

The 2nd Meeting of  
**The Forum on the Climate-Energy Security Nexus [The Nexus Forum]**  
*Exploring Cities-level and Insurance Industry Issues*  
 26 JUNE 2013

**SUMMARY REPORT**

**BACKGROUND**

On 8 November, 2012, the IEA and FCO launched the Forum on the Climate-Energy Security Nexus (Nexus Forum). The first meeting at the IEA headquarters served as an agenda-setting session on energy resilience to climate change both on the energy supply- and demand-side. The Nexus Forum was timely, taking place just 2 days after Superstorm Sandy knocked out power in New York.

The second Nexus Forum held in the UK at FCO offices in Whitehall, London on 26 June, 2013, focused on two specific issues which emerged from the first Forum - cities and insurance - exploring opportunities for city-level responses and the role of insurance in building resilience to the impact of a changing climate. This Forum was once again timely, held the day after the release of the Obama's Climate Action Plan, which included significant attention to measures in preparation for the impacts of climate change.

Participants brainstormed under Chatham House Rules about energy resilience issues in cities and insurance, how to develop planning and implementation and roles for central, regional and city government, insurers and other relevant industries. This Report sets out the key messages and issues that were identified during the discussion at the Second Nexus Forum.

**KEY MESSAGES AND ISSUES**

<b>OVERARCHING ISSUES:</b>
<ul style="list-style-type: none"> <li>• <b>Definitions of Resilience</b> <ul style="list-style-type: none"> <li>▪ A system's ability to mitigate and withstand shocks and major changes</li> <li>▪ Ability to recover from disturbances and continue normal functioning</li> <li>▪ Characterised by comprehensive planning, diversity and, most importantly, flexibility</li> <li>▪ Diverse range of responses to a shock or event</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Unprecedented levels of cooperation are needed</b> <ul style="list-style-type: none"> <li>▪ Challenges and solutions should not be considered in isolation</li> <li>▪ Consider interactions of complex local networks and complex policy considerations</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>A fundamental shift in mindset is needed</b> <ul style="list-style-type: none"> <li>▪ Past climatic patterns, energy demand patterns and technical requirements can no longer be used to inform the future</li> <li>▪ Because climate change is characterised by uncertainty, a change is needed in the way we relate to uncertainty, to better integrate this into planning</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>It is important to maintain the complementarity of mitigation and adaptation</b> <ul style="list-style-type: none"> <li>▪ These approaches should go hand-in-hand</li> <li>▪ Evidence-based prioritisation of policy measures should be applied</li> </ul> </li> </ul>

- **Information on climate change and climate risks to energy security should be urgently improved**
  - Increase data-sharing and experience-sharing
  - Guidance is needed on reliable data sources
  - Guidance and consensus-building is needed on best approaches to modelling climate impacts
  - Better context analysis, response analysis and programming
  - A one-stop-shop platform for dissemination of climate risk information, supported through open-source information mapping, would be a valuable new tool
- **Communication to the public about climate risks must be improved**
  - Inform all stakeholders about the reality of climate threats and the potential impact they could have on their respective interests
  - Better understanding among the public will increase public acceptability of climate resilience discussions
  - Communication will generate the political license to act
  - Care is needed to ensure the message underlines the particular impacts for the various audiences in the private sector and in the public

**OVERARCHING ENERGY ISSUES:**

- **A changing climate will have significant effects on energy generation and energy use systems, e.g.:**
  - Changes in scale and pattern of energy demand for heating and cooling
  - Ability of energy producers to meet demand (e.g. availability of cooling water for thermal generation plants; reduced efficiency of power lines in high temperatures).
- **Resilience needs to be built into the energy generation and supply systems, e.g. through:**
  - Diversity of energy sources
  - Implementation of efficient energy management systems in energy utilities
  - Building flexibility into energy generation technologies
  - Extending utilities' planning timeframes
  - NB. many of these actions will be commercial decisions taken by industry
- **There is an important role for regulators in incentivising resilience measures in early stages through regulatory frameworks and perhaps through pricing.**
- **There is significant scope for streamlining urban energy-using systems that should be harnessed in order to increase energy resilience**
  - Ensure maximum energy efficiency in new urban infrastructure
  - Increase energy efficiency in publically procured technologies
  - Adapt existing/continuing systems to a revised set of climatic thresholds
  - Build in more flexibility and responsiveness to sudden changes in energy supply
- **Development of innovative new energy infrastructure will create economic opportunities, spur the development of new businesses and industries and generate jobs**

**GOVERNMENT/CITIES ISSUES:**

- **Most cities are decarbonising their energy infrastructure, while work on building climate resilience is a recently developing field. Attention has increased considerably – from 30% of C40-member cities working on resilience issues in 2011, to 78% in 2013.**

<ul style="list-style-type: none"> <li>• <b>It is necessary to plan for managing the impact of a changing climate on the normal functioning of specific energy-using urban infrastructure. Consider:</b> <ul style="list-style-type: none"> <li>▪ Electricity supply to support operation of commercial enterprises</li> <li>▪ Fuel supply to run transport and industrial systems</li> <li>▪ Ensure delivery of crucial public services (<i>e.g.</i> health services; food supply; banking)</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Cities should develop strong local action plans to build resilience and guide the response in the event that the city's energy security is compromised. A plan may include:</b> <ul style="list-style-type: none"> <li>▪ Identify alternative energy supplies in advance of shortages</li> <li>▪ Plan the allocation of restricted energy supply to priority loads (<i>e.g.</i> hospitals, public transport, water treatment plants)</li> <li>▪ Integrate intelligent energy management networks into energy systems</li> <li>▪ Resilience-building could be developed through regulation, <i>e.g.</i> building codes.</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>There are several advantages to planning climate resilience at the local level:</b> <ul style="list-style-type: none"> <li>▪ Cities can tailor development of resilient urban systems to the precise needs of a particular city and the social and economic circumstances of its local population</li> <li>▪ Local governments are likely to face fewer political/administrative barriers than central governments so resilience measures can be implemented faster</li> <li>▪ Local authorities can respond faster to local emergency situations – should be able to provide the necessary responsiveness to deal with climate-related shocks</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Consideration should be given to how energy resilience plans are best approached</b> <ul style="list-style-type: none"> <li>▪ Local low-carbon development plans are common in most cities - these could be a logical place to integrate climate adaptation measures</li> <li>▪ Consider whether climate resilience is best addressed in dedicated plans or if climate impacts should be integrated into existing plans <i>e.g.</i> civil emergency response plans</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Role for central Government may include:</b> <ul style="list-style-type: none"> <li>▪ Encourage resilience planning by requiring or incentivising resilience measures (internally; in cities; in industry)</li> <li>▪ Incentives could be linked to funding to support resilience-building work</li> <li>▪ Guide development of a standardised process for resilience planning</li> <li>▪ National resilience-building frameworks could help cities identify the level of resilience that they should aspire to and ensure consistency across cities</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Consider how to reconcile the need for long-term planning in energy resilience with the reality of short-term decision making in elected government bodies</b> <ul style="list-style-type: none"> <li>▪ Political license to act will be supported by improved public communication</li> <li>▪ At the city level, action could be sustained by a mandate from central government</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>• <b>Government leaders should collaborate with major energy users in the private sector, including:</b> <ul style="list-style-type: none"> <li>▪ Infrastructure providers <i>e.g.</i> electricity generation &amp; transmission, transport</li> <li>▪ Key energy-using sectors <i>e.g.</i> developers, architects, engineers, aluminium manufacturing</li> </ul> </li> </ul>

**OVERARCHING BUSINESS ISSUES:**

<ul style="list-style-type: none"> <li>• <b>The private sector has been focused on decarbonisation or "greening" measures but attention to climate resilience issues is now growing</b></li> </ul>
<ul style="list-style-type: none"> <li>• <b>The private sector requests government to share information on climate change, expected impacts, government action on climate change and resilience building measures.</b></li> </ul>

- **Government could support an industry-level response on resilience in the following ways:**
  - Provide a clear political signal about importance of resilience, to reduce the political risk for investors in resilience-building projects and strategy to avoid piecemeal resilience efforts which could have a negative impact on overall infrastructure
  - *In the short term:* lead by developing a robust and consistent approach to understanding and responding to climate change risk
  - *In the long-term:* investigate options to stimulate private investment in resilience building

#### INSURANCE ISSUES:

- **Insurance is a key to resilience building**
  - Essentially a tool for risk-sharing and maintaining economic stability, with an additional potential function of motivating resilience-building behaviour (special efforts needed to harness this potential)
  - Need to avoid the emergence of "uninsurable" cities or areas Industry has valuable experience to share on the impacts of a changing climate
  - Industry has a shared interest in limiting the damage caused by a changing climate
- **Without adequate insurance, climate change is likely to cause major GDP growth decay**
  - Large commercial operators are generally well-insured
  - Small business and residential sector tend to be reluctant to insure
  - Compulsory insurance requirements are difficult to implement effectively
  - Better to increase public information on need for insurance cover for climatic events
- **Traditional risk models relying on historical data need to be re-examined in light of latest climate information to ensure the insurance industry's risk factors are accurate**
- **Insurers could take steps to support resilience building**
  - Risk-based pricing may be the best incentive – more work needed to do this well
  - With clear indicators, such as building code requirements or labelling, insurers could develop evolutionary incentivising measures and products
- **Insurance industry is facing challenges as a result of increasing rate of climatic events**
  - High and rising costs both in the energy sector and beyond
  - Increased insurance capital requirements to cover additional risks threatens the availability of coverage for certain high risk-areas
  - Growing uncertainties related to climate change have resulted in a loss of public trust and reduced commercial viability of some insurance products
- **Governments often face challenges with current insurance structures, including:**
  - Subsidy costs, lack of risk-based premiums, and low take-up rates
  - Economic losses far exceed the insured losses
- **The insurance industry requests government to set standards for resilience building and seeks governmental guidance on:**
  - What are the characteristics of an adequately resilient asset?
  - What are adequate time-frames for assets to recover or adjust to a climatic change?
- **Government and insurers could work together, for example by:**
  - Sharing information and work together on climate risk forecasting
  - Working towards complementarity between government-guaranteed facilities and private insurance products, and appropriate capital structures to support them
  - Pursuing the most effective and economically efficient approach to climate risk cover

- **Dialogue between insurers and governments should be enhanced to:**
  - Improve governments’ understanding of what the industry can and can’t deliver
  - Share insurance industry forecasting with governments so governments can consider whether they can /need to take action
  - Enhance governments’ understanding of issues faced by the insurance industry so options can be discussed
  - Improve insurers’ understanding of government approaches to disaster insurance and whether governments will underwrite risk in climate/disaster circumstances
  - Help insurers to communicate their concerns in terms of climate/disaster risk

## PLANNING APPROACHES

Discussions at the 2<sup>nd</sup> Nexus Forum helped the IEA to generate a set of key considerations that are likely to be important when developing central planning processes for building energy resilience. These are outlined in the “OPTIC approach” framework below.

### **An OPTIC approach:**

#### **OPTIMAL RISK INFORMATION**

- Improve information on climate risk including strengthening relationships with appropriately skilled/informed scientific monitoring organisations
- Enhance work on forecasting/modelling of climatic changes

#### **PLANNING**

- Require development of resilience plans to increase responsiveness to climatic changes and shocks – national frameworks, local plans and sector specific plans (*e.g.* energy utilities; major urban energy-using services including transportation systems; civil response bodies and other social services such as hospitals)
- Develop a standardised process for resilience planning, including: how to assess climate-related risk; who should be consulted in the process; what specific steps should be taken to build resilience in each sector
- Carefully consider regular review periods for plans (*i.e.* 3 years or less)

#### **TECHNICAL REINFORCEMENT**

- Build, or incentivise up-scaling of technical readiness including building-in flexibility to deal with uncertain climatic changes
- Consider energy reserves, priority load allocation and cut-off plans

#### **INSTITUTIONAL REINFORCEMENT**

- Develop institutional resilience through mandating authorities with relevant responsibilities
- Develop cross-sectoral coordination, collaboration and information-sharing groups for both response planning and management
- Allocate the necessary powers to bodies tasked to manage and implement resilience-building, including powers to work with energy providers

#### **COMMUNICATION**

- Make accurate climate information broadly accessible to the public, both to enhance awareness of the challenge and explain the public’s role and the role of government and other stakeholders in advance of, during and, where appropriate, after climatic changes.

## IEA CONTRIBUTION TO ENHANCING RESILIENCE

The IEA's contribution to building resilience to the impacts of a changing climate on the energy sector continues to develop along four tracks: dialogue facilitation; policy information collection and dissemination; resilience policy development; and data and modelling.

1.	<p><b>DIALOGUE FACILITATION</b></p> <ul style="list-style-type: none"> <li>• 1<sup>st</sup> Nexus Forum (8 Nov 2012, Paris): “Implications for business: exploring the impact on business of changes in building resilience to changing climate.”</li> <li>• 2<sup>nd</sup> Nexus Forum (26 Jun 2013, London): “Cities and insurance: exploring opportunities for city-level responses and the role of insurance in building resilience to impacts of climate change.”</li> <li>• COMING: 3<sup>rd</sup> Nexus Forum (Friday 25 Oct 2013, Paris): building the resilience of the electricity sector.</li> </ul>
2.	<p><b>POLICY INFORMATION COLLECTION &amp; DISSEMINATION</b></p> <ul style="list-style-type: none"> <li>• Enhancing IEA In-Depth Energy Policy Reviews (IDR) to gradually integrate energy resilience issues.</li> <li>• Enhancing the IEA PAMS Databases to gradually integrate resilience policy information with a view to housing a global inventory of relevant governmental policies and plans.</li> <li>• Integrating climate resilience into IEA Emergency Preparedness Reviews (EPR)</li> </ul>
3.	<p><b>RESILIENCE POLICY DEVELOPMENT</b></p> <ul style="list-style-type: none"> <li>• <b>Contributing to external policy research on energy resilience</b> <ul style="list-style-type: none"> <li>○ US Dept. of Energy (US DOE) (July 2013) US Energy Sector Vulnerabilities to Climate Change and Extreme Weather</li> <li>○ Nuclear Energy Agency (NEA) (Feb 2012) Climate Change: Assessment of The Vulnerability of Nuclear Power Plants And Cost Of Adaptation</li> <li>○ OECD/GOV (2012) Methodological Framework On Disaster Risk Assessment</li> <li>○ WBSCD (Nov 2013) draft report on climate resilience in electricity utilities</li> </ul> </li> </ul>
4.	<p><b>DATA &amp; MODELLING</b></p> <ul style="list-style-type: none"> <li>• IEA's World Energy Outlook (WEO) team developed modelling of projected temperature increases in cities for the WEO Special Report on Climate Change (Jun 2013)</li> <li>• IEA's Energy Technology Perspective (ETP) team considering integrating a climate change feedback loop into the ETP technology model to support resilience analysis in 2014</li> <li>• OECD/ENV Long-Term Environment Model beginning to integrate climate change impacts</li> </ul>