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From	:	Dominic Ectors	Annex(es):	- Presentation stakeholder meeting - Draft report of Tasks 0 – 4 (see http://ecodesign-lightingsystems.eu/documents)
To	:	Ruben Kubiak; ENER Lot 37 Stakeholders		
Copy	:	Paul Van Tichelen, Dominic Ectors, Marcel Stevens, Paul Waide		

Minutes of stakeholder meeting for the ecodesign preparatory study Lot 37 – Lighting systems

CCAB Building, Brussels, March 8, 2016

Present	Name	abbr.
European Commission		
DG ENERGY	Ruben Kubiak	RK
Project Team		
VITO	Paul Van Tichelen	PVT
Paul Waide Consulting	Paul Waide	PW
VITO	Dominic Ectors	DE
VITO	Marcel Stevens	MS
Stakeholders		
Anec/BEUC		AB
Belgium		BE
CECAPI		CEC
CLASP		CLA
Denmark		DK
ECOS		ECO
Eu.bac		EUB
Germany		DE
IALD		IAL
ICF		ICC
Italy		SE
LightingEurope		LE
Society of Light and Lighting (CIBSE)		CIB
Sony Europe		SON
Sweden		SE
The Netherlands		NL

Topten International Services	TOP
United Kingdom	UK
VOLTA	VOL

Objective of the meeting

Stakeholder consultation in the framework of a study with regard to Ecodesign of Lighting Systems (Lot 37) accomplished under the authority of DG Enterprise of the European Commission (EC), under specific contract N° ENER/C3/2012-418 Lot 1/06/SI2.668525, within the multiple framework service contract N° ENER/C3/2012-418 Lot 1, preparatory studies and related technical assistance on specific product groups.

The main objective was to discuss the technical aspects related to the study (Task 0-4 report) and to present the next steps of the study.

Note: complementary to this minutes of the meeting the meeting powerpoint presentation can be consulted

Agenda

- Welcome
- Short presentation of participants
- Short introduction to the MEErP & project planning
- Task 1, scope + standards & comments
- Task 1, EU policy + voluntary initiatives in place (Paul Waide)
- Draft Task 2 + comments
- Break &lunch
- Draft Task 3 + comments
- Draft Task 4 + comments
- Any other business
- Planning stakeholder feedback and finalization

Minutes

- **Short presentation of participants (all)**

After all participants presented themselves, RK gave a short overview where the study is heading at. VITO and Paul Waide are main contractors on this study. This is not a full preparatory study, because the lighting systems are complex topic. Tasks 0, 1, 2 , 3, 4 and partially 7 as indicated by the MEErP will be delivered. By the end of the year the study must be finished. The EC will then decide to go ahead or not based upon the study and to figure out the best way to use the study. Is Ecodesign the right policy tool, or is it energy labelling or EPBD (Energy performance of Buildings Directive) or something completely new? Or do we wait a bit longer to see how the technology develops?
Next RK gives some details on what's going on in the Ecodesign preparatory study on lighting products. There was a consultation forum on the beginning of December 2015. The EC received a lot of comments. The impact assessment process is started, which will run from 6 to 12 months, but the process might be slower than previously anticipated, because)the Commission is waiting for the energy labelling regulation to be agreed on by council and parliament, and the energy efficiency unit is stretched on resources.

abbr.	Comment/answer

SE	Five years ago we discussed lighting system legislation. Have you draw anything from what was discussed then (using system legislation or EPBD)?
RK	It is related. The outcomes of these discussions were the background to decide to have a dedicated study on the topic. It is a very complex topic and that's why the preparatory study will take a long time. And we hope when the study has finished that we have a better idea how to tackle it.

- **Short introduction to the ecodesign directive MEErP (PVT)**

See stakeholder meeting presentation slides 4 till 7

abbr.	Comment/answer
LE	Slide 6: Can you clarify application data ?
PVT	That are the calculations based upon reference designs.

- **Task 1 (PVT)**

See stakeholder meeting presentation slides 8 till 21

abbr.	Comment/answer
PVT	Slide 10: The focus of this study is on automation (lighting control) and design.
BE	Slide 12: What is the difference between control gear and controls?
PVT	Control gear is the hardware that drives the lamp. The controls are the lighting controls or control systems. It is how you control the lighting.
LE	Slide 14: You said you didn't use the full set of parameters for the lighting quality indoor. Why didn't you for instance consider cylindrical illuminance? In certain cases it gives you the need to install mode power to avoid shades on faces like in class rooms. So at the end of the study you may have too low level of benchmark values not considering the proper level for quality in certain applications.
PVT	I will consider it in the updated version. Agreed that the flux code (from data in the past) is a simplification unable to have this quality parameters.
LE	That is the key point of the story. Once you are designing a lighting scheme and you are not considering these kind of parameters then you can have a low level of power consumption, having a certain illuminance on a horizontal level. Once you have to create the proper level of illuminance in the vertical plane you need also to improve the quality of the product.
PVT	I will include it in the update. It is important t cross check this parameter and it is now possible to calculate cylindrical illuminance in the Dialux software.
IAL	There is a semantic problem. What we are talking about is not lighting 'quality' but lighting quantities these are things with different natures. Lighting quality is more than quantity and we don't have a specific method of measuring quality. I have a problem talking about lighting quality. If people are going to get an expectation about that what's going to be delivered, and all we are now dealing with these lighting quantities.
PVT	Indeed. It is important that there are 'measureable lighting requirements' which is not necessarily the same as 'lighting quality'. People can have a different level of interpretation regarding 'lighting quality'. I have noted it from your comments(IALD comments received)..
IALD	Slide 14: The majority of the lighting studies is done for horizontal illuminance , however this is a bad measure for quality of light in an architectural sense. Even here (the meeting room) all the walls are dark. If we regulate for only horizontal illuminance, we will end up regulating in a way it is easy to make very bad lighting and difficult to make good lighting.
PVT	We have noted it. And it is a topic that have to be taken into account in task 7 policy measures: that there should be enough margin and that we should check that there is no collateral damage from policy.

CLASP	Slide 15: Why did you deviated from the standards? You used different terminology or definitions? When you started today you said you would try to harmonize and be as consistent as possible with the standards.
PVT	I don't deviate in a deep way from the standards. What I use are the draft standard proposals. I copy this terminology from these standards, but they are not finished and not all standards are updated. I also try to keep consistency between indoor and outdoor standards. In any case with the definitions in task 1 they are traceable to the standards and the things that may different are symbols and acronyms (reason: in the European standards these were changed and in the revision process that runned parallel to this study).
LE	Slide 17: To inform you: in working group 12 we agreed to keep the useful utilance (UU) out of the draft standard propasal(EN13201-part 6).(reason: the standard should not overlap with the contents of EN13201-part 5). Once you have a standard with a calculation method for the energy efficiency of the system, then that standard should be the only one. The useful utilance is part of the literature in the lighting sector and is ok to have it in your study.
PVT	We include in the study as much as possible. For the end value it is not so relevant, but for the understanding and the analyses and the decomposition of improvement options that are useful ideas I would like to maintain in the study.
DK	S17: to my opinion EN13201-part 6 of the standard is no longer in coherence with the mandate of the standard. We identified a need for tackling overlighting but it is compensated by the CL parameter(EN 13201-5), a factor for fitting to the requirements. Part 6 is mandate for the regulation 245 for a most efficient utilization factor. We defined this Useful Utilance as the most energy efficient utilization factor to be used for documentation according to regulation 245.
PVT	Indeed. We discussed the mandates in task 1. There is a mandate for the utilance. It is already partially incorporated the factor CL in part 5 of the standard.
PVT	Slide 18: Measurement standards: there is a standard specifying the requirements for lighting of indoor work places: 12464-1. But it specifies a measurement method that requires a lot of work having to perform many point-to-point measurements on a grid. Paul is wondering if this is done in the field, or that in practice just a few points are measured?
IAL	We as designers had to prove in several occasions the performance of our systems to whatever standard asked for and the only way to do this a grid of point-by-point measurements. Standards for that exist, currently there is no better way of doing this. Digital photography could be an option but this will give us not illuminance data, but luminance data and that would require resetting the standards to luminance based. We would be in favour of this, but that is a long way down the road. For now we have to use point by point on a grid as defined.
PVT	That is much work. I doubt many people do that. A simple way could be to check a minimum value, e.g. if the average should be 500 lx with 60 % uniformity check only for a minimum of 300 lux for instance in a few points.
IAL	That really doesn't work. You cannot just check a few points. You cannot go for a minimum, this is not practical. To get the minimum you have to check a lot of points to get the minimum. We cannot shortcut this at the moment with the current technology and the current measures. We have to follow what the industry standards are, which are grid measurements. This will give problems for people who are looking for compliance. It happens a lot more in emergency lighting than in normal lighting. Because emergency lighting tends to be checked for conformance to statutes and regulation in a lot of countries.
CIB	Sometimes the scheme will not meet the criteria and the only way finding out what the reason is, is by doing some common sense methods; are the luminaires delivering the expected? are the designs correct? But I agree they are not used that often.

- **Task 1 (PW): Policies**

See stakeholder meeting presentation slides 22 till 61. Paul Waide explains the policies in place, the EU legislation and the voluntary initiatives.

abbr.	Comment/answer
PW	Slide 61: concerning street lighting design regulation or guidelines we are aware of a Royal decree in Spain, a guideline the Netherland and a standard in Italy, but there may be other regulations or guidelines we haven't heard of. Appeal to the stakeholder group: if you are aware of other regulations of guidelines we haven't mention, please inform us so we can include it in Task1.

- **Task 0 (PVT): screening**

See stakeholder meeting presentation slide 62. Also included is a Task 0: a first screening. The outcome was that the focus is on non-residential and specific application areas. Depending on the figures in task 2 we may add additional reference designs when a certain application area is important. This is a rough calculation and the figures will be updated later.

- **Task 2 (PVT): Market**

See stakeholder meeting presentation slides 62 till 75. Task 2 collects the market data.

abbr.	Comment/answer
PVT	Slide 67 – 72 : cross-checks: the most obvious way to do this is by multiplying the LENI value by the area (m^2) and this will result in a certain amount of TWh per year. For roads one can use the road length and road width to obtain the area. Eurostat does not provide the non-residential area data, and these values have to be estimated. We see a substantial difference between the BPIE and the VHK data on the amount of area. So this can be one of the parameters that have to be evaluated. Using the large value (11773 Mm^2) the outcome is 13kWh/(m^2.y) and this figure is very low. Compared with the TEK tool this would mean that on average we are in the green zone. Also compared to what is required with the UK building legislation this would mean that the stock on average is in line with their requirements. So this has to be checked. Parameters (see slide 72) to be checked are (see slide 72): operating hours, stock area, total power consumption, stock illumination level, area estimates, and combination with Daylight factor. We are open for more input data.
IAL	Obviously this data is insufficient to perform this task properly. Maybe we can ask the commission to find some funding to do some proper surveys to find out what is installed now. Otherwise if we go forward with so much uncertainty there is no likelihood of getting good regulations at the end.
RK	Thanks for the suggestion but points out that this is not usually done, because of the very high costs involved and time needed for a survey to cover the whole EU. Further, the modelling approach is a common and accepted methodology in policy making..
PVT	We could add a recommendation to Eurostat to collect and process such data. Of course some uncertainty will always be present and should not stop us from continue the study or deciding on policy. We work with the data that we have, but if you can help us

	increasing the accuracy of the data is very welcome.
PW	If some stakeholders have national data, while it is only national, this would be useful to perform crosschecks. So please share this kind of information.
SE	We did that kind of audits in 2005-2008, statistically correct, and is was very expensive (10MUero). We are considering updating this data doing a quick assessment doing some enquiries. I agree, the data should not prevent us from doing something.
TOP	The stock area data seems to have the most influence on the final result. Do you have more information on the difference between these 2 figures? Are there other sources to verify this?
PVT	In the past study the stock is calculated from the sales, lifetime and operational hours. Changing the operational hours has also an impact on the payback time, ROI will take longer. It is quite a substantial change, so we don't like to change it (operational hours parameter) too much. The main input is the sales, average wattage and the lifetime of the lamp. There might be a relation between these parameters and the stock area data. Now more field data is needed, and in task 7 we can see how to react on this.
DK	There might be uncertainty in the data, but the data may still be quite useful anyhow, because the important thing is to identify the potentials. Which part of the lighting system has to highest potential for energy savings. It doesn't need to be so accurate. Most of the parameter are relative correct to each other. In task 7 there will be a sensitivity analysis to take this uncertainty in this data into account.
PVT	Indeed, the sensitivity analysis will take this uncertainty into account, of course I want to limit this uncertainty as much as possible.
SE	Checking the reports there was a wide spread in operational hours from 500 hours till 4000. That is quite large uncertainty.
PVT	You sometimes finds explanations why the operational hours can be lower. People may use daylight more than calculated in the standard way. Or the light may be switched on at a lower level.
SE	We checked buildings with the same technical installations and areas and we found large variations. In many times it was due to the building management. The management awareness is really important.
IAL	Slide 75 comments: I think there is a problem using LENI and regulation on lamp efficiency. If we are looking at systems, LENI is the systems measure. The lamp efficiency is going to run on its own. If we are targeting something to measure and to regulate on at system level, it has to be on a LENI basis. Making it more complicated than that, is going to make the regulations make no sense to anybody.
PVT	The regulation is more related to LENI. The figures and cross-check are more about background, impact accounting, bookkeeping for the Commission. We don't have to mix both aspects. It is now about impact on 155 TWh for non-residential lighting out of 3500TWh total consumption for Europe..
IAL	This gives me concern, giving the inaccuracy in the accounting process we have here .This could easily get to a situation where we are setting targets which are not achievable within lighting system.
PVT	There are many parameters that can impact the policy measures.
RK	This is not the time to decide if we are going to use LENI, or anything else, in a regulatory measure. But we need consistency with other studies. It is bookkeeping. It is for us important to understand how much can be saved. We do not want to double count. We need to have accurate information for a policymaker to take the right policy decisions. If LENI is the appropriate tool to be used we will do that in the regulation. This is separate from the bookkeeping. I agree we should get the data as good and right as possible to

	form decisions later on in the policy process. We are on the right track. Also acknowledging that we will never have perfect information, we always have to estimate. Hence, the purpose of this stakeholder meeting is to get as much information as possible.
IAL	We have the lamp regulation 245/2009. What we don't have is a follow up to measure exactly what has happened. All what has happened is not measurement, but statistical or other expectation what the effect might have been. When we get to this stage with this degree of uncertainty, we need to get to position where you have a good, reliable sound basis to make regulation or recommendations. If we create regulation on a basis that isn't correct, and that regulation can't be made to work then we have a problem. We must do proper research on what the current situation is and what has happened since the regulation245/2009.
SE	I disagree with IAL. There are methods to estimate what was before and to evaluate what has happened since 245/2009. You can check the market. You can do an assessment what is in the stock, how it is used.
PVT	Agreed that the impact of 245/2009 will interfere with this study and result in added complexity Of course more price data is welcome, cost of design. Maybe we can do a small enquiry. If you have that or references please apply this to us.

- **Task 3 (PVT): Users**

See stakeholder meeting presentation slides 76 till 96.

abbr.	Comment/answer
CIB	Slide 77: With respect to the references you should add a combination of ceiling mounted luminaires and suspended luminaires. A lot of offices are lit that way.
PVT	Indeed. They reference designs could be merged into a single one.
IAL	S78: Colour of reflecting surfaces. This is mentioned in EN12464-1 recommendations. In practice architects and interior designers are not aware of those recommendations. Changing reflectivity has a huge impact on the overall efficiency of a lighting scheme. Given the way the regulation is going, is there any way foreseen that we could get the people doing the surface finishes think about that? How could those get regulated in?
PVT	The first thing is to demonstrate this impact in our calculation and I think I have that (reflection and also daylight) on board in the spreadsheet. Reflection has indeed an enormous impact on artificial lighting energy use and on daylight.
IAL	The other areas to incorporate are the cylindrical illuminance and illuminance of surfaces. There are specific requirements in the standard now for minimum lighting level at the ceiling and at the walls. These need to be captured as part of the total energy use….
DK	It is possible to count all the flux needed for all the surfaces of the room. So they will be part of the target area, weighted by the requirement of each surface. Further on the cylindrical illuminance, this works like a kind of spatial uniformity. This cannot be counted as spatial flux needed, it is really something about the direction of the light. Of course that will tend to decrease the illumination on task area. However, it is just the same as a requirement of uniformity. … Only if we calculate the annual energy consumption based on the floor area, it is different from the total room surface area (floor, ceiling, walls). That is actual possible to do. It is a new approached we haven't seen before and it is not in the standards.
PVT	We cannot add all the complexity in the study. The cylindrical illuminance parameter is a secondary parameter, a criteria like uniformity. …We should have this story on board..
IAL	Slide 80: Practical application of LENI. There are set values in the LENI document. But there

	is nothing preventing you from using the correct values for the particular situation you are working in. If we apply LENI we look specifically at what is happening in the particular project in terms of hours of use, patterns of use, patterns of occupation, preset settings and so on. It is a matter of applying the thing properly and doing the work required to do that. If you base it on standards it is a loose standard, but in terms optimizing energy use you should apply it on a case by case basis, which is what the designer should be doing.
PVT	Indeed, you can change the parameters in EN 15193, because there is nothing mentioned in the standard indicating that is not allowed. It is something to add to the study.
CIB	Slide 81: useful daylight index. We seem all be heading away from this as a metric. It has got huge limitations.
PVT	There are indeed many more advanced designs and calculations and the standard heavily simplifies daylight. But nevertheless it gives guidance. It gives you a standard method to compare yourselves to.
IAL	Slide 83:About dimming. We have to design to an end-of-life situation. Everything we design that meets the standard is over-lighting by a significant amount. If we look at a maintenance factor of 0,7 which is probably correct for a 50000 hour LED solution. Then your initial lighting level, initial lighting equipment and initial energy use is going to be monstrous, unless you have control system that corrects this. This is something that has to be mandated, rather than ignored. It does interplay with daylight as well. We need to think how this can be integrated in the rules.
PVT	OK, noted. (it is in factor Fclo in the study)
SE	Regarding outdoor lighting I got a similar comment from a colleague at traffic agency regarding over illuminating to begin with. The consumption was quite high. He was thinking about either having a self reporting system that can measure much more accurate or having more requirements on the lumen maintenance so the slope is less. They noticed that the consumption was higher than expected because of the compensation they introduce in the beginning. Maybe something alike can be introduced here. Some self reporting systems. So control systems could help.
PVT	In the current regulation for HID lamp there are lamp lumen maintenance, that is something to think about. Therefore it is also connected to the other study “light sources”.
LE	Slide 86: Question about the weather. The metrological visibility, cloudy.
PVT	The standard simplifies this and assumes overcast sky in the case solar blinds are used, therefore weather has little impact We could simulate this. The figures are rough. When solar blinds are used, direct sunlight is assumed not to be relevant in the standard. (because of shielding)
CIB	Is that not a fundamental mistake? The scenario with an overcast sky is very rare thing. So if we look at how energy is going to be used or the impact of solar gain, we are not starting at the right place to get at the right finish line. If we don’t use climate based daylight modelling we are not getting real appreciation on how that space is going to react (things like objects in its view). The daylight factor is brilliant because it is so simple, so intuitive, but it is significantly wrong.
PVT	That is also our experience with daylight systems. We can add more on this in task 3&4.
CIB	A final note: in the UK is now using climate based daylight modelling in all schools, because it is giving them more useful information.
PVT	Slide 90: indirect impact of the use phase - indoor only. What do we do with it in the calculation?
SE	It is very complicated, because it dependents on latitude so much. We try to do it in window labeling, and it is very tricky. Maybe it is out of the scope here. Maybe it easier to have requirements on LENI level and installed power per square meter. There is also the Technology Corporation Project (TCP). They treated the daylight

	contribution to heating and cooling. Maybe you can consult them.
PVT	For heating and cooling the direct sunlight has more impact. A LENI value on a annual basis is not enough for the people making the energy balance of a building. There are tables in the standard to split up the annual LENI values using the standard weighting factors into monthly basis.
IAL	Slide 91: End-of-Life. This is a typically concern of ours working out effectively this time, and certainly the cost to EoL. If the current draft of the single lighting regulation goes forward, we are going to take a lot of equipment out of use much earlier than would normally be because the lamps will no longer be available. We have a timeline on that regulation for now. Can't you incorporate that timeline into the thinking for the EoL?
PVT	This is a typical scenario issue. We can take that on board when we discuss scenario's in task 7. We should mention it here. …
LE	Slide 93: Installation times That are a couple of aspects that have to be considered here. First what is the impact of LED technology? Specially in relation to road lighting, you could imagine that there would be no relamping during the lifetime of the product. Indoor: it is not always the EoL of the product that makes that renovation takes place. It's much more linked to the application. For instance in case of hotels or restaurants they will more often renovate their complete installation to make it more modern or better looking and that will not change because we go to LED technology.
PVT	In the past we assumed that Luminaire cleaning might still be needed for outdoor lighting, because it was combined with lamp replacement. Maybe we have to add more repair/cleaning/replacement cases, times and periods. Also the failure of electronic control gear is now assumed as spot replacement and this might be more complex. Maybe more differentiation can be made here.
IAL	Slide 94: Ballast failure. Ballast life isn't any longer connected to the operating life of the lamp. If we have control gear in it, something like DALI, then the ballast is always on. It is hours of life, not hour of lamp operation that need to be taken into account in determining the number of failures that occur over system life
PVT	Yes, that makes it more complicated. Technically speaking the electrolytical capacitor is the weakest component and that is related to the power and not to the control gear. In this case we could keep the simple formula. We can of course mention it. We have the parameter on board and can do such a calculation if we could get good data.
ECO	Slide 96: comments. Question: when you defined the reference lighting applications have you considered integrating the industry and retail sector, which will have very different surrounding conditions and that may influence the economic situation and user behaviour.
PVT	Yes. There is a grey area in the retail sector, and we are aware of that. Not all retail, restaurants do not follow the standard because their objective is to design for what we call ambient lighting, design for atmospheric or artistic lighting. We are aware that we will miss specific areas. It is so specific for each project that we cannot have a good metric for it. We will look in task 7 what we can do with it. This is indeed a grey application area that is non-residential and that is not following what we are doing here.
SE	You didn't touch the new possibilities in the new lighting systems. That is unexplored territory. I'm a bit scared that we are limiting ourselves to too much about the actual applications. We want to put some kind of cap that we don't spend too much normalized to the function, the service it provides. It would be ok for me to actually increase the energy use for lighting if in the same time we provide more services with benefits like security, safety, ambience or cosiness. It would be a mistake if we put a cap on that without considering the new applications and services. It would be a threat towards innovation and new business models we see. It is not a rebound effect.

PVT	I hope all the ingredients are captured here, and we can see different possibilities.
SE	We must remember that the standards we are working with here are for lighting systems. They are not market requirements. The methods used here take the requirements from the standards, but they might take as well the requirements elsewhere. The methods are proved to work here. We can make some major conclusions from it for identifying improvement potentials. Every lighting system can be put into some requirement that apply for it, and then it can be evaluated in the meaning of efficiency. It is not limited to these standards. It is a general approach that could be used anywhere.
PVT	Noted and to be remind for in task 7.
IAL	Comment: good lighting, good lighting design does not mean high energy consumption. You need to think more carefully about the application, how you use equipment. In a lot of cases it means more equipment and more potential connected load with a higher use of controls to deliver the right light in the right place at the right time. It is important as we go on with this to be careful not to limit potential flexibility which is achieved by say putting twice as much lighting you need but only using half of it at a time. That is important when it comes to flexible retail or office areas. If we want to get to a point where we can discriminate between task area and surrounding area it will make a huge difference in energy use. It is an important thing to think about lighting quality in relation to energy use, not in relation to equipment connected.

- **Task 4 (PVT): Technologies**

See stakeholder meeting presentation slides 97 till 104.

abbr.	Comment/answer
LE	Slide 104: we will also check the concept of Useful Utilance. Utilance is a technical parameter. The approach cannot be the same indoor as outdoor. Indoor is much more difficult, because you have to meet the requirements for the luminance on the wall and the balance of the luminance in some application, which is much more than to lit a task area alone.
PVT	There are indeed limitation with the method that is connected to the floor area, when considering also walls and the ceilings.
LE	The concept that arises from this mathematical and technical parameters is the human centric lighting concept. The human, the people need to be in the proper lighting environment for better activity or well-being. It is much more than to lit the surface.
PVT	Indeed. But an indicator for system efficiency is always difficult. Is there an alternative? We will not mandate a certain utilance. It is a dashboard, an insight that you will have.
DK	Comment on Useful Utilance. It has nothing to do with the light quality as such. It has to do with when you have some requirements set it shows you how efficient the luminance flux from the luminaires are used to meet the requirements.
LE	It is easier for outdoor lighting. It is much more difficult for indoor, because the reference surface is not clear enough.
DK	It can be connected to any surface where there is a requirement. And at the same time supplementary requirements as cylindrical illuminance and uniformities are met. Of course they can only be compared for different installations meeting the same requirements. That is true.
IAL	We agree that utilance numbers are very useful in lighting design to determine what is good and what even is energy efficient. The issue about lighting the surfaces rather than the work target area itself is one that part of the change in the last EN 12464-1. We must not lose sight of the fact that in regulation we are looking at the room space and not just at the task area. It may be even better to ignore the task area in some circumstances and looking at the background lighting level as the target level in designing office spaces and

	the like. Then it is very easy to add task lighting as a task light to achieve the higher task lighting levels. If we do that we've got immediately one third energy saving, if we change that target, if we change the culture and expectations of people living in offices of having the background level of light and supplementing that with task lighting rather than lighting the whole area to task level.
PVT	Indeed, it is about meeting requirements. The simplification of utilance is only connected to one parameter and one area. If you have more than one design criteria and more than one area, the single value might not be enough to reflect that. Of course it can be indicative for the primary parameter and primary floor area requirement. It is complex to measure how to match multiple criteria with a single performance indicator parameter. Nevertheless we could calculate it based on the main parameter and area?
BE	Question. This is very complex. Is there any straightforward way that any of the knowledge we are building here can be translated into an eco-design measure? From what I see now there is something called lighting systems which may be manufactured by one or more companies. Several component, including manual dimmers, occupancy detectors, the luminaires, you can input in for example the Dialux model and evaluate what illuminance you get on say a horizontal surface in a standard office layout. This illuminance should meet certain requirements for that task or office layout and then you can model the energy efficiency for that. Or should a system be tested in a test lab; and surveillance authorities should redo the test to verify compliance? In the real world there will be different configurations, difficult to capture in one test. A goal might be that every system at least offers the opportunity to either have occupancy detection or good dimming qualities. I guess these are the kind of results we want to have to lower cost and consumption?
PVT	That is an issue for task 7. It is not the goal of this stakeholder meeting to discuss this, but any idea for task 7 can submitted to us.
RK	We are not even sure what the right policy tool will be, if any tool , to regulate lighting systems. We are using the MEErP methodology, based on ecodesign, because this is a tested methodology and appears to be the most proper way to do it. We have to look for the most appropriate policy tool in task 7, but probably also at later stages.

- **Task 7 (PVT):**

See stakeholder meeting presentation slide 106.

abbr.	Comment/answer
-	-

- **Planning (PVT):**

See stakeholder meeting presentation slide7 & 107.

abbr.	Comment/answer
IAL	We probably want to go over our comment submission again and with your comments against it, we will simplify a bit these comments.
ECO	Is the lot number lot 37 or is it lot 6?
RK	It is lot 37. 6 is the number of the contract under our framework contract.