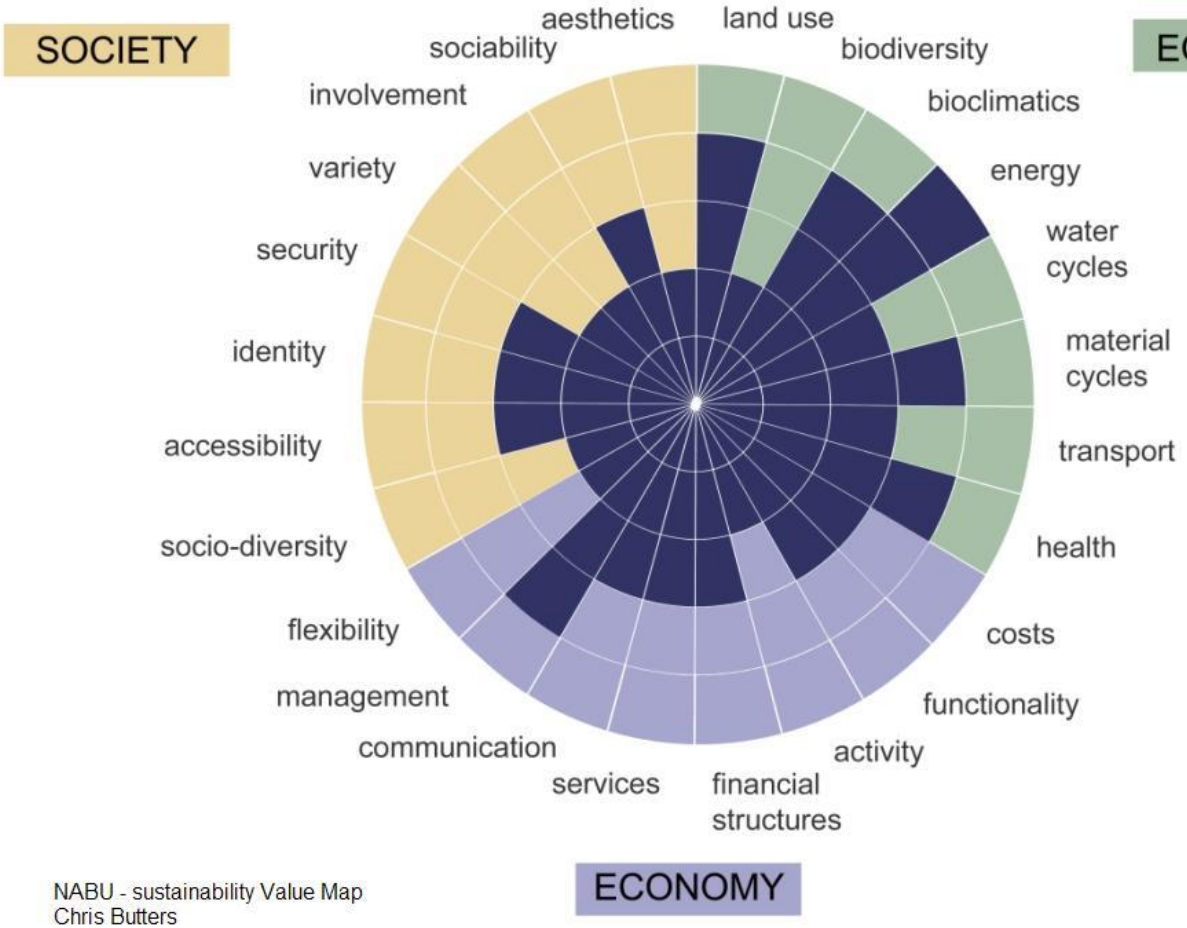


Sustainability Value Map

ECOLOGY
ECONOMY
SOCIETY

Chris Butters / GAIA

Lindås passive houses, Goteborg

The Sustainability Value Map visualises the goal that *all* architecture and city planning should fulfil the three conditions of sustainability

Sustainability Value Map

SEE LOTS ABOUT THE SUSTAINABILITY VALUE MAP ON THE INTERNET

Also in the book «Sustainable Urbanism and Beyond», ed. T.Haas, Wiley, USA 2012

organism-function-environment (Frederic Le Play)

folk-work-place (Patrick Geddes)

Criteria for sustainability:

1. **ECOLOGY** → Environmental, material aspects – quantifiable parameters
2. **ECONOMY / WORK** → Organisation, work, finance – structures, methods, processes
3. **SOCIETY** → Community and human aspects – qualitative parameters

SUSTAINABILITY PARAMETERS: ECOLOGY

LAND USE: effective space use, density, footprint

BIOCLIMATIC DESIGN: localisation, orientation, climatics, building layout

BIODIVERSITY: ecological landscaping, green profile, land productivity

ENERGY: minimal consumption, energy recovery, renewable energy

WATER CYCLES: rainwater, runoff, waste treatment, water saving technology

MATERIAL CYCLES: construction materials, waste management, building re-use

TRANSPORTS: collective, energy-efficient, non polluting transports

HEALTH: outdoor and indoor environment, noise, healthy ventilation

SUSTAINABILITY PARAMETERS: SOCIETY

SOCIODIVERSITY: socio-economic mix, social diversity

ACCESSIBILITY: inclusivity for all groups: children, elderly, handicapped

IDENTITY: sense of place, belonging, history and culture

SECURITY: transparency, supportiveness, visibility, low crime

VARIETY: experiential and sensory richness and variety

INVOLVEMENT: participation, connection, shared responsibility

SOCIABILITY: spatial hierarchy, private/public, both contact and privacy

AESTHETICS: artistic, psychological and spiritual stimulation and pleasure

SUSTAINABILITY PARAMETERS: ECONOMY

(nb the word «economy» is not just money but whole organisation of society)

COSTS: affordability, life cycle costing

FUNCTIONALITY: practical needs and functions (individual and collective)

ECONOMIC ACTIVITY: employment, diversity of work, varied economic base

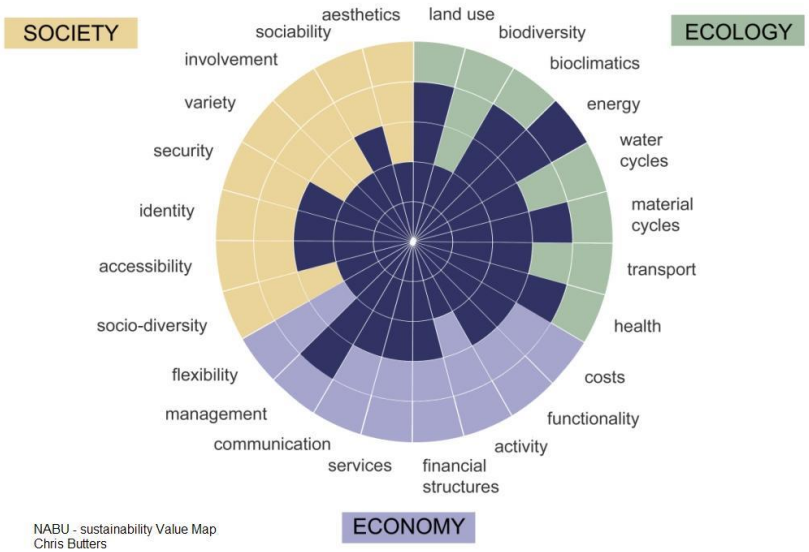
FINANCIAL STRUCTURES: opportunity, equity, secure tenure, credit systems

SERVICES: both type and localisation: school, commerce, culture etc.

COMMUNICATION: high information density, efficiency, transparency

MANAGEMENT: governance, partnerships, user involvement, maintenance

FLEXIBILITY: adaptability to change over time



Qualitative

i.e:
- identity
- involvement
- health
- aesthetics
- flexibility

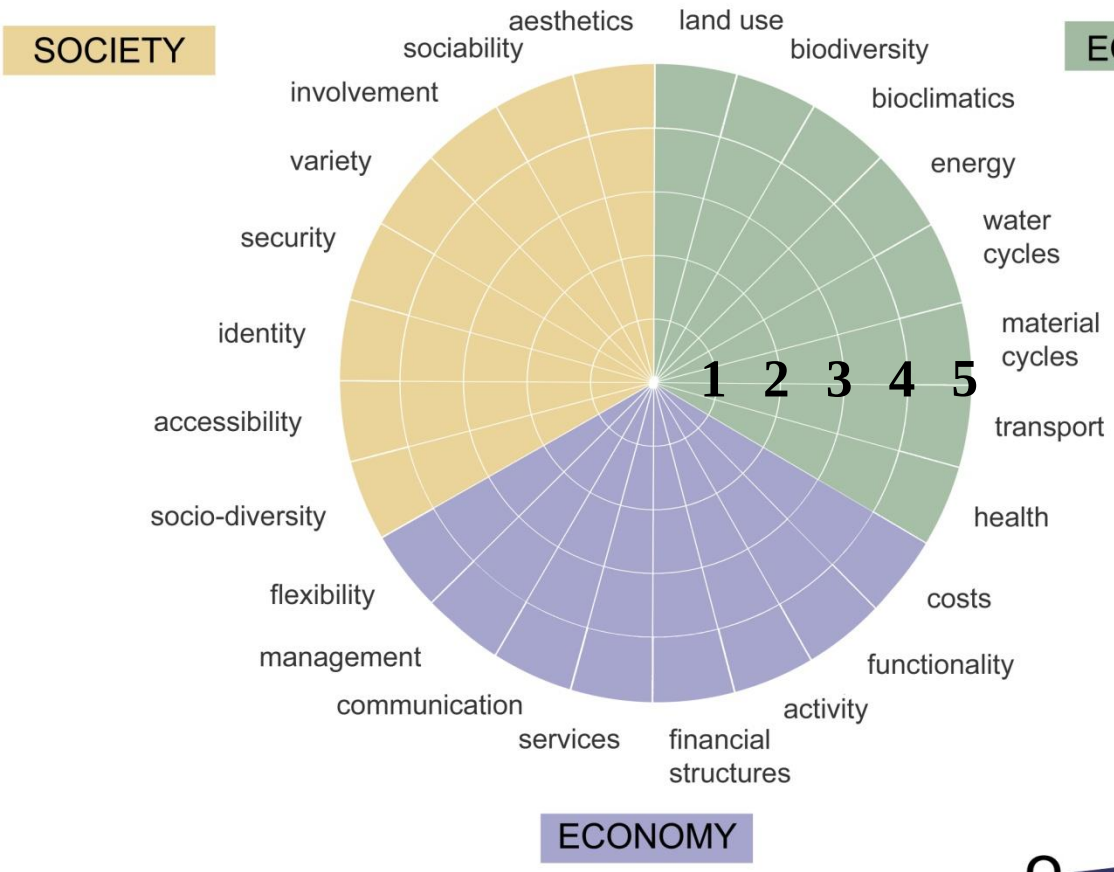
THE INDICATORS

Quantitative

i.e:
- land use
- energy
- transports
- bioclimatic design
- biodiversity

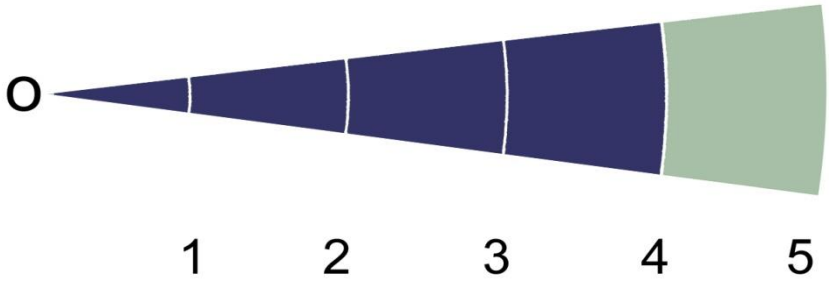
The Value Map obliges all of us to see in a holistic way, and is a very powerful tool in discussionsn and in design – very useful even without using detailed measurements.

The Sustainability Value Map



How to use the Value Map:

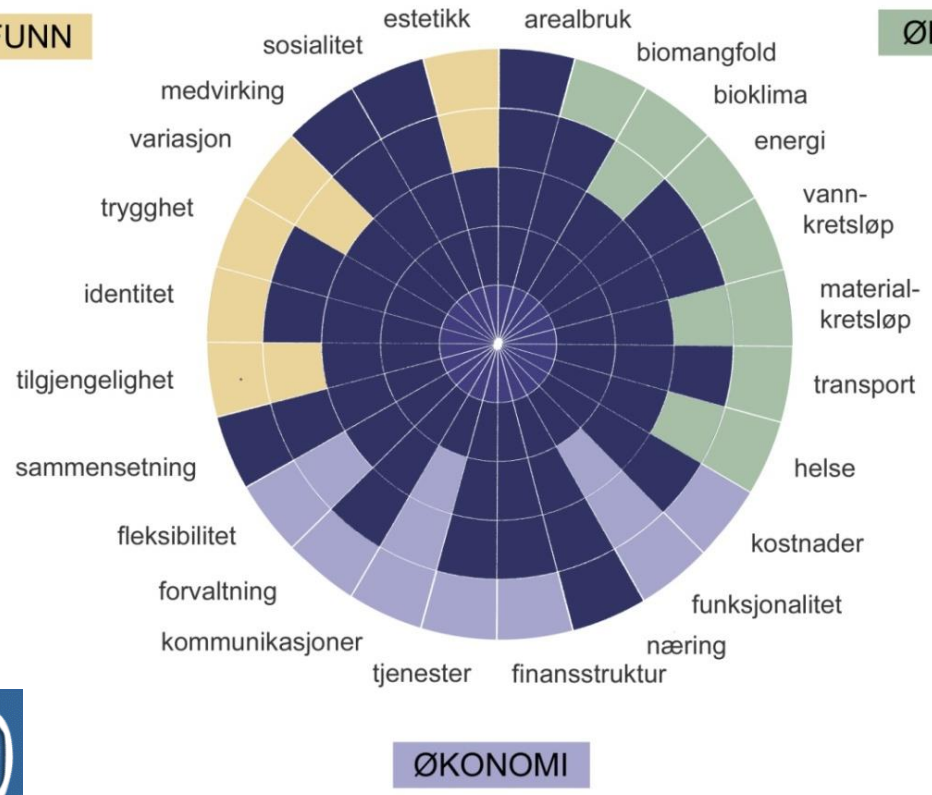
Level 1: poor standard
Level 2: normal today
(not good enough)
Level 3: some suatainability
Level 4: good sustainability–
Level 5: very sustainable



The message given graphically is that «strong sustainability» is a long way away (level 5) and hard to achieve in all areas

Vauban, Freiburg, Germany
Urban Ecology project

Ecology, economy and community



NB: kun illustrasjonseksempel - basert på skjønnsmessige og subjektive vurderinger

LOW INCOME HOUSING IN HOT CLIMATES:
REDUCING ENERGY USE AND CLIMATE EMISSIONS

LESSONS FROM ELSEWHERE: THE PASSIVHAUS TREND

The University of Warwick

INTRODUCING SUSTAINABLE BUILDINGS IS NOT PRIMARILY A TECHNICAL QUESTION !

The first passivhaus were achieved (in freezing Canada) in 1979

The technology and design are not very difficult

Changing design and construction practices is

Behavioural issues are equally difficult

LOW INCOME HOUSING IN HOT CLIMATES:
REDUCING ENERGY USE AND CLIMATE EMISSIONS

LESSONS FROM ELSEWHERE: THE PASSIVHAUS TREND

Chris Butters, Warwick University, UK

The University of Warwick

PASSIVHAUS: (what do «passive» and «active» mean??)

Reducing heat loss to nearly zero (or in hot climates, heat gain)

Adding most efficient technology

Getting builders to do it right

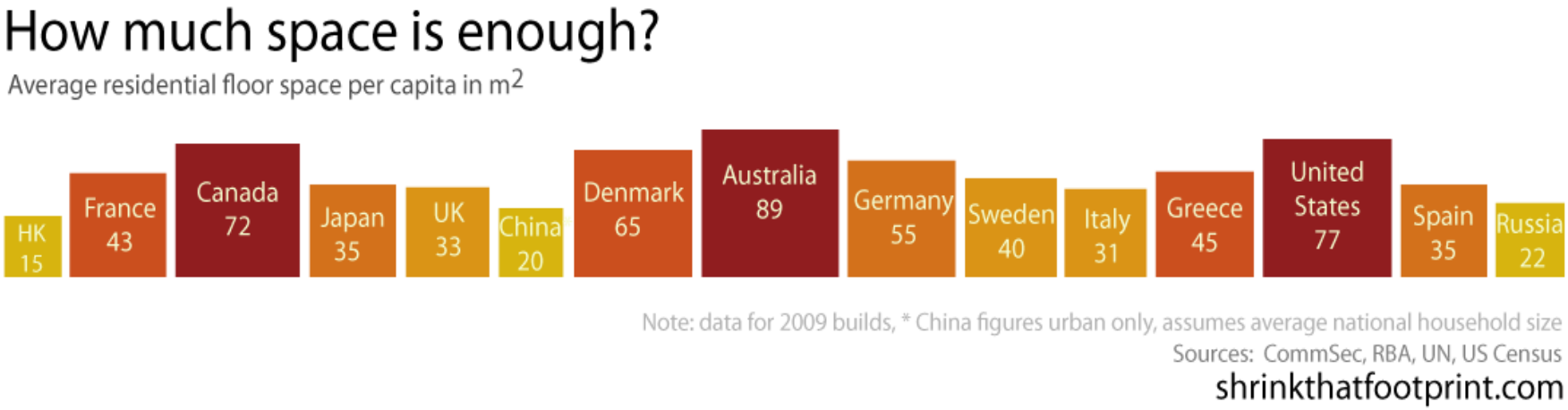
Getting users to use it right

The results (POE surveys): not nearly as good !!

The lesson we can't keep ignoring is that sustainability is about people and their consumption. Hence, the very First question is: how big a house do you need?

Smaller = less land, less energy and less cost

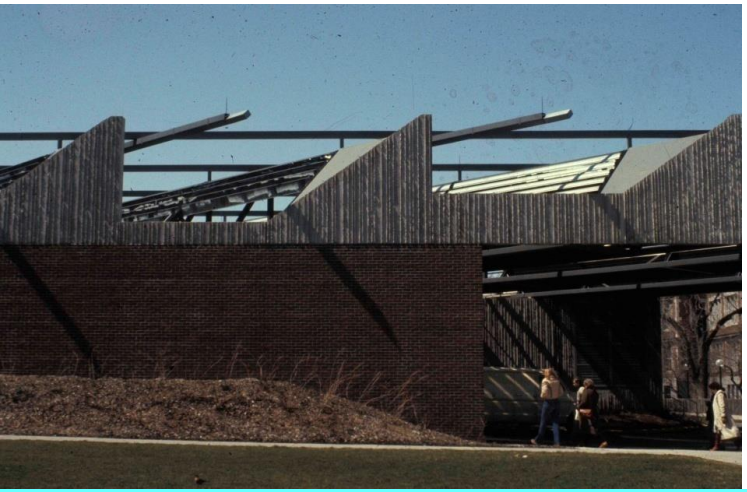
The University of Warwick



Environmental architecture

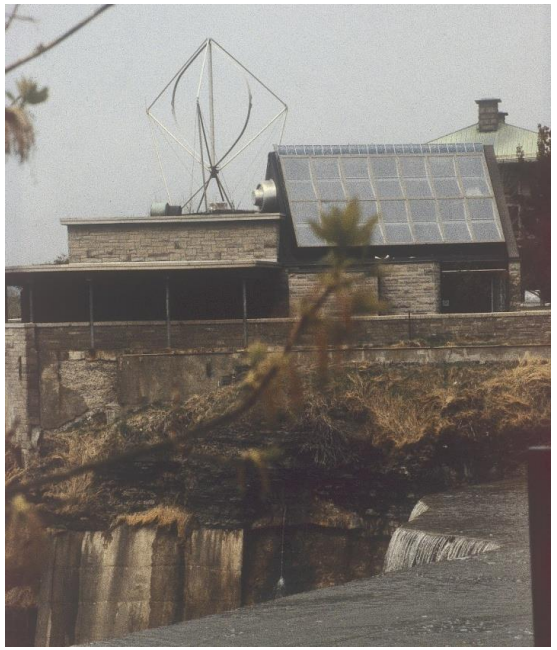
THE NEED FOR ECOMINIMALISM

There's too much ecotechnology !

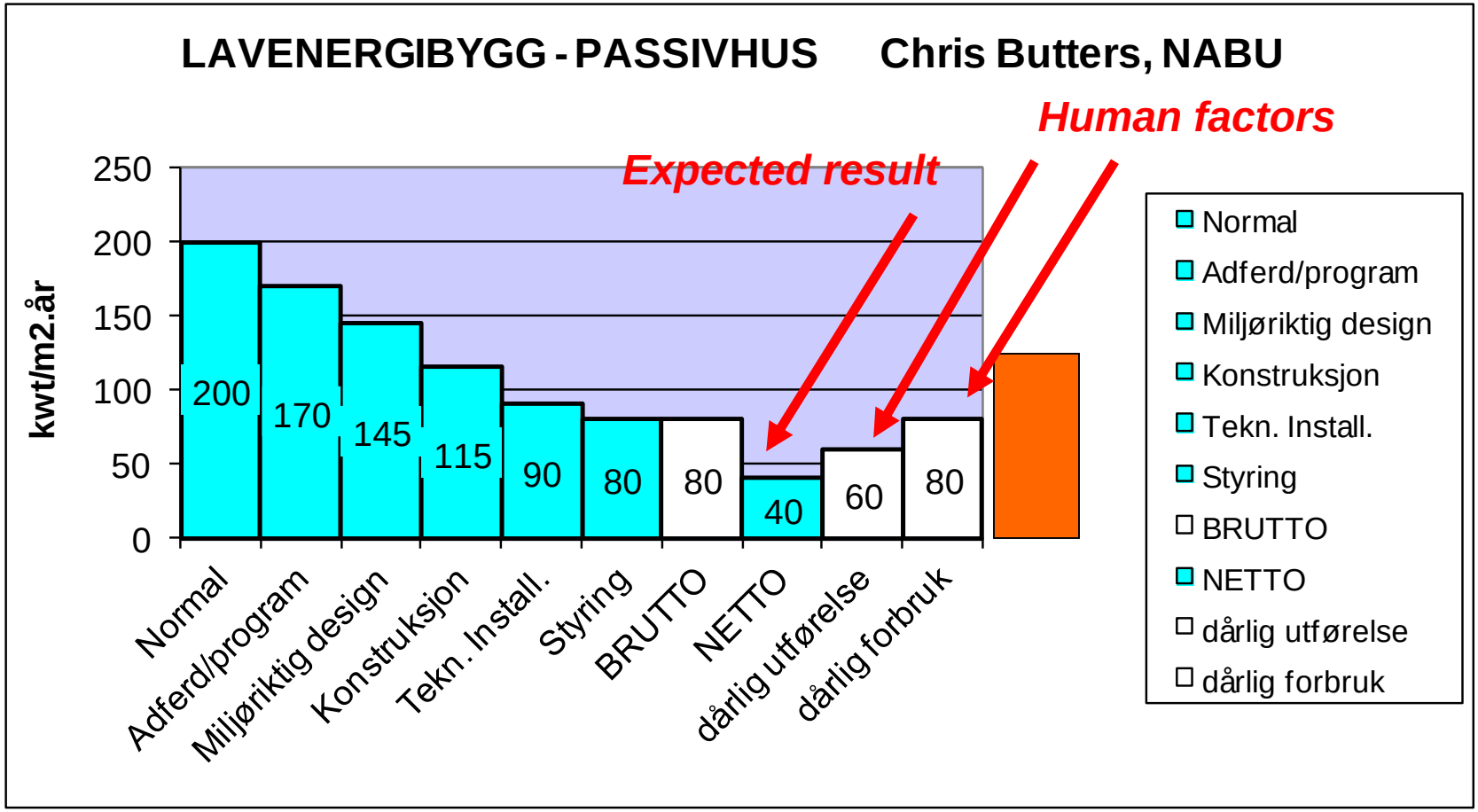


it gives the message that eco-architecture

- ***is very expensive***
- ***has to look special***
- ***is only for greenies***



faktisk resultat?



From theory to reality: research today – and policy !! – focuses on technical factors and potential efficiency gains. But other factors are ”equally real”: design, communication, work quality, behaviour, …

LESSONS FROM THE PASSIVHAUS MOVEMENT:

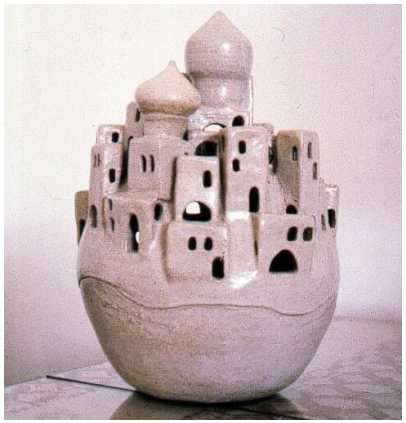
Too much ecotechnology and/or supply side focus (a recurring issue since the 1970s – «eco-bling» sells)

Theoretical efficiency is easy on paper (… 85% heat recovery of MVHR was found to be 30% in reality)

German builders may be methodical, the rest of us aren't! (and most homeowners don't have a clue)

Building energy policies, incentives etc are often very poorly designed

Local initiatives are a key to success



Factors that decrease the real efficiency, usefulness and/or economic sense of MVHR systems

1. Technical spaces > 15 % of built volume; cost + grey energy !
2. Air leakages 10-40% of oxygen needs, esp. in windy regions
3. Embodied energy of the ventilation system itself (+ other emissions)
4. Passivhaus precision in the whole building industry?? Hmm …
5. Buildings become less airtight over time
6. Typically lose 1% efficiency each year) (or more?)
7. Warmer climate > less heat need > MVHR less profitable
8. Often deliver FAR less than promised. Sweden: av. **under 30%** !!!
9. RH: let hygroscopic materials do the job! (genuinely ”passive”)
10. Increases electricity use and hence climate emissions
11. Old buildings: airtightness almost impossible (+costs + arch.impact)
12. Non-technical issues: noise, dry air, draughts, failure, radiation …
13. Robustness: design, installation, operation, maintenance (domino)

Working with non-technical aspects, adaptive comfort and user behaviour may be far more effectve and far cheaper

LESSONS FROM THE PASSIVHAUS MOVEMENT:

1. **Initial focus on one thing only (space heating energy)**
2. **Focus shifts towards embodied energy/carbon**
3. **Focus shifts towards real-life construction inefficiency and disappointing technical efficiencies**
4. **Focus shifts towards behaviour, rebound effects etc**
5. **Ecominimalism? (keep it simple, stupid !!)**