

# ***TRANSFORMING HOW WE VALUE ENERGY SAVING PROJECTS***

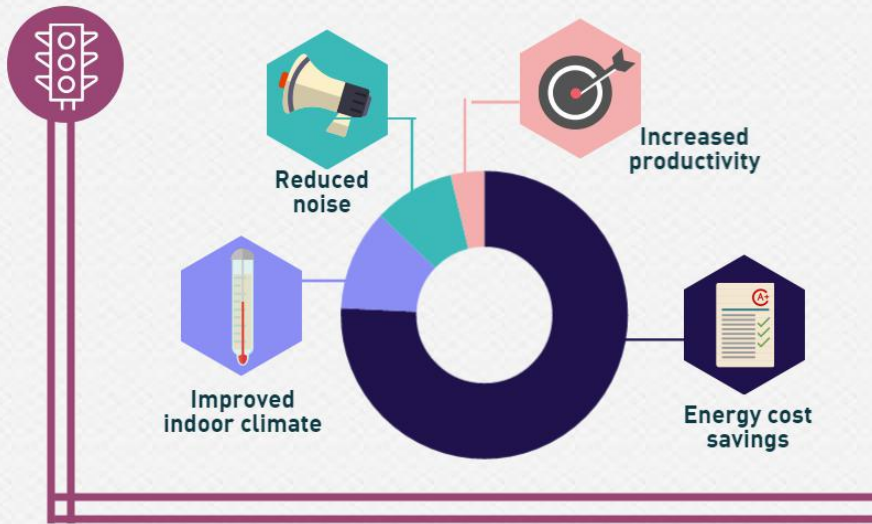
New robes for NEB research – open and expanding data

By Ida Stokkebye Christiansen



Ea Energy Analyses

## What are Non energy benefits?



The Paper 100 :: A 2016 Mix :: What's hot today?

# We've heard the story

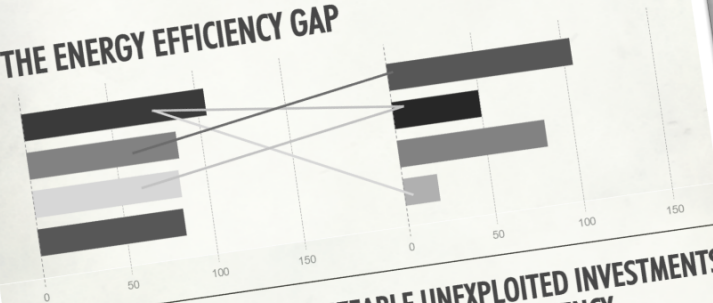
Written by: John Doe

September 13, 2016

"Evaluators have yet to develop standard protocols for defining, measuring, recording, and evaluating energy's multiple benefits" (ACEEE 2015; iv)"

"Information documenting the project-level coincidence of energy and non-energy value creation is derived mostly from case studies that are prepared independently of each other and without reference to a standard methodology" (ACEEE 2015; 22)"

## THE ENERGY EFFICIENCY GAP

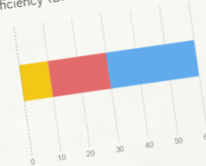


## UNVALUED SIDE EFFECTS



## SIZEABLE UNEXPLOITED INVESTMENTS WITHIN ENERGY EFFICIENCY

Studies indicate sizeable unexploited cost-effective investments within energy efficiency (Brown 2001, ACEEE 2015, IEA/OECD 2014).



# A TOOL FOR PROJECT LEVEL NEBs

**NEB** (Non Energy Benefits)

Web tool for collection and determination of non energy benefits connected to energy saving projects

Start Cases Methods Statistics Examples Contact About

## CASES

Create a new case

Assessment of NEBs : (B) = Calculated; (M) = Measured; (S) = Certain; (U) = Uncertain; (E) = Other; (G) = Estimated

ID	Industry category	Technology	Title	Firm																											
10201 <a href="#">Open</a>	Metalical and metal industry	Cooling	Ny luftkøler																												
<p>Case responsible: Ole Wandall-Frostholm Position: Rådgiver Employed at: AURA rådgivning</p> <p>Implementering af ny luft køler</p> <p>Notat about technology: Luft til vand køling</p> <p>Chosen NEB's and their valuation in terms of energy savings: <a href="#">PDF</a></p> <table border="1"> <thead> <tr> <th>NEB</th> <th>Valuation</th> <th>Assessment</th> </tr> </thead> <tbody> <tr> <td>1 - Non planned outage time</td> <td>9%</td> <td>Calculated</td> </tr> <tr> <td>2 - Productivity</td> <td>9%</td> <td>Calculated</td> </tr> <tr> <td>3 - Air/Noise</td> <td>5%</td> <td>Calculated</td> </tr> <tr> <td>4 - maintenance costs</td> <td>1%</td> <td>Calculated</td> </tr> </tbody> </table>					NEB	Valuation	Assessment	1 - Non planned outage time	9%	Calculated	2 - Productivity	9%	Calculated	3 - Air/Noise	5%	Calculated	4 - maintenance costs	1%	Calculated												
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10197 <a href="#">Open</a>	Other manufacturing company	Other	Energioptimering af klimaskærm på gartneri																												
<p>Case responsible: Jens Rystedt Position: Employed at: Lillegaard Teknik</p> <p>Udsiftning af klimaskærm på væksthus og opsætning af energigardiner</p> <p>Notat about technology: Reduktion af energiforbrug ved energioptimering af klimaskærmen.</p> <p>Chosen NEB's and their valuation in terms of energy savings: <a href="#">PDF</a></p> <table border="1"> <thead> <tr> <th>NEB</th> <th>Valuation</th> <th>Assessment</th> </tr> </thead> <tbody> <tr> <td>1 - Productivity</td> <td>10%</td> <td>Calculated</td> </tr> <tr> <td>2 - Product quality</td> <td>10%</td> <td>Calculated</td> </tr> <tr> <td>3 - maintenance costs</td> <td>15%</td> <td>Calculated</td> </tr> </tbody> </table>					NEB	Valuation	Assessment	1 - Productivity	10%	Calculated	2 - Product quality	10%	Calculated	3 - maintenance costs	15%	Calculated															
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## NEB CATEGORIES

### PRODUCTIVITY

Flexibility in production  
Material consumption  
Needed manpower  
Space requirements  
Product quality  
Unscheduled down-time  
Increased production capacity  
Other

### INTERNAL ENVIRONMENT / HEALTH / SAFETY

Vapor / moisture / mold  
Air / dust  
Sound / noise  
Light  
Employee flux / retention  
Room temperature  
Safety  
Stress  
Draught  
Heavy lifts  
Other

### SALES

Better energy label of the building  
Sustainability  
Improvement / maintenance of the building's exterior  
Customer satisfaction/loyalty  
Publicity  
Unique selling points (such as sustainability)  
Other

### EXTERNAL ENVIRONMENT AND RESOURCES

Waste  
CO2 emissions  
Other GHG emissions  
Other emissions  
Security of supply / Self sufficiency  
Other

## TECHNOLOGY GROUPS

### ENERGY SUPPLY

Biomass  
Electricity  
District heating  
Gas boiler  
Oil boiler  
Other

### PROCESS PLANT

Burning  
Distillation  
Evaporation  
Cooling  
Heating  
Process equipment  
Melting  
Drying  
Heat recovery  
Other

### ENVELOPE

Facade insulation  
Ceiling / roof insulation  
Window replacement  
Other

### SERVICE SYSTEMS

Lighting  
Cooling  
Less energy consuming devices  
Pumps  
Compressed air  
Ventilation  
Other

### RENEWABLE ENERGY

Biomass plants  
Solar cells  
Solar heating  
Heat pumps  
Wind turbines  
Other



CALCULATED



MEASURED



PREFERENCE BASED



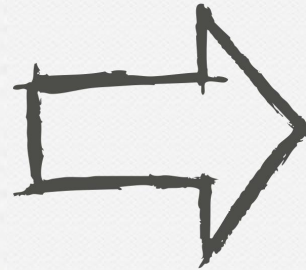
# **RESULTS**

## ***THE CHICKEN OR THE EGG***

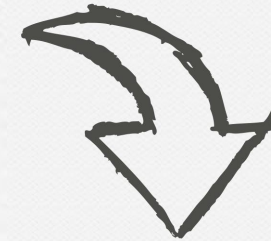
**112**  
ENERGY EFFICIENCY  
PROJECTS

**291**  
NON ENERGY  
BENEFITS  
IDENTIFIED

**40 %**  
MORE VALUE

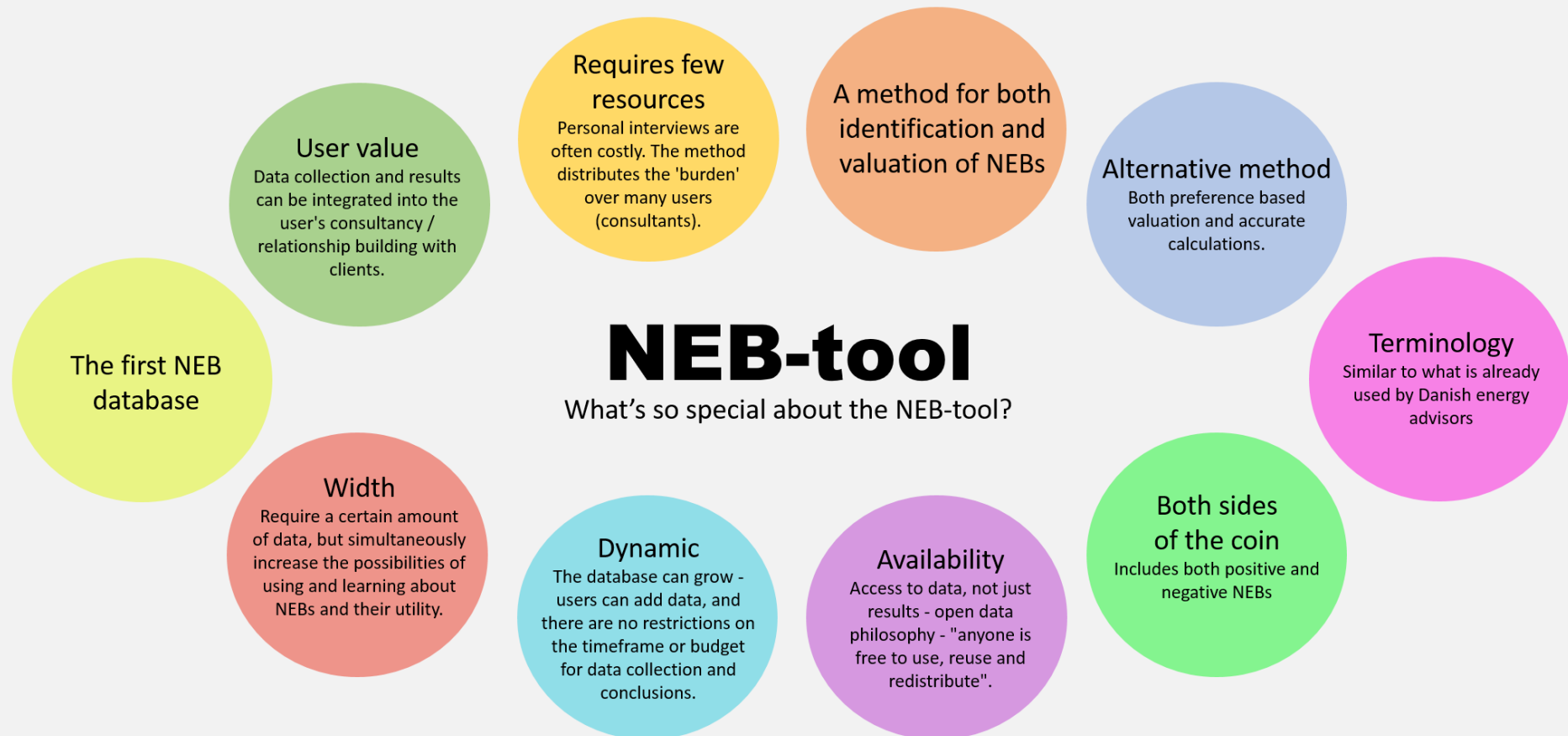


- NON-PROBABILISTIC DESIGN
- SAMPLE SIZE AND CHARACTERISTICS
- A COGNITIVE BURDEN



- INFLUENCING THE INCENTIVE TO INVEST
- OPEN AND EXPANDING DATA
- A PRECISION TRADE-OFF

# ***A TOOL FOR PROJECT LEVEL NEBs***



***THANK YOU  
FOR YOUR TIME***

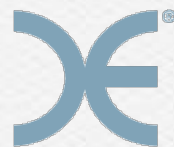
For more visit:  
[www.neb.teknologisk.dk](http://www.neb.teknologisk.dk)



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INSTITUT**



**ELFORSK**