

Værktøjer til mere bæredygtig renovering

Webinar 2024-06-11



Hvorfor renovering?

30 / 35 / 40

FN's klimapanel  renovering som et vigtigt greb for at nedbringe byggeriets miljø- og klimaaftryk

Renoveringer i fokus  og de muligheder der kan være fx energieffektivitet, klima, indeklima, socialt, økonomisk mv.

Program

1. Velkommen V/ Marika Englén, Dansk Standard
2. En europæisk standard for mere bæredygtig renovering V/ Svein Bjørberg, Multiconsult, Norge
3. Certificering af din renovering med Svanemærket V/ Henrik Hougaard, Miljømærkning Danmark
4. ObelHus, Danmarks første svanemærkede bygningsrenovering V/ Jens Ole Maribo Samallo & Kasper Winther Larsen, HP Byg
5. Spørgsmål

Om standarder

DANSK STANDARD

Drivkraft for en bæredygtig udvikling

I Dansk Standard samler vi tre stærke redskaber, der på hver deres måde understøtter og udvikler den bæredygtige omstilling i samfundet: Standarder, miljømærkerne Svanemærket og EU-Blomsten og godkendelser fra ETA-Danmark.



Vi bruger miljømærkerne til at fremhæve de bedste på markedet.



Godkendelser til at vise, at de nye løsninger faktisk virker.

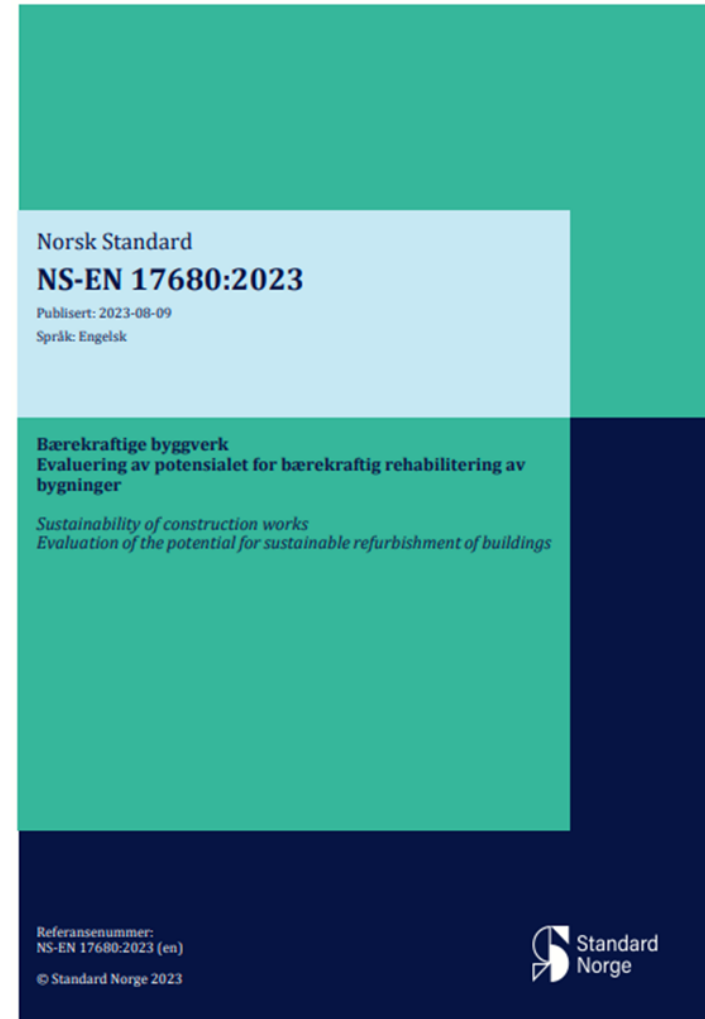


Og standarder til at skabe et fælles sprog, der kan skalere de grønne løsninger og udvikle det brede marked.

NS-EN 17680:2023 Sustainable Construction “Evaluation of Sustainable Refurbishment potential”

Presentasjon
11. juni 2024

Professor emeritus Svein Bjørberg, Multiconsult / NBEF



Bakgrunn

- Siv.ing. Bygg fra NTNU 1973
- Eksisterende bygg fra 1974
 - Ombygging, bevaring, fredning
- FoU-aktiviteter
 - Utvikling av bygningsforvaltning som fagområde
 - NS 3424, **NS 3454**, Modell (Multi-Map) for teknisk verdi, oppgradering, åpningsballanse, tilpasningsdyktighet++
 - LCC-Norden, ISO / CEN (**FM**)
 - Byggskader (RUB), Bygningssakkyndige, Hurtig-Erfa
 - Effektive helsebygg, OSCAR Verdi for eier og bruker
 - Sustainable Refurbishment (Nordisk og CEN TC 350/WG8)
 - August 2023: **NS-EN 17680 Guideline for Sustainable Refurbishment**
- Professor II ved NTNU
 - 1992 – 2019 (Ombygging, BEF) ved byggfakultetet
 - 2010 - 2019 (Eiendomsutvikling og –forvaltning) ved arkitekturfakultetet



Stort potensial i eksisterende bygningsmasse til å tilfredsstille nye trender og krav

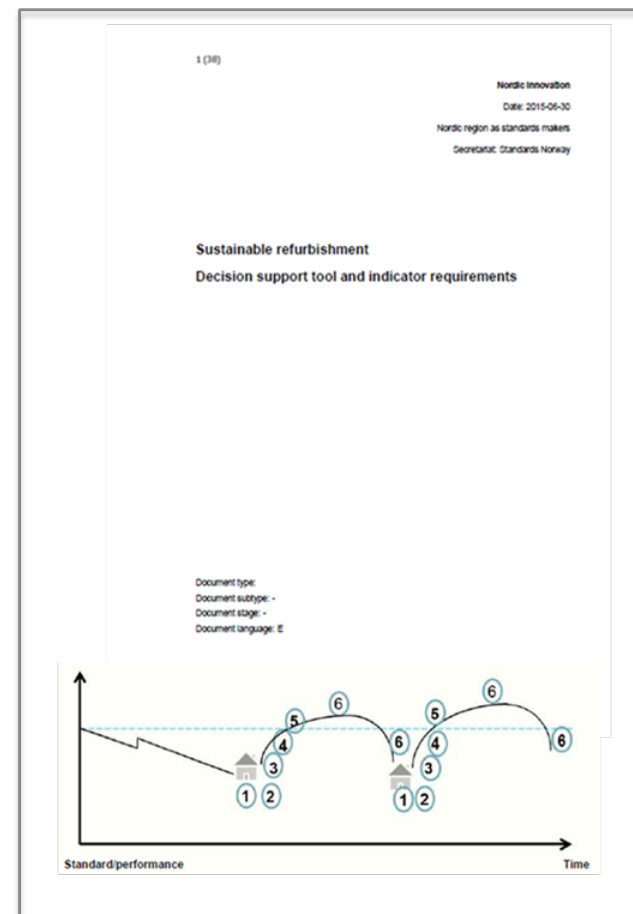
ca 400 millioner m2 bygg (ca 2/3 er boliger) + ca 40 millioner m2 hytter

- **Demografisk utvikling:**
 - 80% av verdens befolkning ender i byer / tettsteder: sosial utfordring
 - Økende antall enslige husholdninger: ca 55% i Oslo
- **Klimaendringer** (påvirkning på bygg og områder)
- **Sirkulær økonomi** (gjenvinning, gjenbruk, lang levetid på hele bygg gir stor gevinst)
- **Taksonomi** (grønne bygg, brune bygg)
- **Vedtak i EU:** Ombygging av 35 millioner bygg 2020 – 2030 (stor gevinst i bygg med gener for et langt liv)




Startpunkt i Norden: Nordisk Ministerråd

- To runder
 - 2009: Nettverk i nordisk byggeindustri
 - 2011: Nordisk region skal være ledende i det grønne skifte
- Nordic Innovation Center (NICE)
 - 2012: Utpekte 3 områder hvorav
 - **Sustainable Refurbishment of existing buildings**
 - 2015: Ferdig rapport juni
 - 2017: **Dansk Standard foreslår rapporten som grunnlag til EU-standard**
- Sekretariat hos Standard Norge
 - ✓ Oppstart jan 2018, ferdig august 2023
 - ✓ Prosjektleder: Svein Bjørberg

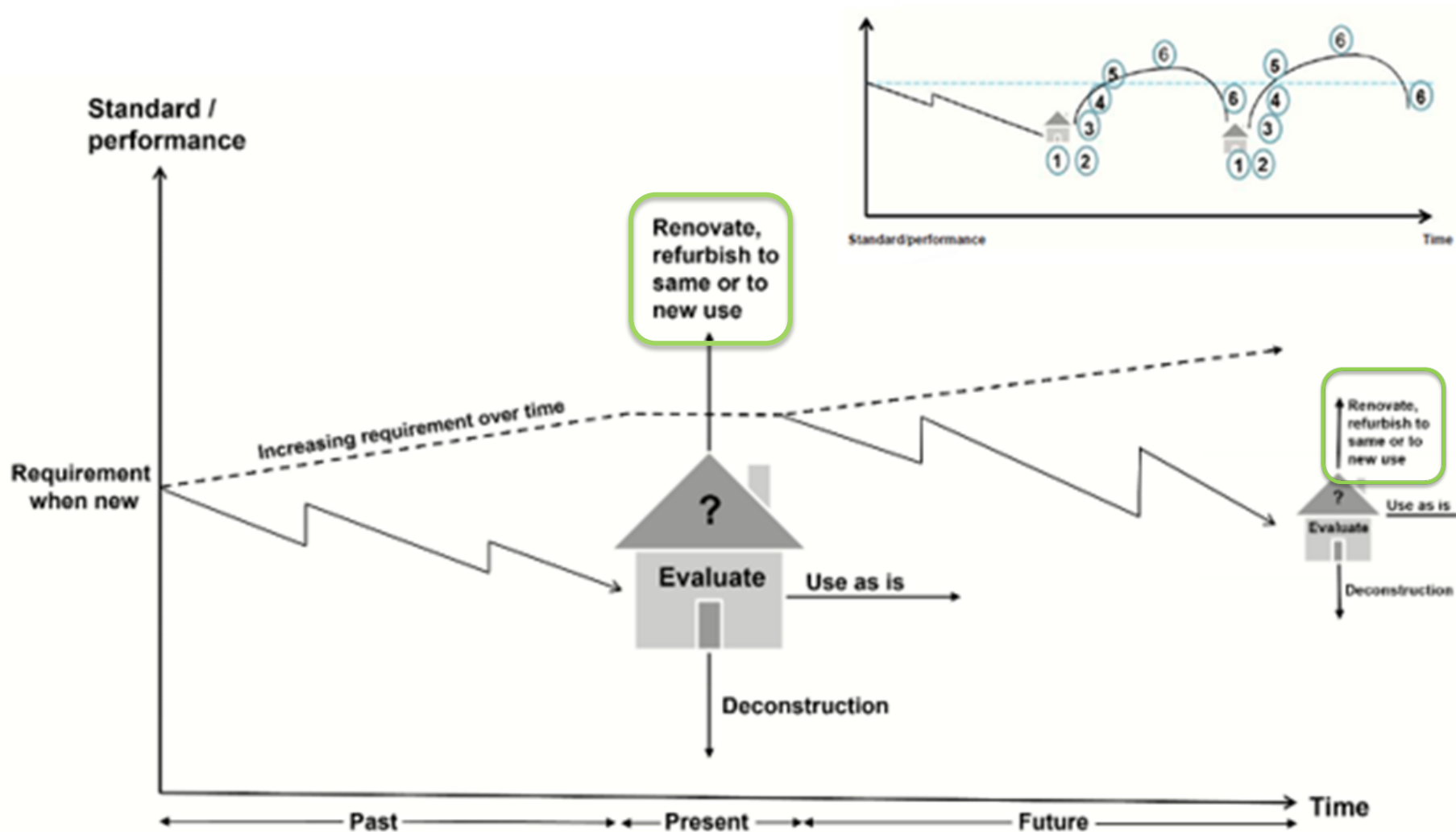


TC 350: Sustainability of construction works

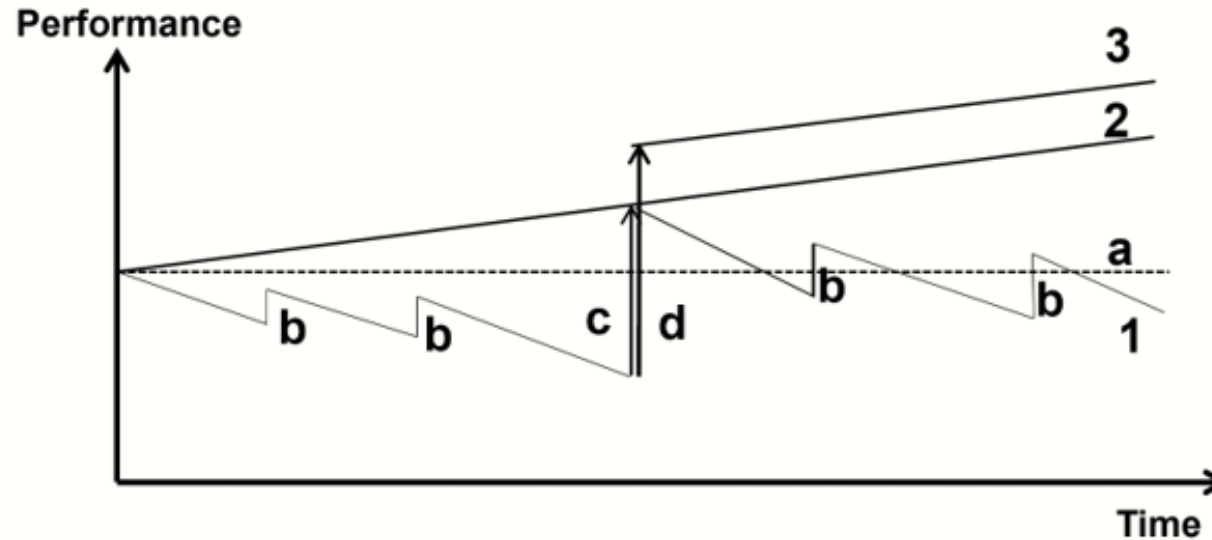
Framework level	<i>Sustainability Assessment</i>			<i>Technical characteristics</i>	<i>Functionality</i>
Works level	EN 15643 Sustainability of Construction Works – Framework for Assessment of Buildings and Civil Engineering Works			Service Life Planning – Principles ISO 15686-1	
	EN 15978-1 (EN 15978 rev) Assessment of Environmental Performance of Buildings	prEN 15978-2 (EN 16309 rev) Assessment of Social Performance of Buildings	prEN 15978-3 (EN 16627 rev) Assessment of Economic Performance of Buildings	EN ISO 52000 Energy Performance of Buildings	
	prEN 17680 Assessment of Options for Sustainable Refurbishment of Buildings				
Product level	EN 17472 Sustainability Assessment of Civil Engineering Works				
	EN 15804 + A2 Environmental Product Declarations – Core Rules for Construction Products			Service Life Prediction Procedures ISO 15686-2,	
	EN 15942rev Communication Format B-to-B				
	EN 15941rev Data Quality				
	EN 17672 Rules for B-to-C Communication			Feedback from Practice ISO 15686-7,	
	EN ISO 22057 Data templates for the use of EPDs in BIM			Reference Service Life & Service Life Estimation ISO 15686-8	
	CEN/TR 16790 Guidance for EN 15804 CEN/TR 17005 Additional environmental impact categories and indicators.				

(Ref.: NS-EN 17680:2023, figure 1)

Decision methodology process



Renovation and refurbishment



Key

a Requirement at construction time as **new building**

b **Maintenance**

Note 1: Only maintenance will lead to some repaired and replacements in the future

c Renovation: Upgrading the fabric/material, components and energy retrofit

Note 2: For listed buildings, renovation (c) may only reach line (a) depending on national regulations.

d Refurbishment: Major renovation that can also include change of space distribution in connection with construction activities

Note 3: Fulfil new requirements on performance from core business

Note 4: In certain circumstances refurbishment measures may not reach sustainability requirements

Note 5: Requirements to space distribution and renovation and change of use

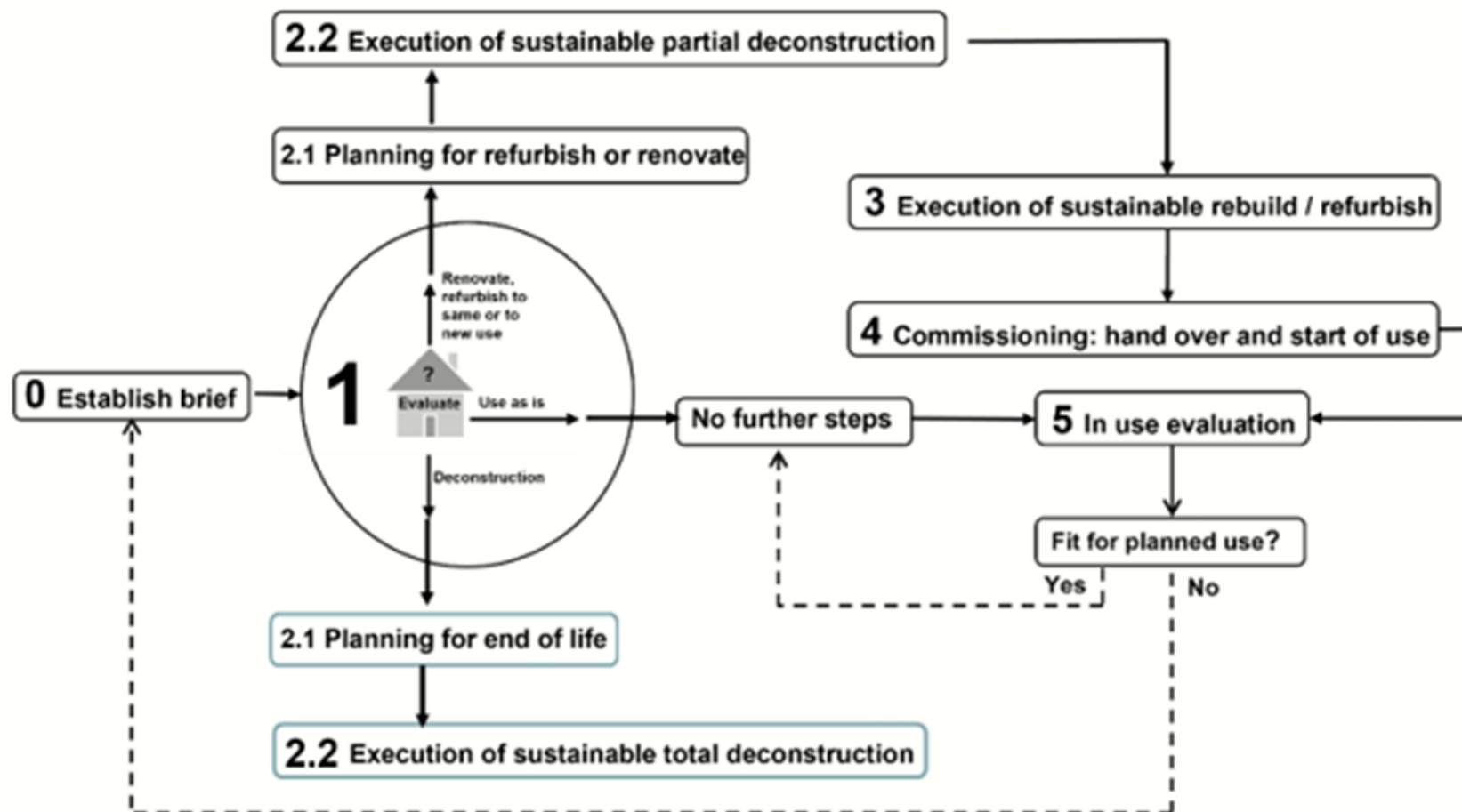
1. Performance level with just maintenance and replacement of components, elements and systems, including new energy efficiency upgrade

2. **Upgrading level:** Technical upgrade to today's performance demands.

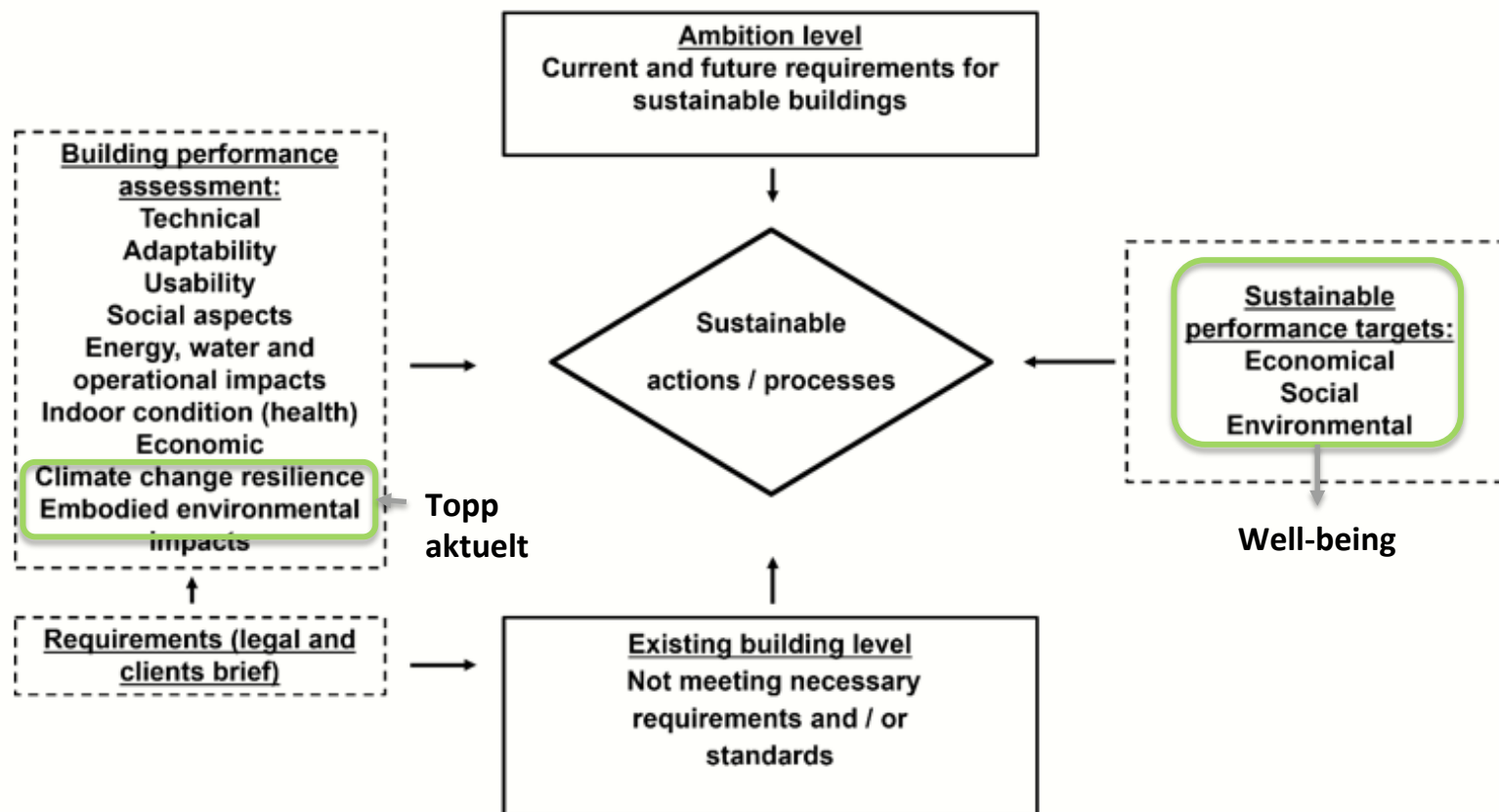
3. **Sustainability level:** New demands related to sustainability performance. (Renovation that also includes change space distribution)

(Ref.: prEN 17680 fig 5)

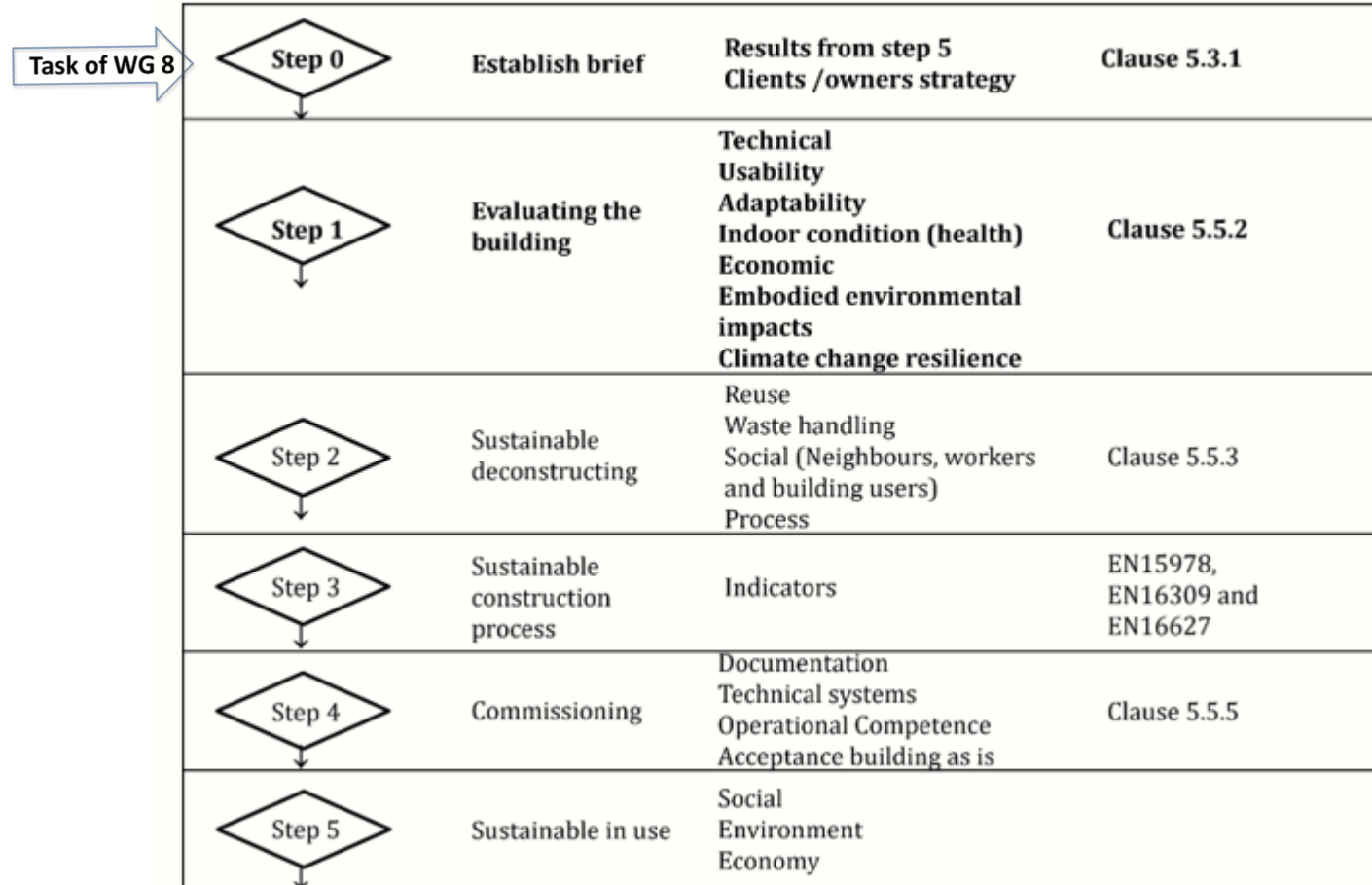
Decision flowchart



Bridge (closing) the gaps



Step by step



(Ref.: prEN 17680, figure 8)

Main categories for assessment

My point of view:
Important starting point

Main categories	Numbers of indicators	Exemplified description
Technical	18	The costs for upgrading a building which has not been well maintained, and/or has significant failures may be very high in relation to both payback and sustainability.
Adaptability	14	Adaptability should allow for changes in circumstances, either within the building (such as change of use), or its local environment (urban design of walls, floors, and other load bearing elements to allow for potential future changes in use or layout.
Usability	7	Poor usability levels will lower productivity of building user(s).
Social aspects	4	Poor architectural and urban quality can have a long-lasting negative effect on social and cultural value of space.
Energy and water (operational impacts)	4	Overuse of resources can have negative impact on efficiency and environment.
Indoor environment (including health aspects)	12	A poor indoor environment and/or poor indoor air quality can have a negative impact on the efficiency, productivity, creativity, comfort, and general health and wellbeing of the building occupants.
Economic	5	Total costs for refurbishment should be estimated as a consequence of performance classes found for technical, usability, adaptability and indoor climate related to possible income.
Climate change resilience	6	The design of the building, construction works, and materials used should attempt to mitigate the negative impacts of climate change, rising sea levels, flooding, avalanche, seismic activity, and extreme weather events.
Embodied environmental impacts	1	Assessment method shall be in accordance with EN 15978.





Examples on indicators

Topp aktuell etter «Hans»

<p>Climate change adaptation and resilience</p> <p>6</p>	<p>Extreme weather conditions (wind load, rain, ...)</p> <p>Materials and details of buildings envelope</p> <p>Increase of sea level</p> <p>Flooding</p> <p>Landslide</p> <p>Avalanche</p> <p>The building</p> <p>The site</p>	<p>Technical</p> <p>18</p> <p>Foundation-load bearing system.</p> <p>Windows/doors in facades</p> <p>Balconies</p> <p>Roof</p> <p>Indoor surfaces (ceilings, floors, walls)</p> <p>Inventory (fixed)sanitation</p> <p>Heating</p> <p>Ventilation system/ventilation rate</p> <p>Air-conditioning</p> <p>Fire protection (active and passive)</p> <p>Security</p> <p>Electrical system lighting</p> <p>IT-Communication</p> <p>Lifts</p> <p>Waste handling in use</p> <p>Outdoor technical systems</p> <p>Ground-drainage</p> <p>Seismic behaviour</p>
<p>Adaptability</p> <p>14</p>	<p>Flexibility / generality:</p> <p>Net floor to ceiling height</p> <p>Load bearing capacity (floors)</p> <p>Vertical space for installations</p> <p>Possibility for holes in slabs</p> <p>Amount of space on each floor</p> <p>Possibility to open space</p> <p>Width of communication areas</p> <p>Inner walls</p> <p>Width of building</p> <p>Lift</p> <p>Elasticity:</p> <p>Site situation</p> <p>Vertical and foundations load bearing capacity</p> <p>Within the building</p> <p>The building</p>	

Performance classes. First big discussion!

- How to get all participant to agree on a set of classes?
 - It was not possible
- Norwegian classification used in appendix
 - Class 0, 1, 2 and 3
 - based on principles in prEN 16086

Classes	Performance	Description	Consequence
0 	No nonconformity	- the performance corresponds to the chosen reference level	Non
1 	Minor or moderate nonconformity	- the building or part thereof exhibits normal wear and has been maintained; or - the nonconformity or lack of documentation is not important in relation to the reference level	Minor
2 	Essential nonconformity	- the building or part thereof is severely worn or has suffered major damage or has a significantly reduced performance in relation to the reference level. Local severe wear and a need for local measures; or - lack of important documentation; or - the remaining useful life is short; or - it has been inadequately or incorrectly designed; or - it has been inadequately or incorrectly maintained.	Medium
3 	Major or serious nonconformity	- the building or part thereof has suffered or will imminently suffer total functional failure or need for immediate measures. Danger to life or health.	Catastrophic. Action needed
NI ??	Not investigated	- the part is not accessible for inspection and no documentation is available to verify correct design and a possible nonconformity can involve major consequences and risk.	More comprehensive investigations are needed to identify any nonconformity

(Ref.: prEN 17680, table A.1)

Example of classification of indicators in performance classes, from 0 – 3

Technical (5 out of 18) and Adaptability (8 out of 14)

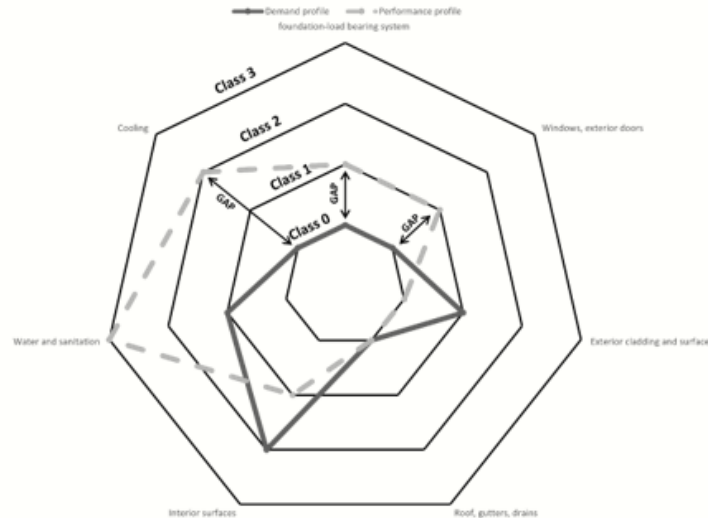
Indicator	Class 0	Class 1	Class 2	Class 3
Net floor to ceiling height (Indicator 1)	$x > 4,0$ m. (or that the over or underlying floor is a technical mezzanine)	$3,5 \text{ m} < x \leq 4,0 \text{ m}$	$3,0 \text{ m} < x \leq 3,5 \text{ m}$	$x \leq 3 \text{ m}$
Load bearing capacity floors (Indicator 2)	$x > 5 \text{ kN/m}^2$	$4 \text{ kN/m}^2 - 5 \text{ kN/m}^2$	$3 \text{ kN/m}^2 - 3,9 \text{ kN/m}^2$	$< 3 \text{ kN/m}^2$
Vertical space for installations (Indicator 3)	Large and/or several shafts providing large space for expansion and/or new vertical transmissions (alternatively technical towers)	Shafts size and/or several shafts providing possibility for expansion and /or vertical shafts	Shafts size and/or several shafts providing a limited / remote for expansion and /or vertical shafts	Small shafts and / or number of shafts providing a very little space for expansion and /or new vertical shafts. No residual capacity
Create openings in structural element. (Indicator 4)	Well adapted for creating new openings (eg. in situ slabs)	Adapted for creating new openings in some areas (eg. prestressed concrete elements)	Restricted opportunity for creating new openings in some areas (eg. prestressed concrete elements)	Not / very restricted opportunity for creating new openings (eg. prestressed concrete elements)
Amount of space on each floor (Indicator 5)	$x > xx \text{ m}^2$	$xx \text{ m}^2 < x \leq yy \text{ m}^2$	$yy \text{ m}^2 < x \leq zz^2 \text{ m}^2$	$x \leq zz \text{ m}^2$
Possibility to open space (not communication routes) (Indicator 6)	$x > xx \text{ m}^2$	$xx \text{ m}^2 < x \leq yy \text{ m}^2$	$yy \text{ m}^2 < x \leq zz \text{ m}^2$	$x \leq zz \text{ m}^2$
Width of communication routes (corridors within the functional range) (Indicator 7)	$x > xx \text{ m}$	$xx \text{ m} < x \leq yy \text{ m}$	$yy \text{ m} < x \leq zz \text{ m}$	$x \leq zz \text{ m}$
Interior walls (Indicator 8)	No load bearing interior walls, light system walls without bindings to technical installations.	Limited extent of load bearing internal walls in one direction	Heavy inner walls with partial load bearing	Heavy and load bearing inner walls in both directions

Indicator	Class 0	Class 1	Class 2	Class 3
Foundation-load bearing system (Indicator 1)	Stable foundation founded on / to rock (piles). No risk or sign of settling damages. No sign of weakening of the structural system.	Small signs of settlement cracks, but stable	Stable foundation, a few signs of increasing structural damages. Small signs of weakening (spalling, cracks)	Unstable foundation. Signs of structural cracks or high risk of settlements damages. Signs of deflection or corrosion on reinforcement
Windows, exterior doors (Indicator 2)	No damages, only minor wear on windows/doors of new built standard. Good air tightness	Visual impairments, stiff casements/sash. No signs of decay.	Loose / torn gaskets, small air leaks. Defective coating. Standard insulating glass without low-e coating. Partly need for renovation/replacement	Substantial damages, air leakages, loose corner joint, cracks / decay of material, defect hardware, only single glass. Need for replacement.
Exterior cladding and surface (Indicator 3)	No damages, only minor wear damages on elements of new built standard.	Chipping or spalling of minor extent. No signs of decay or corrosion	Jointed wood or plastering and signs of decay or corrosion. Signs of weathering and spalling.	Substantial damages, cracks, spalling, decay etc. Need for replacement/renovation/rehabilitation
Roof, gutters, drains (Indicator 4)	No damages, only minor wear damages/ageing on elements of new built standard. Good design of roofing and fittings in connection with drains etc.	Initial growth of moss. Minor signs of wear damages on roofing / deformation of gutters, drains, fittings	Signs of initial damages of roofing. Leakages in gutters and drains. Substantial growth of moss. Need for periodic maintenance.	Substantial damages of roofing, leakages, defect drains etc. Demand for replacement/upgrading
Interior surfaces (floor, wall, ceiling) (Indicator 5)	No damages, only minor wear damages on elements of new built standard. Surfaces are plane and nearly new coating.	Initial wear. Minor cracks and spalling. Wear in areas with heavy traffic.	Partly substantial wear damages or cracks. Need for periodic maintenance.	Substantial damages or extensive wear damages. Need for renovation and rehabilitation/replacement

Communication results

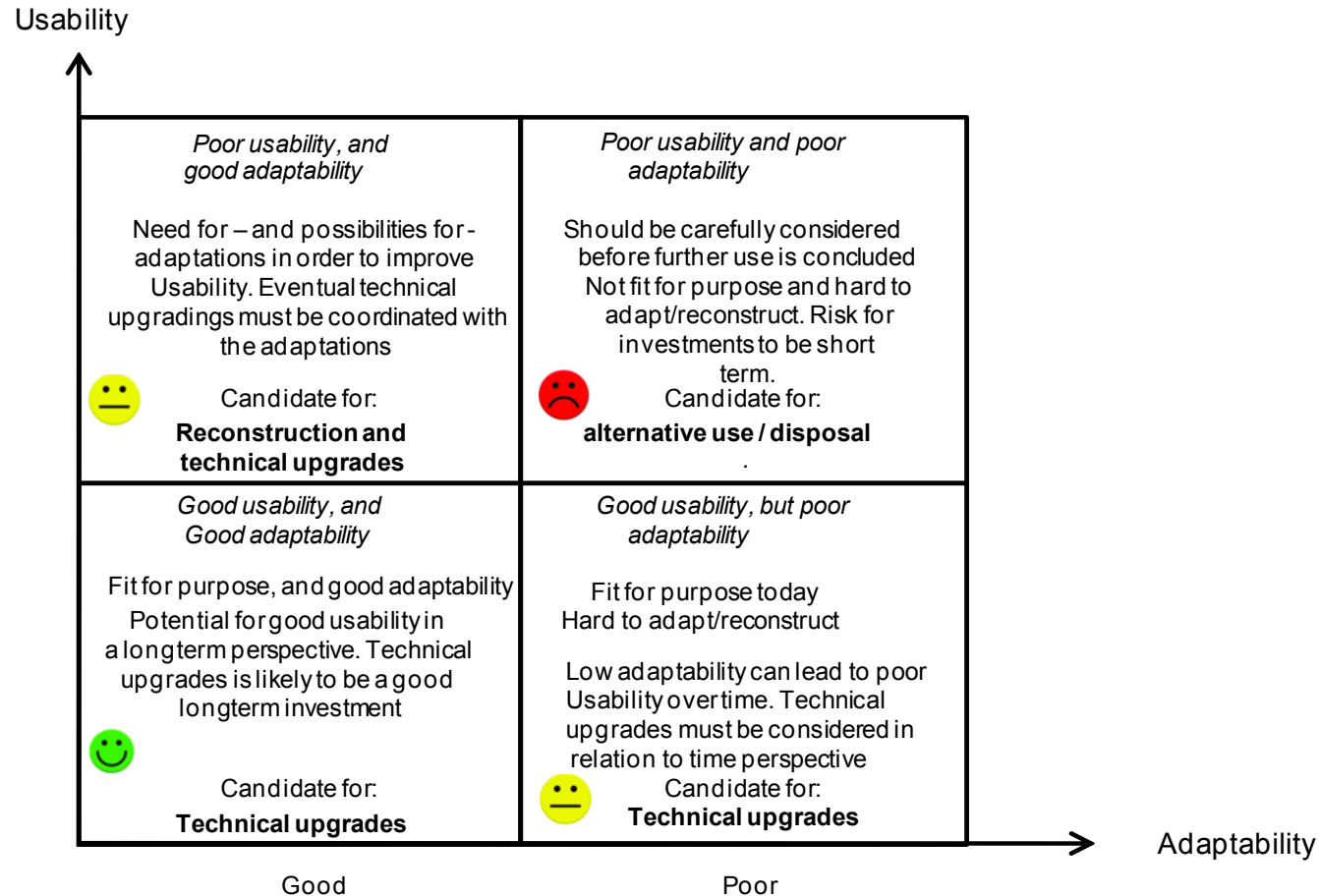
— Demand profile - - - Performance profile

Indicator	Class 0	Class 1	Class 2	Class 3
foundation-load bearing system (indicator 1)	Stable foundation founded on / to rock (piles). No risk or sign of settling damages. No sign of weakening of the structural system.	Small signs of settlement cracks, but stable	Stable foundation, a few signs of increasing structural damages. Small signs of weakening (spalling, cracks)	Unstable foundation. Signs of structural cracks or high risk of settlements damages. Signs of deflection or corrosion on reinforcement
Windows, exterior doors (indicator 2)	No damages, only minor wear on windows/doors of new built standard. Good air tightness	Visual impairments, stiff casements/windows. No signs of decay.	Loose / torn gaskets, small air leaks. Defective coating. Standard insulating glass without low-e coating. Partly need for renovation/replacement	Substantial damages, air leakages, loose corner joint, cracks / decay of material, defect hardware, only single glass. Need for replacement.
Exterior cladding and surface (indicator 3)	No damages, only minor wear damages on elements of new built standard.	Chipping or spalling of minor extent. No signs of decay or corrosion	Jointed wood or plastering and signs of decay or corrosion. Signs of weathering and spalling	Substantial damages, cracks, spalling, decay etc. Need for replacement/renovation/ rehabilitation
Roof, gutters, drains (indicator 4)	No damages, only minor wear damages on elements of new built standard. No indication of roofing and fittings in connection with drains etc.	Initial growth of moss. Minor signs of wear damages on roofing / deformation of gutters, drains, fittings	Signs of initial damages of roofing. Leakages in gutters and drains. Substantial growth of moss. Need for periodic maintenance.	Substantial damages of roofing, leakages, defect drains etc. Demand for replacement/upgrading
Interior surfaces (floor, wall, ceiling) (indicator 5)	No damages, only minor wear damages on elements of new built standard. Surfaces are plane and nearly new coating.	Initial wear. Minor cracks and spalling. Problem areas with heavy traffic	Partly substantial wear damages or cracks. Need for periodic maintenance.	Substantial damages or extensive wear damages. Need for renovation and rehabilitation/ replacement
Water and sanitation (indicator 7)	The quality of pipeline network, armatures, outfits are of new built standard. No sign of any problems. Service life left as new built. Sufficient capacity.	About 15 years of age, but well maintained. No signs of leakages or other problems. Sufficient capacity.	About 30 years/older than 30 years, but well maintained and parts with short service life are replaced. Signs of too low capacity.	Older than 30 years and parts with shorter service life are not replaced. Need renovation and replacement.
Air-conditioning (indicator 8)	The quality of pipeline network, armatures, outfits are of new built condition. Service life left as new built. Sufficient capacity. Zoning.	About 10 years of age. Zoning. No signs of leakages or other problems. Sufficient capacity.	About 20 years/older than 20 years, but well maintained and parts with short service life are replaced. No zoning. Signs of low capacity Keep close attention	Older than 20 years and parts with shorter service life are not replaced. No zoning unsatisfactory capacity. Need for renovation or replacement. Or no air-conditioning installed.



(Ref.: prEN 17680, figure A 1 og A 2)

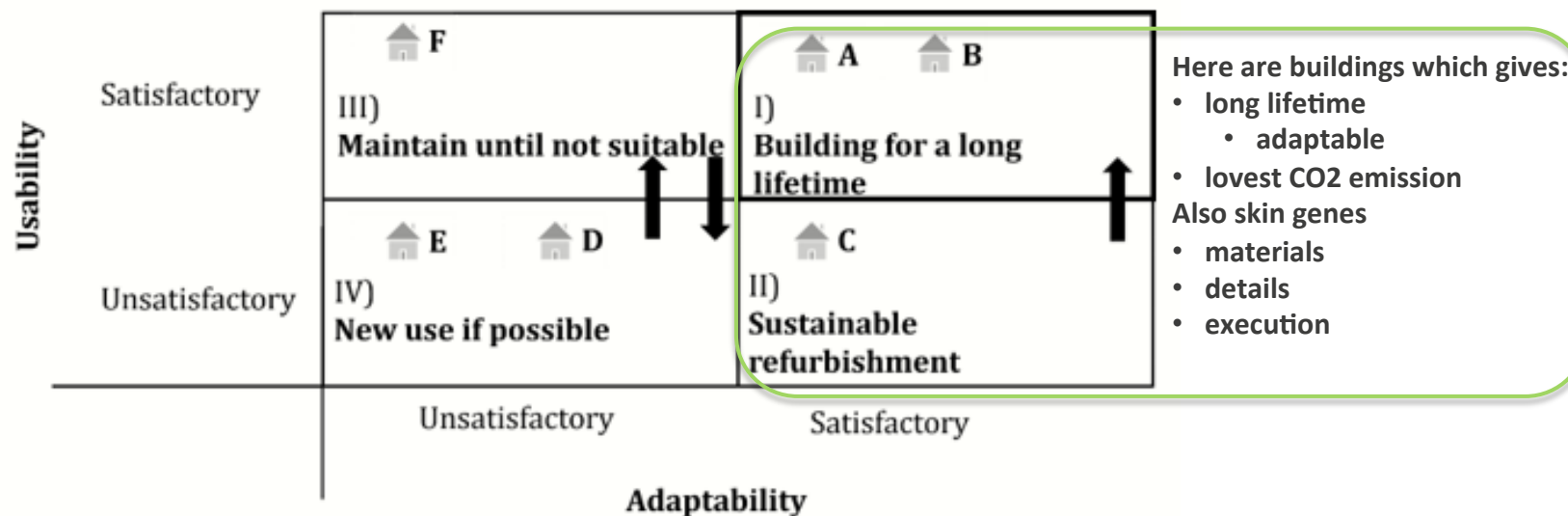
The Viability Model



The viability model ("Levedyktighetsmodellen" – the combination of usability and adaptability (adapted from Larssen and Bjørberg, 2004)

Communication results

Which buildings are fit for a long lifetime?



Key

- | | |
|------------------|--|
| Building A and B | Valuable buildings because they have good adaptability and usability. They have the potential to stay in quadrant I) due to the ability to adapt to new demands from core business. Will keep best economy for users and owner |
| Building C | Can easily be moved from quadrant II) to I) when core business or owner ask for new performance demands |
| Building D and E | If new use is possible, they can move from quadrant IV) to III). If no new use is possible, and the building is not listed, then recommendation should be sustainable deconstruction. |
| Building F | Will move to quadrant IV) when core business ask for new performance demands. Recommendation is to maintain with minimum of costs until it achieves unsatisfactory usability. |



Further steps in the life cycle of the building(s)

Table 4 — Indicators for sustainable deconstruction

Categories	Indicators for step 2 (2.1 planning related and 2.2 execution related)
Reuse	Components for re-use on site or offsite Materials for recycling Materials for recovery
Waste disposal	Energy recovery from building materials Hazardous waste disposed (safe destruction or deposit/landfill) Non-hazardous waste disposed (safe destruction)
Social (Neighbours, users and workers)	Dust and particles Noise Traffic Vibrations Light pollution Health and safety of workers Health and safety of users in the case of refurbishment in-use conditions Accessibility
Process	Energy for deconstruction Energy for transport

Step 2
Deconstruction

Step 4
Commissioning

Step 5
Indoor climate

Table 5 — Indicators for commissioning-stage

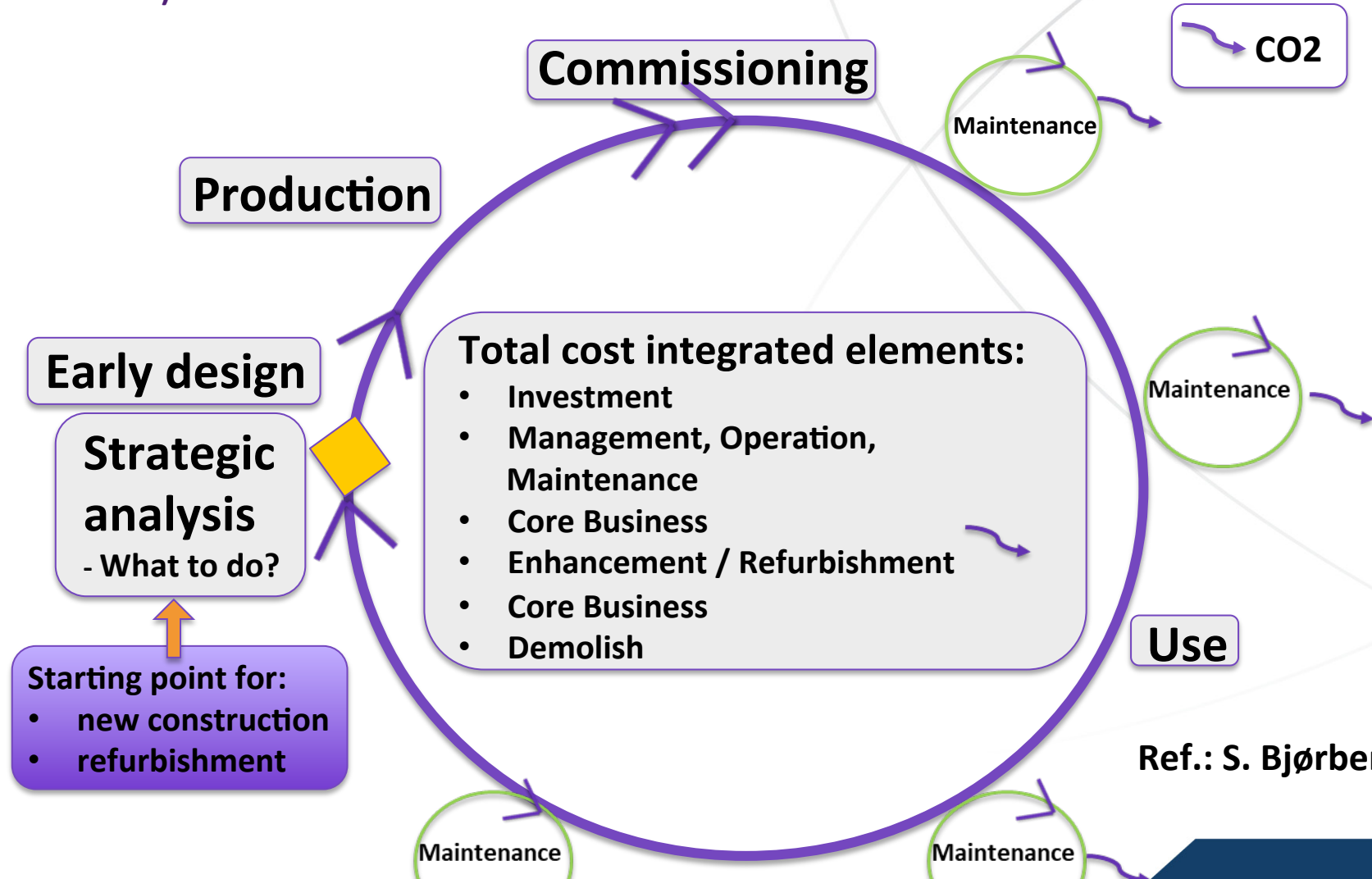
Categories	Indicators for step 4 Commissioning
Documentation	As Built <u>documents</u> Digital model of the project Guidelines for operation and maintenance ² Documentation on adaptability Manuals for IT-systems Simple user's manual
Technical Systems	Functionality of integrated systems Airflow proved <u>requirements</u> Security and safety systems Outdoor systems ¹
Operational Competence	Training program <u>fulfilled</u> Organization of MOM (Management, Operation, Maintenance) defined
Approval of the building	Inspection of completion totally <u>finished</u> Surfaces are as <u>described</u> Indoor climate as described (example on criteria for indoor climate is given in table A5)

Table 6 — Indicators for in use-stage

Categories	Indicators for step 5
Social	Indoor climate
	Aesthetic environment Acoustic environment (for users of the building and neighbours) Actinic (light conditions) environment (for users of the building and neighbours) Accessibility and Universal Design, see EN 17210:2021 Usability Safety Thermal comfort (for users of the building and neighbours)
Environmental	Material and chemical usage Waste treatment Energy source Energy demand Electricity usage Energy management Water consumption Ecology Nature conservation
Economy	Adaptability Level of Maintenance (technical condition) Location Building certifications Value Life cycle costs

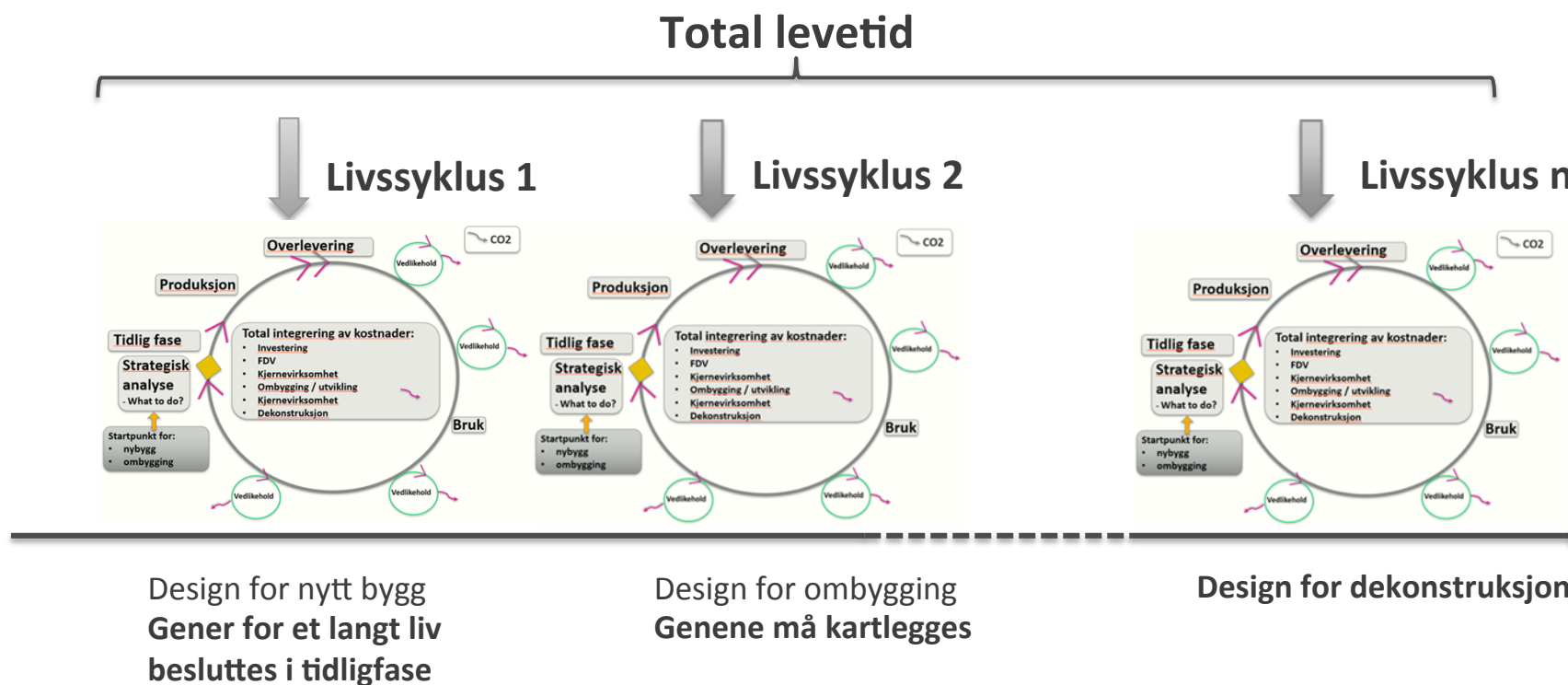
OSCAR GENERIC PHASEPLAN = CIRCULAR PHASEPLAN

(ANALYSIS-DESIGN-PRODUCTION-COMMISSION-USE- MAINTAIN - REFURBISHMENT-DEMOLISH)



Ref.: S. Bjørberg, 2017

My model: Total levetid er en sum av n livssykluser



Hvordan kartlegge gener for ombygging?



Genes in a buliding context

- Usability: possibility to satisfy new demands:
 - Adaptability
 - Flexibility: possibility to change space distribution
 - » Ex.: from cell offices to open landscape
 - Generality: possibility to change functionality
 - » Ex.: from office to school
 - Elasticity: possibility to change volume
 - » Ex.: extra floor or/and horizontal extension
- Skin: possibility for a long technical lifetime
 - Maintenance friendly
 - Materials, details and execution that together provide maximum resistance to degradation
 - » Long intervals for maintenance and replacements

Ønskeliste for sirkulær økonomi

Bygningsdeler / systemer i tre grupper sett i et livsløpsperspektiv (**Bygg skal vare lenge**):

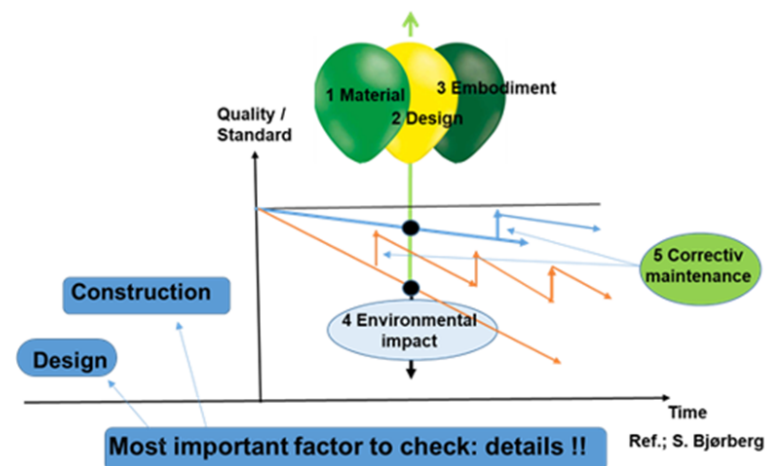
1. «Ser vi aldri igjen»: **må vare i total levetid**
2. «Ser, men skal ikke utskiftes»: **må være vedlikeholdsvennlig**
3. «Ser, kan vedlikeholdes og skiftes ut»: **vedlikeholds- og demonteringsvennlig**
 1. OBS: Bygningsdel / system med kort bruks-/levetid må ikke dekkes av noe med lang bruks-/levetid
 2. 0-friksjon mellom bygningsdel / system med ulik bruks-/levetid

Byggskader og vedlikeholdsbehov **starter i detaliene** (ikke alltid)

- Standardiser «**Ballongteoriens 5 trinn**»

Vi må kvitte oss med ordet «**Etterslep**»

- Standardiseres til gjeld i **balanseregnskapet**



Og så var det slutt.....

Takk for oppmerksomheten

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+47 915 35 547





Svanemærket

Renovering

Indhold

- Hvem bygger og hvor meget
- Hvad kan Svanemærkes
- Et hurtigt overblik over krav

Svanemærket indenfor byggeri

Nybyg, Renovering og kommende kriterier for drift af ejendomme

Bygningsdrift: Høring er i gang og det forventes at lancere i november

Krav: 41 obligatoriske

Nybyggeri: Kontor, Bolig og Institutioner

Krav: 42 Pointkrav: 23

Renovering: Kontor, Bolig og Institutioner, eller transformation

Krav: 39 Obligatoriske

- Svanemærket gradueres ikke.

07

Mulighed for affaldssortering

Affaldssorteringsbeholdere skal installeres i mindst:

- fire grupperinger i den svanemærkede boligenhed, dvs. i lejlighed og hus.
- fem grupperinger i eller ved siden af køkkenet på den svanemærkede skole og daginstitution.

Restaffaldet tæller som en gruppering.

En affaldskværn kan kun regnes som en gruppering, hvis madaffaldet samles i en beholder/tank og sendes til forrådnelse eller kompostering, og affaldskværne er godkendt i henhold til kommunale/lokale VA-regler.

Krav O23 (nano) gælder også for affaldskværn.

Beskrivelse af affaldssorteringsbeholdere enten i tekst eller billeder.



Svanemærkede referencebyggerier (93 byggerier version 3.0)



"Kolding Sky", 19 etager, AP Pension/5E Byg, 2019-2020



"Skråningen II, Lejre", EcoVillage/Casa Byg, 2018-2019



"Dalhusene", Taglejligheder, Vanløse, JØP/
Hune & Elkjær, 2019-2020



"Regnskoven" Børneinstitution, Gladsaxe Kommune/
Elindco, 2019-2020



478 Ungdomsboliger, Lyngby, PensionDanmark/
Boligfonden DTU/ Scandi Byg, 2020-2021



"Store Solvænget", Almene boliger, Amager,
JØP/Scandi Byg, 2019- 2020



Højt kendskab og troværdighed

93% af danskerne kender Svanemærket¹

67% af danskerne har tillid til Svanemærket²

66% af danskerne ser efter Svanemærket, når de vælger varer²

1) YouGov jan. 2023

2) Nordic Consumer Sustainability Index by Nordic Swan Ecolabel, IPSOS 2022, ser af og til, ofte eller altid efter Svanemærket, når de vælger varer.

A modern kitchen and balcony area. The kitchen features white cabinetry, a countertop with a red pot, a wooden cutting board, and a small potted plant. The balcony has a wooden deck, a black metal table and chairs, and a green circular overlay with the text "Svanemærket Renovering".

Svanemærket Renovering

Kategorier	Eksempler på obligatoriske krav
1. Generelle krav / inden renoveringen	Beskrivelse af projektet Ansvar Tilstandsanalyse Miljøkortlægning og miljøsanering Fugtinventering Affaldsplan og affaldshåndtering Opfølgning / slutrapport for sanering
2. Indeklima	IAQ-plan Radon Fugtforebyggende arbejde Kontrol af ventilationens funktion PCB-måling Kemikaliekrav
3. Energi og klima	Bygningens energibehov efter renovering Belysning Energieffektive hvidevarer
5. Affald og ressourceudnyttelse	Håndtering af bygge-, nedrivnings og farligt affald
6. Materialer	Bæredygtigt træ Trykimprægneret træ* Kobber % PVC (gulv, tag og vægge) Relining epoxy Ressourceeffektive materialevalg (O31) / Bæredygtighedstiltag (O35)
7. Information til kunden	Instruktioner til kunden
8. Kvalitetsstyring	Materialekontrol Fugtsikring 3. partskontrol af kvalitet Egenkontrol

Hvad er der krav til i dag?

- Udelukkende obligatoriske krav i kriteriet

HP Byg

Svanemærket

Renovering af Strandvejen 12-14
9000 Aalborg



Kasper Winther Larsen
Projektchef / Sagsansvarlig



Peter Brokholm Andersen
Projektleder / Svanemærket-ansvarlig



Jens Ole Maribo Samallo
Bæredygtighedsleder

Dagsorden

- | Projektet
- | Erfaringer
- | Udfordringer
- | Digital håndtering
- | Besøg på byggepladsen

Projektet

- Transformation
- 4500 kvm + kælder
- 65 lejligheder



HP BYG

Erfaringer

- Forberedelse – Internt, Bygherre og UE'er
- Producenter – Database
- Materialer – Lister
- System løsninger
- Håndværker - Medansvar
- Generel håndtering



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1. Generelle Krav

01 Samlet beskrivelse af renoveringsprojektet

- Overordnet projektbeskrivelse fra C.F. Møller (ARK) ligger i Ajour <https://h-p.ajoursystem.net/api/aiourbox/file/downloadSource/?field=8dc7f2a5-312e-4ddd-822f-213afb56c9f8&revisionId=9dd50b9f-a1a6-4bdb-90b9-776bb551ae61>
- Beskrivelse af vigtige bygningsdele, herunder bærende konstruktioner, findes i Konstruktionsgrundlag fra Brix & Kamp (ING). – 3.4 Eksisterende konstruktioner
De eksisterende konstruktioner er alle udført som sammenhængende, pladsstøbe betonkonstruktioner med betonsøjler, bjælker og dæk. Fra tidligere ombygninger i bygningen er der opgivet at betondækket i etageadskillelsen er dimensioneret for en belastning på 500 kg/m², som angivet i udklipet nedenfor:

ID	Dato	Titel	Udgiver	Modtager	Status	Noter
200	15-05-2024 10:39	2.8.1.2_02 Afgrænsning af fællesområder kælder.pdf (1)	15-05-2024 Metal og metalkrot		Færdig	
199	08-05-2024 10:08	111.pdf (1)	08-05-2024 08-05-2024	Svanemærke 6 - Holdbare produkter og materialeoversigt	Færdig	Opfølgning på materiale - kasse i type 9 lejlighed 2 sal <i>Seneste kommentar</i> GTIN nr. virker dog heller ikke databasen
198	25-04-2024 11:41	K02_H1_EXX_N101 Situationsplan storandvejen.pdf (1)	25-04-2024 25-04-2024	Svanemærke 6 - Holdbare produkter og materialeoversigt	Færdig	Sikabond-541 Kan ikke findes i databasen <i>Seneste kommentar</i> Er ikke på databasen

Udfordringer

- Håndværkere
- Underentreprenører
- Leverandører
- Overdragelse
- Materialer
 - Lyd-dug
 - Tape
 - EPDM fastgørelse
 - PCB
 - Gammel maling



Digital håndtering

Create the product list for your Nordic Ecolabelled project

In order for your building to be Nordic Ecolabelled, the chemical products, building products, building goods and products must fulfil our requirements. Here, you can create and administrate your product list, either by searching for products which are already listed in Nordic Ecolabel's database of products in Nordic Ecolabelled buildings or by adding new products which you like to be inspected and included in the database. You can also use a product list from a previous project as a base for your new product list.

Search by name, GTIN, etc.

Search by product groups and types

Copy products from an existing licence product

Copy products from an existing collection

Please select country
 Danish Swedish Norwegian Finland Iceland

Found products

ID	Product name	Manufacturer	Status	Product type	Comment
1349871000	Troldtekt lys natur, 35 mm, malet	Troldtekt A/S	Listed	Roof and wall cladding	
202403381	Troldtekt	Troldtekt A/S	Listed	Roof and wall cladding	Troldtekt acoustic ceiling and wall panels are made from 100% natural materials, wood and cement. The combination of wood and cement creates Troldtekts unique sound absorbing properties, ensuring acoustics in any room. The material has a natural resilience and can handle moist environments, while also providing effective fire protection. Troldtekt is a natural product with documented sustainability throughout its entire life cycle. Troldtekt is available in a high number of combinations that vary according to surface structure, edge, installation system, colour, dimension and thickness. Our solutions allow you the opportunity to integrate and conceal for example speakers in the Troldtekt ceiling. Specially designed lighting, decorative elements and a wide range of accessories are also available
2007050092	Troldtekt Natural Wood fine	Troldtekt A/S	Listed	Roof and wall cladding	Troldtekt akustikplader er fremstillet af naturprodukterne træ og cement. Kombinationen af træ og cement skaber Troldtekts unikke lydabsorberende egenskaber og sikrer god akustik i arkitekturen. Materialet har en naturlig styrke og tåler fugtige omgivelser og giver samtidig en effektiv brandsikring. Troldtekt akustikplader er et naturprodukt og er dokumenteret bæredygtigt gennem hele produktets livscyklus. Troldtekt akustik lys fin er en malet plade med en træuldsbredde på 1,5 mm
719170468	Troldtekt white painted	Troldtekt A/S	Listed	Roof and wall cladding	Troldtekt akustikplader er fremstillet af naturprodukterne træ og cement. Kombinationen af træ og cement skaber Troldtekts unikke lydabsorberende egenskaber og sikrer god akustik i arkitekturen. Materialet har en naturlig styrke og tåler fugtige omgivelser og giver samtidig en effektiv brandsikring. Troldtekt akustikplader er et naturprodukt og er dokumenteret bæredygtigt gennem hele produktets livscyklus.

Your list of selected products for *Strandvejen 12-14*

Forklaring på status:
 Nyt produkt som skal vurderes af entreprenør, der mangler dokumentation for leverandør.
 Klar til sagbehandling hos Miljømærkning Danmark, ikke afsluttet.
 Godkendt til brug i Supermarkede huse
 Et ikke anvendt af Supermarkede huse for huse og må derfor anvendes.
 Overvåget ikke tilladelse og må ikke anvendes.
 Produktet er ikke anvendt og ikke færdigbehandlet

ID Nummer på produkt fra databasen	Produkt navn på produkt fra byggeordrebogen	Beskrivelse af produkt	Producent / leverandør	Placering i byggetil	Supermarked eller EU-Mærket mærket	Listet i Byggeordrebog	Status	Bemærkninger	MID kontrol
Blok, bord og bænke									
502105818	Locatemblok	Loca Blokke 19X19x80mm	Gemmerhørd Beton AS	Brandramme lokabok		Listed	GOODNET		
Løsnings af Hæller Dæk, Løstiller									
710292350	NBS Byggeskum 181	Byggeskum uden isocyanat	Dana Lim AS	Løstiller, dæk og vægge		Listed	GOODNET		
1844458254	BYGMA Cement 42,5	Blokblokk	Aalborg Portland AS	rep. Dæk og vægge		Listed	GOODNET		
Belægning									
859590478	Isafalt KØH	Sursemestrel	MC Bauchemie GmbH	rep. Dæk og vægge - silfret borstet armering i grav, søjler/hælder		Listed	GOODNET		
156533462	Isafalt KM 250	Beton	MC Bauchemie GmbH	rep. Dæk og vægge		Listed	GOODNET		
Isocor - Lene 500									
EL-490044488	Isocor - UN-GREEN	Beton	Isocor	Støbning af elevator skakt		Listed	GOODNET		
299983244	Isocor - Acryl 502	Færdiglig	Dana Lim AS	rep. Dæk/kælder		Listed	GOODNET		
169573069	HT-491 170	Målebåndmærket	H&B Overløbs AS	rep. dæk, løjler (armering og forankring)		Listed	GOODNET		
1895463277	Isocor Ekspanderende Elemenbeton K1. A Sommer	ekspanderet	Saard-Godan Denmark AS	understøtning Dæksløjler (2. ud ved gl. ventakst)		Listed	GOODNET		
Vare nr. JAVU5888									
	Belægning	5000 X 2150 X 150 X 8mm	Lemvig-Møller AS	armering til gamle elevatorakste		Listed	GOODNET		
VVS									
155545380	Wavin Alupex rør i isolering	Water supply and sewage fittings	Nordac Wavin AS	Rørføring i dæk		Listed	GOODNET		
295044838	Wavin Alupex rør R1, R1, R1 isolering	Water supply and sewage fittings	Nordac Wavin AS	Rørføring i dæk		Listed	GOODNET		
640170780	Wavin Flex One rør R1, R1, isolering	Water supply and sewage fittings	Nordac Wavin AS	Rørføring i dæk		Listed	GOODNET		
725445818	Unigrip	Højtryks og ekspanderende af ren naturprodukt	Unigrip AS	ventilering af køllinger og rør		Listed	GOODNET		
10870587	UNIPAP White	Pakke til grovkornet	Unigrip AS	ventilering af køllinger og rør		Listed	GOODNET		
829048029	S.A.N. spray	Silikonoverfladestoffer	Unigrip AS	ventilering af køllinger og rør		Listed	GOODNET		
175607070	CONLIT Rensningsbetonbehandling	gennemfugning og tætning, luges op og til brandsikring af stål rør	ROCKWOOL Nordica	Dåser der går gennem dæk eller skillevægge		Listed	GOODNET		
854502918	CONLIT 100 ALU	gennemfugning og tætning, luges op og til brandsikring af stål rør	ROCKWOOL Nordica	Dåser der går gennem dæk eller skillevægge		Listed	GOODNET		
344258437	Tubolit DG TL 181R3-DG	Rensende til vand installationer	ARMANCEL GmbH	alle installationer rør		Listed	GOODNET		
11522119	Danseloft Acryl 504	betøning for lyd	Dana Lim AS	betøning i stift om ventilationsrør for lyd		Listed	GOODNET		
113389376	Combor 250 Top	betøning for lyd	Nolan AS	Ventilations anlæg højlyder		Listed	GOODNET		
	Embutte	Embutte	Seveline	Embutte højlyder		Listed	GOODNET		
Målering									
	A collection Duct Type	Gulf tape	Gulf	Målering afsløring af påvarme/ frøgned dører		Listed	GOODNET		
	Sealch IM	Gulf tape	Sealch IM	Målering afsløring af påvarme/ frøgned dører		Listed	GOODNET		
Ventilation									
	kabel og rør	Tomax til kabler	Tec Con Industri AS	Tomax signal kabel ventilation		Listed	GOODNET		
151514380	HF-COL-FIX 16mm Xpress torn rør	betøning for lyd	Dana Lim AS	betøning i stift om ventilationsrør for lyd		Listed	GOODNET		
1162050472	Silikonspjældemåle W-12, 085x4712	betøning for lyd	Wilm, Danmark AS	signal kabel i bronze til armature		Listed	GOODNET		
21100118	Tagbet 543	Tætning ved tagtårer	Dana Lim AS	Tag		Listed	GOODNET		
Brandbekæmpelse - VVS og V&M									
	Brandbekæmpelse	Sealants and asphalt indoor	Scand Supply AS	Brandbekæmpelse VVS - i dæk		Listed	GOODNET		
136607837	PRF-mørtel 8722 Brandmaske	Sealants and asphalt indoor	Scand Supply AS	Brandbekæmpelse VVS - i dæk		Listed	GOODNET		
1097404718	Freefree 8790 Brandbekæmpelse	Sealants and asphalt indoor	Scand Supply AS	Brandbekæmpelse VVS - i dæk		Listed	GOODNET		
Brænd									
	Isocor SF Press	precastfliser / rør - rustfri		ventilering af køllinger		Listed	GOODNET		

Digital håndtering

Ajour

- Setup med MMD
- O-punkter
- Registeringer
- Affald
- Materialer
- Egen gennemgang

The screenshot displays the Ajour software interface for project management. At the top, there are navigation tabs for 'EG Ajour', 'AjourInspect & QA', 'AjourFM', 'AjourBox', and 'AjourTender'. The main header shows the project name '123002 - Strandvejen 12 - 14' and a status bar with a progress indicator for '%-Fordeling' showing 98% completion. A legend indicates the status of registrations: 124 'Alle', 121 'Oprettet', 0 'Ikke godkendt', and 1 'Afluttet'. Below the header, there are filters for 'Alle grupper' and 'Arbejdsmiljø'. The main content area is a table with columns for registration details and actions.

#	Oprettet	Tegning/GPS	Tidsfrist	Kategori/Liste	Emne	Modtager	Ansvarlig
208	22-05-2024 08:44	K01_H1_E01_N101 Strandvejen 12-14 Stueetage.pdf (1)	22-05-2024 22-05-2024	Svanemærke 06 - Affaldsplan og affaldshåndtering	Metal container - stue etage	Modtaget 23-05-2024, 14:08 HP Byg A/S Peter Brinkholm Andersen	Oprettet 22-05-2024, 08:44 HP Byg A/S Peter Brinkholm Andersen
204	15-05-2024 10:42	2.8.1.2_02 Afgrænsning af fællesområder kælder.pdf (1)	15-05-2024 15-05-2024	Svanemærke 06 - Affaldsplan og affaldshåndtering	Byggeri	Modtaget 15-05-2024, 10:55 HP Byg A/S Christian Husum	Oprettet 15-05-2024, 10:42 HP Byg A/S Christian Husum
203	15-05-2024 10:42	2.8.1.2_02 Afgrænsning af fællesområder kælder.pdf (1)	15-05-2024 15-05-2024	Svanemærke 06 - Affaldsplan og affaldshåndtering	Byggeri	Modtaget 15-05-2024, 10:55 HP Byg A/S Christian Husum	Oprettet 15-05-2024, 10:42 HP Byg A/S Christian Husum
202	15-05-2024 10:40	2.8.1.2_02 Afgrænsning af fællesområder kælder.pdf (1)	15-05-2024 15-05-2024	Svanemærke 06 - Affaldsplan og affaldshåndtering	Byggeri	Modtaget 15-05-2024, 10:55 HP Byg A/S Christian Husum	Oprettet 15-05-2024, 10:40 HP Byg A/S Christian Husum

Besøg på byggepladsen

- Gennemgang og besigtigelse
- Ikke registrerede materialer
- Snak om byggeriets videre forløb
- Mangler / OBS punkter
- Rapport



Spørgsmål

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Projektchef / Sagsansvarlig



Peter Brokholm Andersen
Projektleder / Svanemærket-ansvarlig



Jens Ole Maribo Samallo
Bæredygtighedsleder



A satellite view of Earth showing the Middle East, North Africa, and parts of Europe and Asia. The image is dominated by the colors of the land and sea, with white clouds swirling over the oceans. The text "Tak for i dag" is overlaid in white on the left side of the image.

Tak for i dag



DANSK STANDARD