

# **The Climate/Energy Security Nexus: Improving energy resilience to a changing climate**

**Takashi Hattori**

**Environment and Climate Change Unit, IEA**

**EXPERTS' GROUP ON R&D PRIORITY SETTING AND EVALUATION:  
RD&D Needs for Energy System Climate Preparedness & Resilience**

***13-14 November 2013***

***UTRECHT, THE NETHERLANDS***



**International  
Energy Agency**

# The issue(s)

## ■ How do changes in climate . . .

- Increased temperatures
- Changes in precipitation
- More extreme weather events

## ■ Impact the energy sector:

- Energy demand
- Energy supply
- Energy assets and infrastructure



# Number of Climate-related Disasters Around the World (1980-2011)

 **3455**  
FLOODS

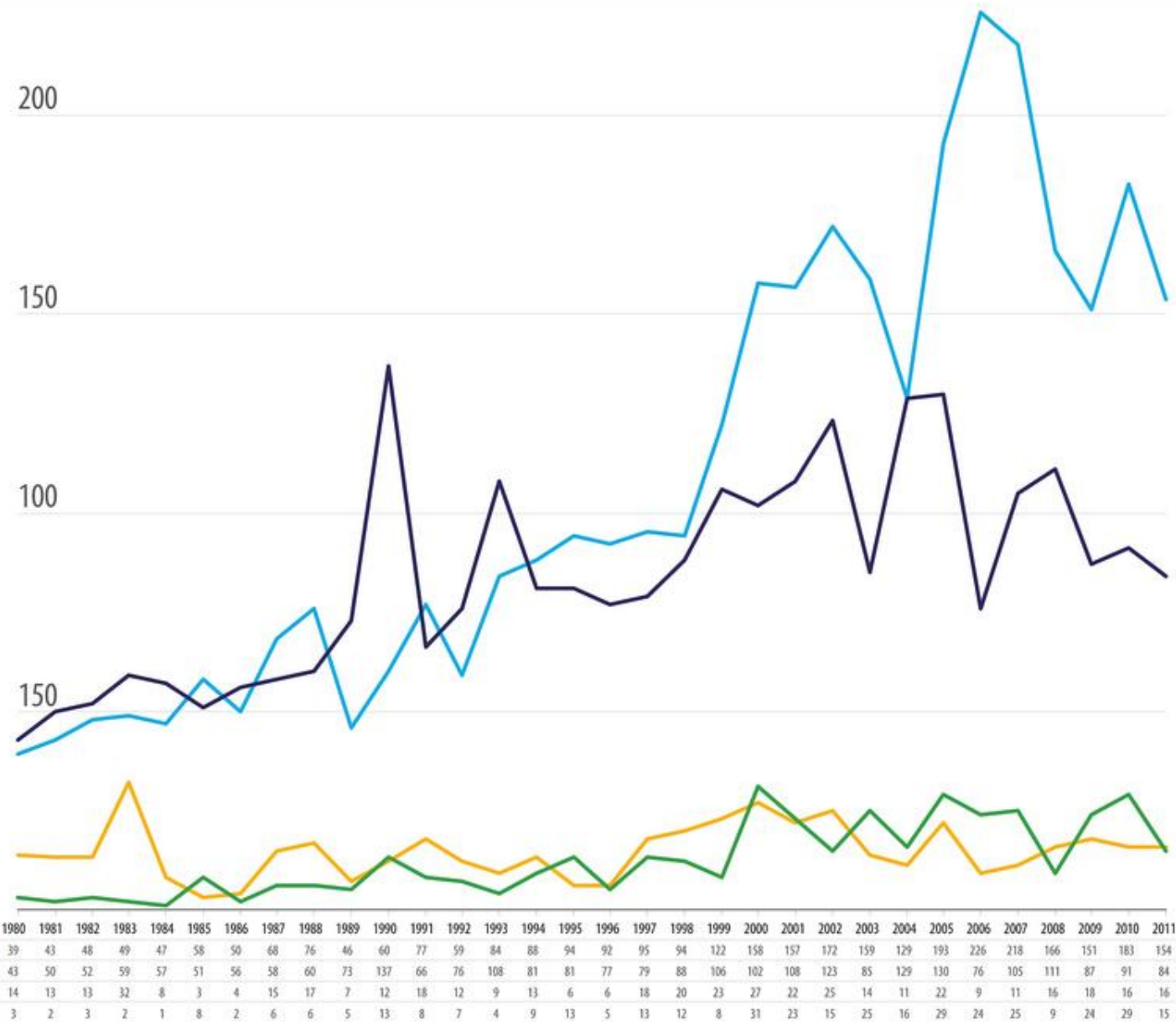
 **2689**  
STORMS

 **470**  
DROUGHTS

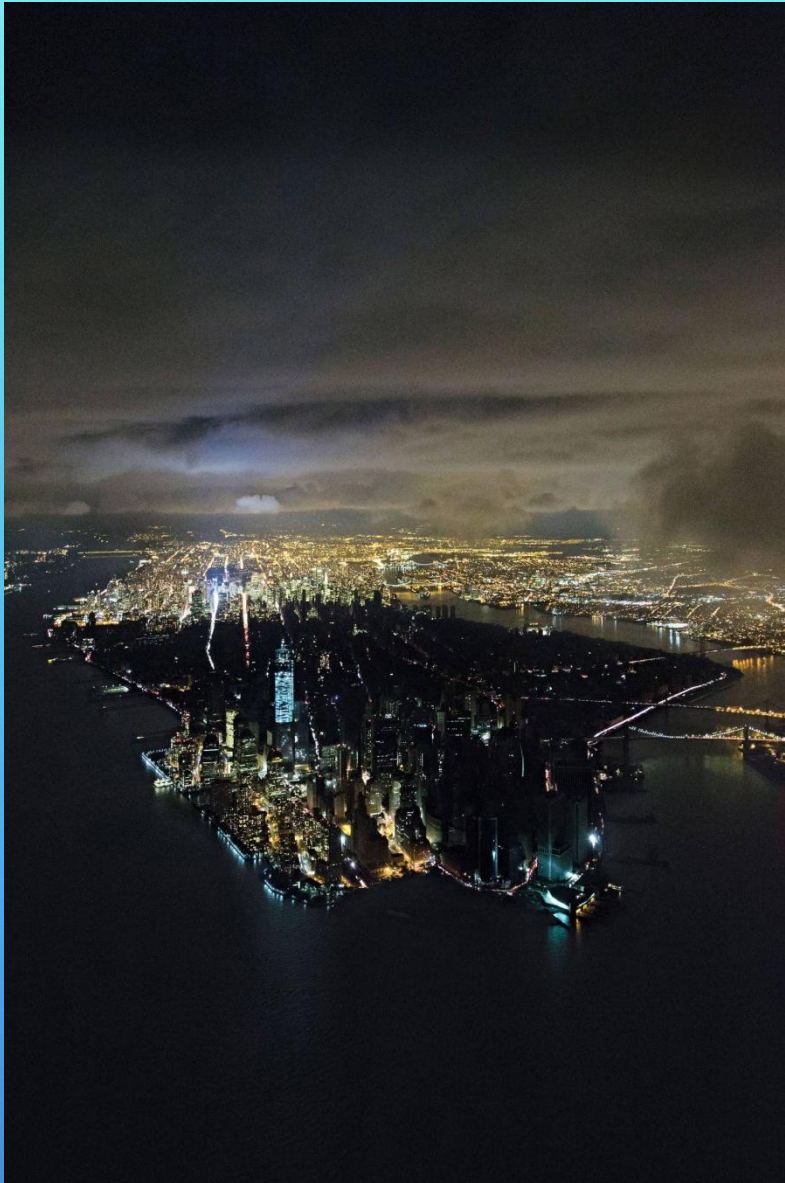
 **395**  
EXTREME TEMPS

 **UNISDR**  
The United Nations Office for Disaster Risk Reduction  
<http://www.unisdr.org>

Created on 13 June 2012  
DATA SOURCES  
EM-DAT - <http://www.emdat.be/> - The OFDA/CRED International Disaster Database; Data version: 13 June 2012 - v12.07  
Humanitarian Symbol Set (2008):  
<http://www.unisdr.org/map/guide/line.php>



# Climate events...



Hurricane Sandy – NY Nov. 1st 2012

*“As of Nov. 1, about 4.7 million people in 15 states were without electricity, down from nearly 8.5 million a day earlier.”*

<http://www.livescience.com/24380-hurricane-sandy-status-data.html>

# **A new perspective for IEA climate work**

**This is not a mitigation discussion but an adaptation discussion**

**= recognition that energy sector will be victimized by climate change**

**Nexus Forum does not discuss:**

- **Climate mitigation policies**
- **Green growth opportunities for business**
- **Energy access**

# 1st Nexus Forum – 8 Nov 2012:

## Implications for Business

### ■ Who came:

- Energy supply and energy user companies
- Representatives from financial sector
- Government representatives

### ■ What we found out:

- Stronger narrative about resilience needed
- More impact and costs data needed
- Regional and local approaches will be key
- Flexibility and responsiveness needs to be built in
- Allocation of responsibilities needs to be addressed
- Approach should be systematic and pragmatic



# **2<sup>nd</sup> Nexus Forum – 26 June 2013: Issues for cities and for insurance industry**

## **■ Who came:**

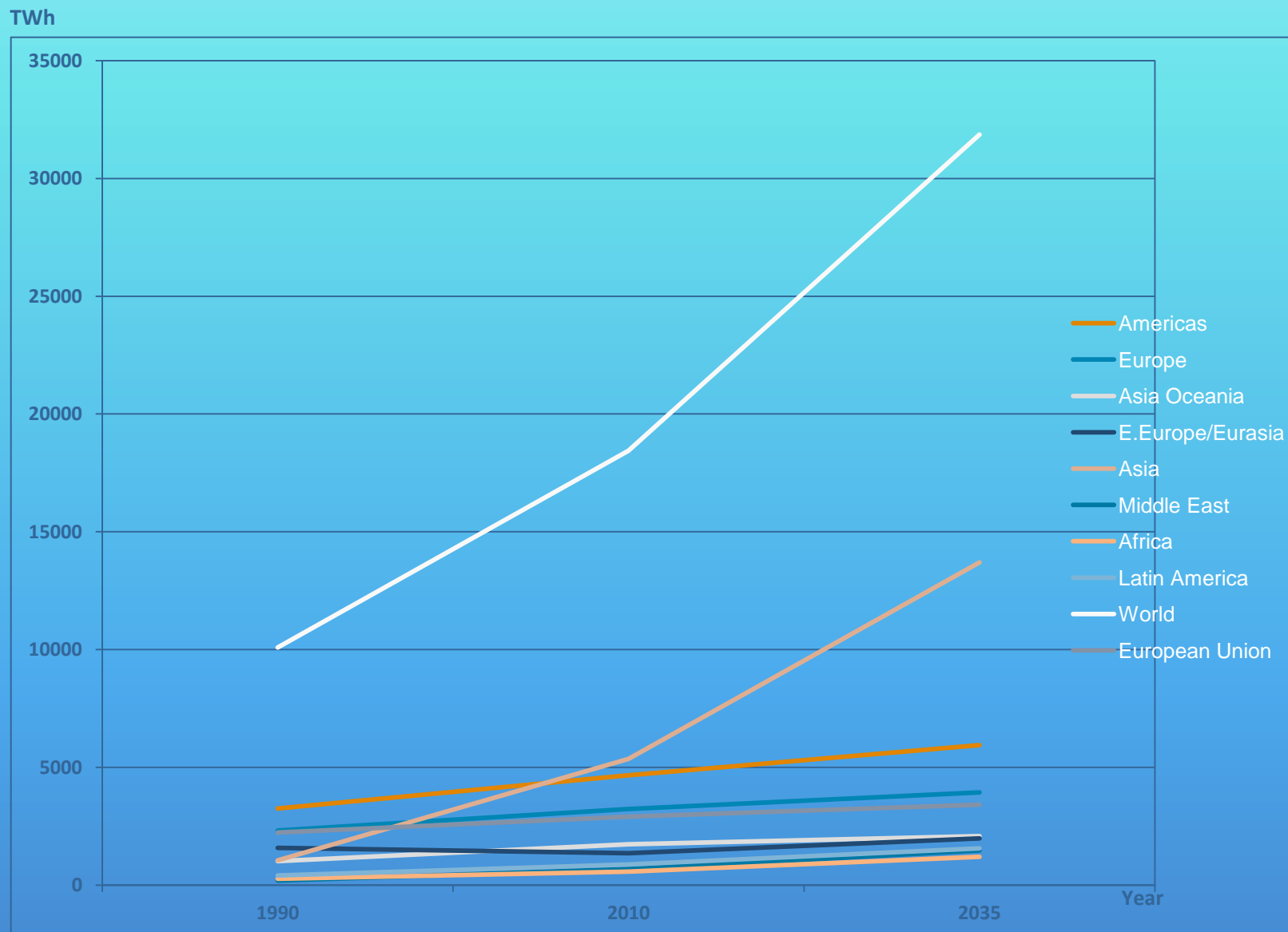
- **Energy sector; insurance and financial sector**
- **Think tanks and coordination groups on city action**
- **Central and local government representatives**

## **■ What we found out:**

- **Fundamental shift in mindset is needed**
- **Strong local action plans can guide planning for impacts on energy-using urban infrastructure**
- **Traditional risk models need to be re-examined in light of latest climate information and risk factors adjusted**
- **Without adequate insurance, climate change is likely to cause major GDP growth decay**

# Power demand

Source: WEO 2012 – New Policies scenario





# Electricity security



## Fuel Security

- Ensure continued fuel supply of gas, coal and uranium



## Adequacy

- Generation capacity
- Network infrastructure



## System Security

- Network operations
- Emergency protocols

# **3<sup>rd</sup> Nexus Forum – 25 October 2013:**

## **Electricity Sector Resilience**

- **The latest climate science and energy sector projections**
- **Assessing electricity/energy sector vulnerabilities to climate change impacts**
- **Special issues in electricity generation**
- **The role for government in incentivizing resilience and driving developments through energy security planning**
- **Examples of independent industry action and the business case behind it**

# **3<sup>rd</sup> Nexus Forum – 25 October 2013:**

## **Electricity Sector Resilience**

### **■ Who came:**

- **Electricity generation, transmission and supply industry representatives from around the globe**
- **Think tanks**
- **Government representatives**

### **■ What we found out:**

- **The data is clear but communication breakdown between climate and energy experts needs remedy**
- **Must quantify the financial and energy impact of climatic changes in order to support decision-making**
- **The synergies between traditional energy security and climate resilience measures should be developed**
- **Adaptation & mitigation should go hand in hand**

# Spheres of action

**DEFINITIONS &  
RESPONSIBILITIES**

**DIALOGUE &  
EXPERIENCE  
SHARING**

**DATA COLLECTION  
& DISSEMINATION**

**PLANNING:  
PREVENTATIVE &  
RESPONSE  
MEASURES**

**INVESTMENT**

**RESILIENCE  
TECHNOLOGY  
DEVELOPMENT**

**PROJECTIONS,  
MODELLING &  
NEEDS  
ASSESSMENT**

**POLICY  
DEVELOPMENT**

**MARKET  
ADAPTATION**



# Nexus Forum

- IEA work stream on energy resilience
- Input from EGRD Workshop

# Thank you!

For further information contact:

[takashi.hattori@iea.org](mailto:takashi.hattori@iea.org)