The Greening of Architecture: *A Critical History and Survey of Contemporary Sustainable Architecture and Urban Design*

Chapter 7: The Global Landscape of Green Architecture

Phillip James Tabb and A. Senem Deviren

‘There is no internationally-agreed definition for green architecture, it is place-sensitive.’

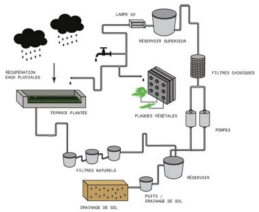
In regards to the ***circumstantial differences*** and in the light of ***regional “modifiers”,*** this chapter is on ***contravening exemplifications*** of greening of architecture.

URBAN-RURAL

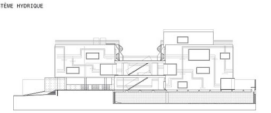
With increasing *urban population* on earth the importance of the presence of ***urban green buildings*** are also increasing. The importance and power of urban green buildings are sourced from their potentials to provide ***sustainable microclimatic environments*** within urban fabric.

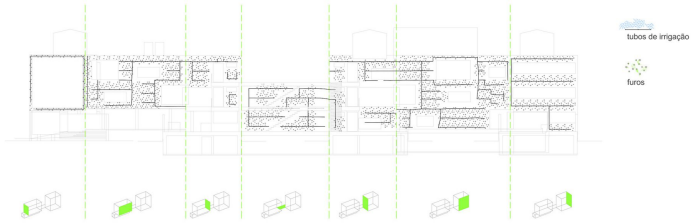
With their limited access to materials, skills and resources, provided by the urban systems, the projects in rural areas have ***situational necessities*** to obtain required materials and energy from renewable sources. The projects selected here for rural locations are demonstrating highly efficient renewable energy use, climate and human comfort balance and promise for future sustainability of the single or groups of relatively new buildings within the heart of less disturbed landscapes.

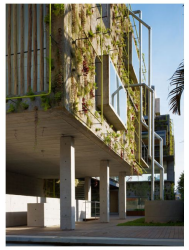
Harmonia 57 2008
Brazil, Triptyque Architects

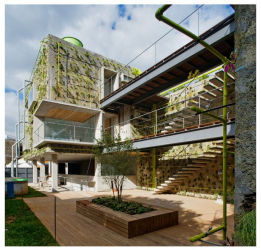


microclimatic green areas
cantiliever balconies minimi-ze thermal bringing
hot water with solar collectors on roof
living organism
facade covered with vegetation
special irrigation system
complex ecosystem
living habitat





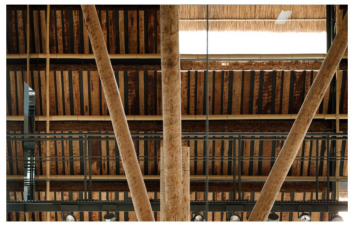


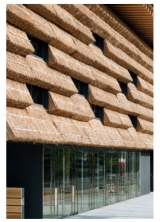


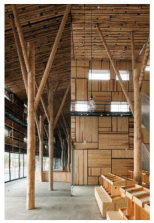
Lodenareal Complex 2009
Austria, Architekturwerkstatt din a4 & Team K2

energy-efficient housing
ecological low-income housing

Community Market Yusuhara 2010
Japan, Kengo Kuma & Associates

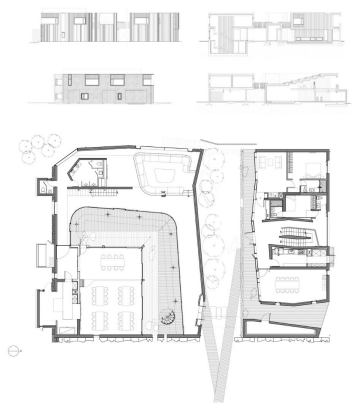






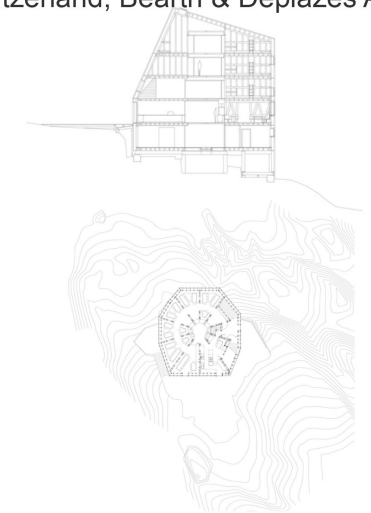
urban sustainibility
place memory
largest scale wooden hall
community spirit
local sources
large atrium for winter
indoor plaza

Hanil Visitors Center & Guest House 2009
South Korea, BCHO Architects



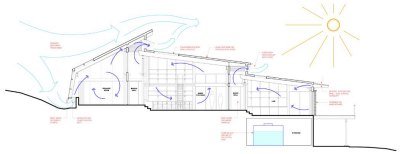
accomodation and research
recyled concrete
ınsulation for roof top
concrete-broke-recast-various mate-
rial-translucent and opaque tiles
landscape material
concrete reform and shown

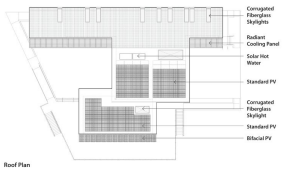
Monte Rosa hut 2009
Switzerland, Bearth & Deplazes Architekten

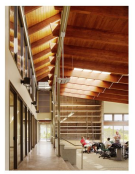


own energy
wooden architecture(structural)
covered with aliminum sheet
solar collectors in South facade
warm air hot water with solar panels
ıce melting for water need
accomodation for hikeres and climbers

Hawaii Preparatory Science Building 2010
Hawaii, Flansburg Architects







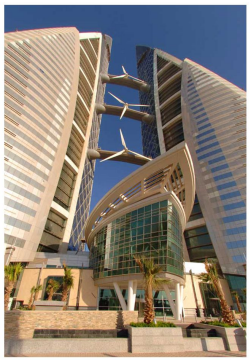
renewable energy
zero-net energy
own power
photovoltaic system
wind turbines
hot water from solar
thermal panels
filtering for drinking water
naturally ventilated
climatic comfort

HIGH-TECH-LOW-TECH

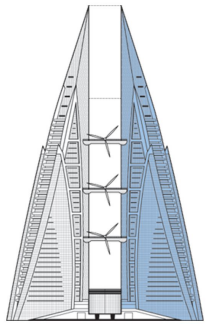
All big cities turning into ***metropolitan areas*** are now ***densely populated*** with ***high-tech, high- rise, multi-functional cutting edge towers.*** Yet reaching high and far, these towers are now also competing to fulfill their ***environmental task:*** **to incorporate "green" features** into their design to contribute to a sustainable future.

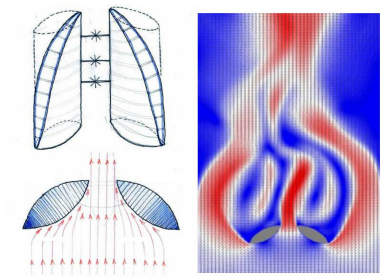
On the other hand, using mainly ***natural, local materials*** and sources, ***low-tech green projects*** present the ***human nature engagement*** at a very basic level.

Bahrain World Trade Center 2008
Manama, Bahrain, Atkins

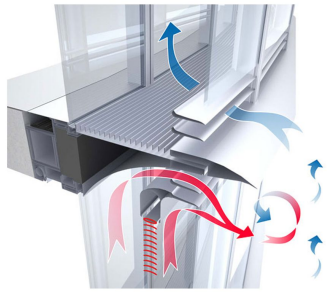


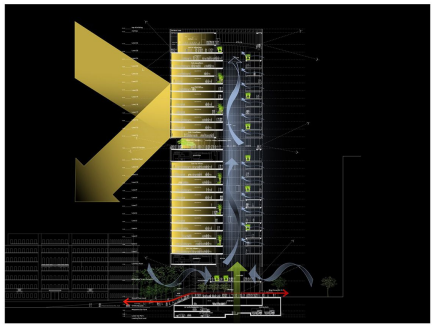
wind turbines
designed bridges
two tower
sort of technology





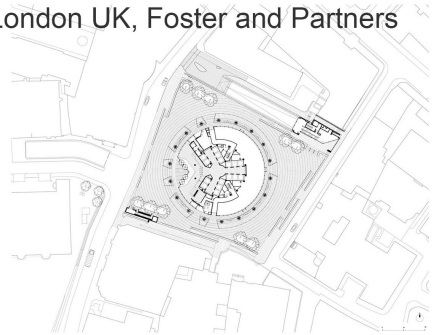
Bligh 1 Office Tower 2011
Australia, Architectus+Ingenhoven Architects

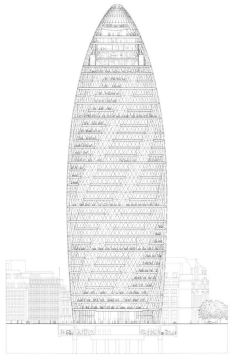


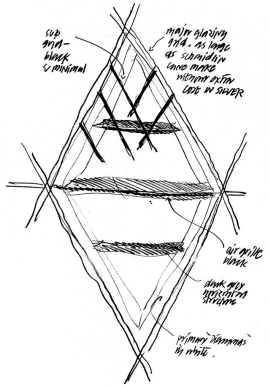


28 storey inner atrium
natural light
extended balconies
natural cooling system
siphoning hot air
double skin facade
green roof
semi open spaces
recyling system
cutting edge technology

Gherkin Tower 2003
London UK, Foster and Partners



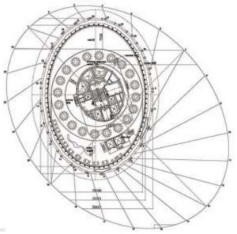
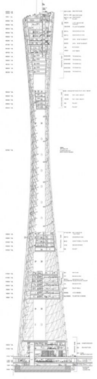
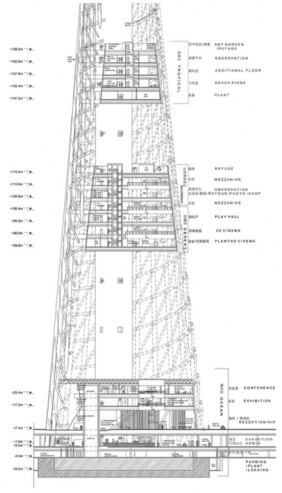
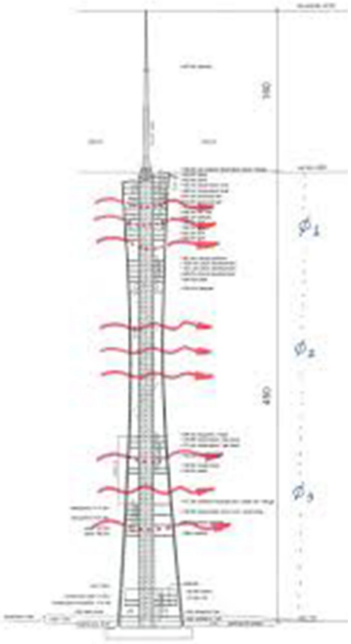




first ecological tall building
cleverly designed ventilati-
on system
reduces energy consumption

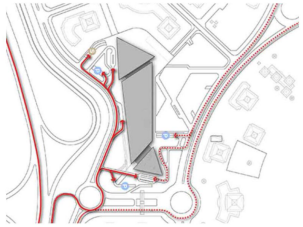
Canton Tower 2010
China, IBA

tv tower
most complex building facade
photovoltaic system
tallest building in World in 2011
facade lightning
green area integrated with master plan

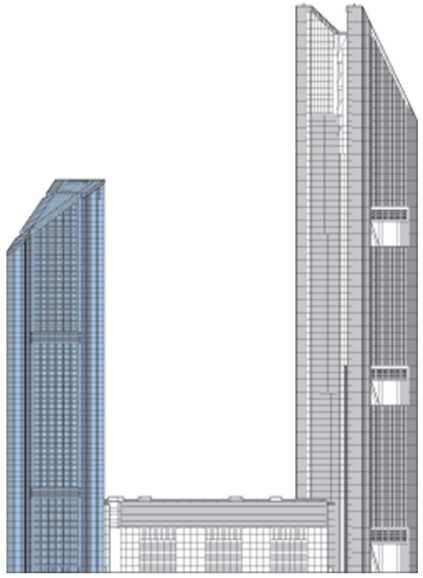







Vietin Bank Tower 2021
Vietnam, Foster +Partners

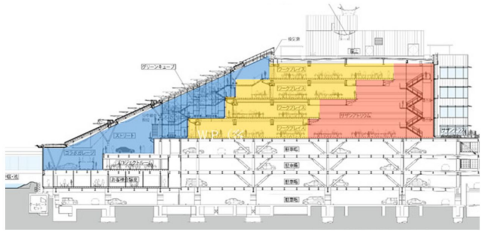
mixed use
two connected towers
high level humidity
low energy desiccant wheel
separating water from the atmosphere
very hot dry air is then cooled with ground water

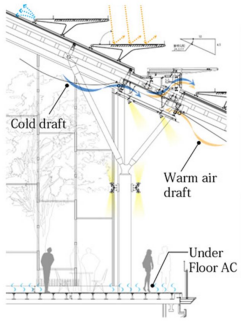




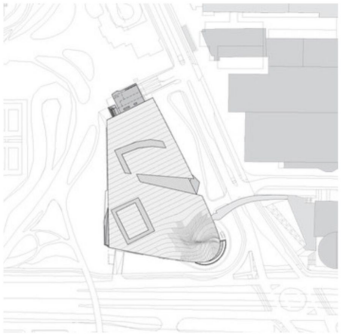


The Nissan Advanced Technology Center 2007
Japan, Nihon Sekkei

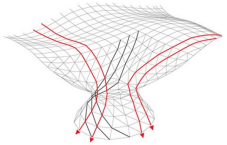


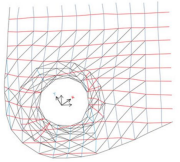


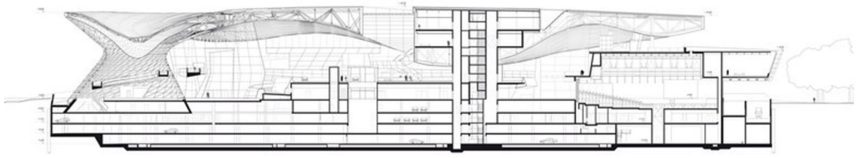
open balcony gardens
green hills
central space
positive influence technology
high level of energy efficiency



BMW Welt
Munich, Germany
2007
Coop Himmelb(l)au



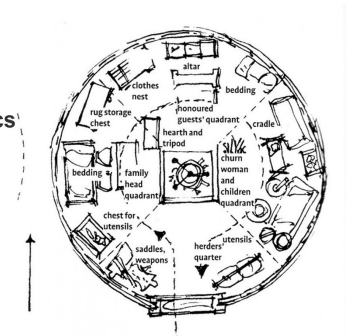




gleaming facade
designed to save energy
natural ventilation
solar heating
multifunctional central hall
subclimatic

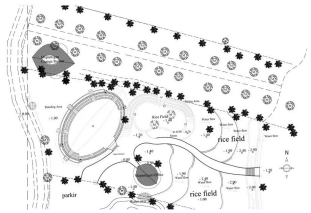
Yurt(s)

vernacular architecture
local materials
local construction technics
local labor



Bali Green School 2007

Bali, Indonesia, John and Cynthia Hardy

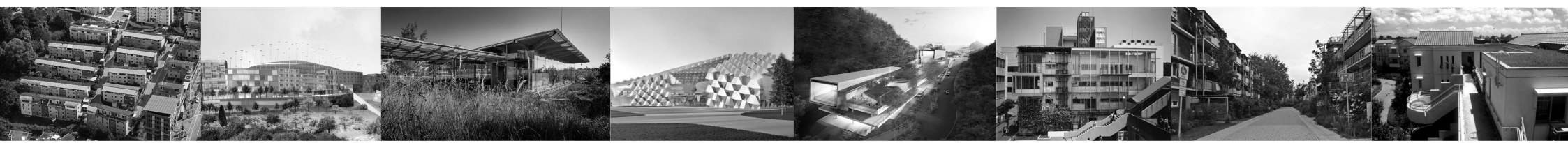


natural local material
bamboo,grass,mud
naturally cooled
cow manure –methane –fueling stoves
bamboo-saw dust-hot water and cooking
solar panels
agricultural ponds

Quensel House, Zeytinlik Village

Cyprus

local mason
local materials
lacated on sloping hill
collecting rainwater in underground watertank
electric power
solar PV panels
hot water for thermal floor heating
thermal panel with vacum tubes
plan organized according sun, wind ,view



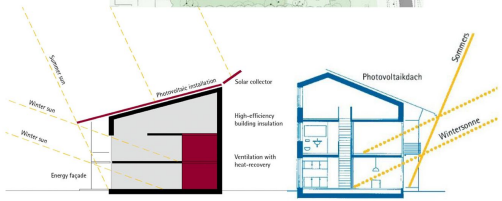
NEW-EXISTING

Under the title of “new” the examples here present *“new understanding of master planning”* for ***green settlements*** and “new design approaches” to green working places in broad terms.

Another challenging task for architects in ***renewal of the existing*** structures is the problem of ***converting historically or culturally*** *important* but decaying ***old buildings*** into ***new green*** and ***sustainable living spaces.***

The eco-renovations of existing structures and buildings in the landscape, when compared to totally new structures, are struggling with keeping the environmental impact minimum while preserving the historical character of the place and also responding to the needs of ***contemporary massive movements of people*** and ***consumption systems.***

Montecorvo Eco-city 2008
Spain, MVRDV & GRAS



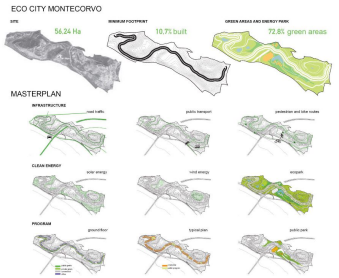
open spaces for solar energy
radial concentric plan
no need high elevator
building largely face to South
intelligent facades
natural lightning/ventilation
optimal heat storage

Solar City 1995-1996
Austria, Thomas Herzog, Norman Foster, Richard Rogers

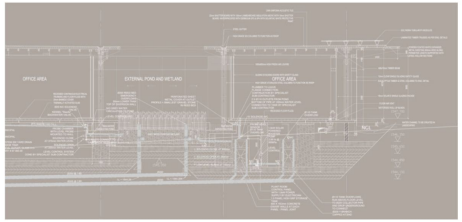
Extensive use of solar energy
Radial concentric plan
Comprehensive use of solar power and compact design

Solar Ship 2004
Germany, Rolf Disch

Mixed use residential+commercial buildings
Passivhaus standard
Rainwater recycling system
Wood-chip boilers

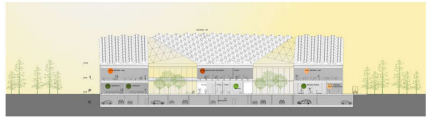


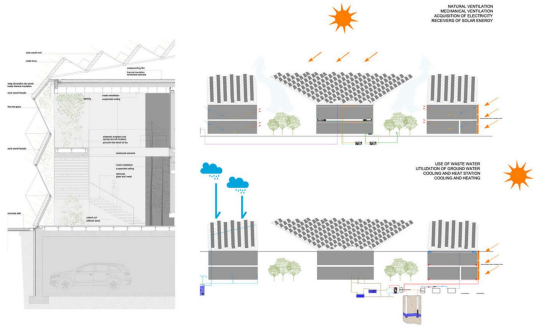
Vodafone Site Solution Innovation Centre 2011
Africa, GLH Architects

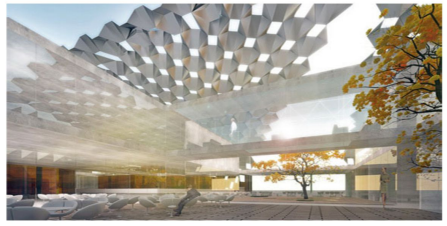


first 5 star building (greenest)
landscape –building
open air courtyard
rainwaterpond and wetland
daylight maximizing with glass
thermal rock stone
thermally activated slab with water
water recyled in wetland and reuse
solar energy
bamboo carved from site mixed steel
eco sensitive workplace
natural ventilation
use of solar energy

Solar Power Offices 2010
Slovenia, OFIS Architects

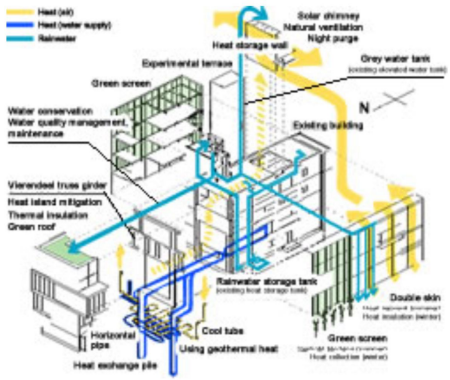






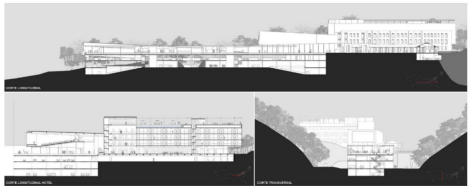
Carbon neutral design
Local sources
Exterior solar membrane

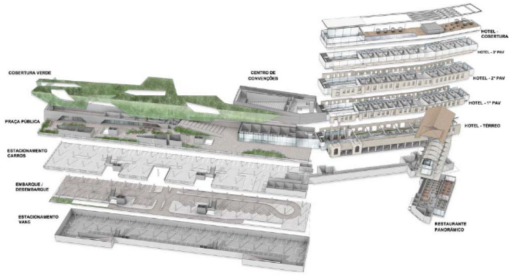
The Frontier Center for Environmental Symbiosis Technology
1968, renovation: 2005
Japan, Masanobu Yuzawa

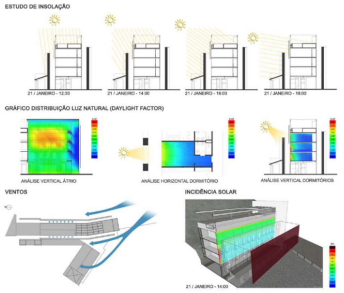


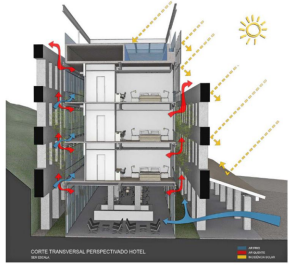
green renovation
bright glass surface and gre-
en-wall
environmental symbiosis

Hotel Paineiras
1984, renovation: 2009
Brazil, Plataforma Arquitectra





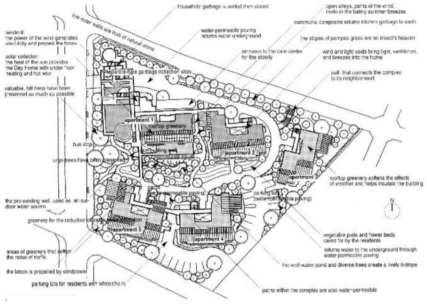




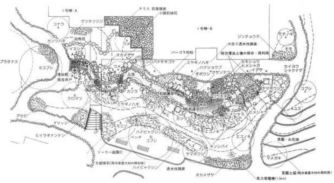
eco hotel
convention center
avoiding large movement of earth
sustainable tourism
providing views
integrate with landscape

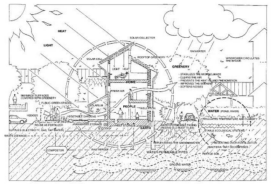
Vauban District 1993-2006
Germany, Forum Vauban

low energy
minimum footprint
residential
shared green spaces
public access –rail transportation
ecological traffic/ mobility
live without own car
public transport
bicycle provided
sustainable water (filtration)
green roof application
preserving water creeks and old trees



2.2 Biotope Garden





Symbiotic Housing 1997
Japan, Inchiura Planners & Architects
+ IWAMURA Atelier JV

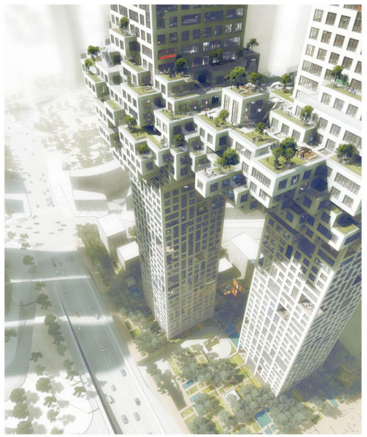
wooden detached houses
5 apartment 70 dwelling
greenery surrounding
passive solution of daylight
heating and cooling integrated in design
easy Access for disabled people

EXTREME-MAINSTREAM

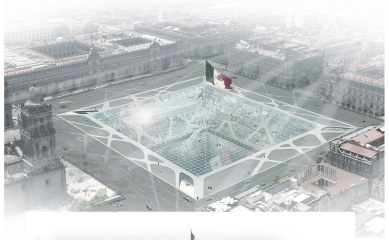
The ideas and forms behind *extreme green projects* that are selected here are sourced from local building typologies or natural characteristics and landscape features of their very location on earth—although they may seem like *high-tech constructions creating sci-fi environments*.

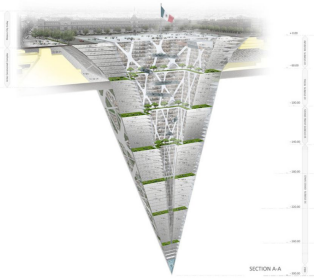
Beside the ***extravagant programs*** and arrogant square feet areas of giant green structures for housing the masses of people, public and private facilities, working places, services and all, there are also more modest projects appeared in our everyday urban contexts—at least in the countries, where the building regulations are being updated or changed by more ***green alternative rules.***

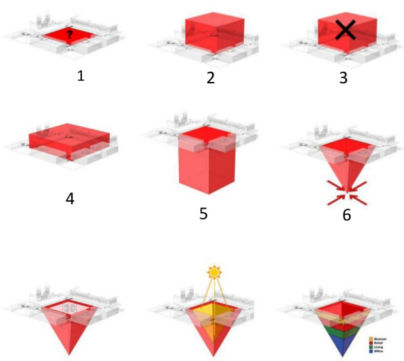
The Cloud
Seoul, Korea
expected to be completed in 2015
MVRDV

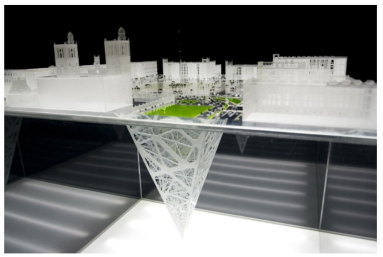


extreme scale
residential
extending business district
connected two towers
large ground floor level
sky lounge
connecting atrium
cross ventilation
well daylight condition





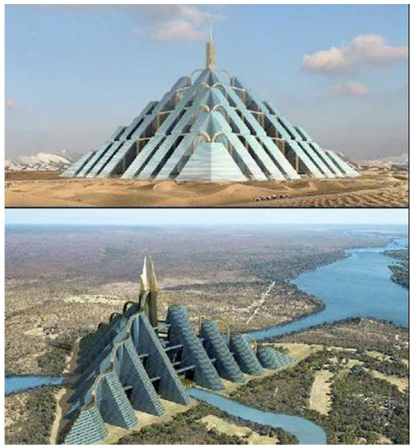




The Earthscraper
Mexico City
2009-competition
BNKR Arquitectura

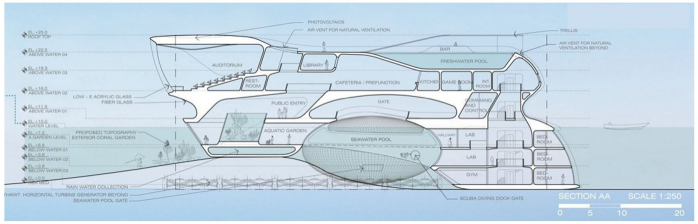
heart of city center
glass roof for daylight
invisible but monumental
extreme scale
clever idea for **densification**
massive hole
renewable sources

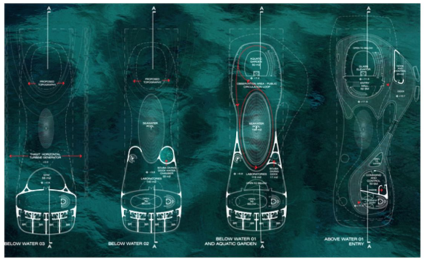
The Ziggurat 2008
Dubai, Timelinks

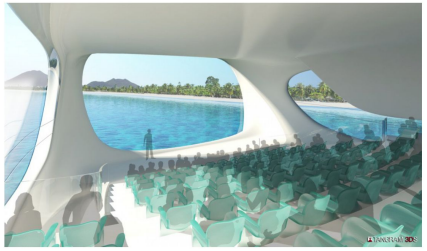


eco-pyramid
sustainable community life
super-efficient
renewable energy sorces
futuristic sustainable city

Marine Research Center
Bali, Indonesia, Solus4







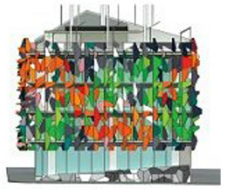
inspration from tsunami waves
energy saving design
some parts located underwater
rainwater collection
sewater conservation system
PV embedded glass panels
deeper seawater circulation

Pixel Building 2010
Australia, Studio 505 architects

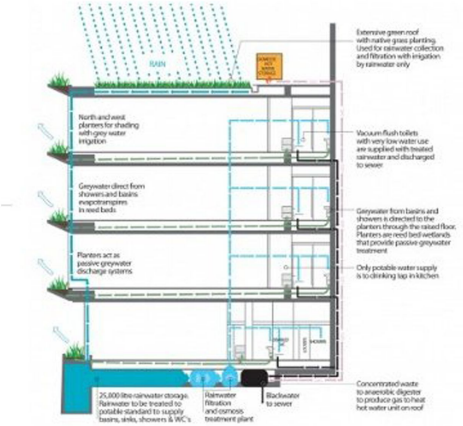
North elevation

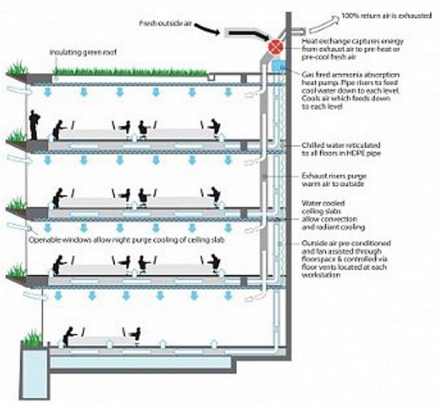
South elevation

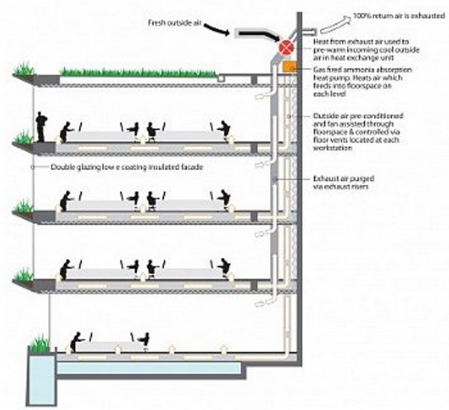
East elevation

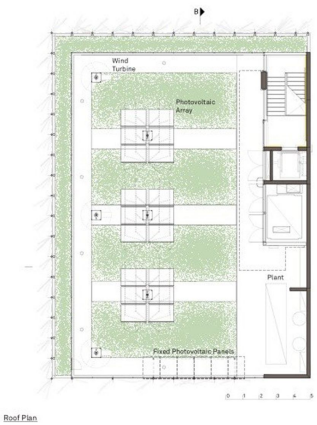


West elevation









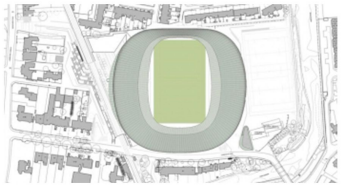
self sufficient
decrease footprint
carbon-neutral
vacuum toilet system
anaerobic digestion system
sun shading system
max daylight
preventing heat and direct sun
automaticaly opening window
carbon free concrete **'Pixelcrete'**
wind turbine
photovoltaic roof panel

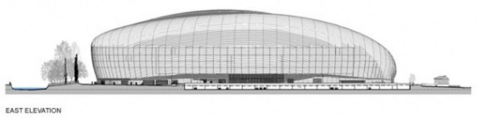
X-LARGE-X-SMALL

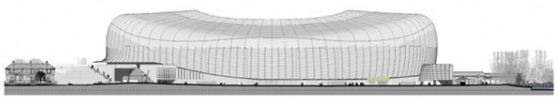
The expected result is the great *equilibrium* between men and nature ***through design with imitation*** of the working principles of natural systems and forms. Large scale projects it is inevitable that the next generation extreme green and sustainable architecture will promote a real ***eco-friendly footprint*** on earth.

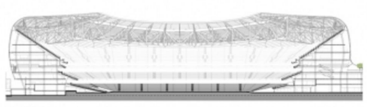
small scaled projects have various opportunities for developing green architectural design concepts and technologies. With their ***high experimental potential*** they provide ***micro-scale exemplar basis*** for sustainable design.

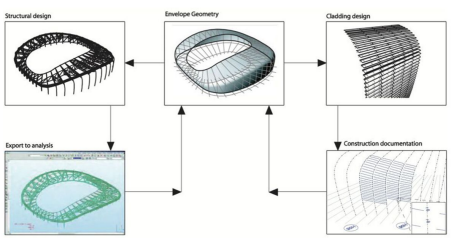
Lansdowne Road Stadium 2010
Dublin, Ireland,Scott Tallon Walker Architects





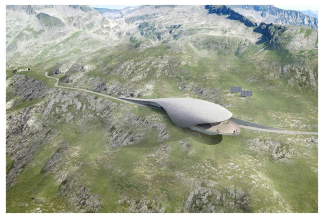


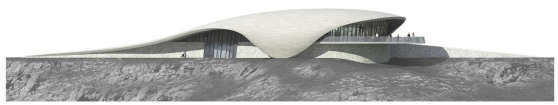


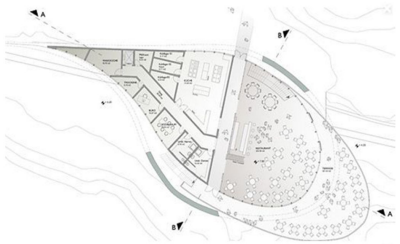


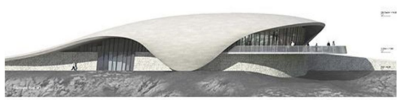
rugby ground
public transport
access to the site during event times

Reisseck Terminal 2011
Austrian Alps, Zechner and Zechner







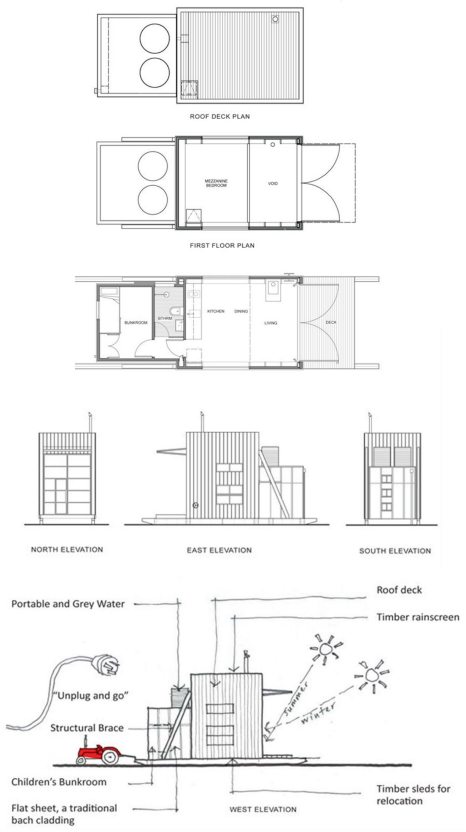


hooded snake
curved roof
shelter
solar panels
self sustaining energy
slooping roof
sustainable wood
highlight
reflect view
renewable energy

Sun Moon Mansion 2009
Dezhou, China,Himin Solar

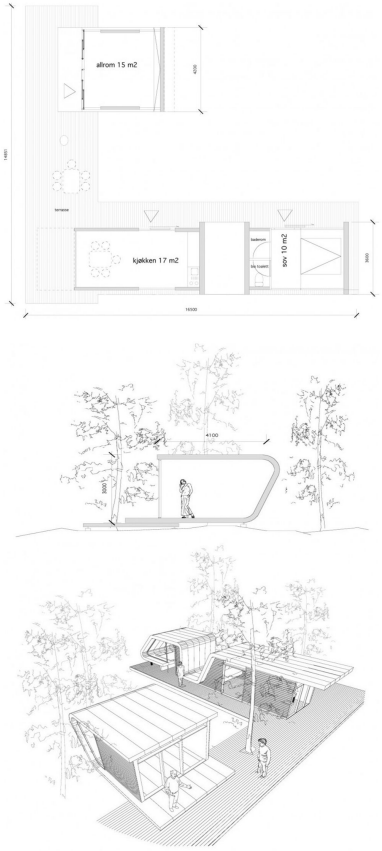
largest **solar-powered** building
sustainable hotel
solar panel create energy
sun and moon create clean energy

The Sled House 2012
New Zealand, Crosson Clarke Carnachan Architects



beach holiday hut
coastal erosion zone
no permanent structure on waterfront due to movement
re-locateble
temporary structure
portable
saving water system
grey water recycled
allowing winter sun
small wood-fired stove
double wooden shutter against hot summer

Hardanger Retreat 2003
Norway, Saunders Architecture



self initiated
self financed project
sustainable design
minimalistic
wood from land
using recycle newspaper for insulation
natural gas used for heating and cooking
candles used for lighting