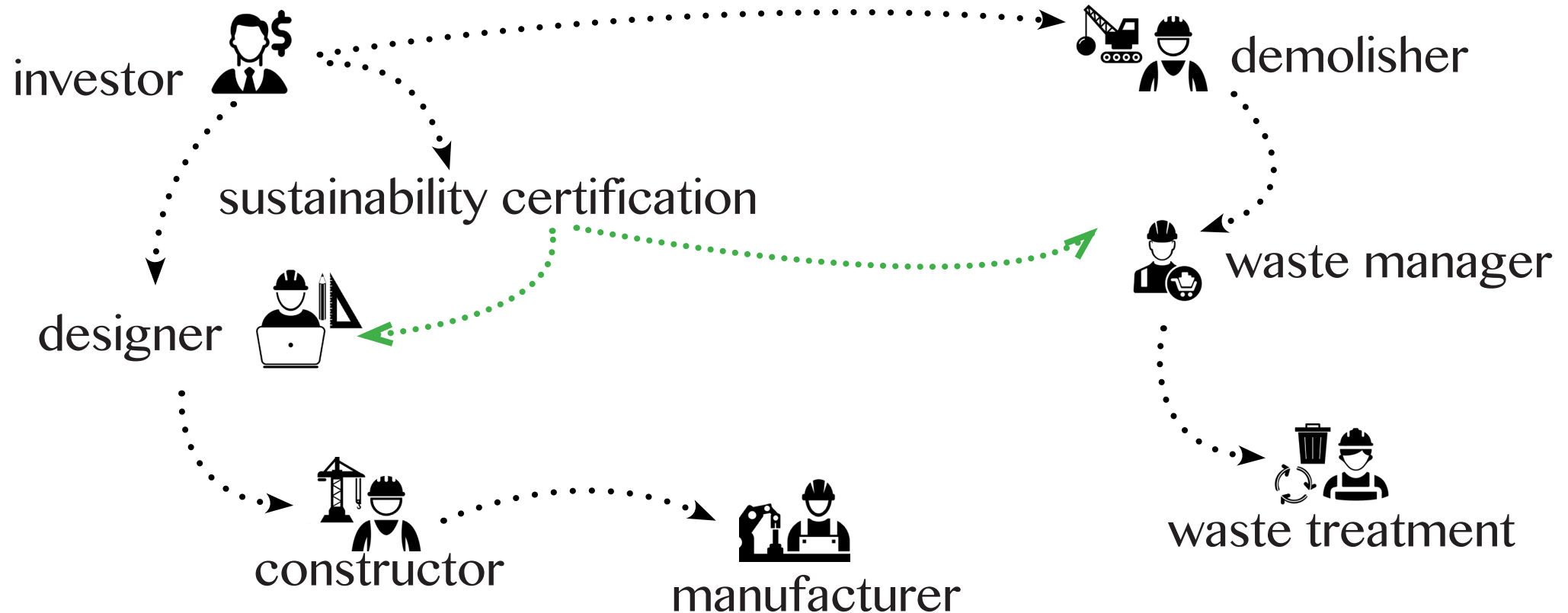
Operators relationships and the decision-making steps

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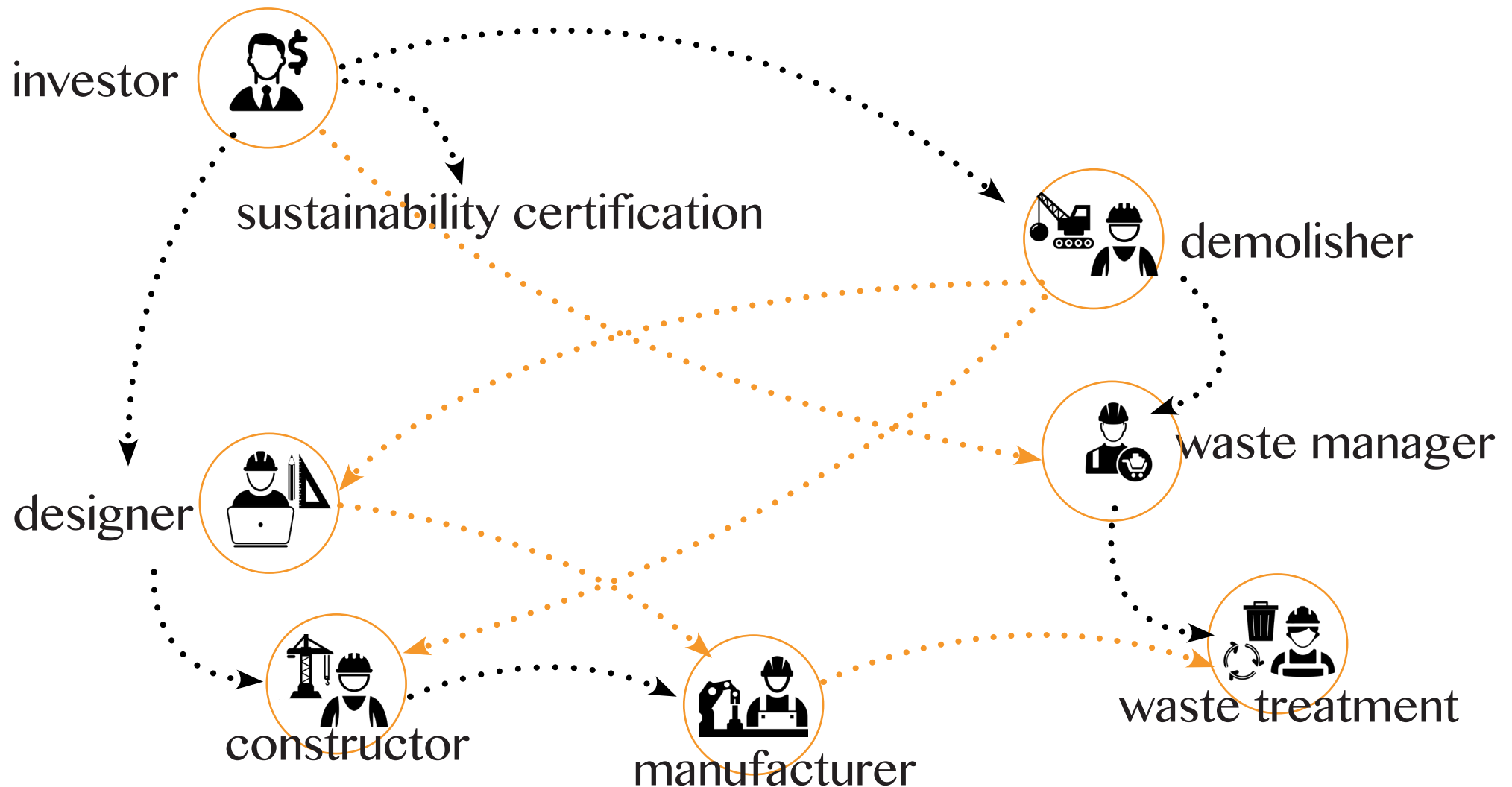
difficult information sharing

decision are not based on sustainability



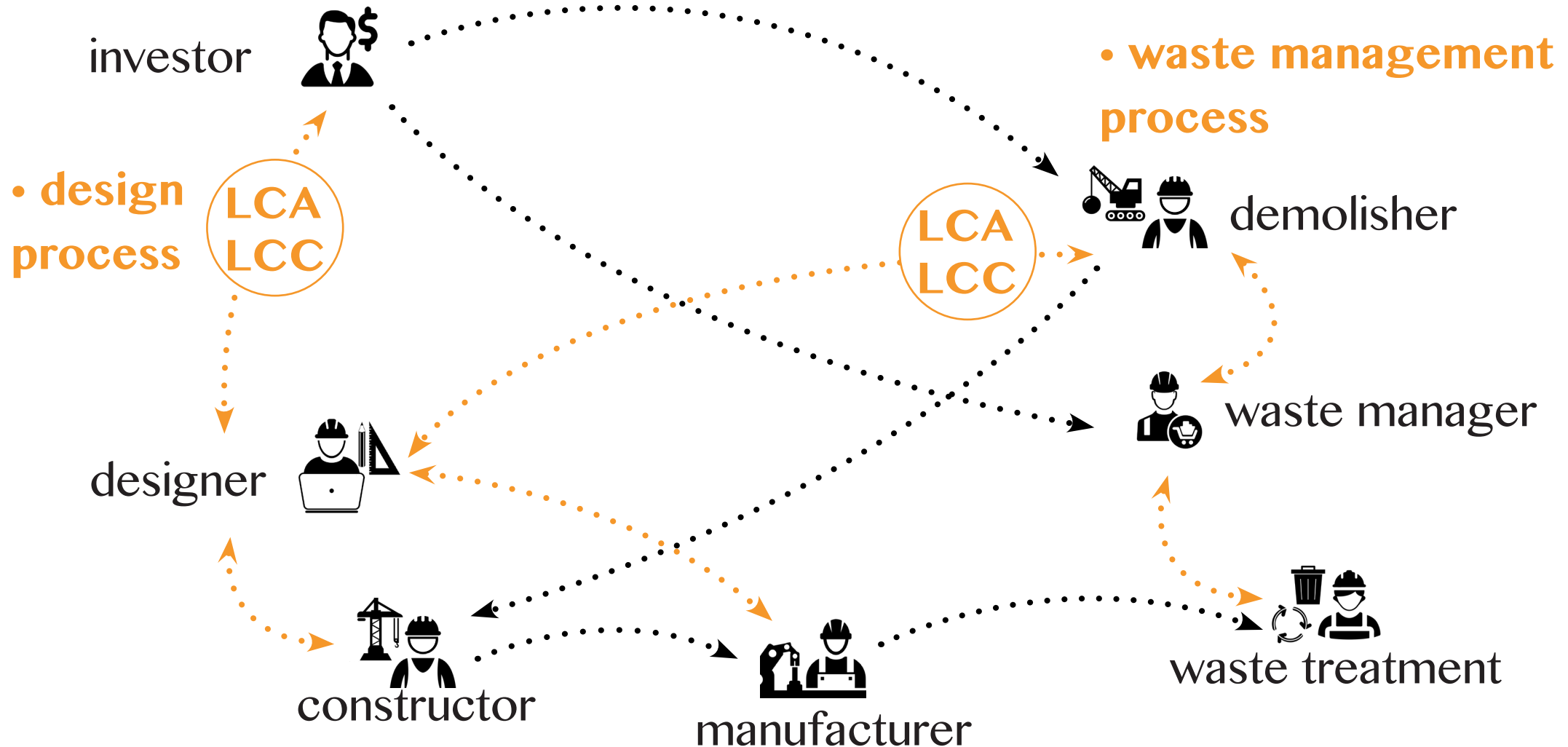
Operators relationships and the decision-making steps

Strategic partnerships



Operators relationships and the decision-making steps

Tools



Obstacles for reuse/recycling of materials

OBSTACLES FOR REUSE:

lack of expert operators

economic aspects

aesthetic aspects

logistic barriers

responsibility



only decorative component reuse

Obstacles for reuse/recycling of materials

OBSTACLES FOR RECYCLING:

economic barrier

main problem: recycling of inert aggregates



Italy, 2016:

54.4 million ton of CDW was generated

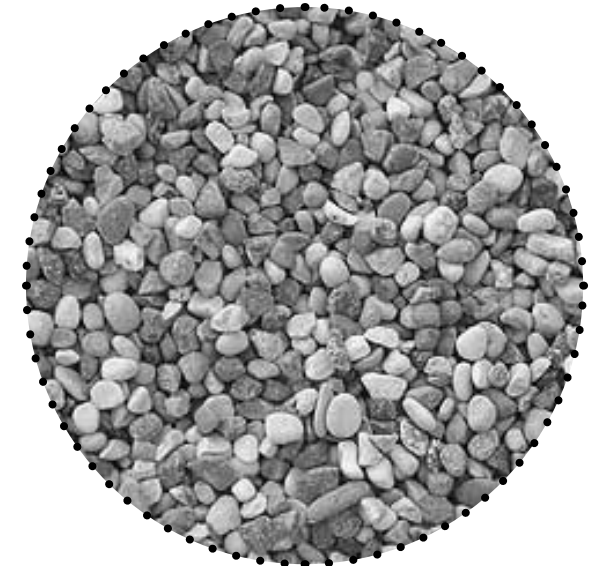
75-85% of Italian CDW is inert aggregates

Italian price of natural aggregate

natural sand: 15 €/ton (0,015 €/kg)

natural gravel: 10 €/ton (0,010 €/kg)

transport costs 6 €/ton until 50 km



Obstacles for reuse/recycling of materials

OBSTACLES FOR RECYCLING:

economic barrier

logistic barriers



STATISTICS:

76% of CWD (soil excluded)
is recycling

plant of waste treatment:
gains to withdraw the waste:
7 €/ton of mixed inert
gain to sell for road substratum:
3-7€/ton of secondary inert aggregate
but often aggregate remains unsold

Obstacles for reuse/recycling of materials

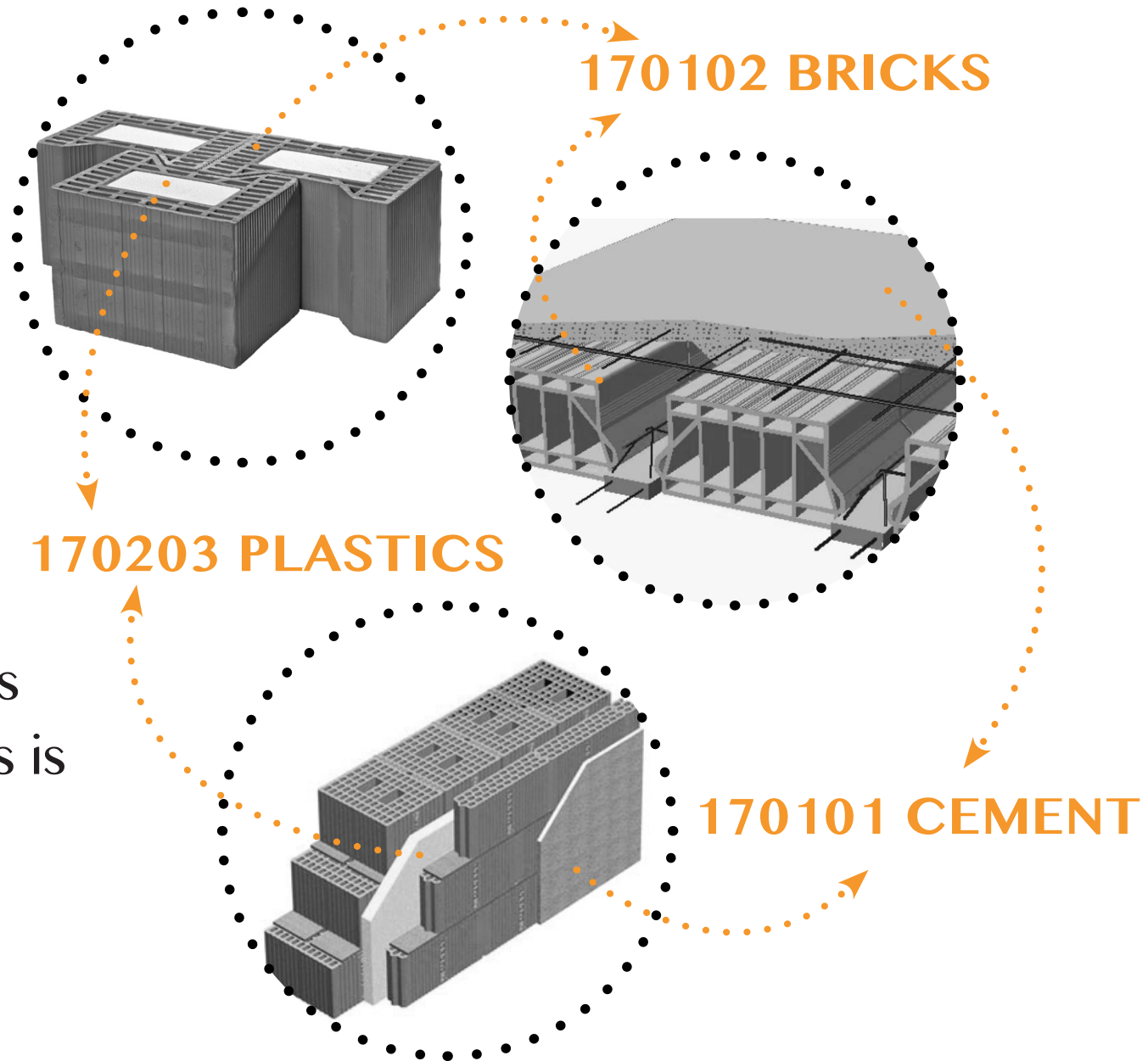
OBSTACLES FOR RECYCLING:

economic barrier

logistic barriers

technical barriers

Subdivision of the aggregates among different waste codes is very difficult



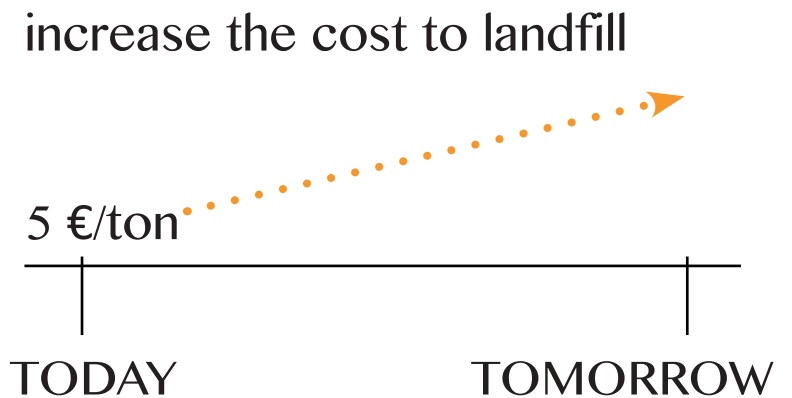
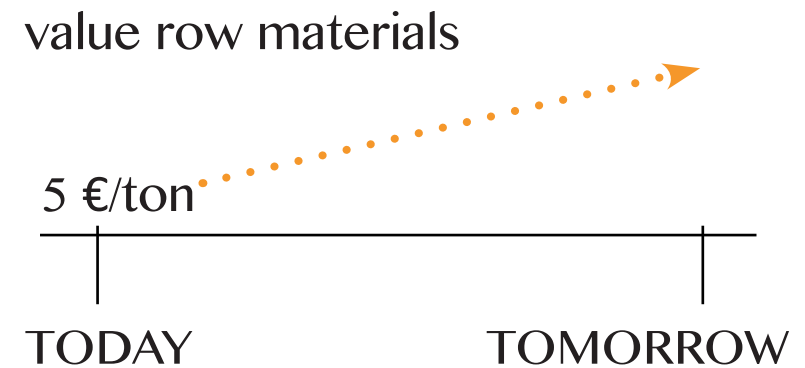
Obstacles for reuse/recycling of materials

Policies improvements

- clarify policy regarding reuse



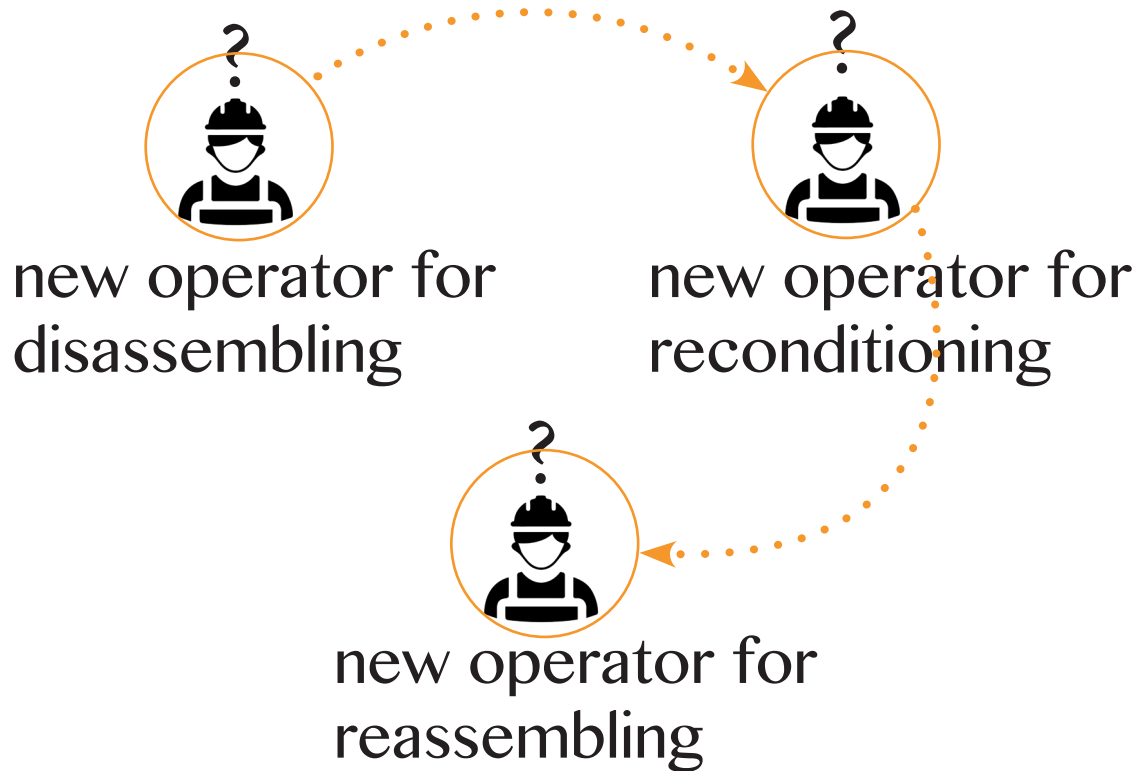
- create a market demand



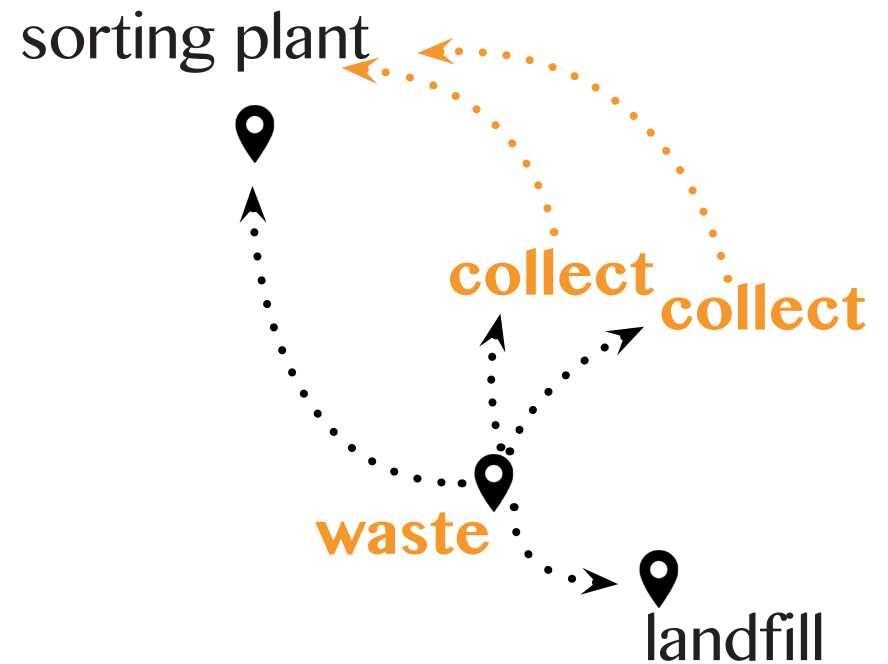
Obstacles for reuse/recycling of materials

Strategic partnerships

- to define expert operators



- to define space to collect waste



Levers for reuse / recycling of materials

LEVERS FOR REUSE/RECYCLING:

there are not economic incentives

Directive 2008/98CE > D.lgs. 205/2010

Green Public Procurement (D.Lgs. 50/2016)



has increased recycling

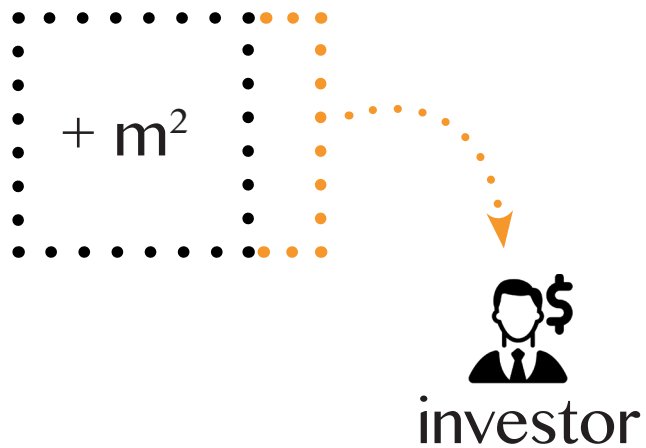


- 15% by weight of the total materials used, must **contain recycled or recovered** raw material
- 50% of the building components have to be **selective demolished** at the end-of-life
- 60% by weight of demolition non-hazardous waste must be **prepared for re-use and recycling**.

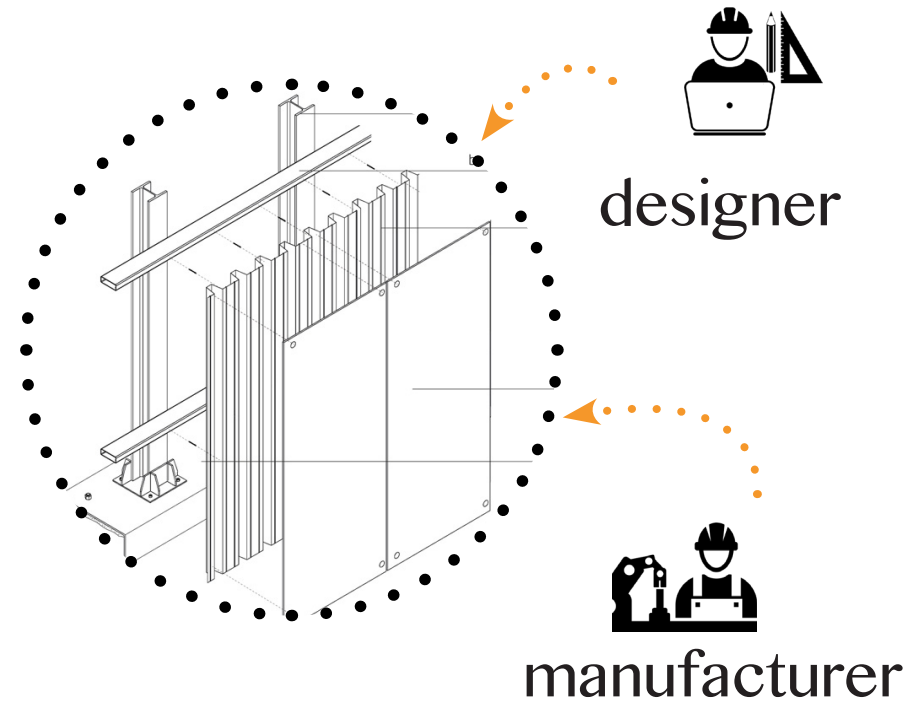
Levers for reuse / recycling of materials

Policies improvements

- economics incentives or building square meters bonus



- implementation of GPP requirements



Potential avoidable waste

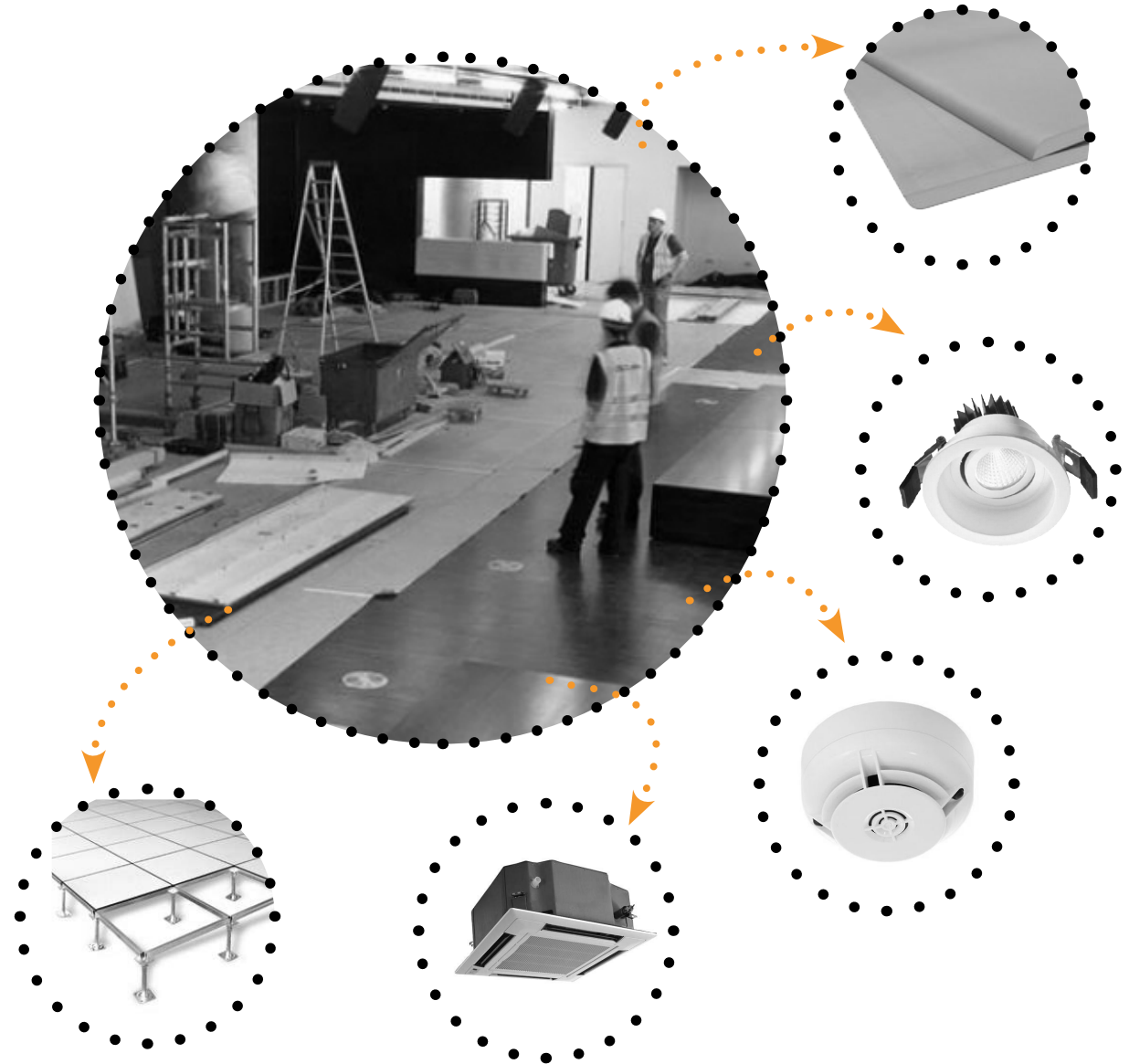
WASTE OF NEW MATERIALS:

fit-out substitution stage

Necessary:



certification of “end of works”
to rent or sell the building



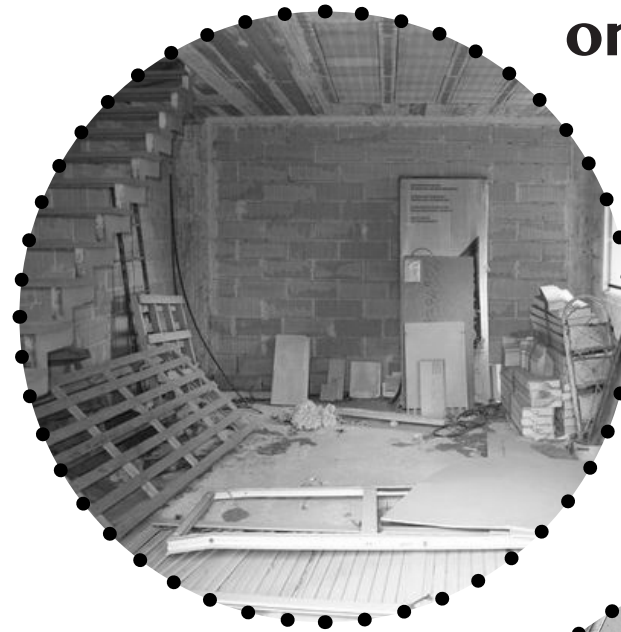
Potential avoidable waste

WASTE OF NEW MATERIALS:

fit-out stage

construction stage

off-site construction techniques are not present in the “price list of construction works”: economic benchmark for defining and verifying the public tenders cost.



on-site
+ waste

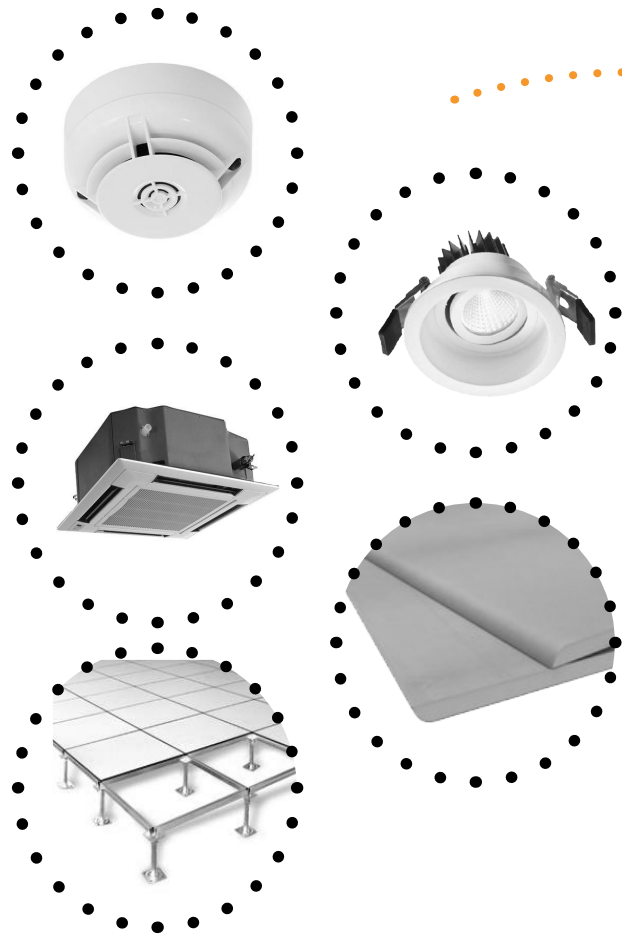


off-site
- waste

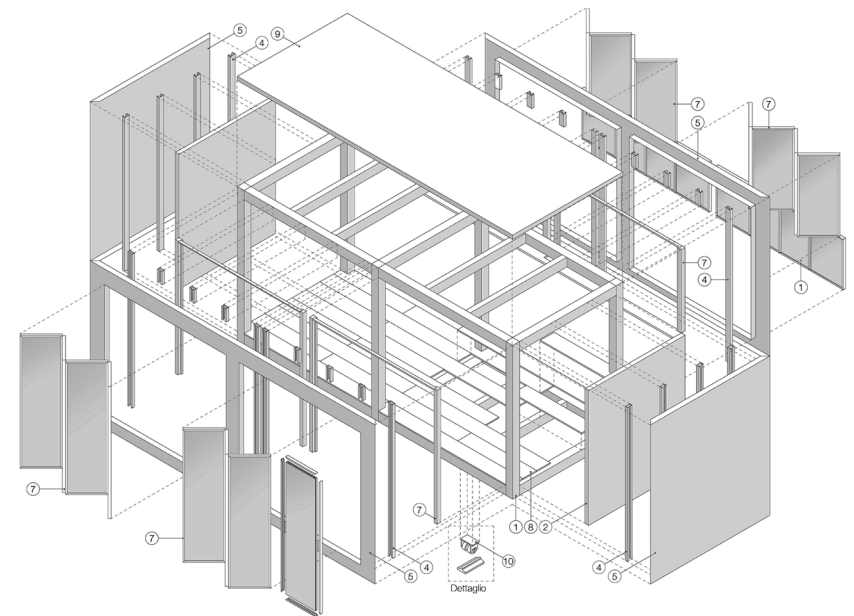
Potential avoidable waste

Strategic partnerships and Policies improves

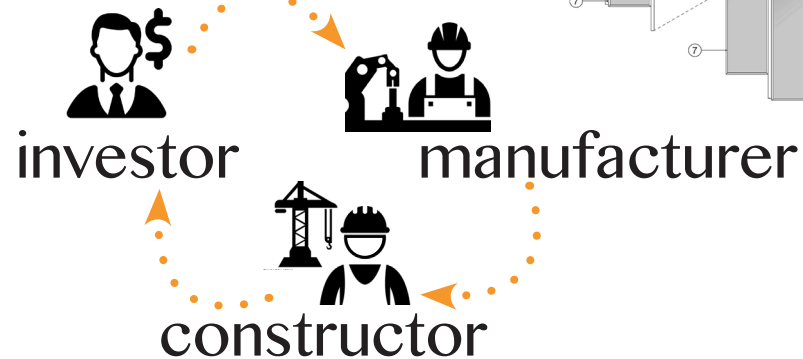
- to create disassemble and reusable fit-out elements



- to introduce off-site techniques in the “price list of construction works”



Reused in other
fit out building



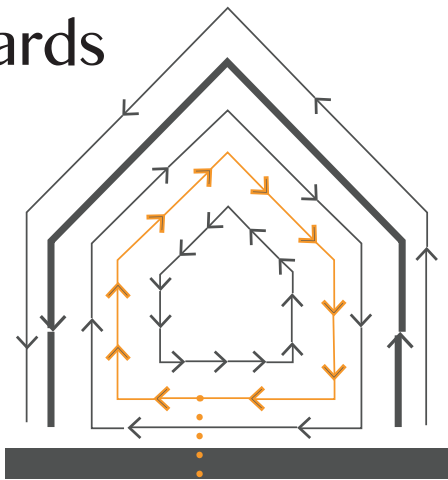
Operators' interest to new Business models

BARRIERS TO NEW BUSINESS MODELS (BASED ON SERVICE):

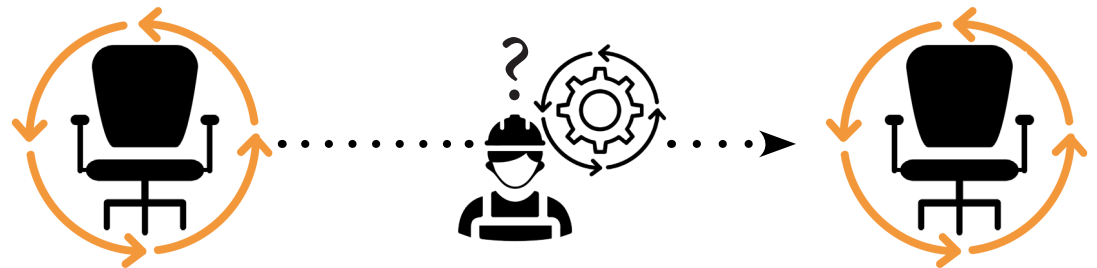
long lifespan

market system based on properties

Now regards
only:



systems (heating water,
air conditioning, lighting etc.)



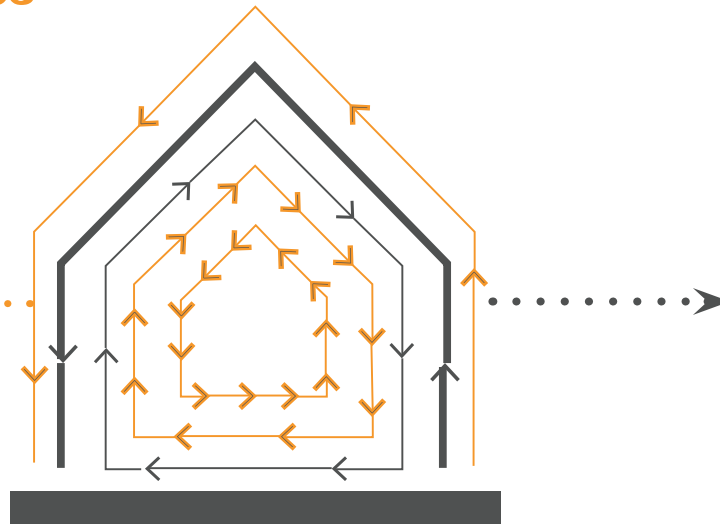
lack of 'operator' and
agreements for managing
the product at the end of its
service life, supplying a substi-
tution of it (as a service).

Potential avoidable waste

Strategic partnership

- to promote a supply service chain in order to activate new business of reused and remanufactured products

starting from short life span component



towards long life span component and the whole building

new business
new operators

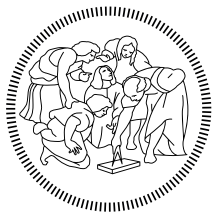


+ reuse
+ remanufacturing

+ maintainance
of materials' value

Thanks

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