



Reconnect in Morocco

Affordable Smart Lighting for Smart Cities, Smart Buildings, Smart Homes... Dream or reality?

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Some global figures

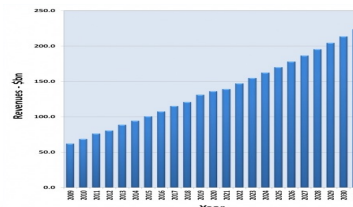


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- 13,7% of net annual electricity world-production for generating artificial light (2019)
- ~1,5- 2% world annual energy primary resources used
- 1 150 000 000 metric tons CO₂ per annum ~5% of the world CO₂ annual emissions
- 30 000 000 000 More than 30 billion electric lighting units operate everyday worldwide
- >60% Expected LED market revenue share (2023)
- US\$ 133 000 000 000 Legacy lighting industry annual turnover in 2022 and it is growing.




Artificial lighting has a large impact on energy, environment but also on every day's life and world's economy



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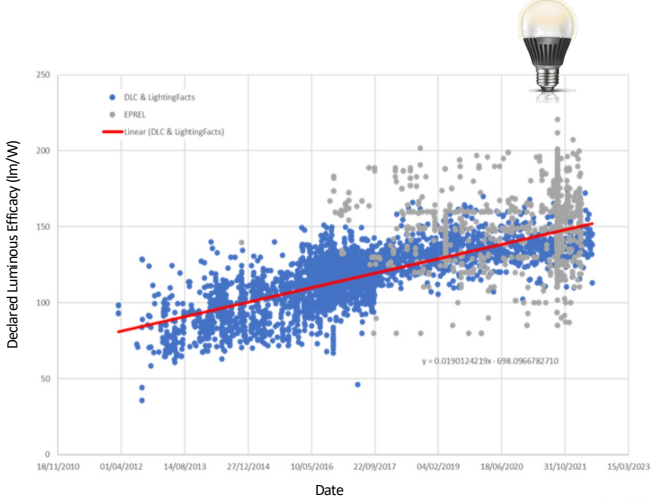
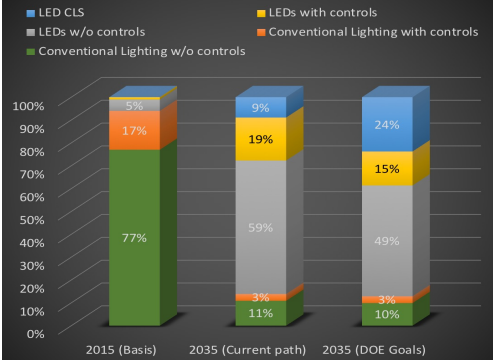
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LED and Control technologies contributes to the fight against global warming




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Energy savings linked to the system's intelligence degree.


Year	LED CLS	LEDs w/o controls	LEDs with controls	Conventional Lighting w/o controls
2015 (Basis)	5%	77%	17%	1%
2035 (Current path)	9%	59%	19%	11%
2035 (DOE Goals)	24%	49%	15%	10%

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But don't forget Mr Zevons...

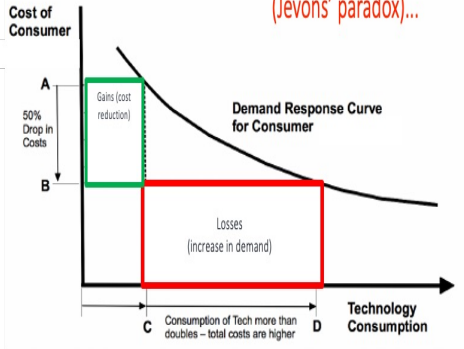


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Prof. William Stanley Jevons
1835-1882

Beware of the "rebound" effect (Jevons' paradox)...




Jevons paradox occurs when technological progress (or government policy) increases the efficiency with which a resource is used (reducing the amount necessary for any one use), but the falling cost of use induces increases in demand enough that resource use is increased, rather than reduced.

Governments typically assume that efficiency gains will lower resource consumption, ignoring the possibility of the paradox arising...



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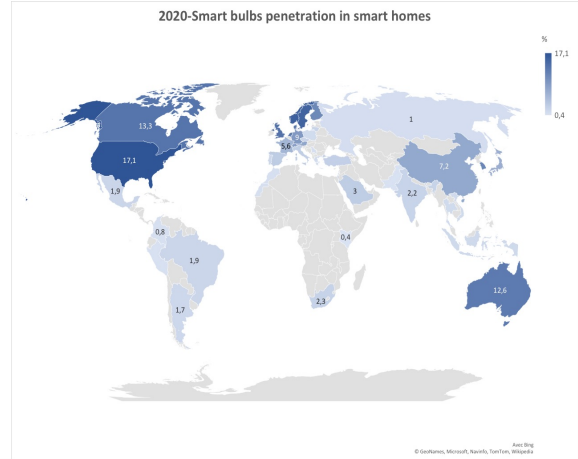
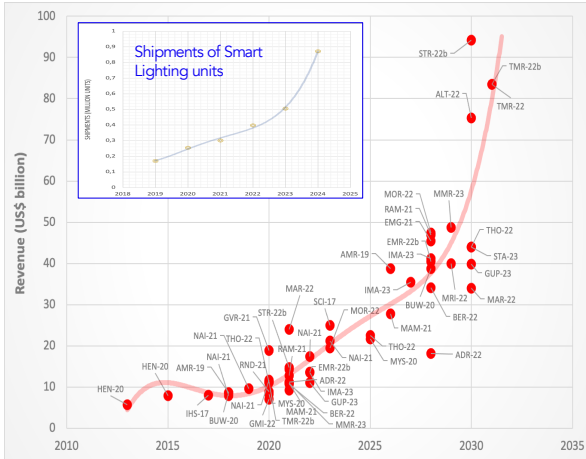
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Smart Lighting is the best option...



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Smart Lighting Market Size & forecasts (US\$ billions)



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What is a smart lighting system?



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- A **smart lighting system's** principal function is to **produce, at any moment, the right light**: where it is needed and when it is necessary.
- It should **adapt the quantity and quality of light to enhance visual performance** in agreement with the type of executed tasks.
- It must **guarantee well-being, health and safety of the end-users**. It should **not squander passively the resources of our planet and limit actively the effects of light pollution on the biotope**, or, any other impacts on the environment.
- The system could **offer additional services** (geo-localisation, data connectivity...) to the end-users through Visible Light Communication protocols.



"I installed an awesome smart light. It turns off when my parents enter my room so they can't see the mess."

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Lighting, will become IoT system's component...

- ▶ Lighting offers an existing very dense mesh inside our cities, buildings...
- ▶ A connected lighting system can be used as basis for connecting communicating objects.
- ▶ Light can be the vector of new services and carrier of dataflows that will spawn additional products.

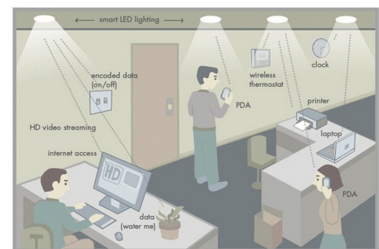
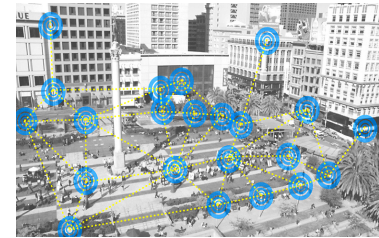


- ⊗ Illumination will become a sub-function of a more complex ICT* system and neglected
- ⊗ Privacy may be affected, the system can be very intrusive
- ⊗ Cyber-security is crucial to protect against cyber-attacks and cyber-terrorism

*ICT = Information Communication Technologies



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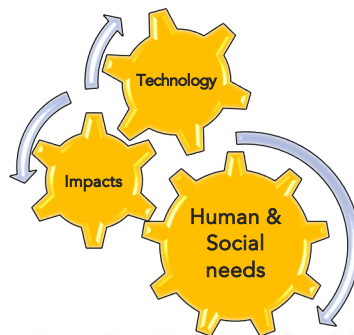
The SSL² concept

SSL² = Solid State Lighting x Sustainable Smart Lighting

- ▶ A Sustainable Smart Lighting (SSL) system uses and optimizes to an intelligent way the best existing technology (Solid State Lighting – SSL) to best fulfil present needs for artificial light and reduce undesirable side-effects, without compromising the ability of future generations to innovate.



Illuminate doesn't mean "flood" objects, people or buildings with light!



Light-up smart, to a sustainable & affordable way, where it is needed, when it is necessary and as best as possible!

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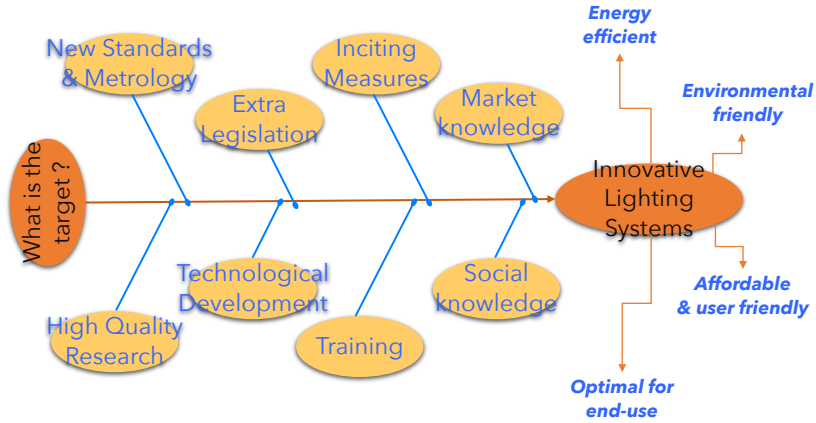


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To achieve that objective cross-discipline efforts are required



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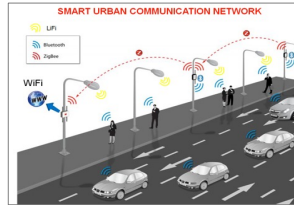
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Smart Lighting for Smart Cities



► In smart cities, so-called smart urban objects can be used in public areas to increase the sense of security of people. Safety in everyday life is improved by overcoming barriers such as dark areas at night without being in obligation to squander energy for illuminating empty spaces. For instance elder people, which can enhance their participation in public life.



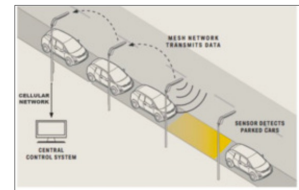
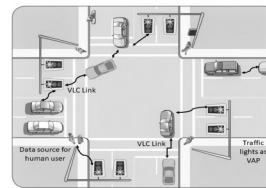
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► A communicating lighting system can reduce car roaming for parking. Locate a parking spot in a city is time consuming and polluting action. Smart lighting poles can locate available parking spots and broadcast information to driver's mobile phones or direct to smart cars.

► Connected smart lighting can reduce vulnerabilities as it can recognize social alarms, hazardous citations, accidents and broadcast information to vulnerable public space users (i.e. elder or disabled people).



► A communicating lighting system can be used to regulate traffic as it can be used for communicating from car to car or/and from city to car. Information can be used to adjust trajectories, reduce speed, prevent collisions. Transfer signals information to cars (traffic lights, limits...)



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