Institution: Oxford Brookes University

Unit of Assessment: 16 - Architecture, Built Environment and Planning

Title of case study: The local socio-economic impacts of major power station projects

1. Summary of the impact

The Impacts Assessment Unit (IAU) at Oxford Brookes University has pioneered research on the local socio-economic impacts of major power station projects. Resultant insights have included:

- Increasing focus on socio-economic impacts in the assessments of such projects;
- Use of associated planning techniques and mitigation measures; and
- Use of the research by wide range of stakeholders, including developers, local communities, local authorities and various agencies (e.g. health, education etc).

Within the REF period these insights have been deployed in new power station impact research, recently (2011-2013) forming part of the successful EDF (international electricity utility company www.edf.com) application to the Infrastructure Planning Commission (IPC) (now National Infrastructure Directorate within the UK Planning Inspectorate (PINS)) to build a new nuclear power station Hinkley Point C (Somerset), plus consultation studies for a new nuclear power station Sizewell C (Suffolk).

2. Underpinning research

A secure energy supply is vital for the functioning of society. Yet the construction and operation of new energy facilities can be very controversial, especially for the host locality. Until recently much more has been known about the local bio-physical impacts of such projects rather than the socio-economic impacts. ***IAU research identifies the nature of the local socio-economic impacts and approaches to mitigate negative impacts and enhance positive impacts***.

Power station facilities are large (covering 100s of hectares), employ many people to build (typically over 5000 pa over an 8 year construction period for a nuclear station) and are expensive (c£14 billion for the new twin-reactor nuclear power stations). IAU research has developed operational models to explain the nature and key determinants of local socio-economic impacts. It differentiates between impacts for different 'stages' in the life-cycle of the development, between social and economic impacts, and also between actual and perceived impacts. The identified impact categories are now widely used to structure major project assessments.

The IAU has undertaken research and consultancy on major UK power station developments over 30 years. This has included work on the various 'types' of developments (fossil–fuelled, nuclear and wind farms), and on the various key 'stages' in the project life-cycle (construction, operation and decommissioning). Initial research, funded largely by the energy industry (CEGB/National Power/ Nuclear Electric) in the 1980s/1990s developed 'operational' models. A major step in the research programme was the award of an applied research contract to the IAU to monitor the local socio-economic impacts of building Sizewell B nuclear power station (Suffolk) over the period 1988 – 1996 (National Power/Nuclear Energy – c £1 million). This is still the most recent nuclear power station built in the UK. The IAU worked with many stakeholders (developer, local authorities, local agencies such as health authorities, police, and the local community – including local schools) to identify the range of local impacts, using a wide range of quantitative and qualitative methods. The findings are published in a set of '*Annual Monitoring Reports*' (1988-1996), plus many related articles (see Section3). The Sizewell B monitoring studies were invaluable in monitoring impacts, and managing them better, in the Suffolk community.

The Sizewell B and other IAU studies (see Section 3) have provided valuable empirical studies for developers and local decision makers in assessing the likely impacts of new developments. During the 1990s and 2000s, IAU advised on/researched the potential local socio-economic impacts of: English gas-fired developments; various Scottish windfarms; and nuclear decommissioning projects. In the period 2008-2013, the IAU has assessed, for British Energy and EDF, the local socio-economic impacts of the UK's new nuclear build programme. This initially involved studies at 4 sites, narrowing down to detailed studies which formed part of the EDF application to PINS (2011) for consent to build Hinkley Point C, plus consultation studies (2012) for building Sizewell C. Examples of such detailed studies include*:* '*Pre-Application Consultation-Stage 2-Environmental*

Statement – Volume 2 – Chapter 8: Socio-Economics' (EDF/IAU, 2010 – see link in Section5) *; 'Proposed Nuclear Development at HPC: Draft Technical Report on Socio-Economic Studies'* (IAU, Feb 2011, 274 pp)*; 'Workforce Profile Report'* (IAU with Quod, Feb 2011).

The key researchers throughout this period have been: Professor John Glasson (programme leader); Mr Andrew Chadwick (senior research associate); plus Dr Bridget Durning, with Professor Riki Therivel, Brendan Barrett and Miek Van der Wee in the early years.

3. References to the research

Relevant publications (primarily in high impact journals)

1. **Refereed journal article**: Glasson, J and P. Cozens (2011) 'Making communities safer from crime: an undervalued element in impact assessment', Environmental Impact Assessment Review, 31, pp25-35. doi:10.1016/j.eiar.2010.03.007
2. **Book chapter:** Glasson, J (2009) `Socio-Economic Impacts 1: Overview and Economic Impacts', in Morris, P. and R. Therivel, (eds.), Methods of Environmental Impact Assessment, Routledge: Abingdon (3rd Edition), pp22-50. A copy of the chapter can be provided by the HEI on request.
3. **Refereed journal article**: Glasson, J (2005) 'Better monitoring for better impact management: the local socio-economic impacts of constructing Sizewell B nuclear power station', Impact Assessment and Project Appraisal, July (05), pp215-226. doi: 10.3152/147154605781765535

Submitted to RAE2008, Oxford Brookes University, UoA31-Town and Country Planning, J Glasson, RA2, Output 4.

4. **Refereed journal article:** Chadwick, A. and J. Glasson, (1999) 'Auditing the Social Economic Impacts of a Major Construction Project: the Case of Sizewell B Nuclear Power Station', Journal of Environmental Planning and Management, 42 (6), pp811- 836. doi: 10.1080/09640569910849

Submitted to RAE2001, Oxford Brookes University, UoA34-Town and Country Planning, A Chadwick, RA2, Output 3.

5. **Refereed journal article:** Glasson, J and A. Chadwick (1997), 'Life after Sizewell B', Town Planning Review, Vol. 68, (3), pp325-345. URL: http://www.jstor.org/stable/27798252 (or a copy can be provided by the HEI on request)

Submitted to RAE2001, Oxford Brookes University, UoA34-Town and Country Planning, A Chadwick, RA2, Output 1.

6. **Refereed journal article:** Glasson, J with B. Barrett and M. Van der Wee, (1988) `A Local Income and Employment Multiplier Analysis of a Proposed Nuclear Power Station Development at Hinkley Point in Somerset', Urban Studies, 25 (3) pp248-261. A copy can be provided by the HEI on request)

Further evidence of quality of the underpinning research

Industry funding: Continuous stream of applied research funding from many branches of the energy industry and related agencies (e.g. Health &Safety Executive (HSE); UK Government; CEC), for over 25 projects/studies with total value of over £3 million

Prestigious appointments of key researchers: John Glasson and Riki Therivel appointed UK IPC (now PINS) Commissioners in 2009. John Glasson appointed: expert socio-economic impacts adviser to Nuclear Decommissioning Authority (NDA) re 'Deep Mined Radioactive Waste Disposal' facility for UK in 2010; academician of Academy of Social Sciences from 2009; socio-economic impacts peer reviewer for several other major projects worldwide (e.g.: nuclear power station developments for Dutch Government (2010); 'Thames Estuary 2100 Plan' for Environment Agency (2009); 'Browse Gasfield Proposal, Western Australia' for Woodside /Chevron/Esso consortium (2008))

High esteem publications: Highly cited publications in key peer–reviewed high ranking journals, plus associated books: '*Glasson, Therivel and Chadwick – Introduction to Environmental Impact Assessment'* (Routledge), is now in 4th edition and is one of the most cited books on environmental impact assessment internationally. A copy of the book can be provided by the HEI on request

Numerous conference presentations: e.g. at International Association for Impact Assessment (IAIA) annual conference: Perth, Western Australia, 2009. The IAIA annual conferences are

attended dominantly by practitioners.

4. Details of the impact

The work undertaken by the IAU has been important in the integration of socio-economic impacts into the assessment and decision making process for the development of major energy projects in the UK, recently in relation to the proposed new nuclear build (NNB) programme (2008—2013). Examples of the **nature, extent and key beneficiaries** of the impacts include:

*(1) Learning from the research on the local socio-economic impacts of building Sizewell B and other power station developments —**now underpinning much of the NNB research***

The IAU studies undertaken to monitor the actual impacts of building Sizewell B (1988-1996) have proved invaluable in the contemporary (2008—2013) research for the NNB programme, in addition to helping to manage mitigation and enhancement measures better in the Suffolk community at the time of the construction of Sizewell B (SZB).

Since 2008, the IAU has been working with first British Energy, and subsequently EDF, to assess the potential socio-economic impacts of the NNB programme. Major detailed socio-economic impact studies have been undertaken for the EDF proposals to build two new twin-reactor (nuclear) power stations, each 3.2 megawatt (MW) capacity, at Hinkley Point C (HPC) and Sizewell C (SZC). Each project has estimated construction costs of c£14bn. The HPC project was the first to go through the PINS examination process and was successful in gaining development consent in March 2013; socio-economic impacts were an important consideration in the decision making process (see references in Section 2 above) Sizewell C is running approximately 2 years behind Hinkley and the IAU is currently (2013) researching the socio-economic impacts of the SZC proposed development, now also building on the recent work done on HPC.

*(2) Improving the **process** of predicting and managing impacts for NNB*

Achieved through:

- Leading many stakeholder socio-economic workshops over the two years pre-application period to explore the range of potential local impacts of both HPC and SZC;
- Writing key research documents (some noted in section 2 above) which provided the basis for the socio-economic input in the application to build HPC submitted to PINS by EDF;
- Exploring in depth with relevant local agencies the potential impacts on the local area economic base, accommodation market, and other local services and facilities (especially health, policing, education);
- The development of models of various impacts, for example on the key mix of the local/non-local workforce (estimated at 34/66 split for HPC), leading to the agreement of 'Statements of Common Ground' between the developer and local authorities under the PINS procedures;
- Developing approaches to auditing the effectiveness of the assessment process in predicting the likely socio-economic impacts of future major developments, leading to a process of adaptive impact assessment, ensuring the monitoring and managing of project impacts through the life of the project are in the interests of all key stakeholders.

*(3) Improving specific mitigation and enhancement **policies** for the NNB programme*

Examples of effective *mitigation* of negative impacts of the project include:

- The impacts on the local housing market were minimised at SZB by the provision of a 1000-bed site hostel. This has been developed for HPC with plans for 3 worker site campuses (1500 bed spaces).
- A substantial rise in crime coinciding with the building of SZB was highlighted by the monitoring process at an early stage, and very effective mitigation measures were quickly put in place. HPC has learnt from this in terms of appropriate developer policies and early planning with the local police.

Examples of socio-economic impact *enhancement* policies include:

- Developing local labour/economy policies including improving the skill base of the local population through training programmes and developing local business supply chain

opportunities. –Provision of a local legacy of affordable housing from construction accommodation facilities.

*(4) Summary of **key beneficiaries** of the applied research (as noted above, see also section 5)*

- Major energy project developers and developers of other major infrastructure projects which need socio-economic impact assessment (e.g.: appointment of John Glasson to advise the Nuclear Decommissioning Authority (NDA), see Section3)
- Key government agencies (central and local), and other agencies
- The local communities, and associated stakeholders, hosting such major developments.
- Impact assessment practitioners.

The socio-economic input to the assessment of major projects, especially energy projects, has grown fast over the last decade. IAU work, disseminated in articles, books and via the major Sizewell B Monitoring Studies, has contributed to this growth—recently reflected in the demand by consultancies, developers and government departments for copies of the Sizewell B Monitoring Studies in relation to the NNB programme.

5. Sources to corroborate the impact

The following individuals may be consulted (letters of corroboration are available where stated from the Oxford Brookes University Research Office) :

- Corroborating statement author 1. Head of Planning; EDF Energy NNB (re NNB, HPC and SZC).
- Corroborating statement author 2. Director of Policy and Regulation: EDF Energy NNB (re NNB, HPC and SZC).
- Corroborative contact 3. Senior officer of UK PINS (formerly IPC) (Head of Environmental Services c/o The Planning Inspectorate) (re: socio-economic work/expertise).
- Corroborating statement author 4. Major consultancies e.g. Director, Quod (re NNB)
- Corroborating statement author 5. Senior local government officers (eg: Head of Spatial Planning, Suffolk CC (re SZB).

Also many reports and weblinks to recent outputs for NNB projects

- For examples of socio-economic research inputs for HPC NNB project (2010-2011), Google 'IAU—Hinkley Point C—Socio-economics', which shows major inputs to EDF consultation documents, presentation to local authority groups, local authority use of documents etc such as 'HPC Pre-Application Consultation chapter on Socio-Economic impacts' available at http://hinkleypoint.edfenergyconsultation.info/Preferred_Proposal_Documents/Environmental%20Appraisal/Volume_2/V2%20C08%20SOCIO%20ECONOMICS.pdf
- See also media reports which quote John Glasson such as http://www.bbc.co.uk/news/uk-england-somerset-21669298