



Sustainable Building Brief

Bezalel Jerusalem

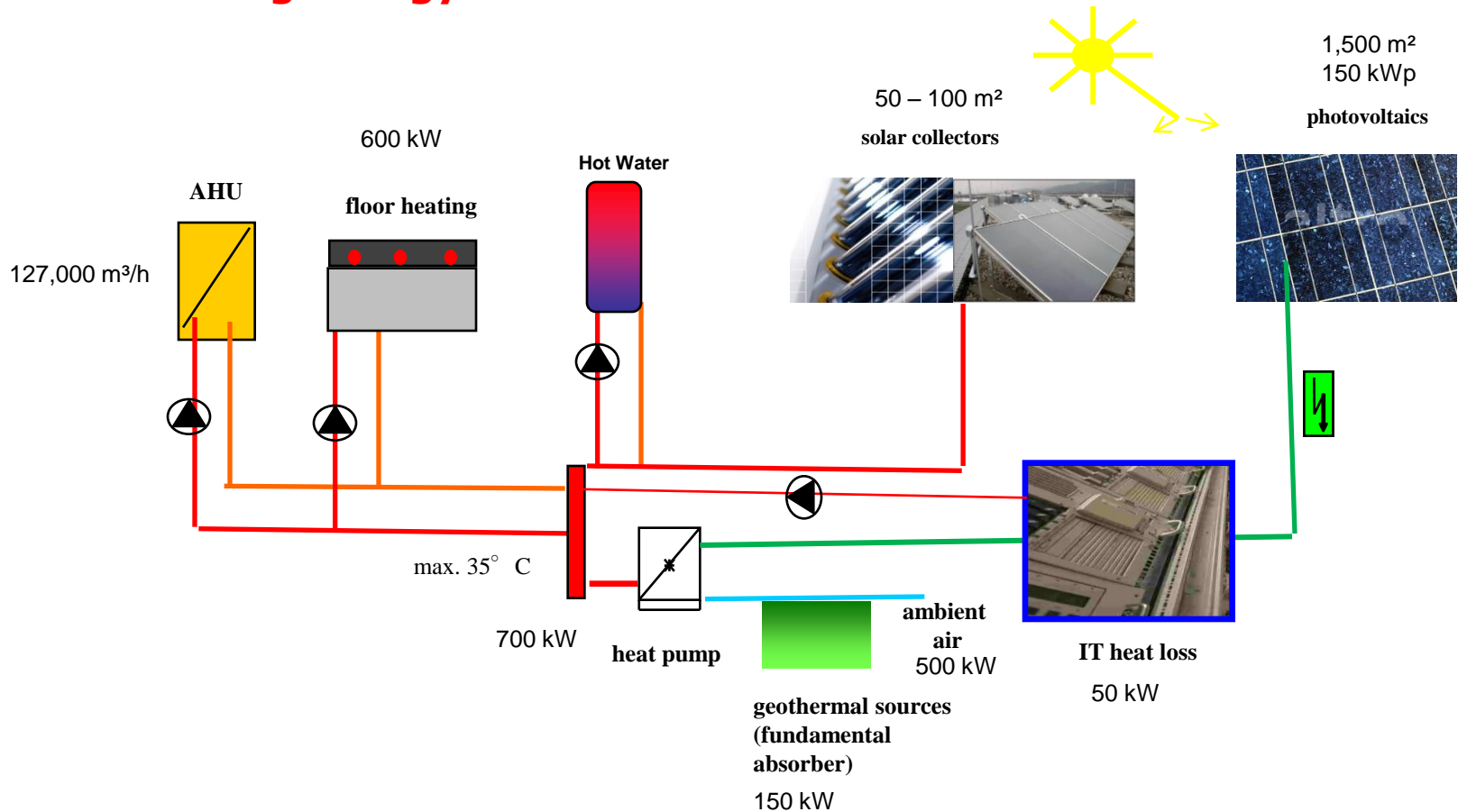
Executive Summary





Project Targets for Sustainable Building Design:

I. Zero Heating Energy



Project Targets for Sustainable Building Design:

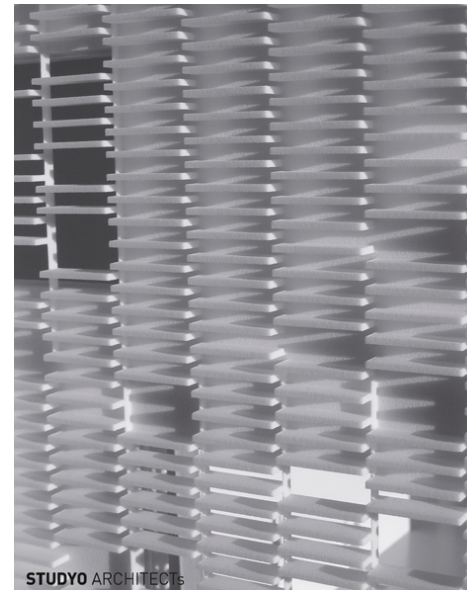
I. **Zero Heating Energy:**

1. heating insulation of building envelope
2. heat recovery in ventilation units
3. heating systems with low heating temperature (like floor heating)
4. using heat losses by computer lab for active heating systems
5. solar collectors for central warm water (sports, kitchen)
6. geothermal use
7. solar energy use via PV-systems (ca. 1,400 m² needed for Zero carbon heating)

Project Targets for Sustainable Building Design:

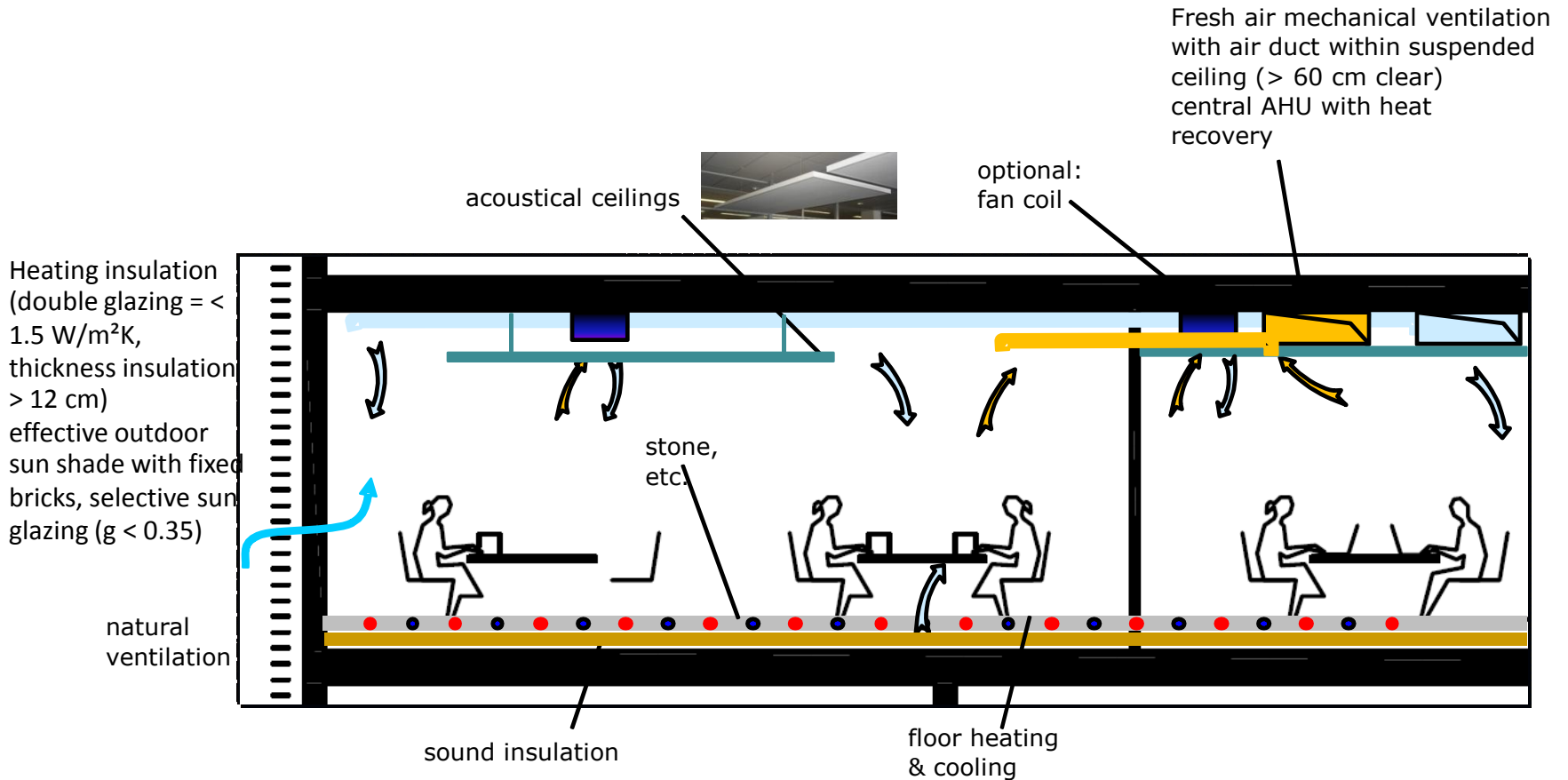
II. **Reduce cooling energy:**

1. heating insulation of building envelope
2. outdoor sun shading for windows
3. daylight use as much as possible
4. natural ventilation as much as possible during the year
5. efficient lighting systems with daylight and motion sensors
6. solar energy use via PV-systems
7. geothermal use



Project Targets for Sustainable Building Design:

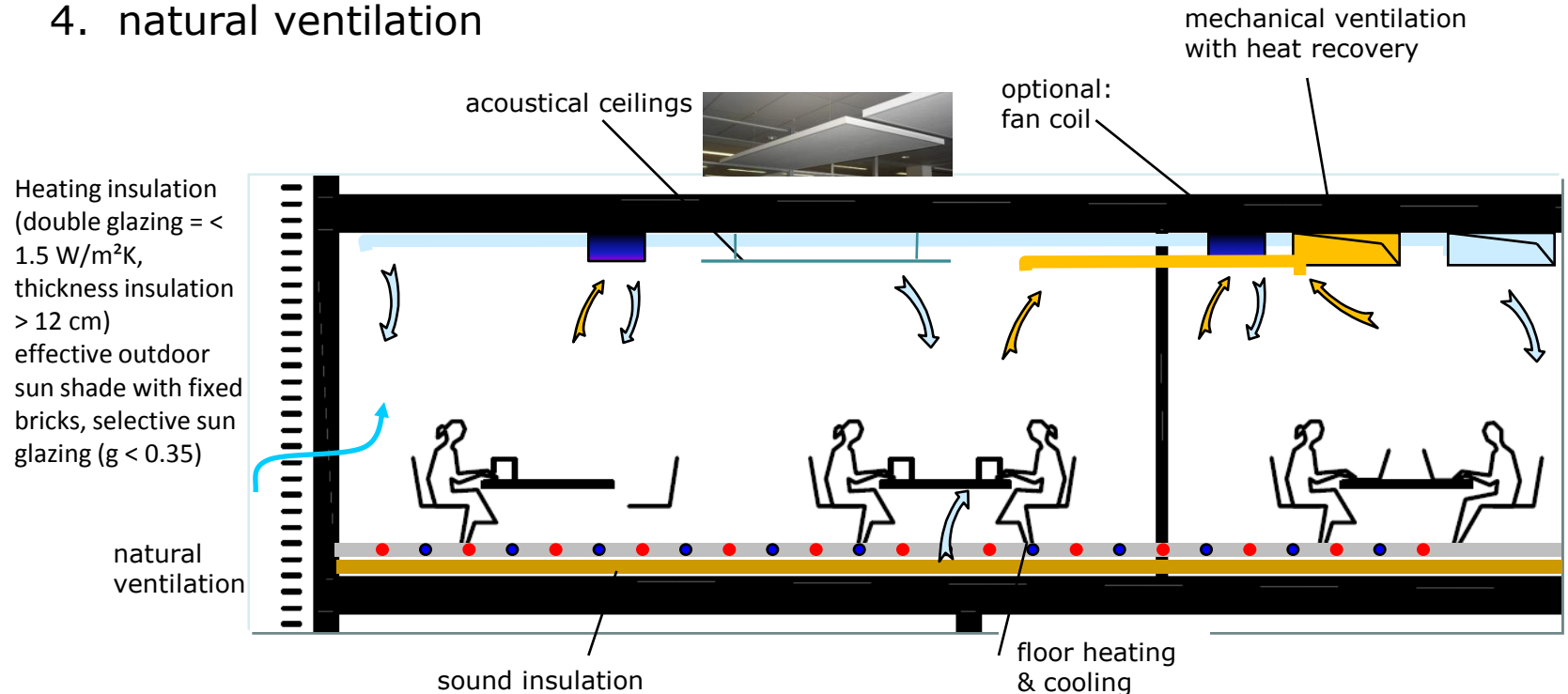
III. Rise productive/creative environment by optimizing thermal comfort:



Project Targets for Sustainable Building Design:

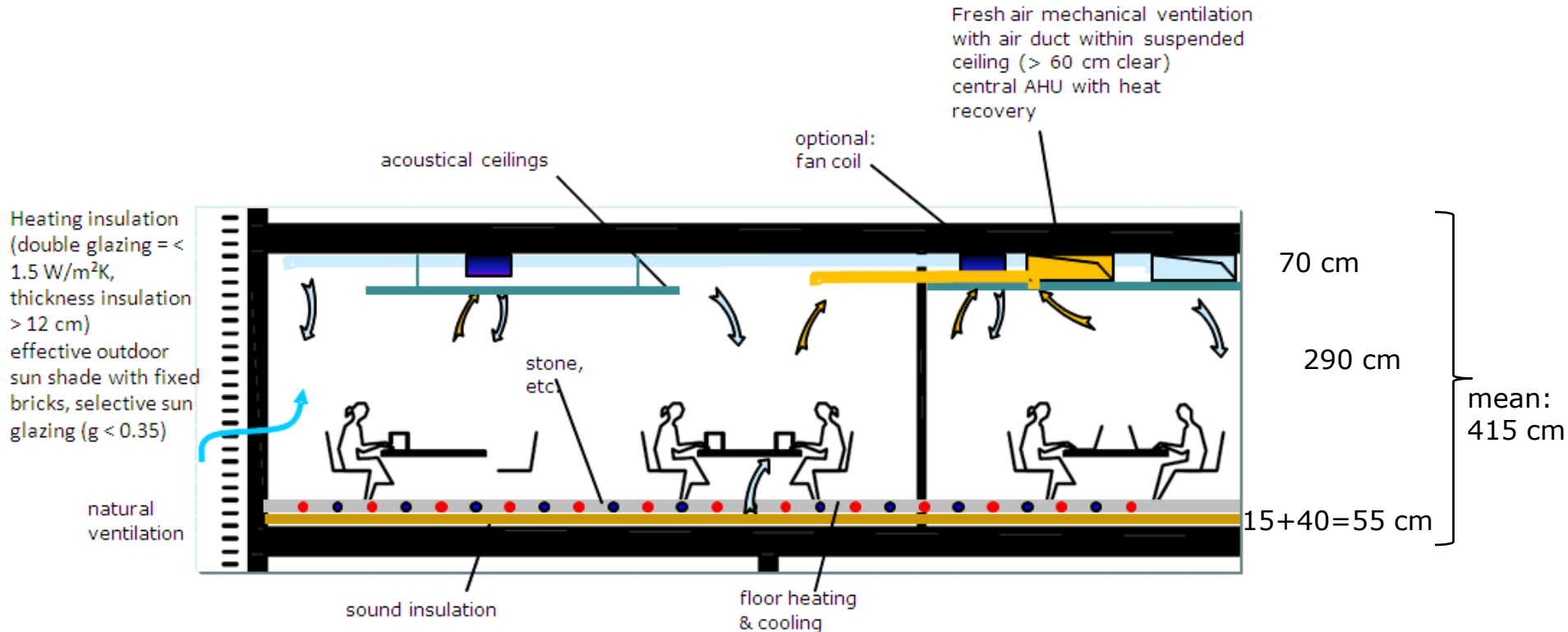
III. **Rise productive/creative environment by optimizing thermal comfort:**

1. radiant heating & cooling
2. heating insulation of building envelope
3. outdoor sun-shading
4. natural ventilation



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Room climate Concept Alternative 2



Project Targets for Sustainable Building Design:

IV. **Reduce city water consumption:**

1. rainwater collection and use for irrigation & ~~toilet flush~~
2. condense water collection from cooling and use for irrigation & ~~toilet flush~~
3. ~~grey-water recycling~~ and use for irrigation & toilet flush



...not allowed yet in Israel



Recommendation:

Prepare the building for the future!

GREEN BUILDING

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High Energy Class



low energy emissions – low waste – low material emissions



Zero heating energy

Reduced cooling energy

Reduced Water Consumption

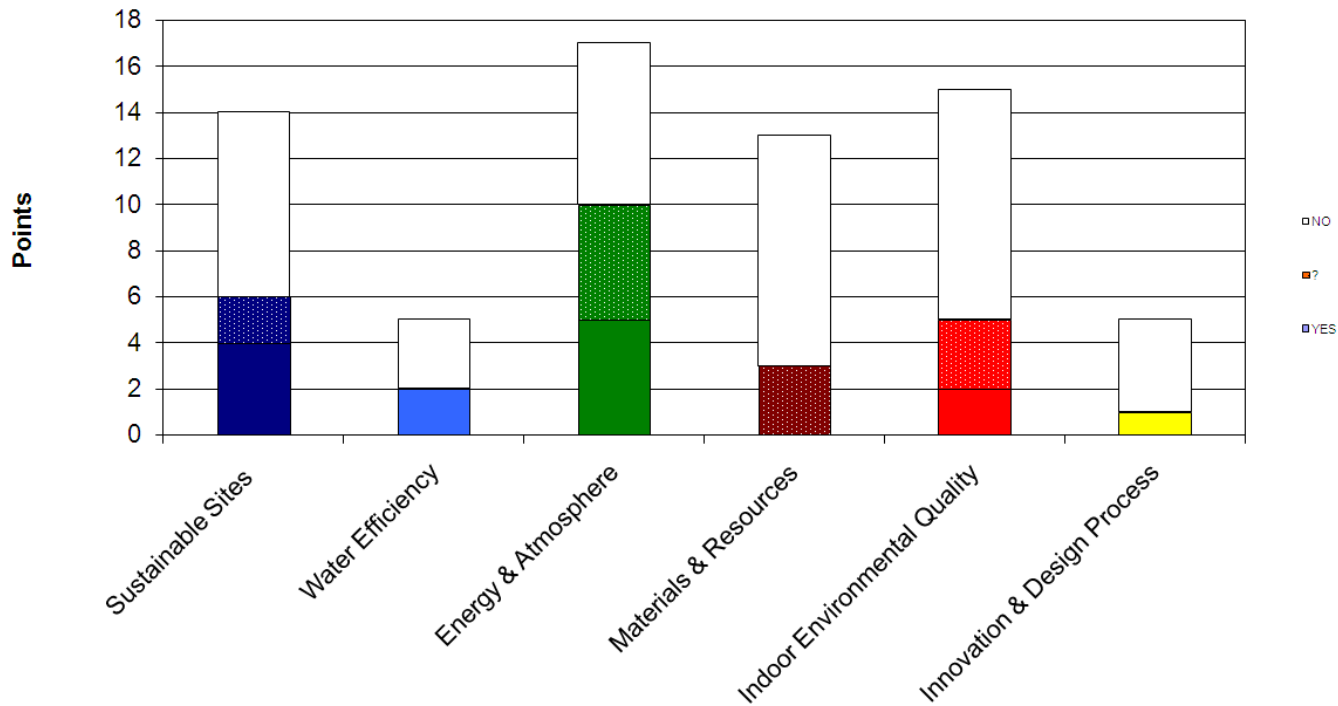
Healthy and Comfortable Climate

Responsibility for the next generation!



LEED

LEED Environmental Categories Actual Situation



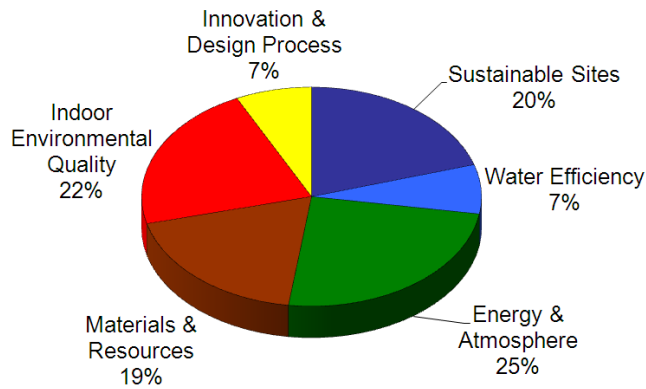
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Project status - Maximum „Certified“ is possible



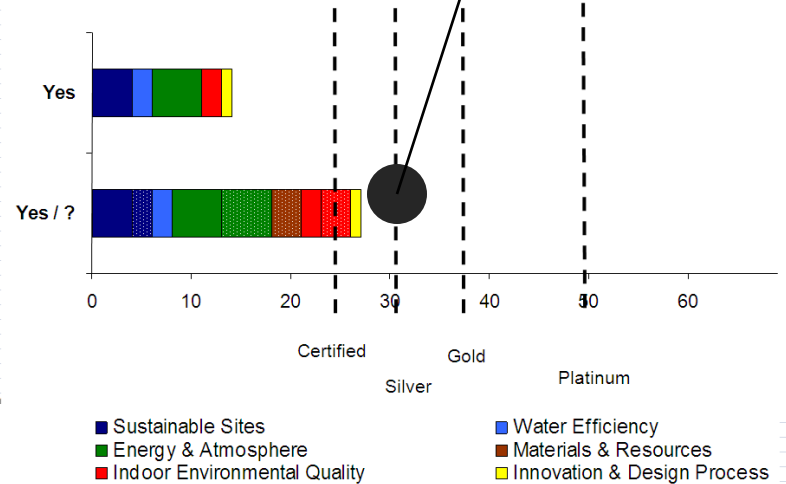
LEED

LEED Environmental Categories



LEED Environmental Categories Actual Situation

Leed Project Assessment Estimation Actual Project Status / Design



**Silver is possible!
GOLD is difficult!**

Yes	To achieve with actual design concept (as in design concept defined)
Yes/?	To achieve possibly with actual design concept (to clarify)

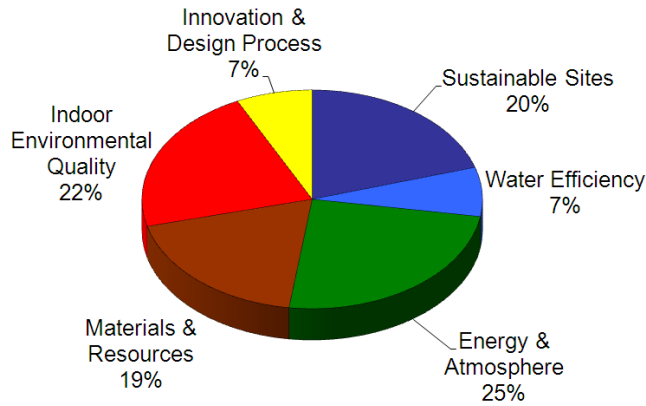
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Project status - Maximum „Certified“ is possible



LEED

LEED Environmental Categories

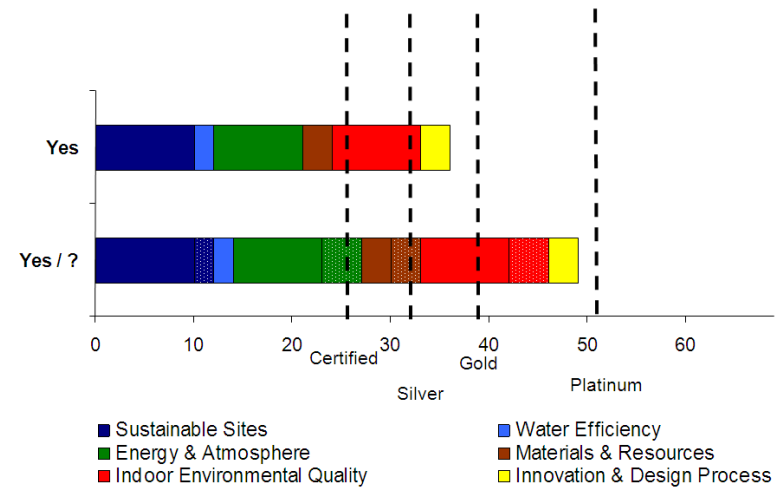


LEED Environmental Categories

Additional Actions
Possible Project Status Certification

Leed Project Assessment Estimation

Additional Actions
Possible Project Status Certification



Yes	To achieve with additional effort of planning and investment
Yes/?	To achieve possibly with additional effort of planning and investment

Measures needed:

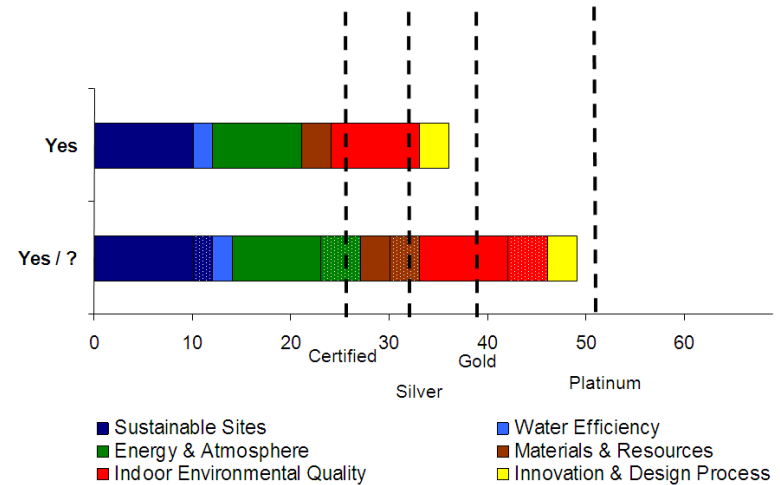
- bicycle storage, changing rooms, showers
- separate parking for low-emitting cars
- full green roofs / solar roofs
- enhanced commissioning, monitoring process
- full documentation of material use
- only low-emitting materials can be used
- using certified materials (like FSC)
- waste management plan during construction
- ...



LEED

Leed Project Assessment Estimation

Additional Actions
Possible Project Status Certification



Yes	To achieve with additional effort of planning and investment
Yes/?	To achieve possibly with additional effort of planning and investment

GREEN BUILDING

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High Energy Class



LEED certified /Silver

renewable energy sources supplying heat and electricity +



natural ventilation combined with mechanical ventilation with heat recovery +

daylighting with individual control +

Low-temperature heating system (floor heating) combined with outdoor air heat pump +

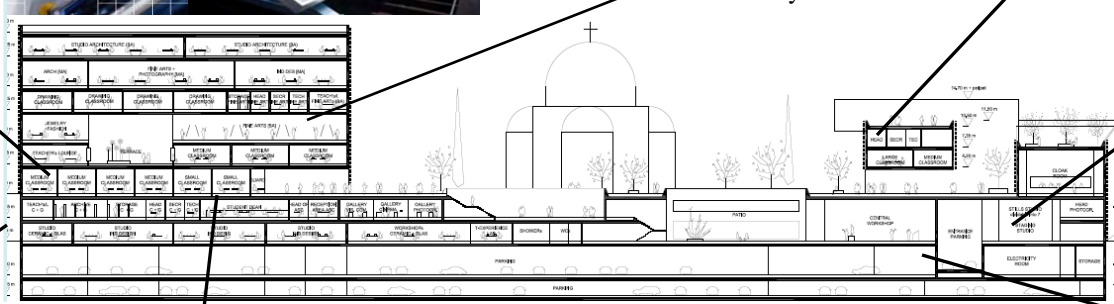
water saving installations preparing for rain-water use, grey-water use ?

Renewable energy supply for heating and cooling via geothermal use (fundamental absorber) -

Using healthy materials provides optimal comfort +

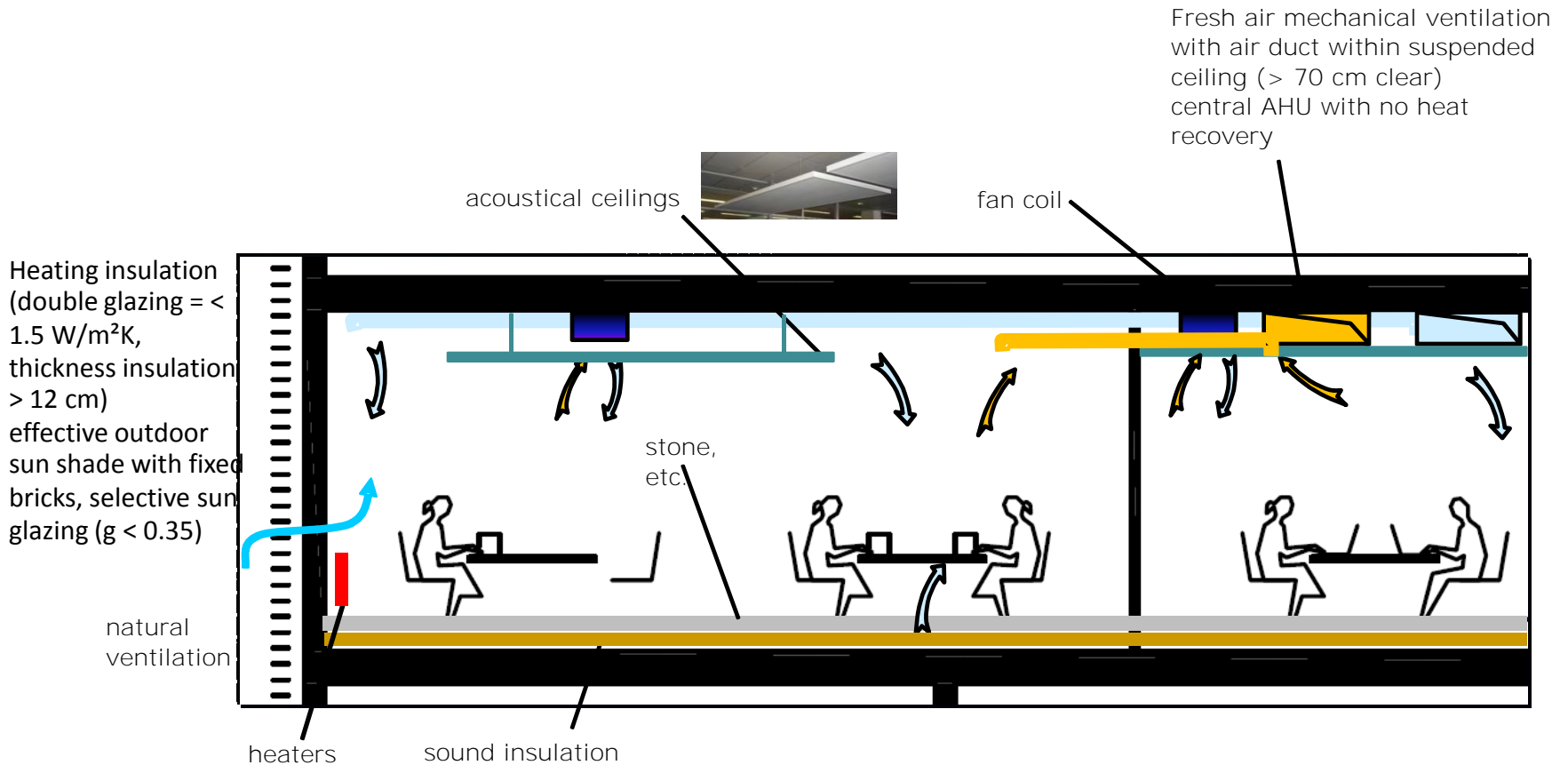
Heating insulation, effective outdoor sun shade +

Using local materials as much as possible ?

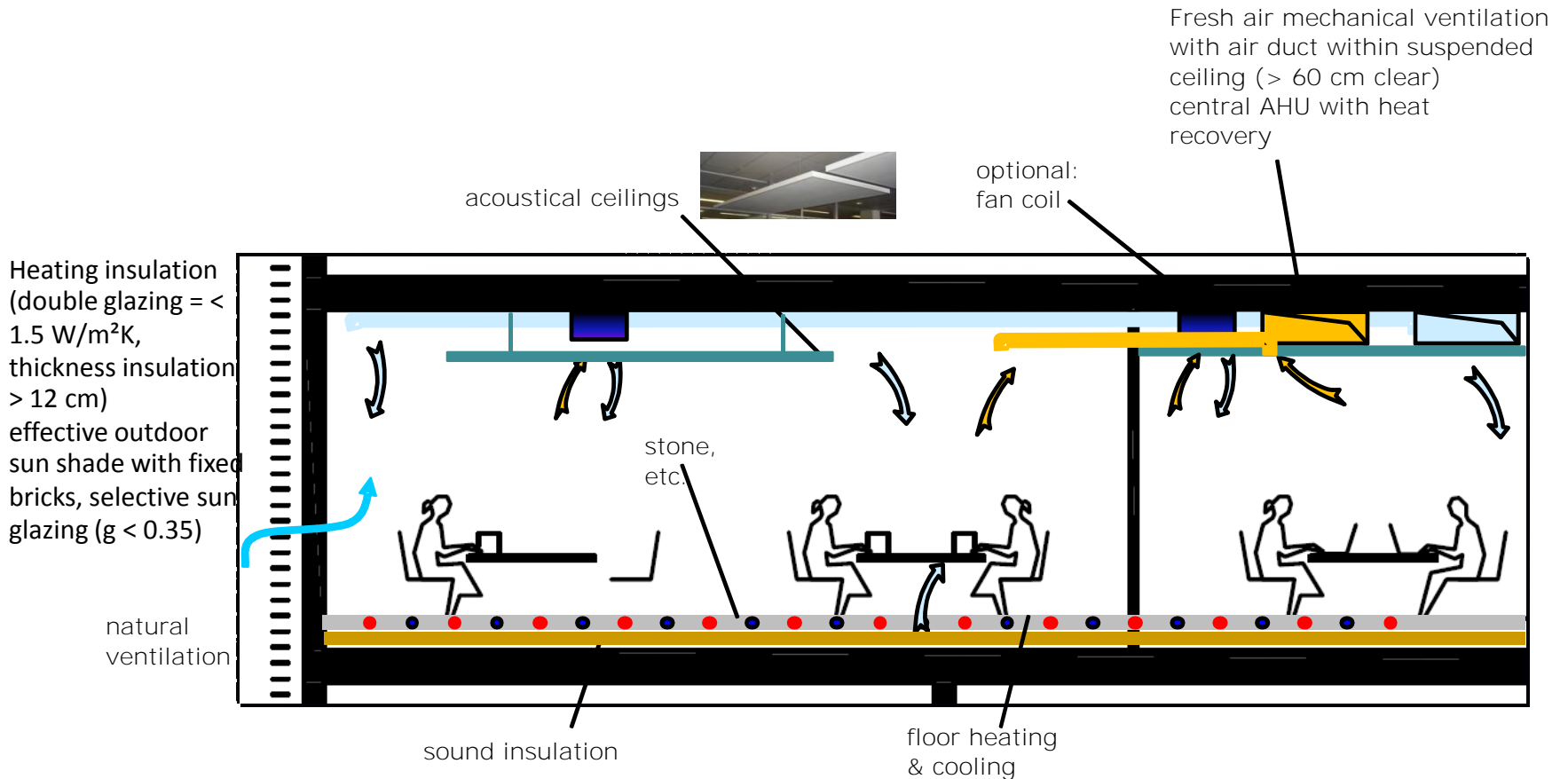


Economical Calculations

Alternative A: Basic Concept



Alternative B: Proposed Enhanced Concept



	Return of Invest	Comments
+ PV:	< 14 years	positive financing from 1st year on
+ Solar Collectors:	< 10 years	hot water need to be verified
+ Heat recovery:	< 6 years	
- Geothermal Absorber:	27 years	not economical, better choosing high efficient chiller