

# Scaling up Community Energy: A Journey to Low Carbon Smart Cities

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# Outline

- Defining key concepts
- Background and problem
- Research question/aim
- Nottingham case study and REMOURBAN
- Research methodology
- Capability Maturity Model
- Research findings
- Future research agenda
- Conclusion

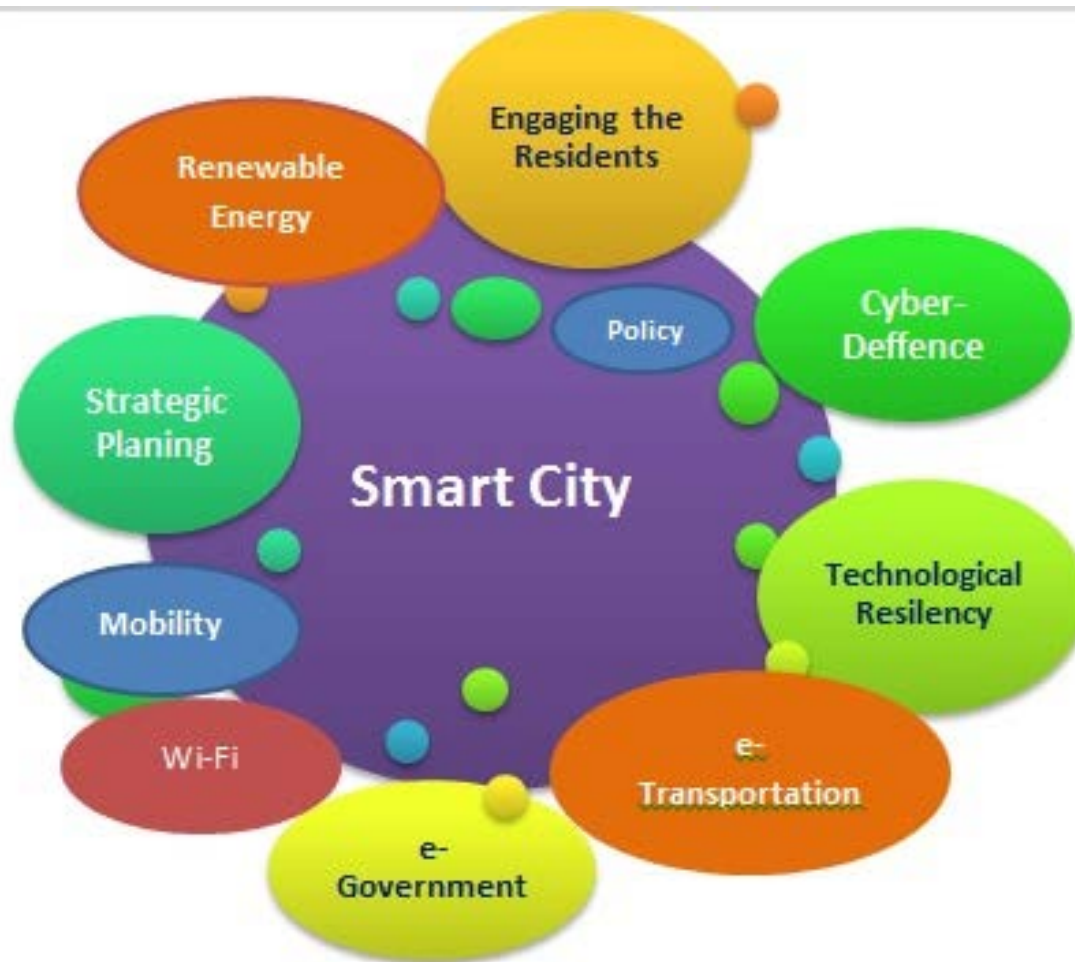
# What is Community Energy (CE)?

- For the first time, DECC published its CE strategy in 2014
- Does not only include energy generation
- Initiatives which involve communities to;
  - (i) reduce energy use
  - (ii) manage local energy better
  - (iii) generate energy locally
  - (iv) purchase energy collectively
- Community engagement is a precursor for implementing CE



# What are Smart Cities?

- Smart City is a buzzword
- An urban development vision to integrate multiple ICT solutions to manage a city's assets
- Low carbon smart cities go beyond that for better resource use and less emissions
- Increasing examples of smart city transformation
  - Opportunity to redesign cities
- Key 'smart' sectors utilised by cities include transport, energy, health care, water and waste
  - Streamline everything
  - Traditional networks and services are made efficient
- Low carbon agenda is at the forefront of Smart Cities



# Background and context

- CE is a growing concept
  - Can assist cities in developing low carbon Smart Cities
- Perspectives
  - Central government
  - Local authorities (LAs)
  - Communities
  - Volunteer groups etc.
- LAs are well placed in its success
- CE can help deliver;
  - Local economic regeneration
  - Stronger sense of community and social change
  - Core priorities of improving public health and wellbeing, fuel poverty, energy efficiency

# What is the problem in cities?

- Cities are complex
- More than half of the world's population lives in cities
  - Urban population is expected to surpass 6 billion by 2045
  - Changing demographics
- More than half of the economic output is in cities
- Cities consume large portion of energy and generate 75% of carbon emissions
  - A range of resource crunches
- Enormous challenges and opportunities for policymakers, LAs, investors and innovators



# Role of Local Authorities

- CE is an innovation and a vehicle to deliver Smart Cities
- LAs have a strategic role through planning and policy
- An undeniable role to take leadership
  - Nottingham, Bristol, Exeter, Oxford are making their attempts
- Many UK LAs lack the budget, leadership and capability to progress smart initiatives
- LAs need to transform their organisations
  - Need to develop organisational capability and maturity
  - What are the areas of improvement?



# Research Question/Aim

- How can LAs develop organisational capability to facilitate scaling up Community Energy to deliver low carbon Smart Cities agenda?
  - An organisational gap analysis of NCC for process improvement and maturity
  - An evaluation of the proposed strategic framework



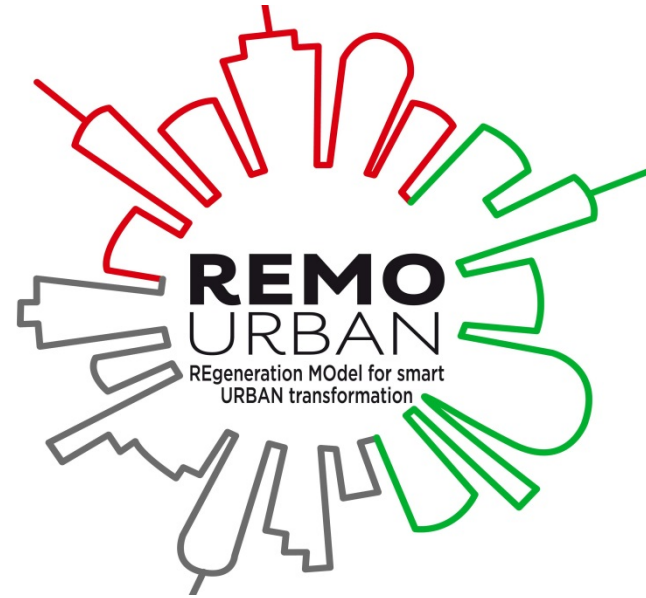
# Nottingham as a Case Study

- Strong commitment to sustainable energy and carbon management
  - Robin Hood Energy
  - EnviroEnergy
  - NCH, NEP
  - Two leading universities
- Core drivers
  - Fuel poverty
    - Cheaper tariffs and energy efficiency
  - Energy security
    - District heating
  - Job creation and economic development
- Surpassed its targets four years early - 26% reduction by 2020
- CE is an expanding opportunity
  - Commercial income through energy services
  - Leadership role in the UK, EU and beyond



# REMOURBAN (REgeneration MOdel for accelerating the smart URBAN transformation)

- 25M EU Horizon 2020 funding
- Integration of;
  - Energy
  - Transport
  - ICT
- Three EU cities;
  - Valladolid (Spain)
  - Nottingham (UK)
  - Eskisehir (Turkey)
- Two follower cities;
  - Seraing (Belgium)
  - Miskolc (Hungary)
- Community engagement is at the heart of it



# Research methodology

## Literature review

- Capability Maturity Model

## Research approach

- Deductive and inductive approach

## Research strategy

- Case study – Nottingham City Council

## Research methods

- Interviews
- Focus group
- Content analysis

## Data analysis

- Nvivo software

Findings-  
Strategic management framework

Validation

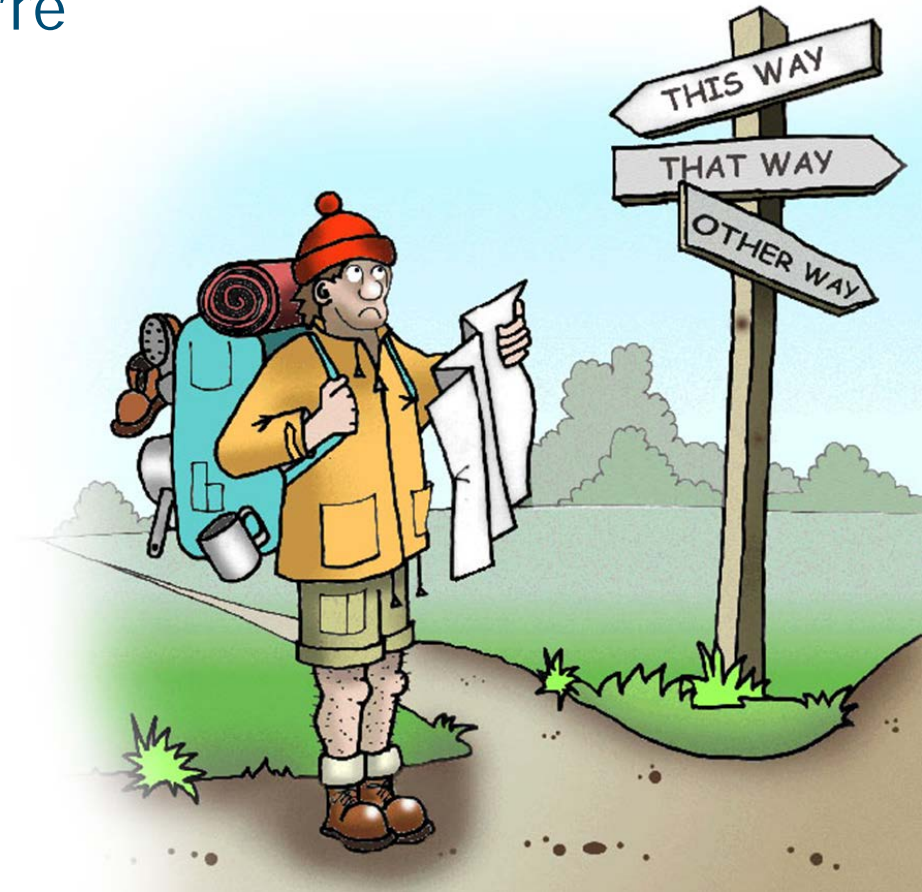
# Data Collection and Analysis

- Thirteen semi-structured interviews
  - NCC and other stakeholders
  - NCC, NCH, NEP, RHE
  - Senior and middle management.
  - NCC's energy services, communications/marketing, housing
- Pilot study
  - Interviews were piloted with two of NCC's staff
- Focus group
  - Three community groups in the Sneinton area
  - Five community leaders
  - Sneinton is the pilot area for Remourban
- Interviews were recorded and transcribed
- Nvivo 10 thematic analysis

“If you don’t know where you’re going, any road will do”

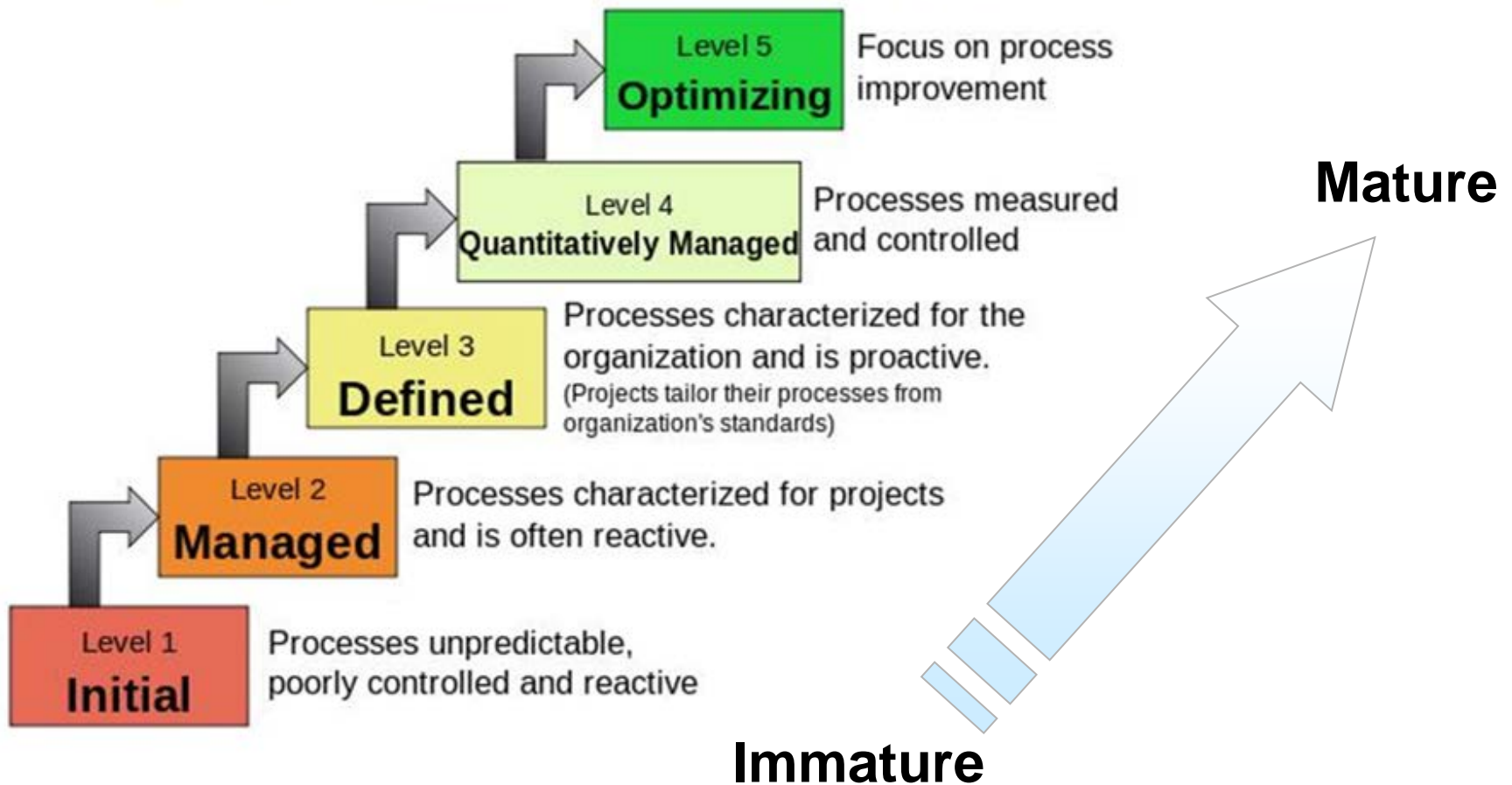
“If you don’t know where you are, a map won’t help”

“A framework approach is needed”



# Capability Maturity Model

## Characteristics of the Maturity levels



# Key Processes (1 of 2)

- **Strategic alignment**

- Is community engagement in energy considered strategic?
- Is it part of a core strategy (e.g. energy)?
- The scope and objectives in the strategy are understood?
- Relationship between community engagement in energy and other core strategies (e.g. transport) understood?

- **CE portfolio management**

- Is there a high level strategic mapping of the portfolio of CE projects across the city?
- Is the portfolio of the projects/initiatives understood and agreed?
- Is there adequate resourcing and financing for CE?

- **Cross-boundary interface**

- Are the activities across stakeholders managed strategically?
- Is the relationship between city and its wider boundaries understood?



# Key Processes (2 of 2)

- **Individual CE Projects planning**

- Is an 'integrational' strategy for engagement planned for each CE project?
- Have the communities been segmented and targeted appropriately
- Are the aims and approaches to different stages of the life cycle understood?
- How will the feedback from communities influence decisions?
- Is there post-project maintenance and evaluation?

- **Project/initiative tracking and monitoring**

- Are there effective procedures for tracking and monitoring?
- Are there clear project plans and milestones in place?
- Are there sufficient resources to achieve these milestones?
- Are lessons learnt?

# Process Enablers

- **Commit-** ensures senior management commitment to the change program (developing CE)
- **Identify-** aims at discovering possible benefits (e.g. reduction in fuel poverty; % of energy generated; carbon reductions)
- **Plan-** describes an action plan with activities that set objectives and targets, assigning roles and responsibilities
- **Take action-** efforts for the implementation of plans and raising awareness. It involves adequate resourcing, appropriate organisational structure and training
- **Review-** aims at improving CE by continuously monitoring and comparing energy performance, undertaking a complete review of targets

# Organisational Gap Analysis of NCC



# Vision and Strategy

- NCC's Energy & Climate Change strategies
  - CE embedded
  - Little evidence of strategic implementation
- CE is not yet a holistic and mainstream activity
  - Ad-hoc and requires more coherent presence in the strategy
- The focus has shifted from sustainability to energy/low carbon projects, e.g. housing, transport.
  - Due to economic down turn and the funding cuts
- CE is not understood across the organisation
- No vision statements and strategies at finger tips
  - Difficult to communicate across organisational boundaries
- Existing strategies are not dynamic
  - No organisational procedures for periodic updates



# Business Case and Resourcing

- NCC has started to embark on innovative actions to scale up CE
- Little business case for CE
  - Beyond FITs
- Lack of funding and resources
  - One communications/marketing officer
- Robin Hood Energy
  - Addressing fuel poverty
  - Focuses on tariff reduction through collective purchasing
  - No carbon reduction
  - Low demand for low carbon or renewable energy
  - Lack of engagement





# Working across the Region

- Political uncertainty (e.g. Brexit and devolution) created uncertainties
  - Unclear how different authorities in the region will engage and interact
- Little evidence of high level dialogue on energy (amongst the leaders of the councils)
  - Some middle level dialogue exists (e.g. LAEP- Local Authority Energy Partnership)
  - One off voluntary examples may exist
- Absence of city leaders setting the theme has led each city/district focusing on individual benefits than developing a shared vision
- Some councils have cut their energy services
  - Cross learning mechanism

# Four Strands of CE

- Reduce energy use
  - Scaling up the retrofitting
  - Behaviour change and engagement
- Manage local energy better
  - How?
- Generate energy locally
  - Solar panels, integrated batteries, smart metering
  - EnviroEnergy (no involvement from communities)
  - Other technologies?
- Purchase energy collectively to reduce costs
  - RHE (no involvement of citizens)
  - A successful model and getting replicated by other cities (Leeds, London)
  - No green/low carbon energy
  - Better marketing through NCH





# Is the Framework Relevant?

- Asks the right questions
- Business drivers are more important
  - Framework needs more emphasis
  - Is CE an opportunity or a cost?
- “Strategic alignment”
  - Expand to understand business case
  - Is CE understood across the organisation?
- “Portfolio management” and “cross-boundary interface”
  - Belong to a higher maturity level
- “Project planning”
  - Explore new models of engagement (beyond transactional)
    - Life cycle engagement?
- “Project/initiative tracking and monitoring”
  - Confused with more generic project management activities
  - Audit project plans for CE activities

# NCC Maturity Levels

- **Level 1: Initial Capability**

- There are manifesto commitments to CE and citizen engagement in energy in strategy documents. However, the implementation of these strategies have not been planned. There are ad-hoc approaches and some evidence of good practices. In general, most of the engagement is at a transactional level.

- **Level 2: Developing Capability**

- A business case for CE and community engagement has been developed and communicated throughout the organisation. There is general awareness of CE across the organisation. As a result, CE is planned and community engagement becomes an integral part of operational practices.

# Future Research Agenda

- How CE best practice looks like?
  - How can policies put engagement at the centre of the agenda?
  - How can CE become core to organisational strategies?
  - Feasibility study for CE schemes
    - Financial, Technical, Social
  - How can LAs innovate in the delivery of core services including energy?
    - How can it transform to a platform for economic growth?
  - What are the innovative financial models for CE?
  - How can LAs empower communities and co-create as a facilitator of change?
    - How can new models of co-creation be developed?
  - How to evaluate community engagement for benchmarking?
    - Developing matrices/KPIs?
  - Experiment other strategic management concepts and pilot the framework in other settings
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# Conclusion

- First time community energy and community engagement is explored from an organisational and strategic perspective
- The role of communities in Smart Cities is crucial
- CE needs to expand beyond learning from individual initiatives
- A strategic management framework for LAs is proposed
  - Embed CE into core strategy
  - Empower communities
- NCC can potentially demonstrate international leadership
- Findings provide support for low carbon Smart Cities
  - Lessons learnt
  - Nottingham experience is relevant to UK and other countries

# Thank you



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