

Global Approaches to Light Pollution Legislation

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AIMS OF THE PAPER

- A critical analysis of regulatory examples –
 - France
 - Korea
- What makes good regulation?

VITAL- A FULL UNDERSTANDING OF LIGHT POLLUTION

- Balance of the interests
- Lighting in the right **place**
- At the right **time**
- At the right **level**
- Of the right **spectrum**

REGULATION MUST BALANCE

- Safety and security*
- Advertising*
- Leisure*
- Architecture
- Nuisance
- Human rights
- Nightscape/ecology/energy

HOW?

- Hard law (binding)
- Soft law (guidance)

- Bolt on - weaker

- Dedicated laws-
 - Objective metrics
 - Curfews

- **Building regulations & eco buildings**
 - Sleeping people/ecology
- **Upgrading street lighting**
 - Sleeping people/ecology
- **Advertising regulations**
- Balance advertising benefits/sleeping/ecology

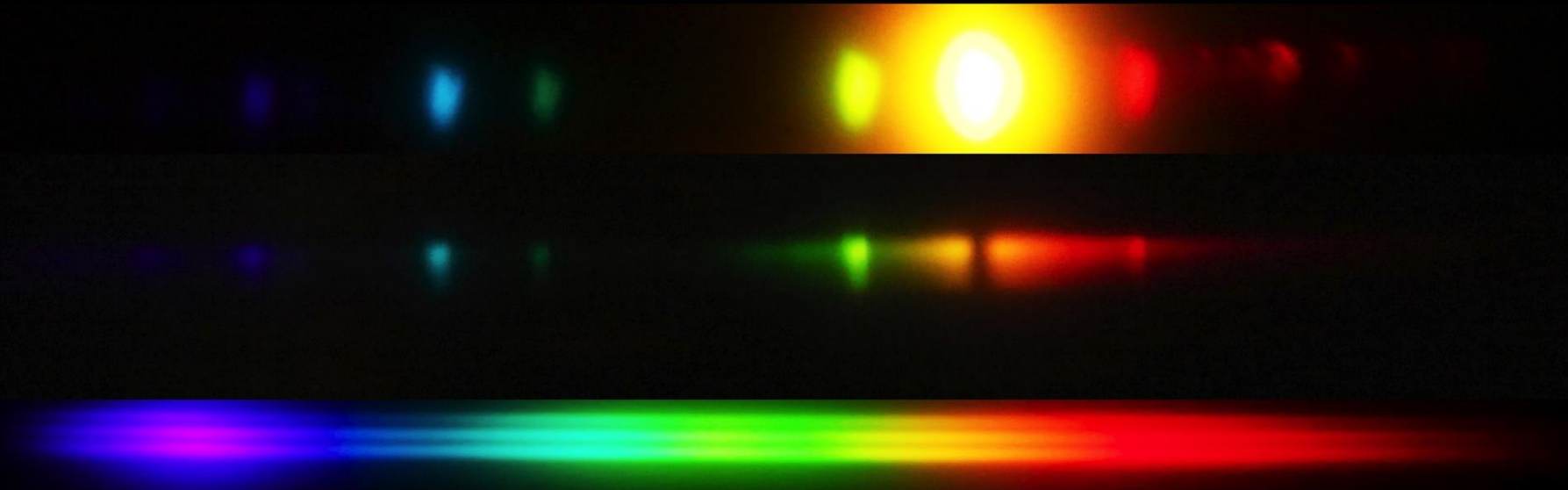
NEW CHALLENGE- DAYLIGHT LIGHTING

Gas

Tungsten- Blue rich



Streetlight Comparison. Top to bottom: 35W SOX, SON and (4200K?) LED



A BALANCE OF INTERESTS?





A COOL WIND ALWAYS BLOWS...

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RENAULT PALACE

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IN-A-LIFETIME

FRESH




Wangji Bar

Videos @ speed of light with Idea 3G

Idea



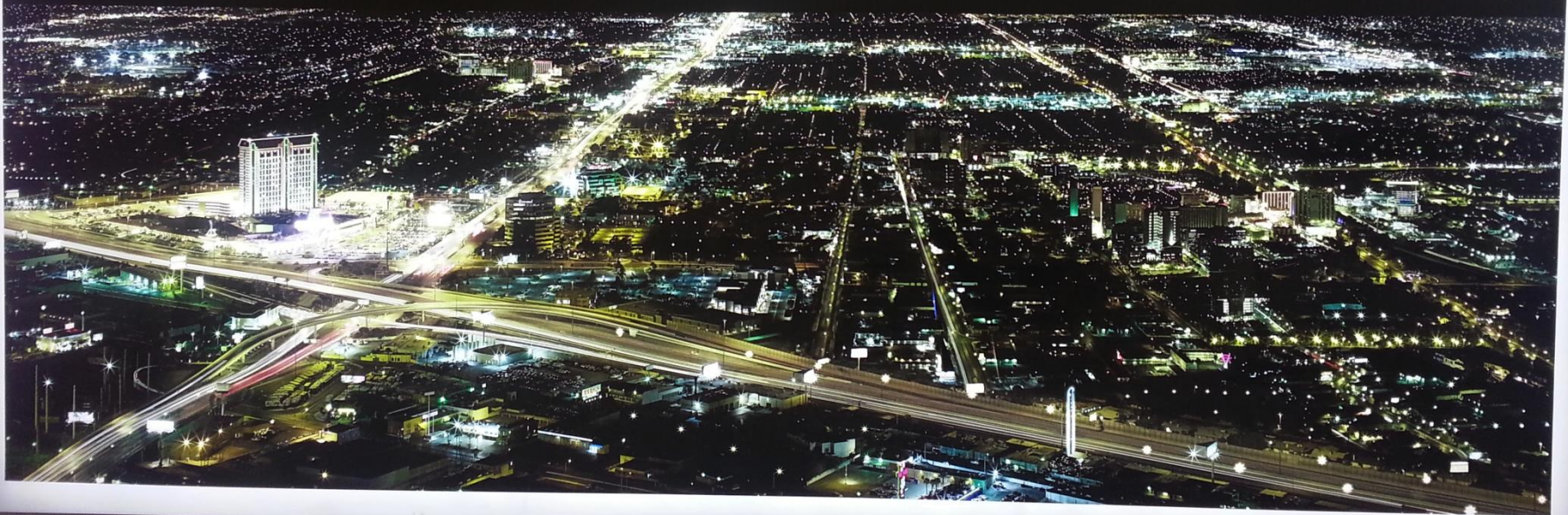


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NIGHTSCAPE

EXAMPLE LAW: FRANCE

- **Dedicated LP law with guidance**
- Environmental law- energy/carbon emissions/ecology & the night sky
- Not metrics based limits- uses **curfews**
- Avoids quantifying light

FRANCE

- **Covers most non-domestic lighting**
- **Curfews, indoor lighting-**
 - Off an hour after the last employee leaves
Night security guards?
- **Curfew exterior lighting-**
- Off 1-7am Includes illuminated shop windows

FRANCE

Excludes consumer lighting

A common cause of problems



FRANCE

- **Excludes**
- Commercial lighting on sensors
 - Good- lighting is not always on
 - Compromise/ acceptance by business & consumer over safety and security

FRANCE

- **Exclusions**
- Christmas & permanent cultural lights (Art. 4)
- **Good-** balance of culture, tourism, business, against the effects of LP?
- **Bad-** open to abuse?



FRANCE

- **Bad-**
- No installation control
- Sensors not enough
- LED? Not enough



KOREA: LIGHT POLLUTION PREVENTION ACT 2012

Objective **metrics** based on CIE 150

Advantages-

Transparency for business/consumers

Objective- easier for regulators to enforce

But- Getting the levels right?

- **Objective** standards-
- Window illuminance
- Advertising and decorative lighting

KOREA



KOREA

- **Zoning- varying maximum levels**
 - Light travels (c.f. noise)
 - Mixed use areas?

Vertical Illuminance on windows			
E1	E2	E3	E4
10 lm/m ²	10 lm/m ²	10 lm/m ²	25 lm/m ²

Maximum luminance from decorative lighting			
E1	E2	E3	E4
20 (average of 5) cd/m ²	60 (average of 5) cd/m ²	180 (average of 15) cd/m ²	300 (average of 25) cd/m ²

Maximum luminance from advertising lighting			
E1	E2	E3	E4
50 cd/m ²	400 cd/m ²	800 cd/m ²	1,000 cd/m ²

KOREA

- **Curfews not used**
- Energy waste from all night lighting?
- Blue rich light and bedroom windows?

SUMMARY

- **Dedicated laws work best (France and Korea)**
- **Need a full understanding of the LP problem- education**

SUMMARY

- **Best law probably a combination of French and the Korean approach**
- **Hard law & guidance**
- **Objective metrics**
- **Curfews**

SUMMARY

- **Guidance support/ eco buildings etc-**
 - fill in gaps, especially installation guidance/spectral type & health
 - Not just energy efficiency
 - Can impose lighting limits

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