Statistics of Electrical Accidents & Japanese Inspection System

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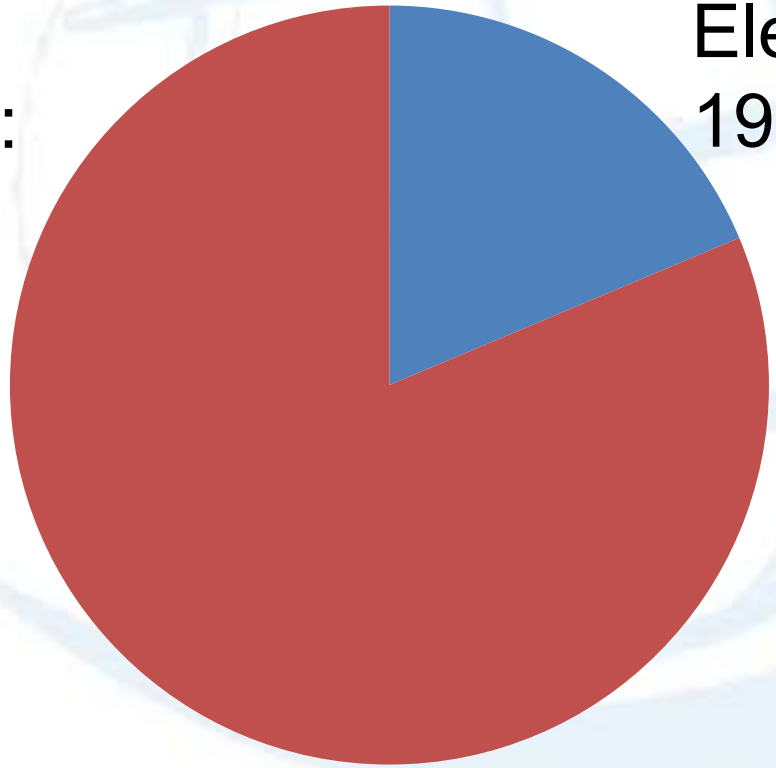
Fisuel Symposium – Morocco – 11th & 12th of May, 2016

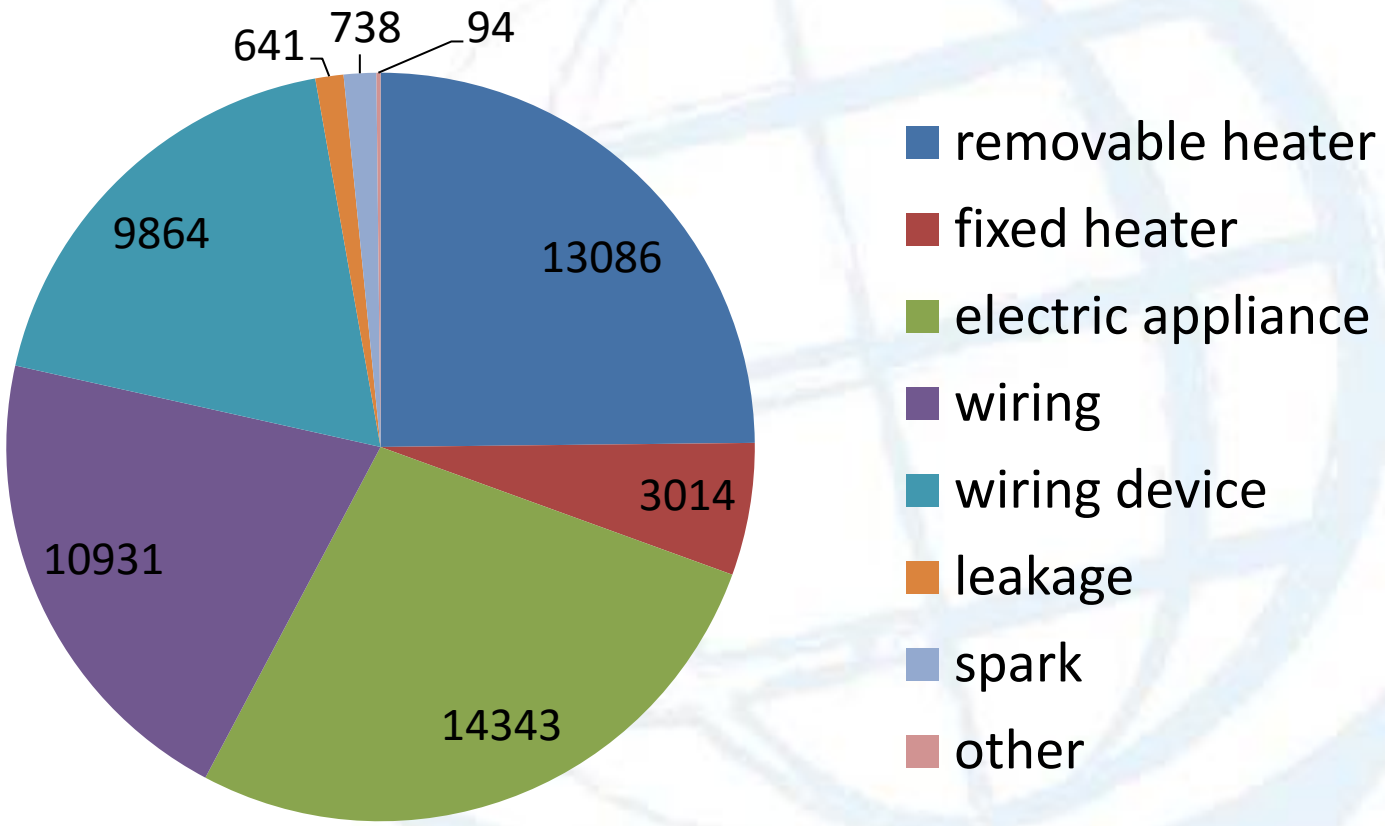
Share of Electrical Fire Among Fire in Building in Japan

All Fires in Buildings :
282,437 (2005-2014)



Source:
Fire Agency, Japan

Electrical Fires in Buildings in Japan



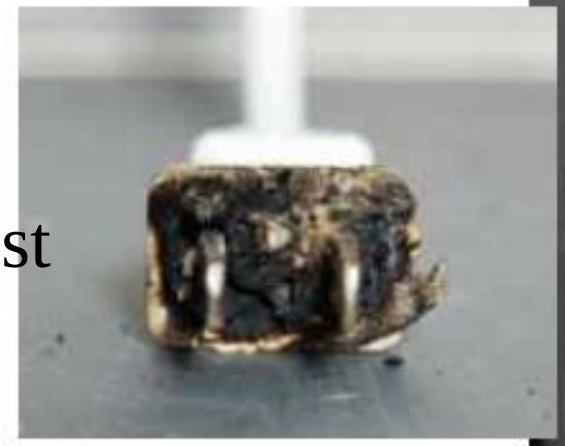
All Electrical Fires in Buildings : 52,711 (2005-2014)

Source:
Fire Agency, Japan

ark tracking
by wet dust accumulation

moisture

dust



Accidents with plugs, codes and wiring devices in Japan

		fatal accident	injury	physical damage	total
wiring devices	extension codes, power strips, sockets, etc	8 (16) [8]	14 (18) [3]	265 [43]	287 (34) [54]
plugs and codes	plugs and codes of electric appliances	6 (7) [6]	81 (88) [12]	627 [118]	714 (95) [136]
total	accidents (victims) [fires]	14 (23) [14]	95 (106) [15]	892 [161]	1001 (129) [190]

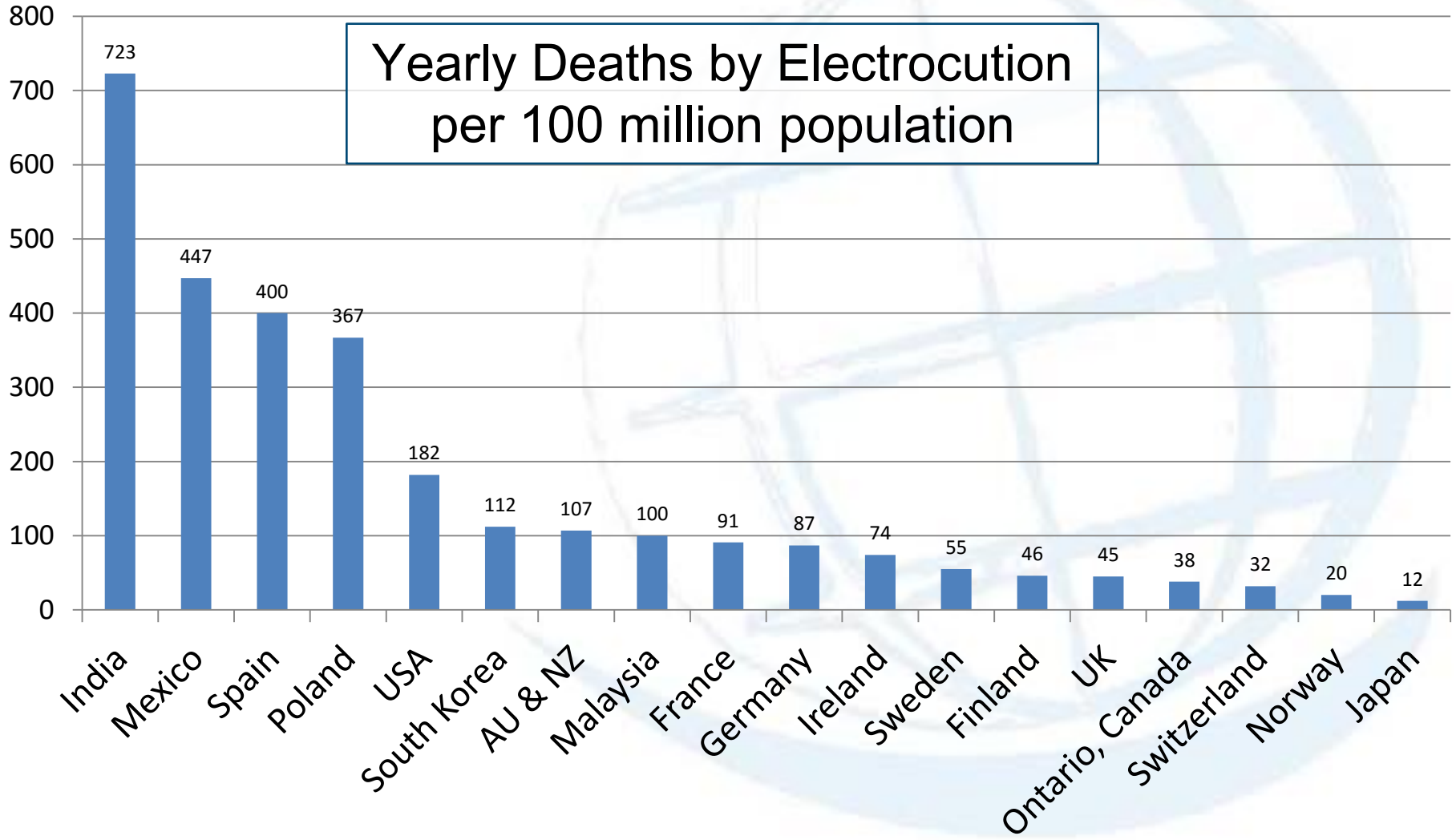
2009-2013 FY

source: NITE, JAPAN

Electrical Safety Campaign in November

11th November:
Wiring Devices' Day

Recommendation;
Cleaning sockets & plugs once a year


Yearly Deaths by Electrocution per 100 million population
800
700
600
500
400
300
200
100
0
723
447
400
367
182
112
107
100
91
87
74
55
46
45
38
32
20
12
India
Mexico
Spain
Poland
USA
South Korea
AU & NZ
Malaysia
France
Germany
Ireland
Sweden
Finland
UK
Ontario, Canada
Switzerland
Norway
Japan

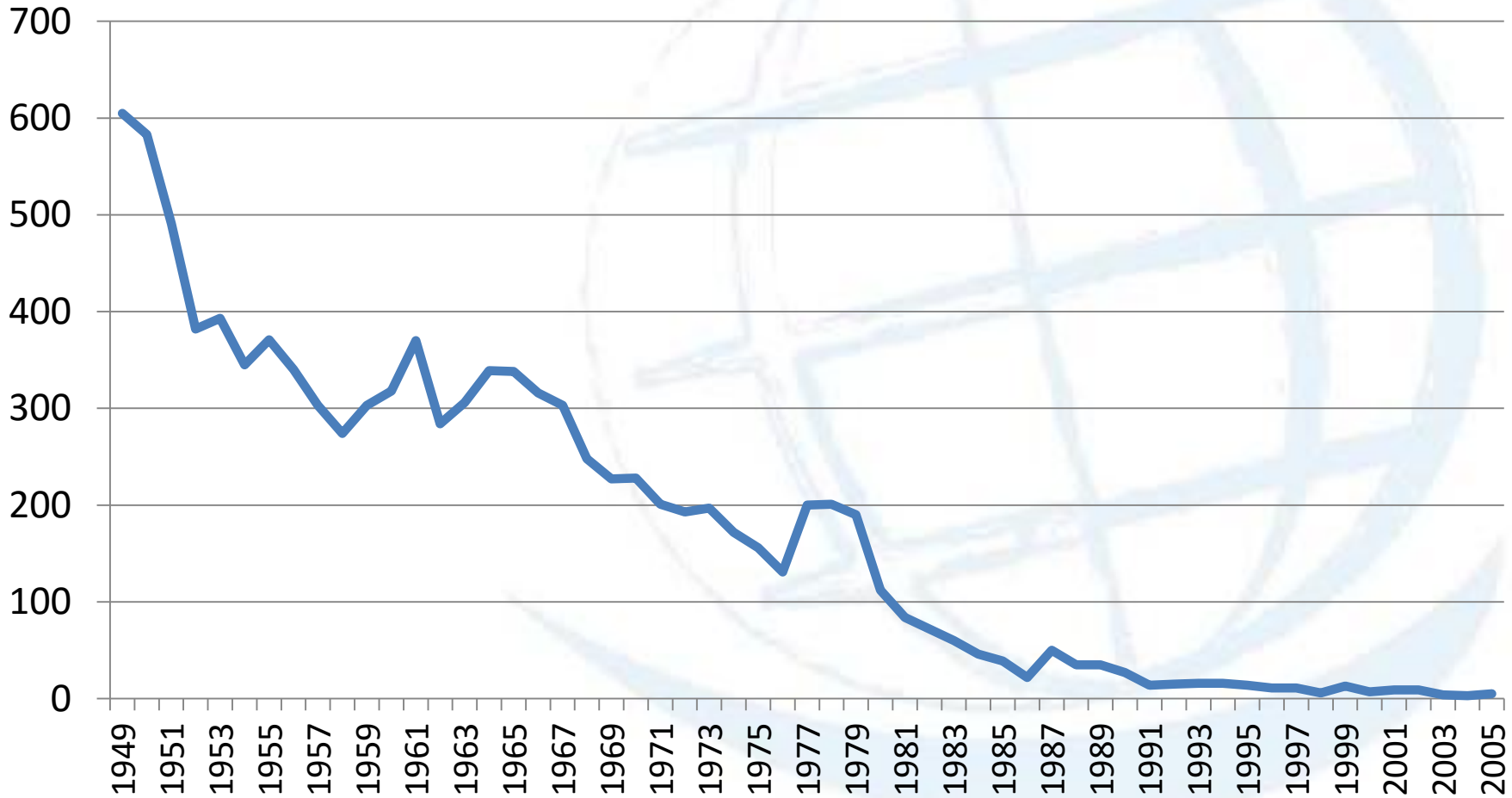
What is Death by Electrocution? (Definition)

- Accidental Death by Electric Shock with electrical installation

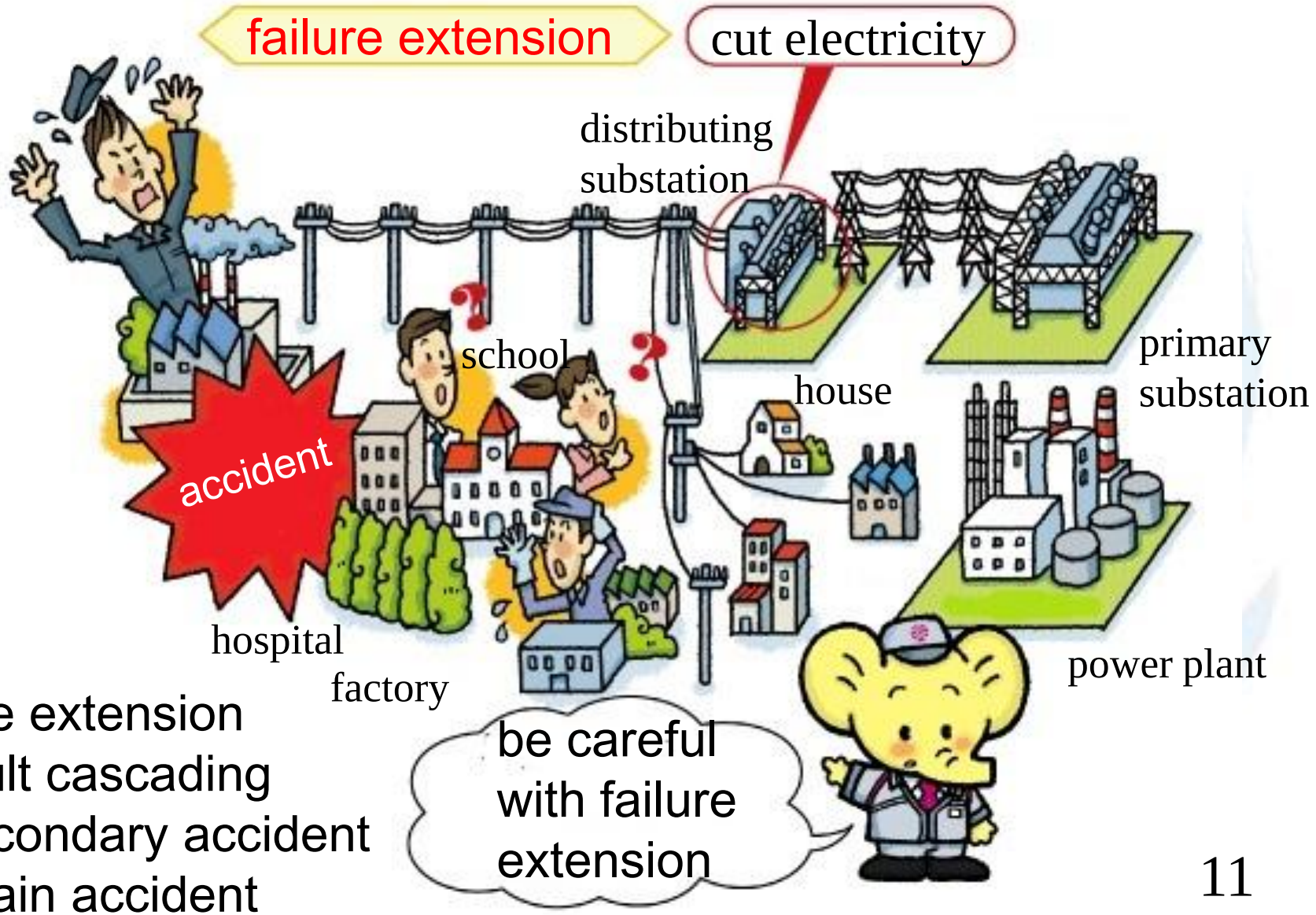
- Include: Ark Burn
- Include: Fall after Electrification (Japan)
- Exclude: Thunder

	Source	Year
India	NCRB	Average 2009-2013
Mexico	INEGI	Average 2003-2007
Spain	FENIE	Average 2000s
Poland	SEP	Average 2002-2011
USA	NSC	Average 1991-1993
South Korea	KESCO	Average 2007-2011
AU & NZ	ERAC	Average 2000-2009
Malaysia	ST	Average 2002-2010
France	INSERM	Average 2006-2010
Germany	VDE	Average 1999-2008
Ireland	HSA	Average 1995-2012
Sweden	NESB	Average 2002-2011
Finland	TUKES	Average 2003-2012
UK (low voltage installation only)	ESC	2010
Ontario, Canada	ESA	Average 2008-2012
Switzerland	ESTI	Average 2003-2012
Norway	DSB	Average 2007-2011
Japan	METI	Average 2007-2011

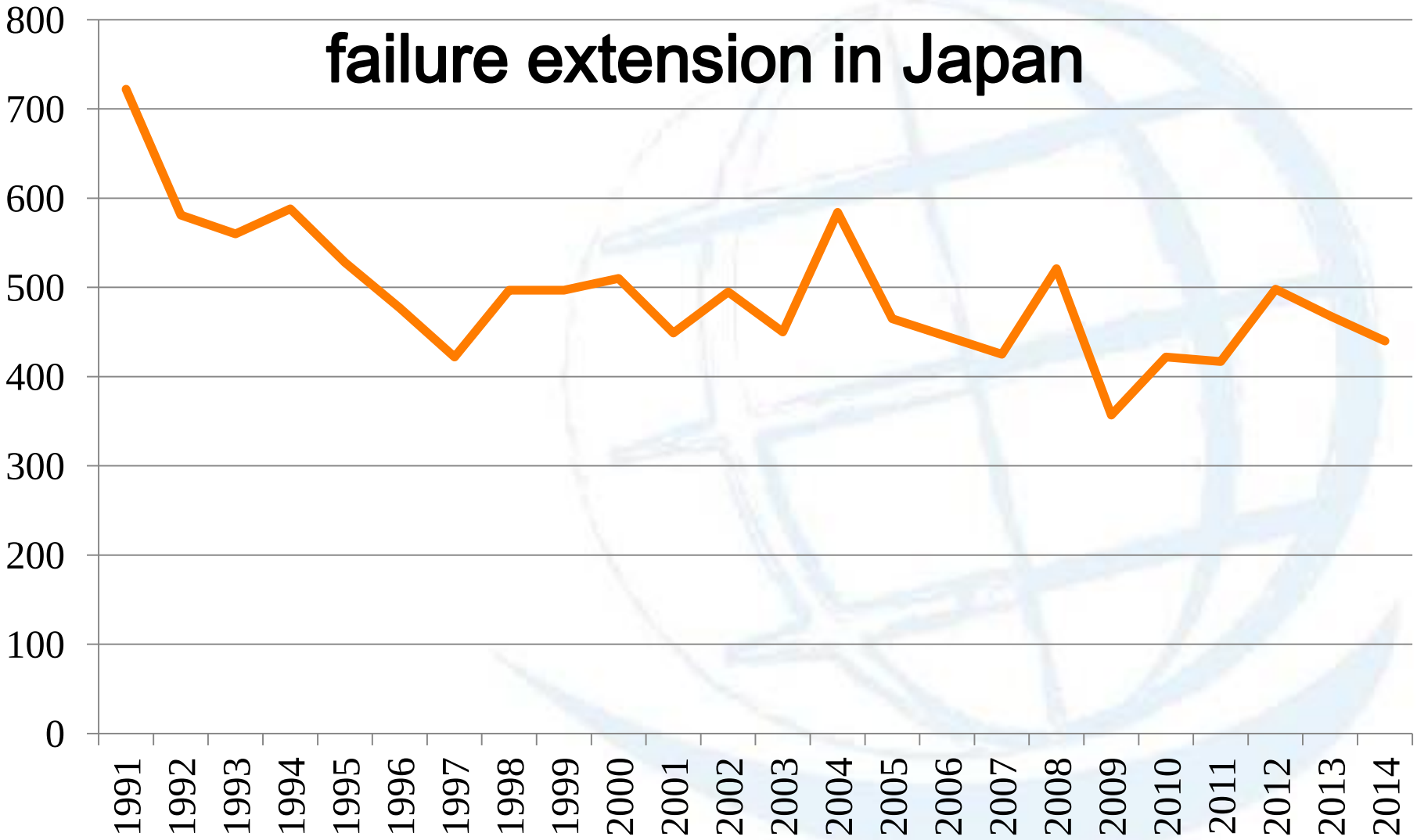
Deaths by electrocution in Japan



Source: METI, Japan

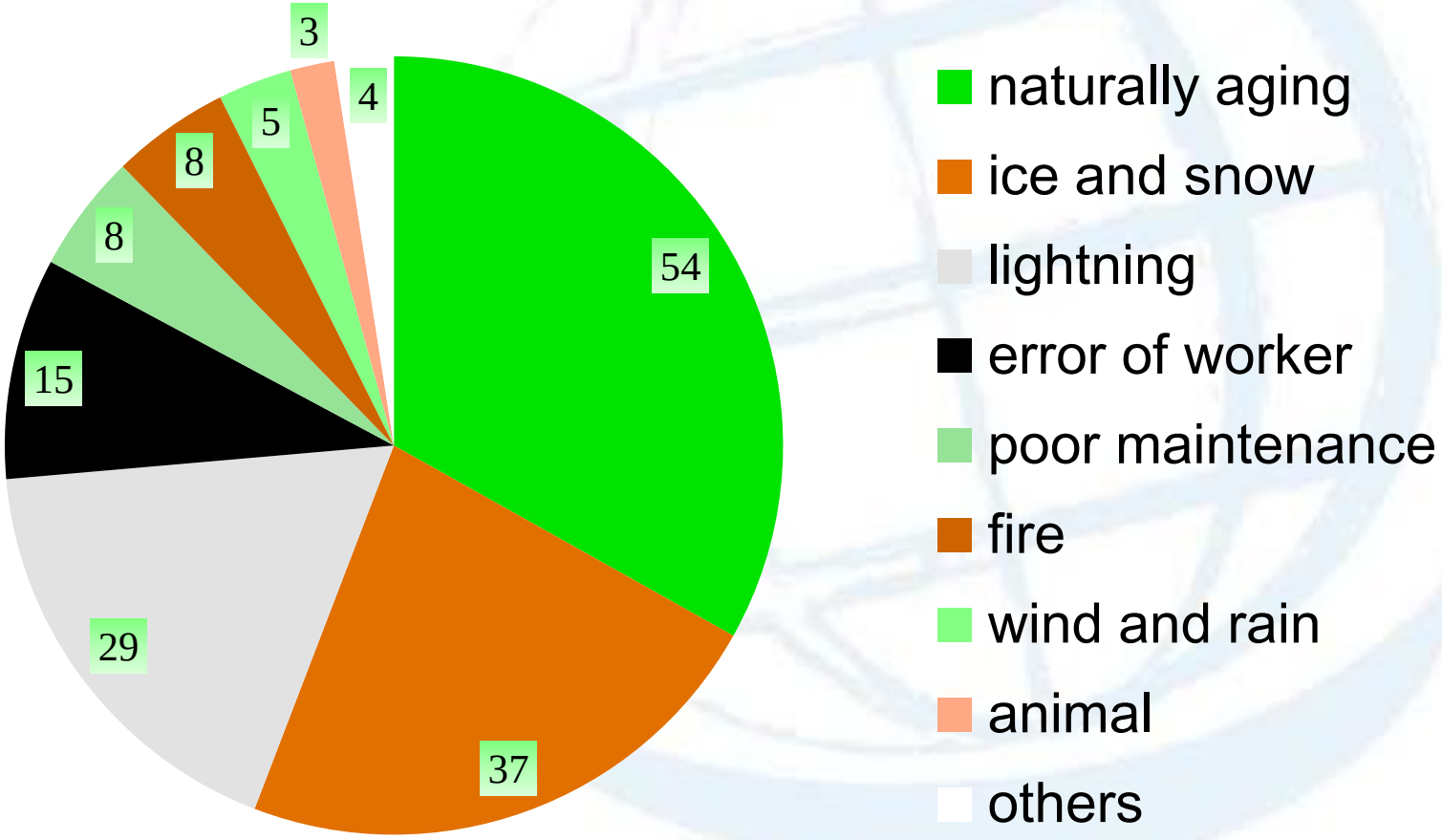


failure extension
or fault cascading
or secondary accident
or chain accident



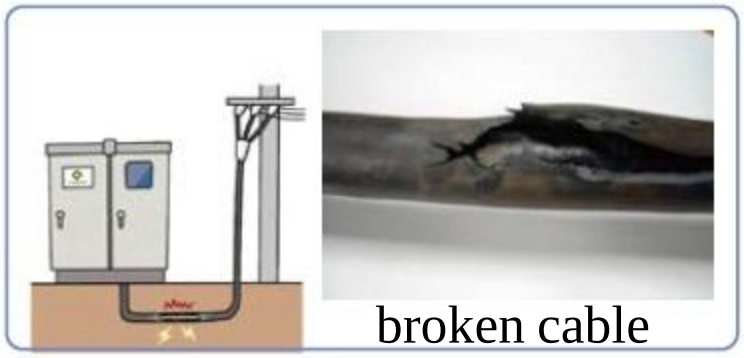
Source: METI, Japan

causes of failure extension in 2013 FY in Kanto (Tokyo and surrounding area)



Source: METI, Japan

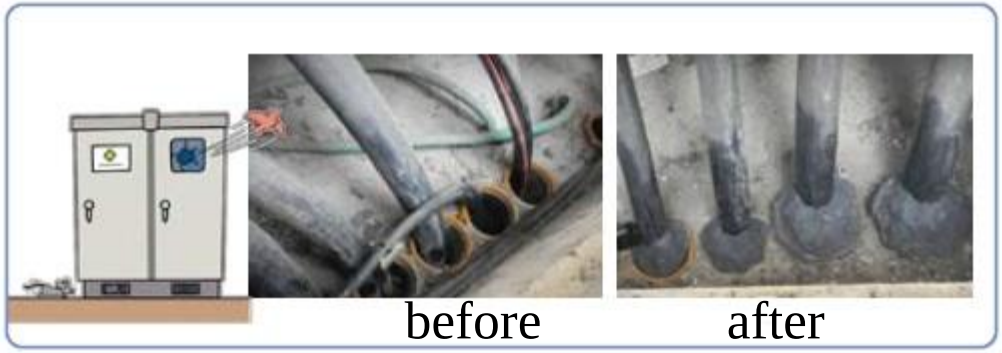
countermeasures against failure extension



broken cable

replacement of old cable

warning to digging



before after

filling hole (protection from animal)

Inspection: for Safety of Electrical Installation

Product	-Standard/Rule-Inspection
Works/Wiring	-Standard/Rule-Inspection
Maintenance	-Standard/Rule-Inspection

FISUEL argumentations (March 2008)

Check the Installations, why?

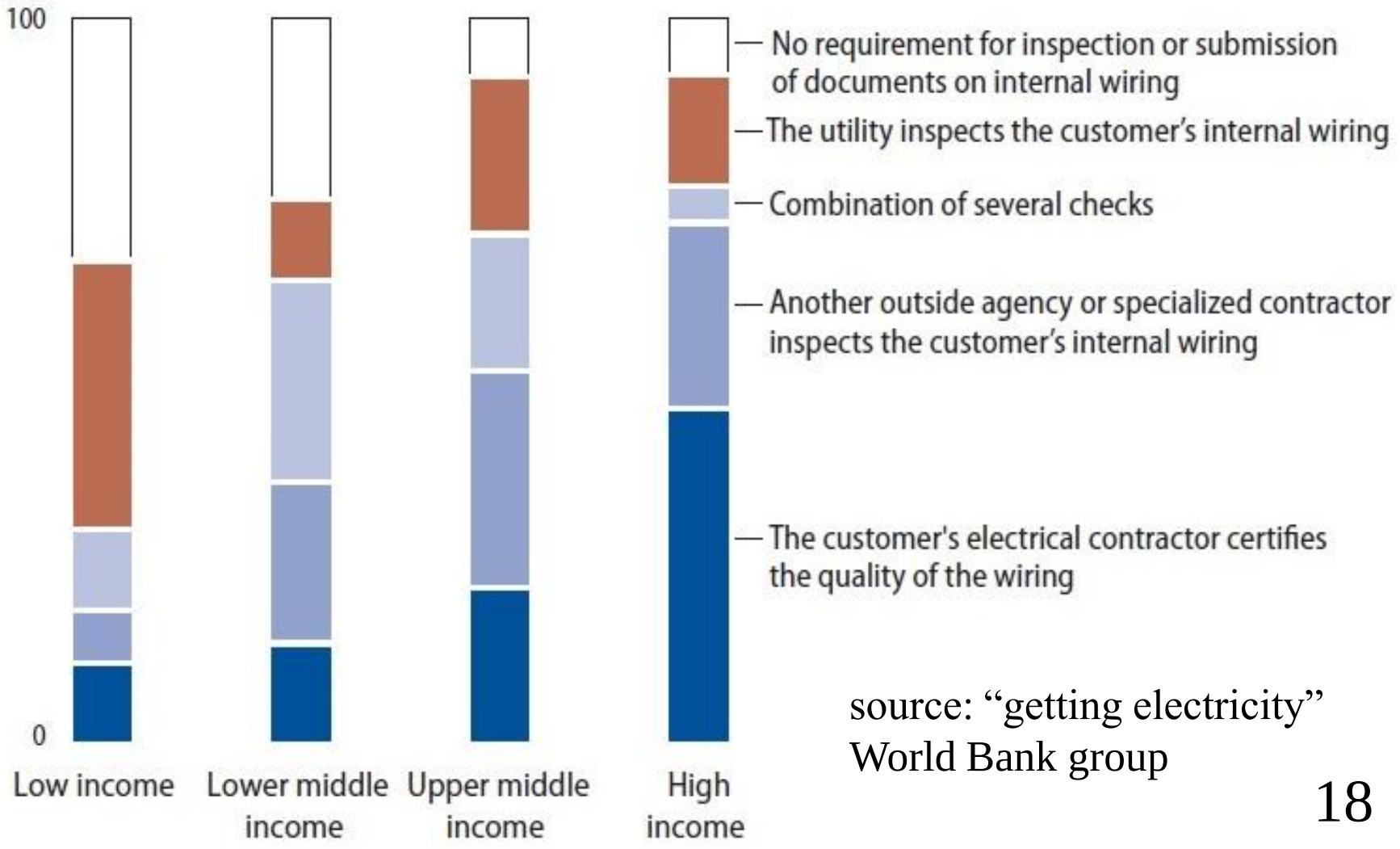
-Inspection of new installation

-Inspection of older installation

Criteria of Safety Barometer

	Criteria	Weight
1.	Standards & rules in place	10
2.	Requirement for initial inspection	10
3.	Requirement for periodic inspection	7.5
4.	Proof of inspection through inspection report	5
5.	Mechanism to inspect existing installations	10
6.	Qualification of inspectors	7.5
7.	Qualification of contractors	5
8.	Active role of utilities	10
9.	Consumer education	5
10.	Regulation imposing standards & initial verification	5
11.	Product labelling	5
12.	Active role of manufacturers	5
13.	Adequate market surveillance	15

Safety Certification for Internal Wiring



source: "getting electricity"
World Bank group

"Getting Electricity" is a research project of World Bank group. "*Getting Electricity*" records all procedures required for a business to obtain a permanent electricity connection and supply for a standardized warehouse. These procedures include all necessary inspections and clearances from the distribution utility and other agencies.

The electricity connection:
a 3-phase, four-wire Y, 140 (kVA) connection.
either the low-voltage or the medium-voltage
either overhead or underground.

Japanese Case ;
Inspection of Low Voltage User's Installation

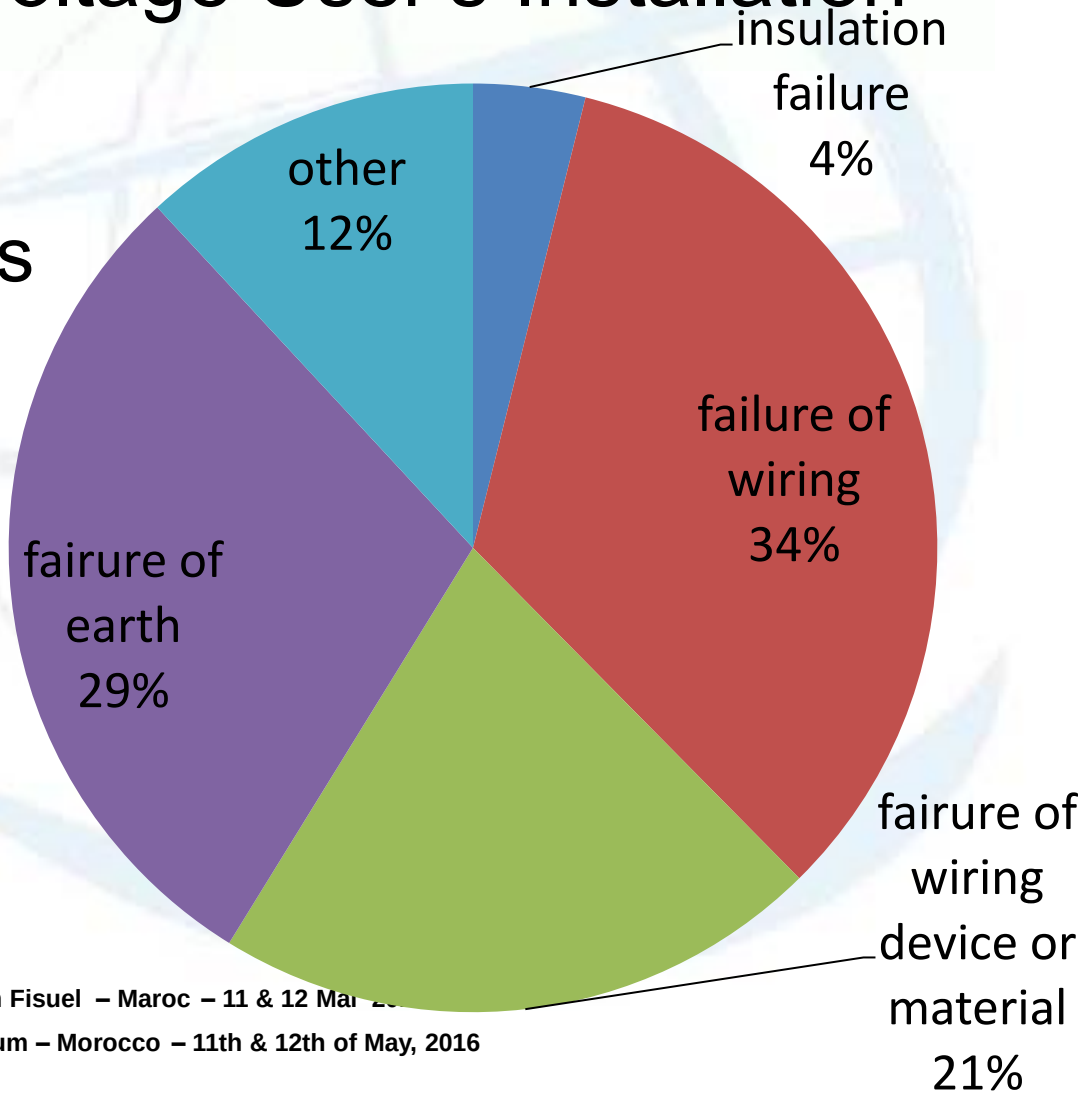
- Electric utilities have the obligation of Initial and periodic inspection(basically every 4 years).
- They can outsource the inspection to specialized institutions, such as ESIAs.
- ESIAs (Electrical Safety Inspection Associations) are non-profit foundations.
- 10 ESIAs in Japan.
- FESIA is the nation-wide body of ESIAs.

Japanese Case ;
Inspection of Low Voltage User's Installation

- For all low-voltage users.
- Dwellings, shops, offices, schools, hospitals, street lights, etc.
- At the end of an inspection, a report shall be issued.
- If any dangerous situations are discovered, the customer shall be immediately warned so that he/she can take the necessary actions to make it safe.

Japanese Case ;
Inspection of Low Voltage User's Installation

Percent of installations with one or more defects found in periodic inspection: 1.8% (2013)



定期調査の動画

Japanese Case ;
Inspection of High Voltage User's Installation

- The owner has the obligation of maintenance and inspection by "electric chief engineer".
- "Electric chief engineer" is a national license.
- The owner (6.6kV) can outsource the inspection to specialized institutions, such as ESIAs .
- ESIAs have the largest share in Japan.

Japanese Case ;
Inspection of High Voltage User's Installation

- For all high-voltage users.
- offices, factories, shopping centers, schools, hospitals, condominiums, etc.
- Typical inspection: monthly , yearly & ad hoc.
- Monthly inspection: live inspection
- Yearly inspection: with suspended power

Japanese Case ;
Inspection of High Voltage User's Installation

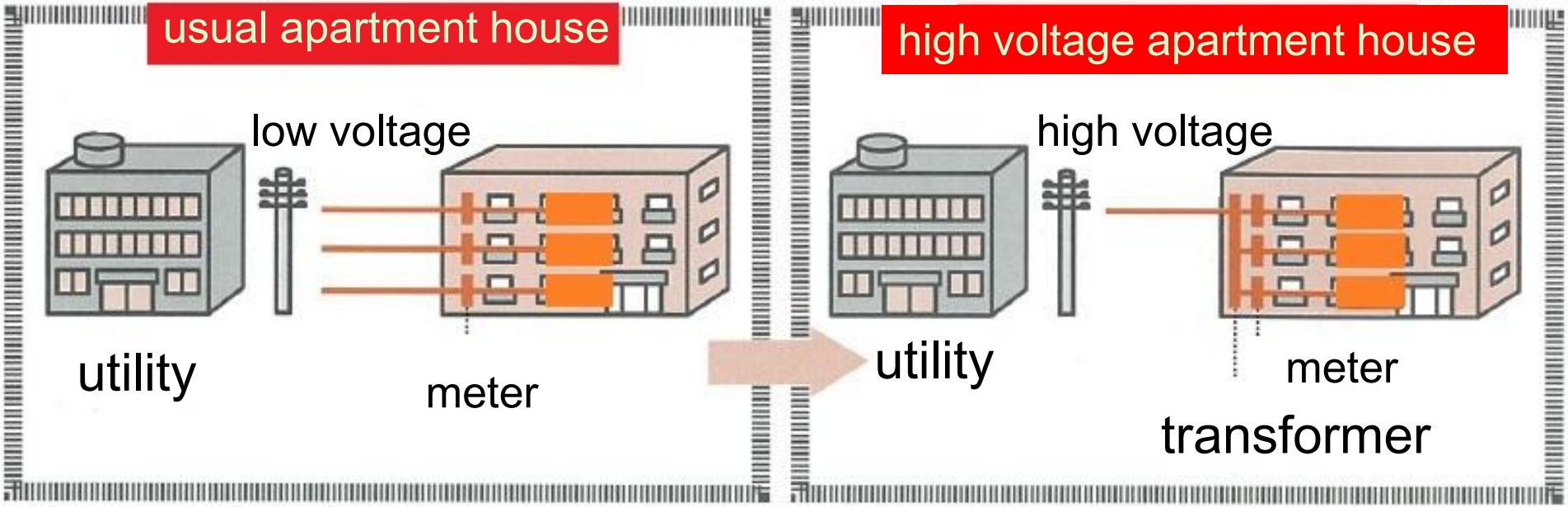
Defects found in inspections by ESIAs

- Defects in high-voltage (6.6kV) installations (excluding generators) / Installations : 2.3 (2013)
- Defects in photo-voltaic / installations: 0.2(2011)

年次点検の動画

High Voltage Apartment House

Source:
METI, Japan



Dead Inspection: every 3 years

Inspection of dwelling units: every 4 years

➡ Inspection on the same day (Generally)

Electric Leakage Monitoring Service

Kanto Electric Safety Services Foundation

関東電気保安協会

Electric Leakage Monitoring Service

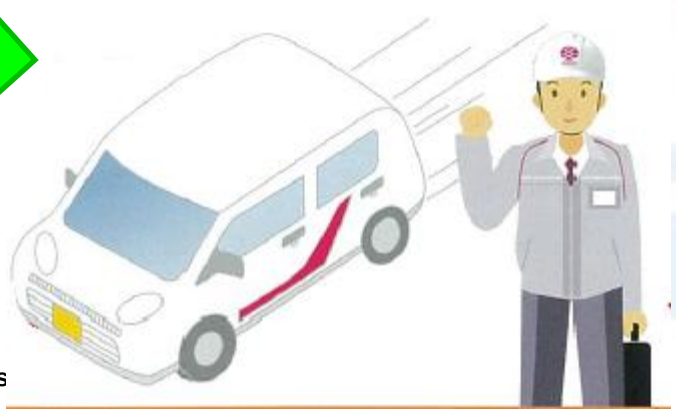
Electric leakage monitor

leakage signal

Emergency Center

emergency dispatch order

engineer



emergency response

365 days,
24 hours

- FESIA is Forum of ESIAs.
- KDH(Kanto Electrical Safety Services Foundation) in Tokyo
- ESIAs have 385 offices & 12,000 employees.
  - ✓ Verification of low voltage installations.
  - ✓ Verification, maintenance, consultation and emergency action for high voltage installations.
  - ✓ Public relations

THANK YOU

MERCI

FESIA

Forum of Electrical Safety Inspection Associations

KDH

Kanto Electrical Safety Services Foundation