STANDBY POWER LOSSES IN HOUSEHOLD ELECTRICAL APPLIANCES AND OFFICE EQUIPMENT

REGIONAL SYMPOSIUM ON ENERGY EFFICIENCY STANDARDS AND LABELLING

UNCC, Bangkok, 29-31 May 2001

Dr. Brahmanand Mohanty

Regional Adviser for Asia, French Agency for the Environment and Energy Management (ADEME)

Adjunct Associate Professor, Asian Institute of Technology (AIT)

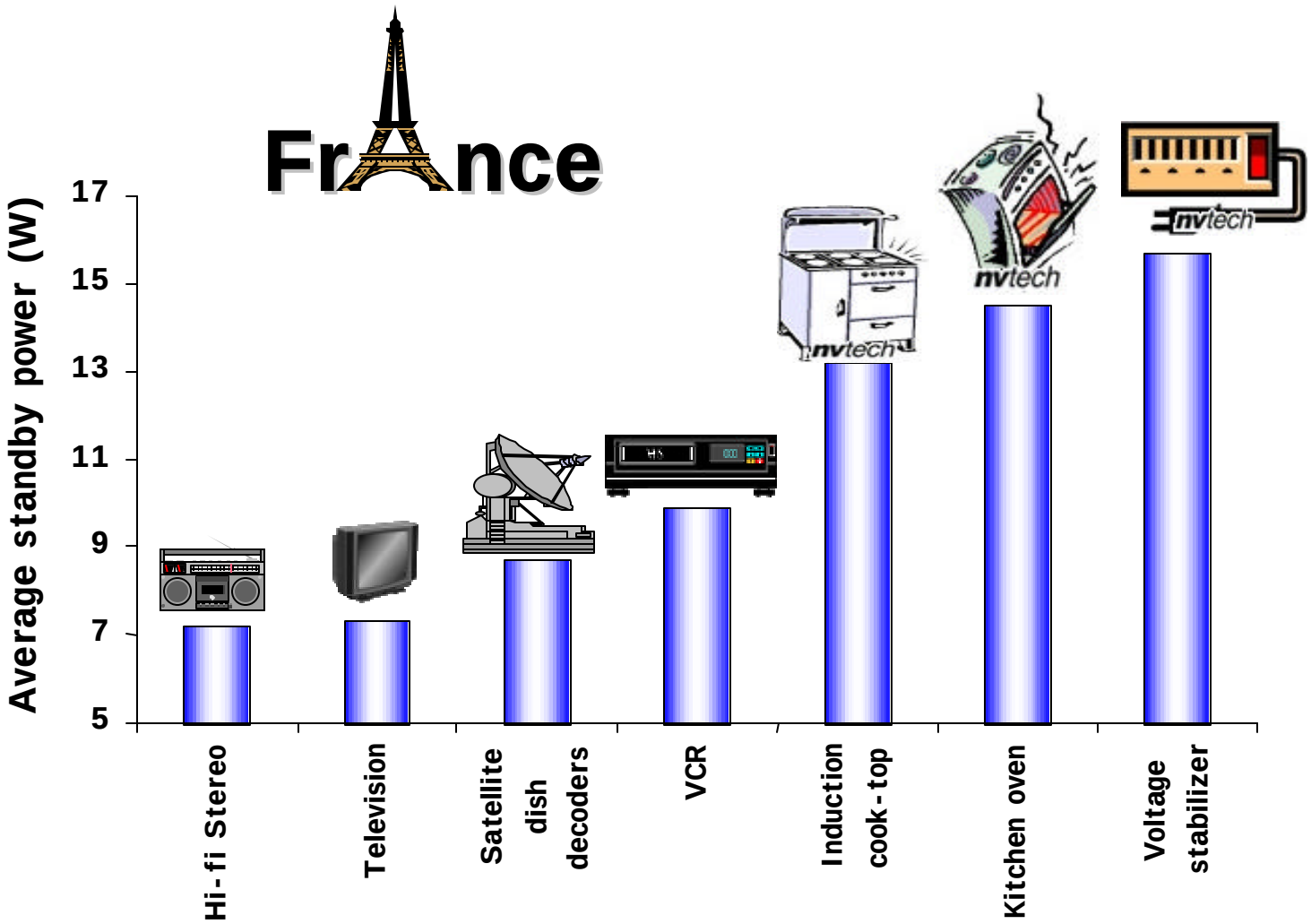
INTRODUCTION

Standby electricity = energy consumed by appliances when switched off or not performing any function

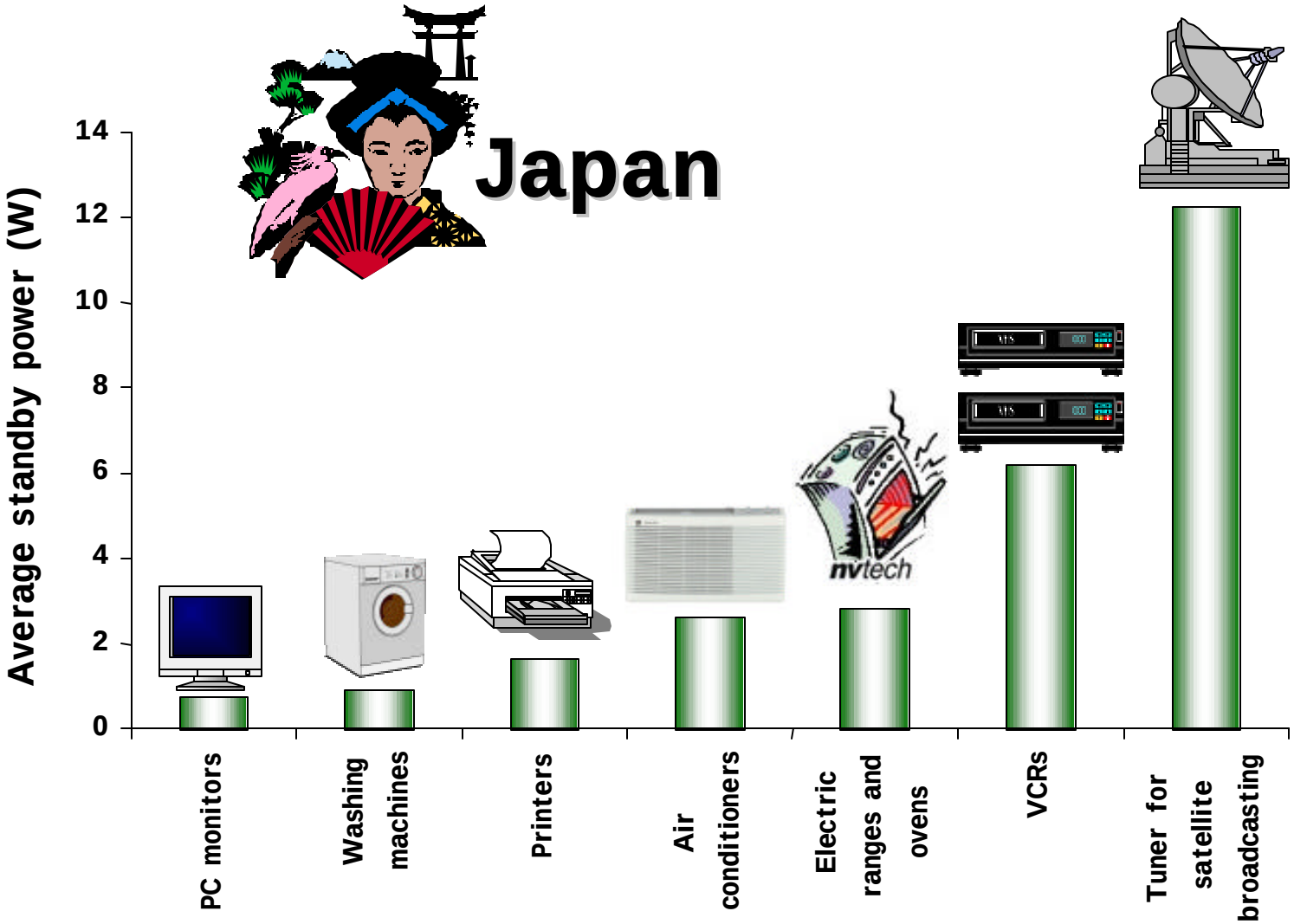
"**Standby loss**" or "**Leaking electricity**"

accounts for 9.4% of household energy use in Japan (11.6% in Australia)

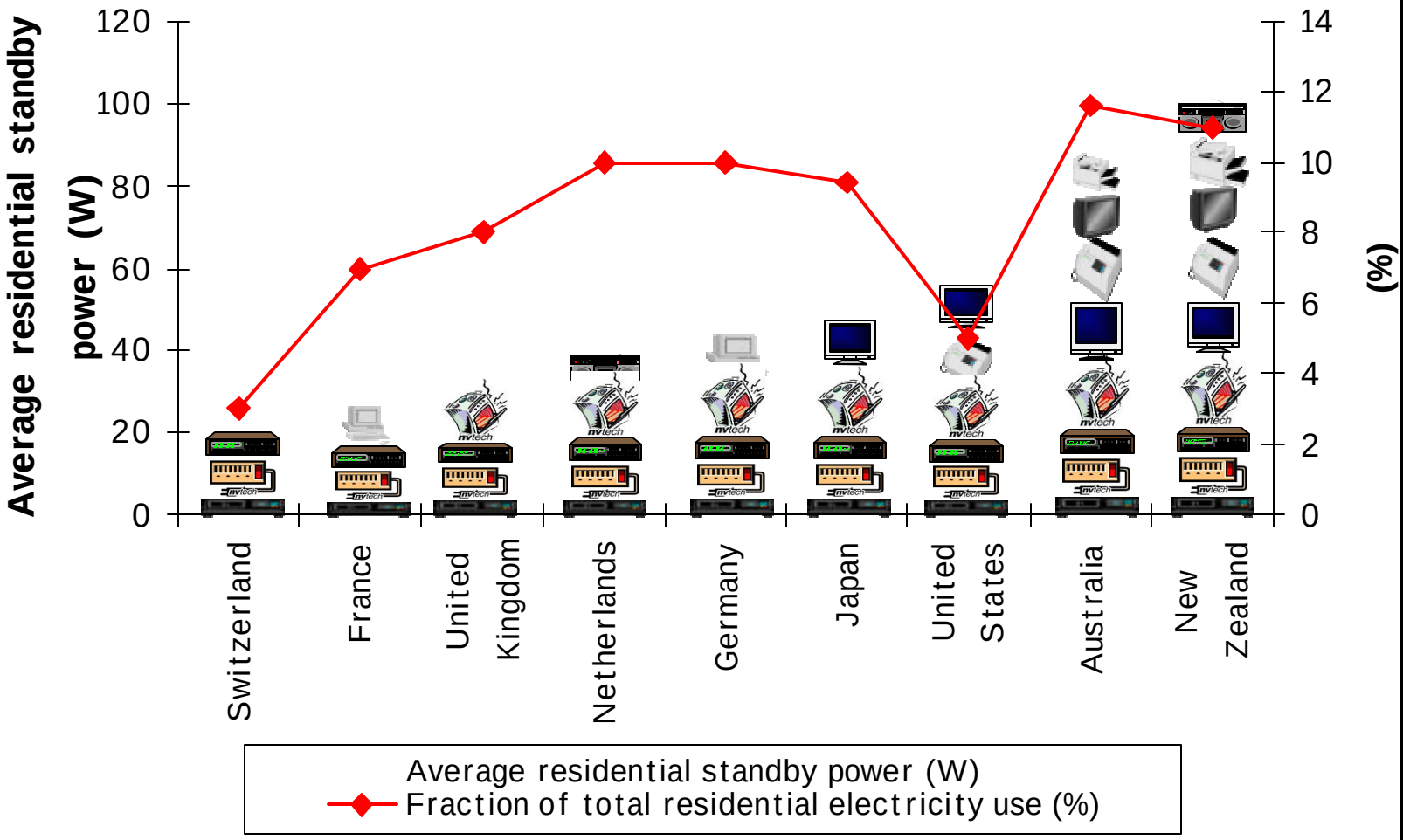
ESTIMATION OF STANDBY POWER LOSSES



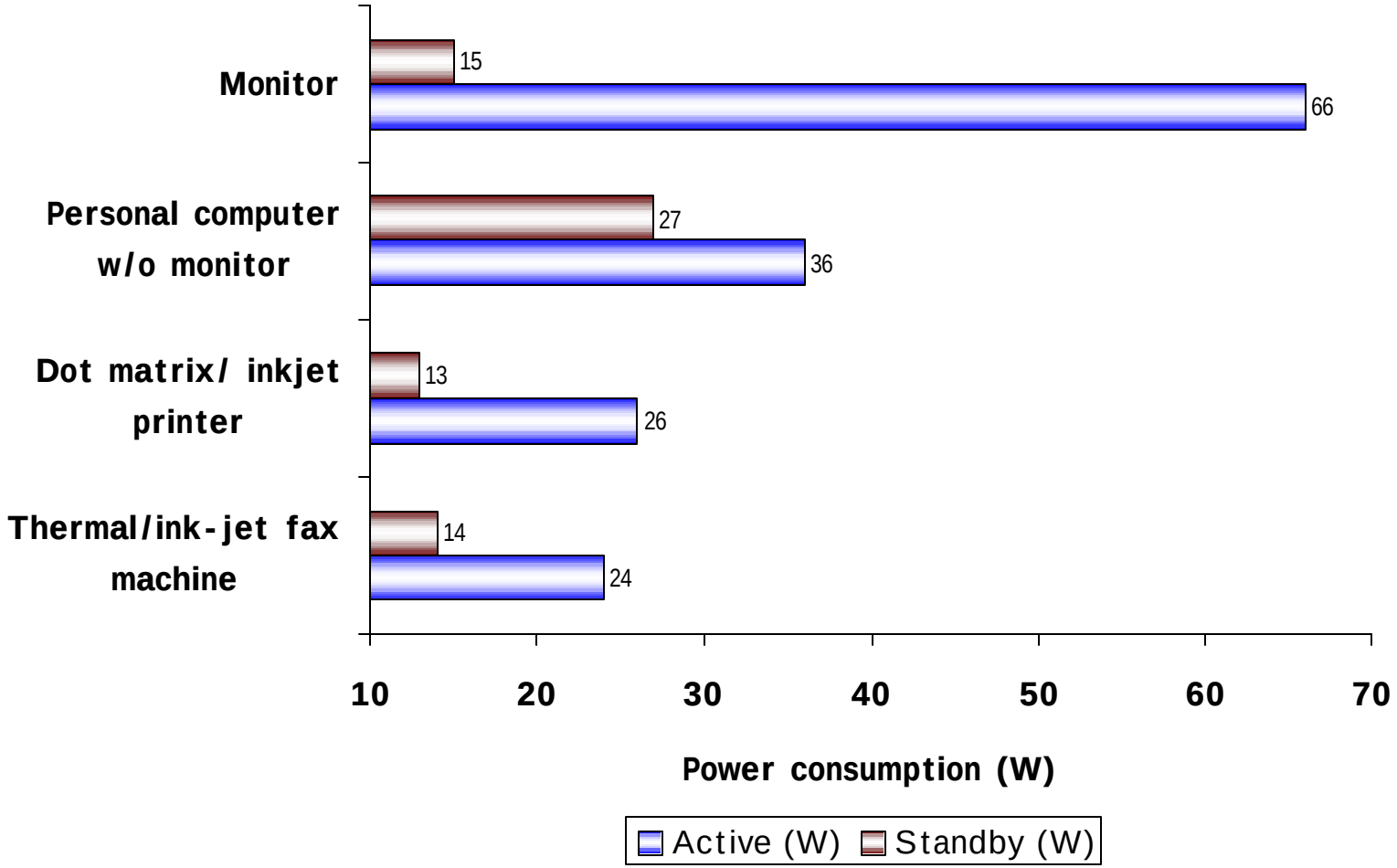
ESTIMATION OF STANDBY POWER LOSSES



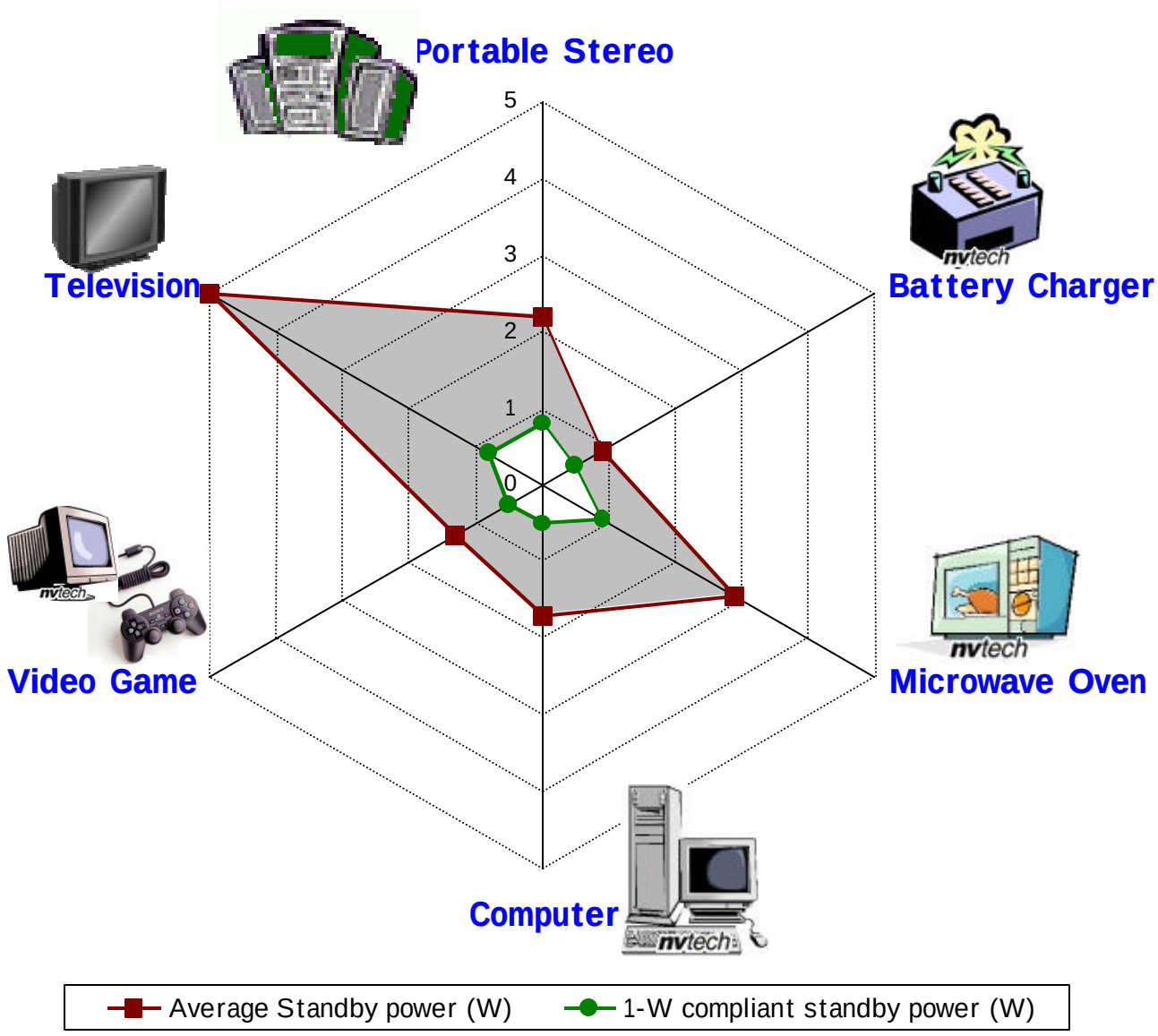
ESTIMATION OF STANDBY POWER LOSSES



ESTIMATION OF STANDBY POWER LOSSES

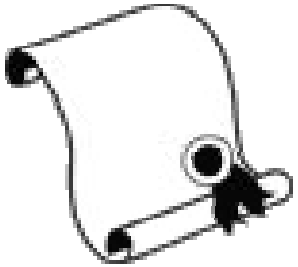


POTENTIAL FOR ENERGY SAVING



OPTIONS TO REDUCE STANDBY POWER USE

1. Involves better consumer awareness and education on standby energy consumption

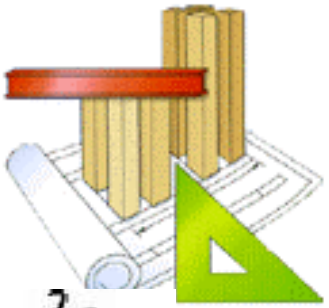


- Conduct information and motivation campaigns

- Not easy and practical

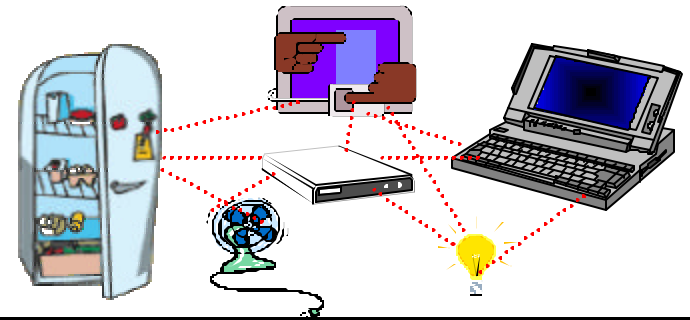
OPTIONS TO REDUCE STANDBY POWER USE

2. Reduce standby power consumption in most appliances by adopting technological innovations



Re-designing appliance circuits can reduce standby power consumption up to 90%.

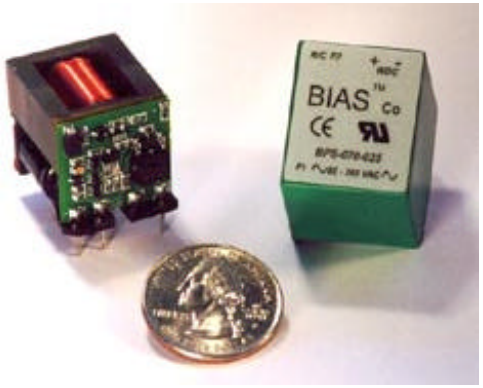
- Sleep modes
- Programming option for switching off
- "Energy Star" label of US EPA
- Technologies: on-off, standby, networked



New Generation Energy Efficient Power Supplies

Switching power supply of Sharp Corporation :

- standby power loss **?** 0.3 W for office equipment
- senses whether the equipment is in operation or in standby state,
- automatically reduces switching frequency when on standby.

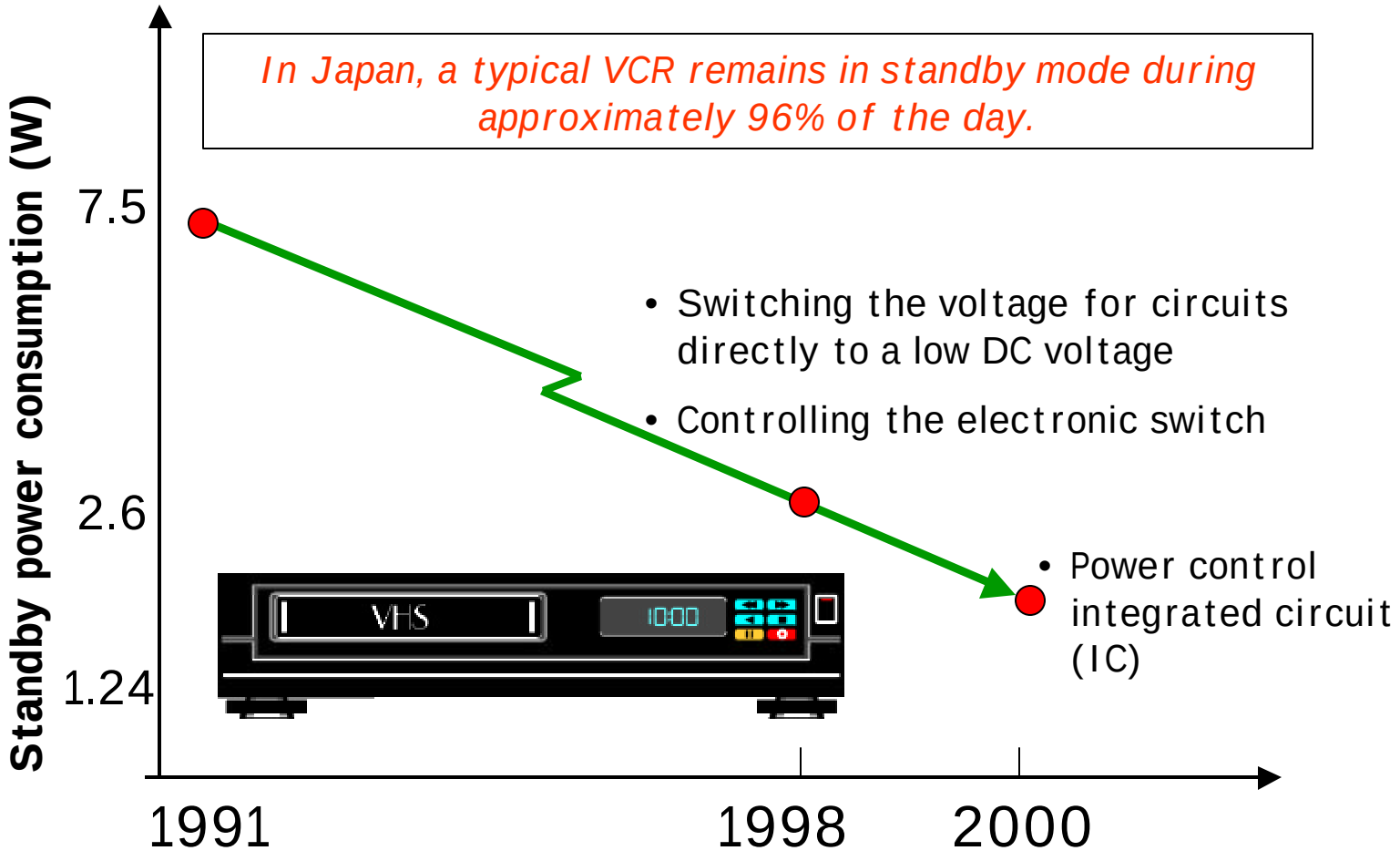


Compact 0.25 W power supply of Bias Power Technology:

- provides a constant AC/DC power source for various types of appliances, including battery chargers.

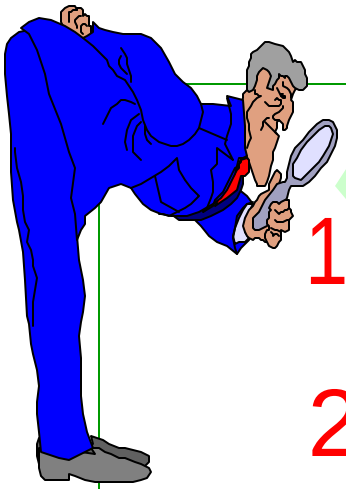
Reduction in the Standby Power of Home Appliances: An Example of VCR

In Japan, a typical VCR remains in standby mode during approximately 96% of the day.



Source: Japan Electronics and Information Technology Industries Association

POLICIES TO CURTAIL STANDBY POWER



1. Standards
2. Voluntary Approaches
3. Labelling
4. Other Complementing Policies

POLICIES TO CURTAIL STANDBY POWER

1. Energy efficiency standards

Worldwide procedures and regulations to define performance of energy intensive products

- **Prescriptive standard,**
- **Minimum energy performance standard,**
- **Class-average standard**

Japanese Initiatives to Reduce Standby Power through the "Top Runner" Programme

- Established in March 1999 under Japan's framework legislation on energy efficiency
- Energy efficiency targets for 11 different products - current performance level of the appliance with the highest energy efficiency:

Energy efficiency of VCRs to be improved by 59% by 2003, and those of computers and magnetic disk units by 83% and 78%, respectively, by 2005.

Source: Ministry of Economy, Trade and Industry (METI), Japan.

Japanese Initiatives to Reduce Standby Power through the "Top Runner" Programme

Depending on the product category, the target period ranges from 4 to 12 years

- Technological progress & environment regulations taken into account while setting standards.
- Labelling scheme planned for household electrical appliances -- refrigerators/ freezers, air conditioners, television and fluorescent lamps.

Source: Ministry of Economy, Trade and Industry (METI), Japan.

POLICIES TO CURTAIL STANDBY POWER

2. Voluntary Approaches

- Informal agreements without any legal bindings
- Negotiated instruments with penalties imposed in the case of non-compliance of agreed targets

Voluntary Agreement to Reduce Standby Power of Electrical Equipment in Korean Market

Energy-saving office equipment and home electronics programme launched in April 1999:

- encourage manufacturers to produce and sell energy saving products meeting standards set by Government.

computers, monitors, printers, fax machines, copiers, scanners, multifunction devices, televisions, video cassette recorders, home audio products, microwave ovens, and battery chargers.

Source: KEMCO, KEMCO's program to reduce standby power in electrical equipment on the Korea Market, 2001.1

Voluntary Agreement to Reduce Standby Power of Electrical Equipment in Korean Market

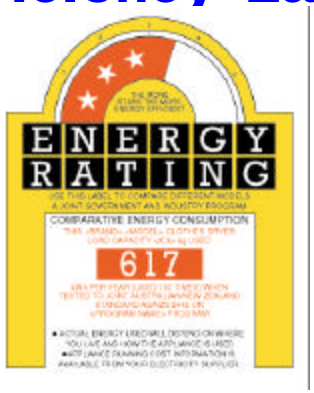
- promoting products that qualify for the standard set by MOCIE & KEMCO to reduce the standby electric power

38 manufacturers in the programme by 1999 and 656 models met the standard set to save standby power losses. Four million energy-saving products (43% of market share) sold, saving 2184 GWh of electricity.

Source: KEMCO, KEMCO's program to reduce standby power in electrical equipment on the Korea Market, 2001.1

POLICIES TO CURTAIL STANDBY POWER

3. Energy-efficiency Labelling



- **Comparative labels:** allow consumers to compare performance among similar products
- **Information-only labels:** provide data on a product's performance
- **Appliance labelling:** provide an effective way to monitor the market and compile information on market transformation

The Energy Star Program Transforming Markets for Energy Efficiency Products

Money Isn't All You're Saving

- Launched in 1992 - initially aimed at computers, monitors and printers.
- Expanded to cover over 30 consumer product categories
- Evaluation criteria: potential to improve unit energy savings, size of the stock, turnover rates, industrial acceptance, & product visibility with consumers.

Source: US EPA (web-site: http://www.epa.gov/nrgystar); LBNL (web-site: http://enduse.lbl.gov/Estar.html)

The Energy Star Program Transforming Markets for Energy Efficiency Products

80% of computers, 95% of monitors, and 99% of printers sold in the USA are Energy Star compliant.

Televisions, VCRs, home audio and DVD products using Energy Star logo consume up to 75% less energy than conventional models when switched off.

- Development of Energy Star specifications much simpler by adopting the reference efficiency levels for some Energy Star products.

Source: US EPA (web-site: http://www.epa.gov/nrgystar); LBNL (web-site: http://enduse.lbl.gov/Estar.html)

POLICIES TO CURTAIL STANDBY POWER

4. Other Complementing Policies

- Market transformation initiatives,
- Technology procurement programmes, introduction of economic instruments,
- Awareness campaigns, database development, etc

FUTURE DIRECTIONS

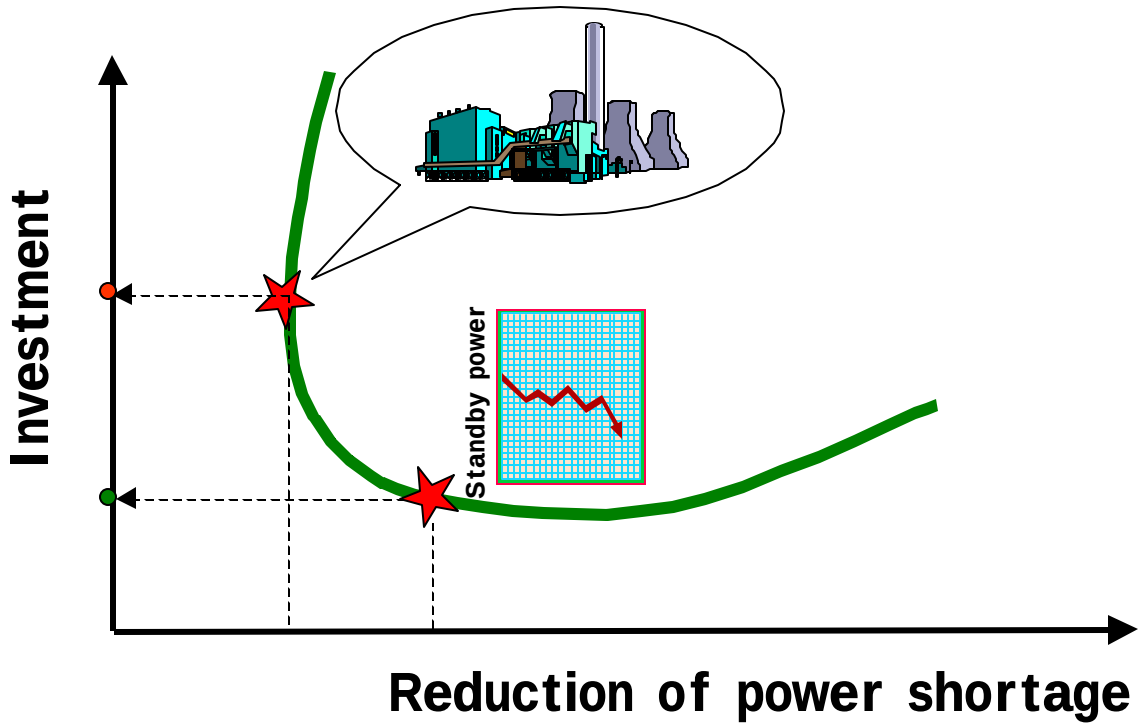
International voluntary programme:

- avoid proliferation of labels and labelling schemes launched by individual countries

FUTURE DIRECTIONS

Policy makers and stakeholders should:

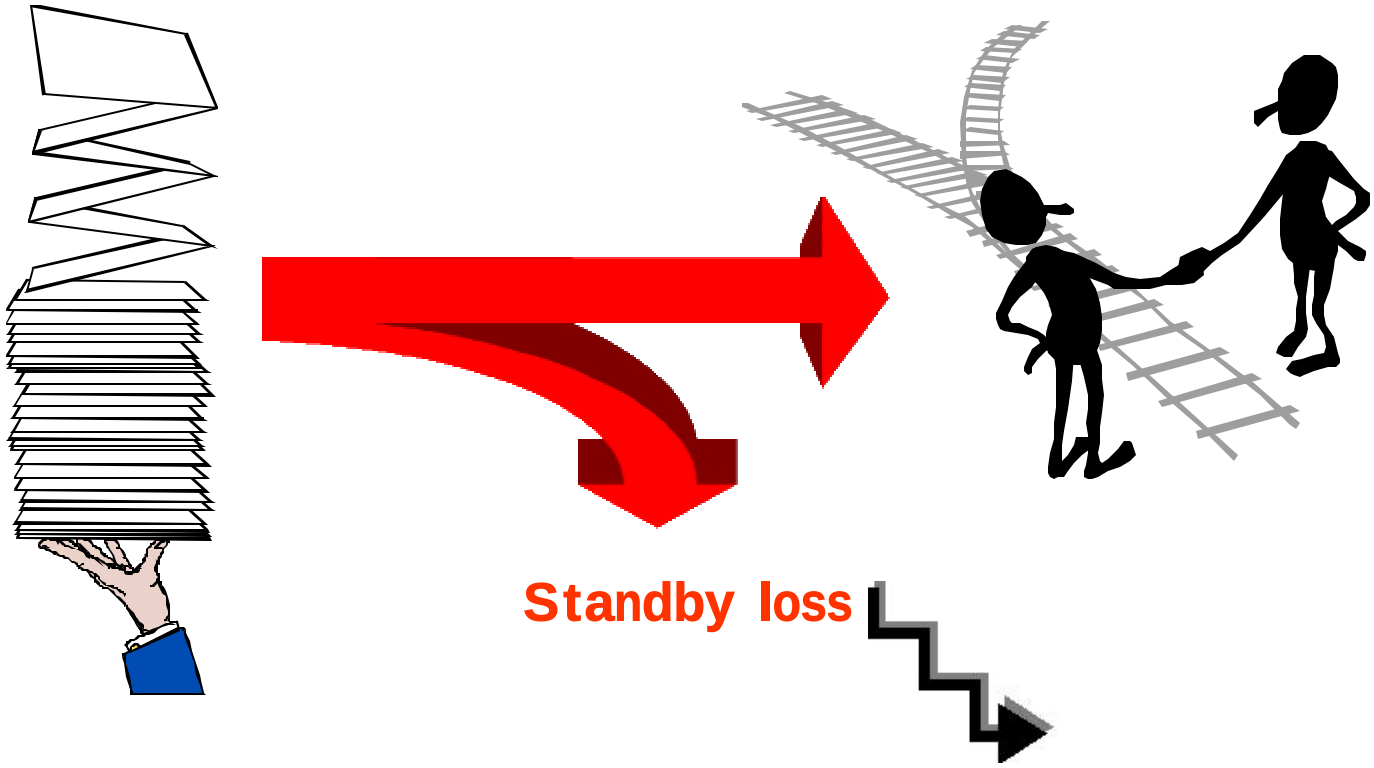
- aim at decreasing standby power consumption at a much lower cost than that invested in power plants



FUTURE DIRECTIONS

Policy makers and stakeholders should:

- develop guidelines for existing and new products, and enhance voluntary agreements with the industry



FUTURE DIRECTIONS

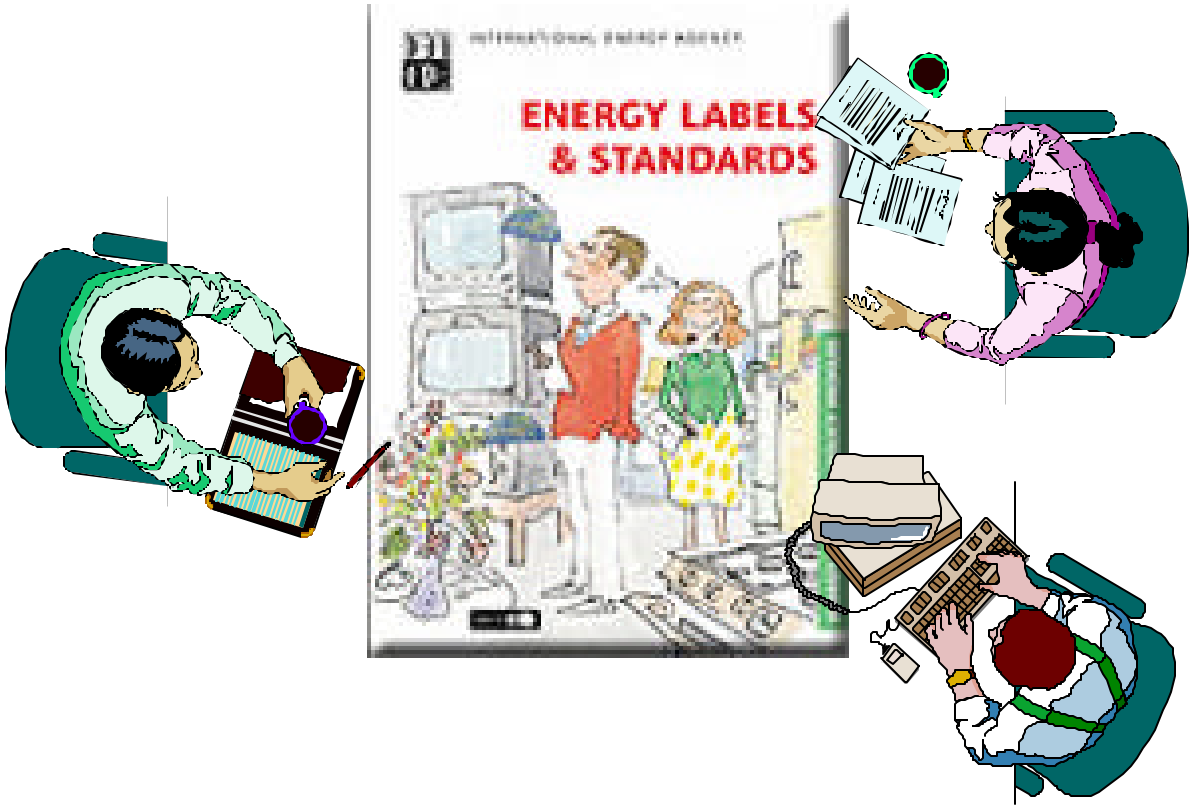
Policy makers and stakeholders should:

- Initiate R&D activities to explore new techno-economic solutions and reduce standby power use

FUTURE DIRECTIONS

Policy makers and stakeholders should:

- Revise existing energy labels of appliances to include information on standby power use



STANDBY POWER: NEW PUBLICATION