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Re: []

Abstract: [This document presents GreenIT Regulations to develop VLC application and the technical specification]

Purpose: [To develop VLC application and the technical specification by GreenIT Regulations]

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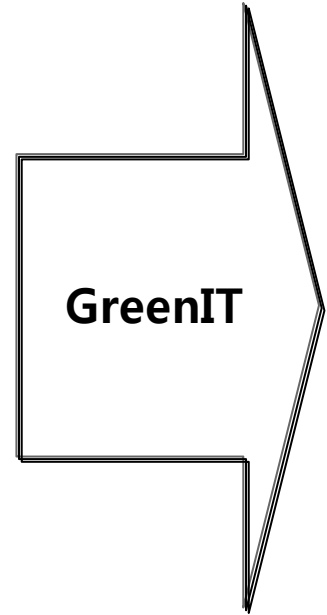
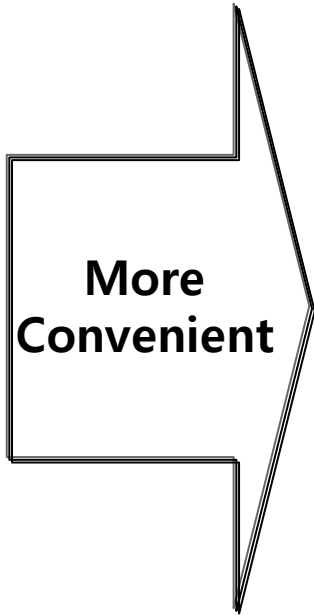
Green IT Regulations

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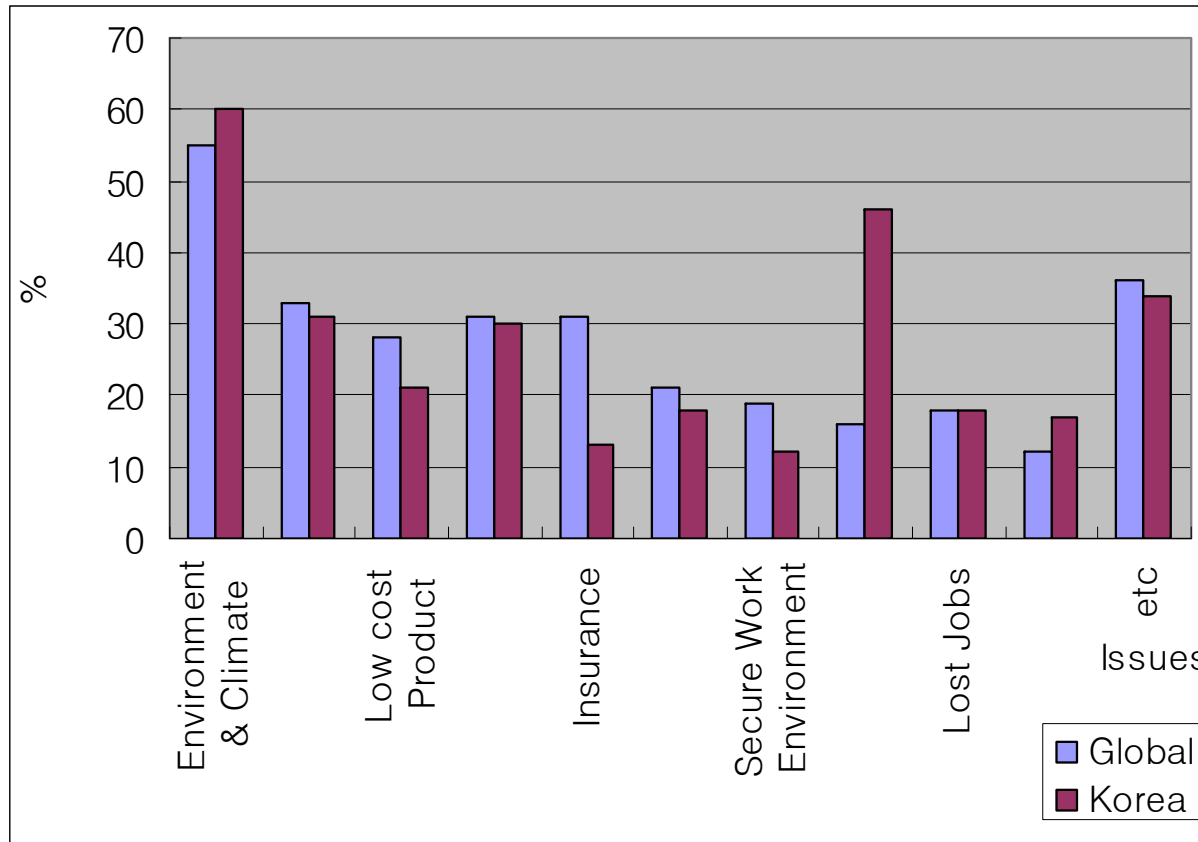
- Green IT Regulation
 - Customer Requirement for Green IT
 - Green Growth regulation
 - View point of regulation
- Other Regulations
 - Safety Regulation
 - Spectrum Regulation
- VLC Regulation Coverage

Customer Requirement Change for IT



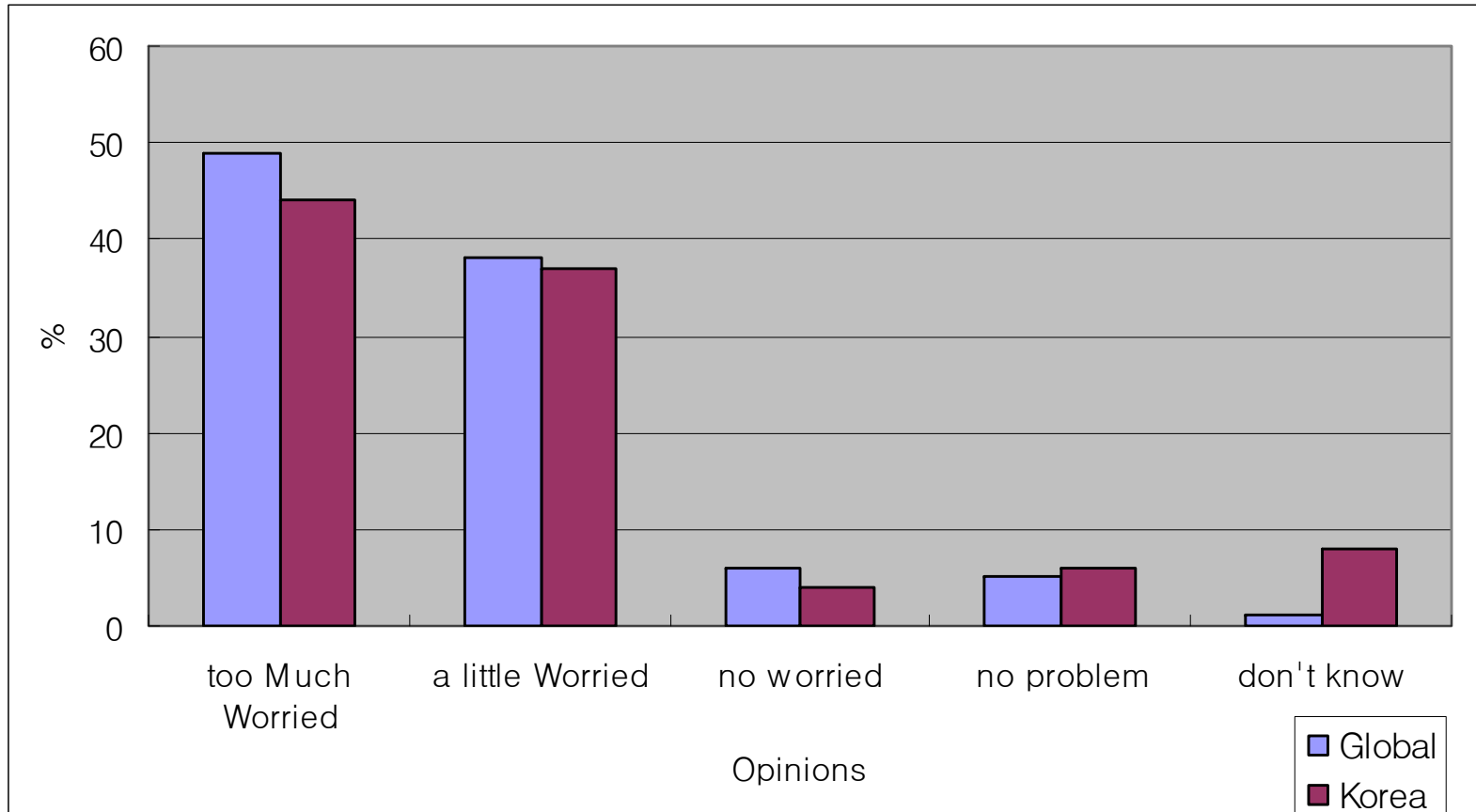
IT Environment Problem

The Biggest Issue in 5yrs: Environment

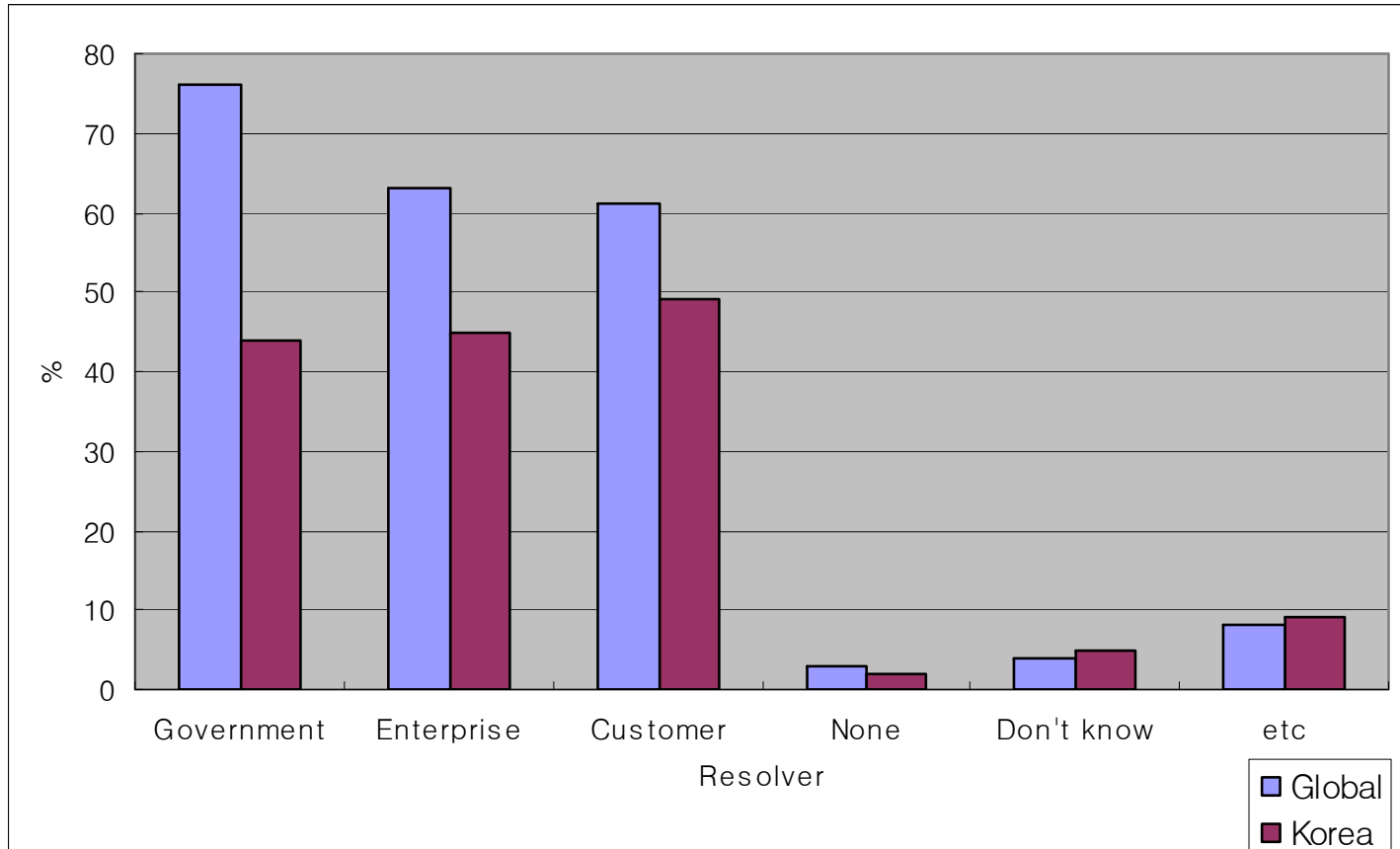


The Biggest Issue in the 5 years could be environment. This is reported by McKinsey and Chosun Daily Newspaper(C7 March 7, 2009) 9 Nations: Korea, Unite Nation, India, England, China, Germany, France, Canada, Brasil, 8,000 people, 2007 to 2008

How much interesting Green IT?



Who has the Responsibility to solve it?



Green Growth Regulations

- **Kyoto Protocol**
 - The Kyoto Protocol is a protocol to the international Framework Convention on Climate Change with the objective of reducing greenhouse gases that cause climate change.
 - As of January 2008, and running through 2012, some countries(170) have to reduce their greenhouse gas emissions by a collective average of 5% below their 1990 levels
- **RoHS**
 - Restriction of Hazardous Substances Directive
 - 6HS: Mercury
- **WEEE**
 - Waste Electrical and Electronic Equipment Directive

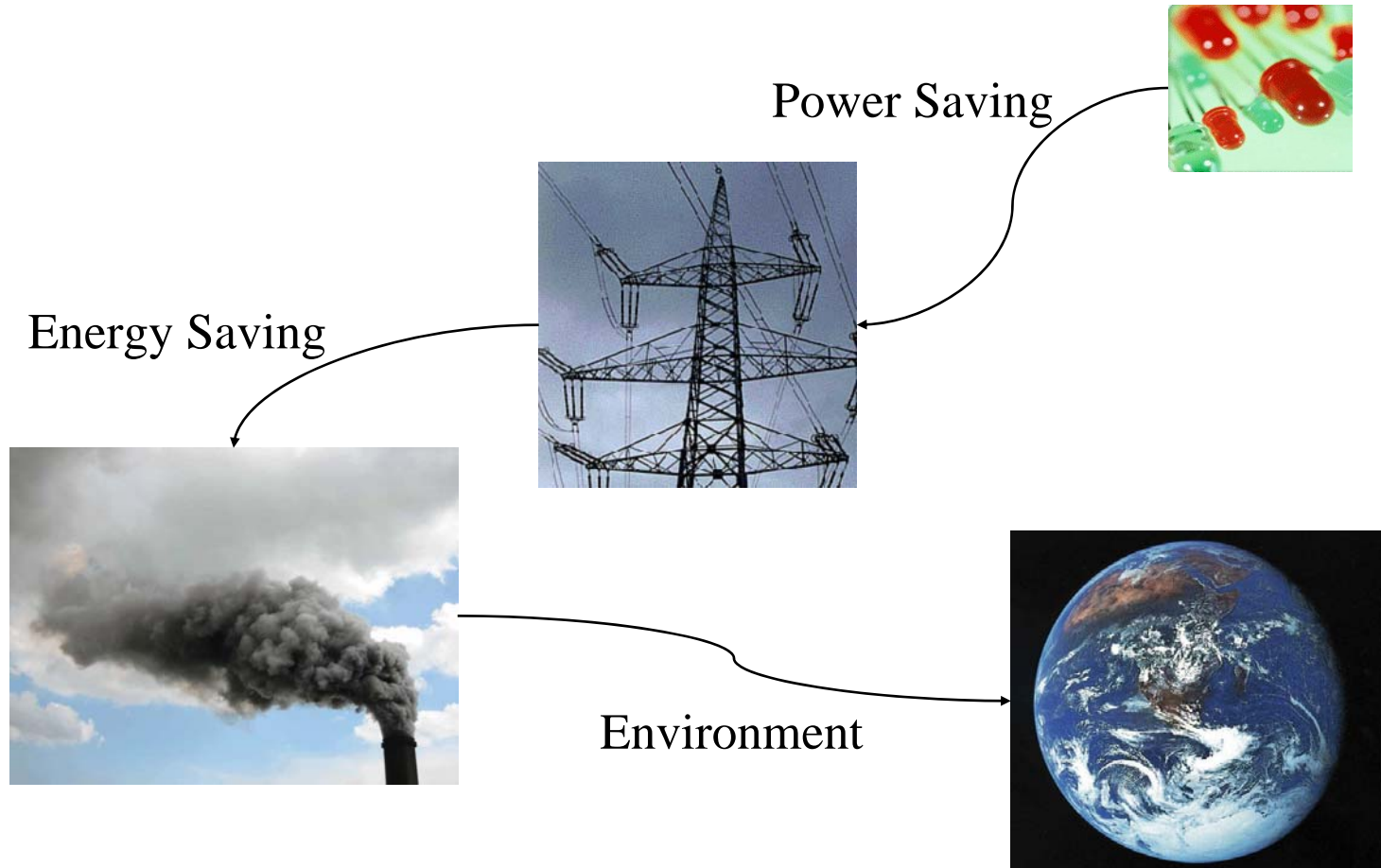
The view point of a regulatory : from negative to positive

- Energy crisis
- Climate changes
- Environment problem
- Lack of radio resources

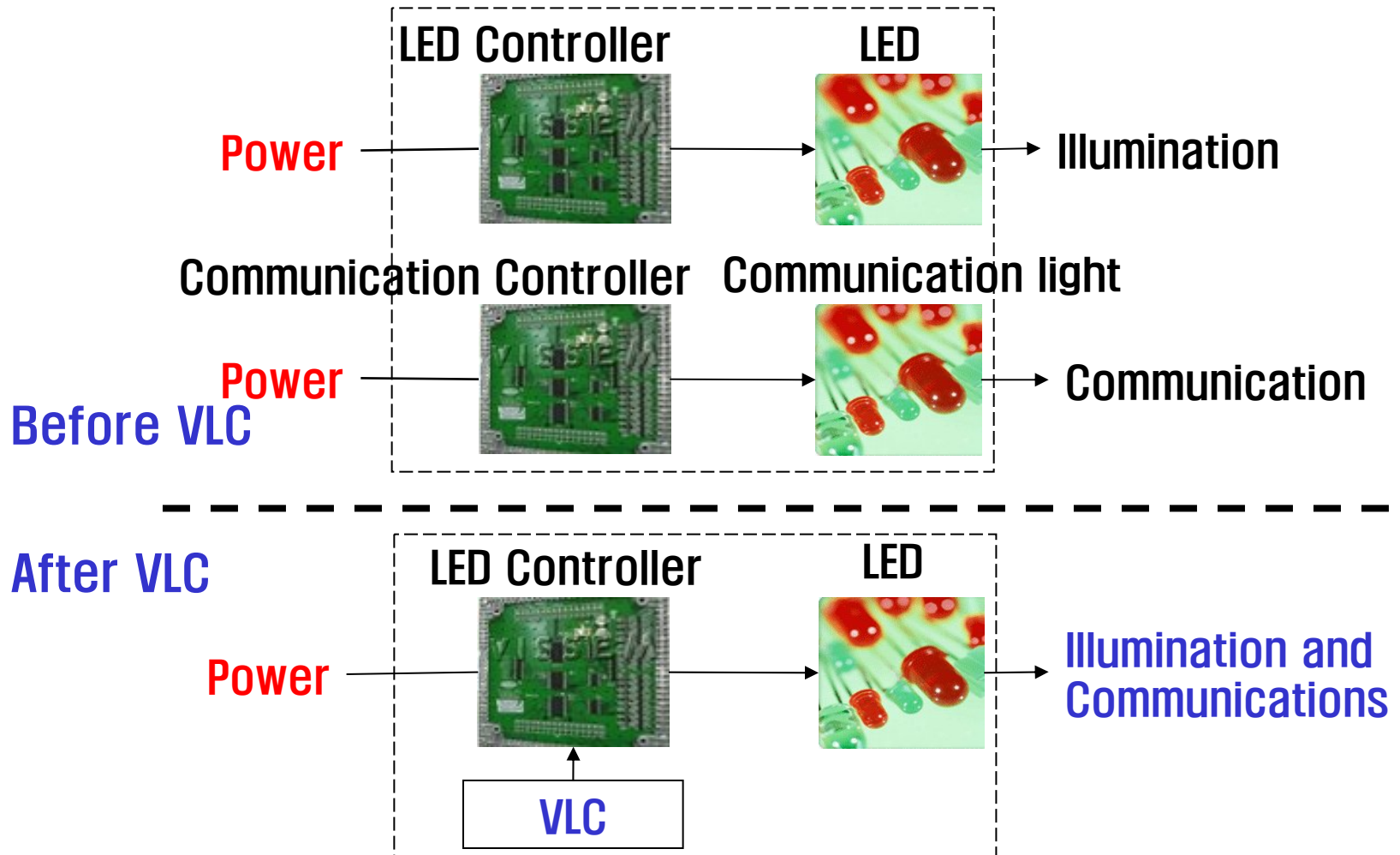
VLC has Green IT Solution

- **Less Power Consumption**
 - LED needs less power
 - VLC share power for illumination and communication
- **Less Waste**
 - LED has a longer life than previous one
 - VLC share a case for illumination and communication

Less Power Consumption



Less Waste



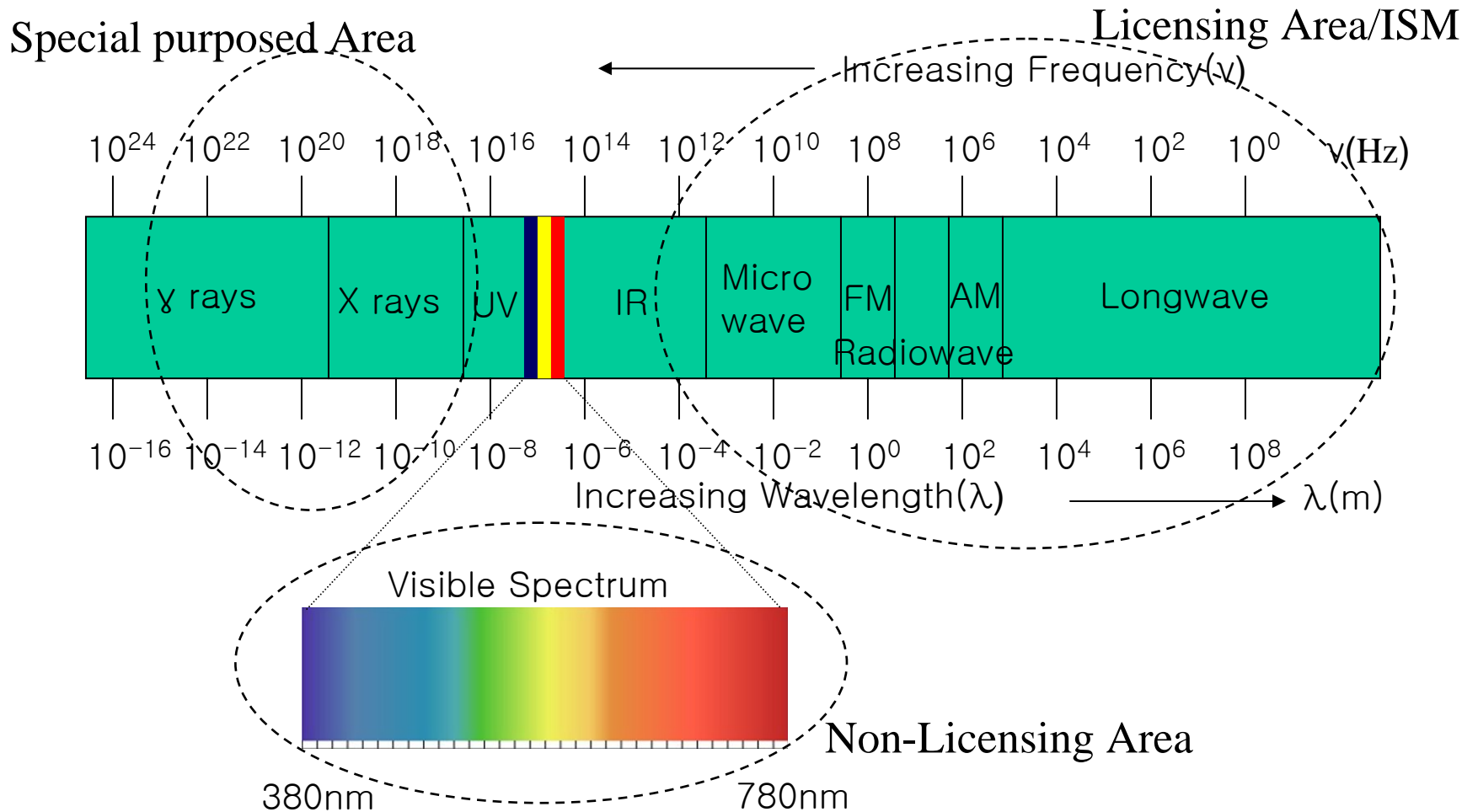
Good Chance from Regulations

- Power Saving → Kyoto Protocol
 - Use only 10% power than before
- Long Living → WEEE
 - Longer 10 times (about 50,000 hours)
- Conservation of nature
 - No Mercury → RoHS
 - Better waste treatment

Spectrum Regulations

- License
 - an intergovernmental treaty text
 - 3 Hz – 300 GHz
 - Broadcasting licensing
 - Cellular licensing
- Non License
 - ISM (Industrial, Scientific and Medical)
 - VLC: 370 THz – 870 THz

Non License Spectrum Area



Eye safety Regulation

- Sufficiently powerful visible to near infrared laser radiation (400-1400 nm) will penetrate the eyeball and may cause heating of the retina
- References
 - IEC 60825-12 (laser safety for free-space optics)
 - IEC 62471 (lamp safety) and IEC [[IEEE 802.15-08-0676-01-0v1c](#)]
 - ANSI Z136: Laser Safety Standards - ANSI
 - EN 207: European norm for laser safety eyewear
- Class 1
 - A class 1 laser is safe under all conditions of normal use
 - Class: 1, 1M, 2, 2M, 3R, 3B, 4
- VLC eye safety issues
 - Illumination : O.K
 - Modulation (OOK)

VLC Regulatory Coverage

- Green IT Regulation
 - Energy Saving Regulation
 - Waste Regulation
- Safety Regulation
 - Eye Safety Regulation
 - LED Illumination Safety Regulation
- Spectrum Regulation
- National Special Regulation