

ARCHITECTURE and renewable energy resources - SUSTAINABLE APPROACHES

KONWERSATORIUM
Gliwice 28.05.2019

Dr arch. Barbara Jękot
Poland / South Africa



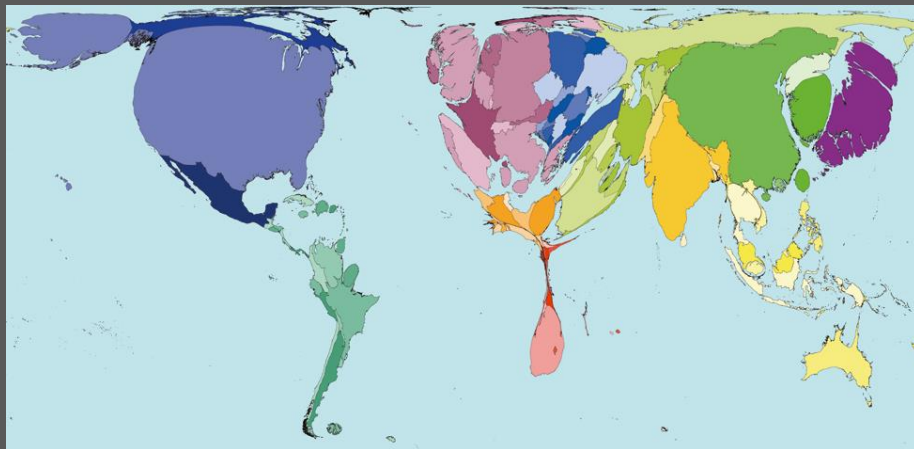
CONTEXT

SUSTAINABILITY and GREEN principles?

ALARMING STATISTICS:
 construction and building industry
 consume
 50% energy,
 50% water,
 and absorb
 60% of lost lands plus
 20% of the world's population
 consumes 86% of resources and
 produces 83% waste
 and pollution



CO₂ emissions



Accumulated CO₂ emissions - deformed areas of countries illustrating their destructive impact

Edwards, B., (2002). *Rough Guide to Sustainability*, RIBA, London

http://arch.rnm.nl/env/int/ipcc/pages_media/SRCCS-final/graphics/jpg/sma
 http://en.wikipedia.org/wiki/List_of_countries_by_carbon_dioxide_emissions



Basic questions regarding power production and pollution emissions:

- **how you can we reduce energy consumption?**
- **how you can optimize possessing sources for obtaining energy?**

More inquisitive questions:

- **about specific development stages**

(initiation/planning/execution/monitoring/utilization/waste disposal),

their optimization and Life Cycle Cost and

- **how much the real cost of energy used to posses material, transportation, construction methods, pollution emission and waste disposal decreases profits of the implementation of the energy efficient buildings?**

ARCHITECTURE/CONSTRUCTION

CERTIFICATIONS



Low-energy house

PHPP Passivhaus Projektierungs Paket/passive house

ZEB zero-energy building

cost/source/emission/energy use/grid...

Triple Zero (*energy/pollution/waste/recycling*)



CRADLE TO CRADLE

LCC Life Cycle Cost

WorldGBC the World Green Building Council



BREEAM British Research Establishment Environmental Assessment Method



LEED Leadership in Energy and Environmental Design

ARCHITECTURE/CONSTRUCTION

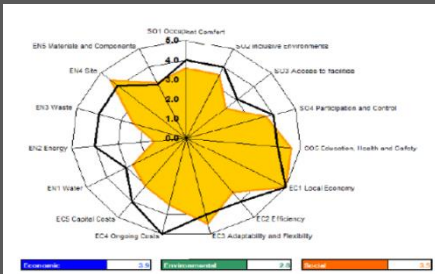
CERTIFICATIONS



D  marche HQE – Haute Qualit   Environnementale
Quality and practicality vs economy of scale?
1996/2009



CASBEE Comprehensive Assessment System for Building
Environment Efficiency
quality vs environmental impact *2001*



SBAT the Sustainable Building Assessment Tool
economy/environment/social issues



GreenStar
2002

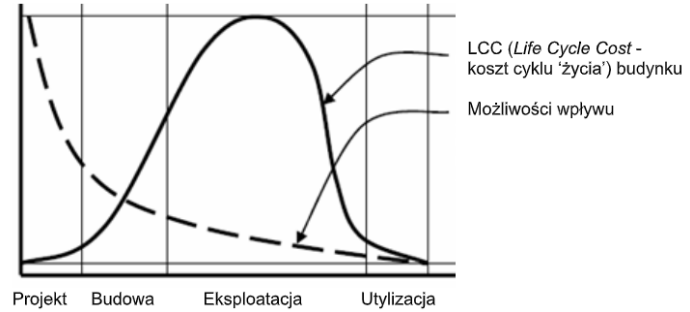
DGNB (Deutsche Gesellschaft
fur Nachhaltiges Bauen)
German certification of
sustainable buildings



ARCHITECTURE 3R (renew/reuse/recycle)



ARCHITECTURE / Life Cycle Cost /influences



Sparrius (1998) + Conradie i Roux (2008)



6 Star Green Star Design Rating

VDMMA in association with Jacobs Parker Architects

<https://www.property24.com/articles/five-new-green-ratings-for-cape-towns-v-and-a-waterfront-buildings/27146>

ARCHITECTURE

and renewable energy resources

...integration of renewal energy resources with architecture does not guarantee as an outcome good architecture but there will be no good architecture without its integration with the renewal energy resources...



BedZED (Beddington Zero Energy Development)
Environmental development, Hackbridge, London



Before and after – mountain development in Alps, Hochschwab, Austria

...over the centuries architecture i technologies have been a kind of record of the development of civilization - and so it is now...