

Green Infrastructure



**RESEARCH TO SUPPORT EMDA'S
GREEN INFRASTRUCTURE TOOLKIT**

**EMGIN USER CONFERENCE
8TH OCTOBER 2009**

Purpose of the research



- Understand the rationale for investment in *gi*
- Provide an evaluation framework to measure the outputs and outcomes of existing *gi* projects
- Set out an assessment framework to guide decision making
- Assist in establishing a consistent approach to the monitoring and evaluation of *gi* projects

The role of green infrastructure



- Sustainable economic growth – creating communities where people want to live, work and visit
- Multi-functional:
 - “...network of multi-functional greenspace...”
 - “...high quality, multi-functional open spaces, corridors...”
 - “...many elements having multi-functional purposes...”
- Contribute to a broad range of national and regional priorities and strategies

Green infrastructure's economic value



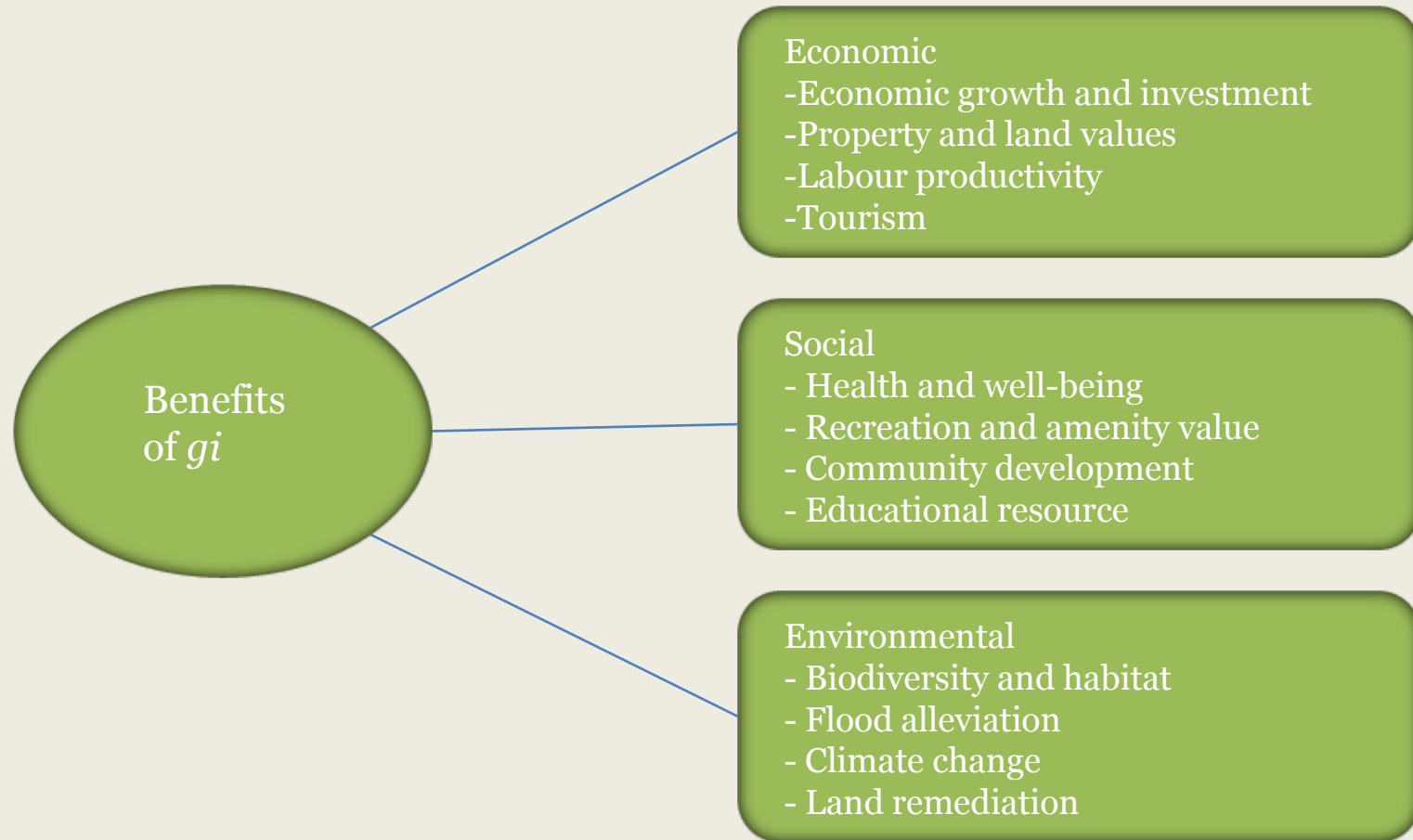
- What is *gi*'s economic value – in its broadest sense (welfare/utility)?
- Descriptive/qualitative literature to support view that *gi* can add economic value
- Some quantitative research does exist – value ranges from £0.02m (agricultural land) to £10.8m (urban core public space) per hectare
- Other studies looked at impact on property values (proxy for welfare effects) – uplift of up to 34%

Green infrastructure's economic value



- However, economic value of *gi* will depend on a number of factors, not least its function
- Function of *gi* can range from economic (e.g. tourism) to social (e.g. recreation) and environmental (e.g. flood amelioration)
- Likely to generate different economic, social and environmental benefits depending on function
- Therefore have looked at individual benefits associated with different types of *gi*

Benefits of green infrastructure



Economic benefits



- Lever in private sector investment – *£1m in Riverside Park Industrial Estate, Middlesbrough*
- Uplift in property values – *1% increase in greenspace equals 0.3%-0.5% increase in values*
- Improve labour force productivity – *60% of staff view surroundings/external views as having greatest impact on how feel at work*
- Attract new visitors – *2.5 billion visits to urban greenspaces each year in England*

Social benefits



- Stimulate increased physical activity– *urban park can help save £0.8m to £2.7m in terms of health costs of inactivity*
- Provide setting for recreation and amenity – *“one of the most widely recognised functions of greenspace”*
- Provide opportunities for social interaction and increases civic pride – *97% of respondents believe greenspaces create nicer places to live*
- Offers range of formal and informal educational opportunities – *greenspace activities shown to have greater impact on improving child behaviour*

Environmental benefits



- Provide habitat for a wide variety of species – *attributed biodiversity value of £906 per hectare*
- Important contribution to flood alleviation– *annual cost of flooding could reach £22 billion by 2080*
- Also contribute to improved energy efficiency – *urban woodland can cut energy costs by 10%*
- Effective land remediation strategy – *bring sites with little commercial value back into public use*

Measuring the benefits of green infrastructure



- Nature of benefits associated with *gi* provides rationale for public sector intervention:
 - Positive/negative externalities
 - Public good
 - Equity
- However, need to prioritise resources where it will deliver the greatest benefit
- Determine what has worked well and what has not
- Identify future priorities for *gi* investment

Evaluation framework



- Evaluation is critical in order to assess the extent to which:
 - The objectives of intervening have been achieved
 - Additional impacts or changes that are attributable to the project or programme have resulted
 - These changes were secured in a sustainable, efficient way and were value for money
 - And to provide lessons for the future
- For *gi* projects and programmes this will require the use of various research methods and evaluation analyses

Evaluation framework



Research methods

- Project review
- Output monitoring
- Financial performance
- Socio-economic baseline and change
- Policy/strategic review
- Stakeholder interviews
- Beneficiary surveys
- Benchmarking
- Case studies

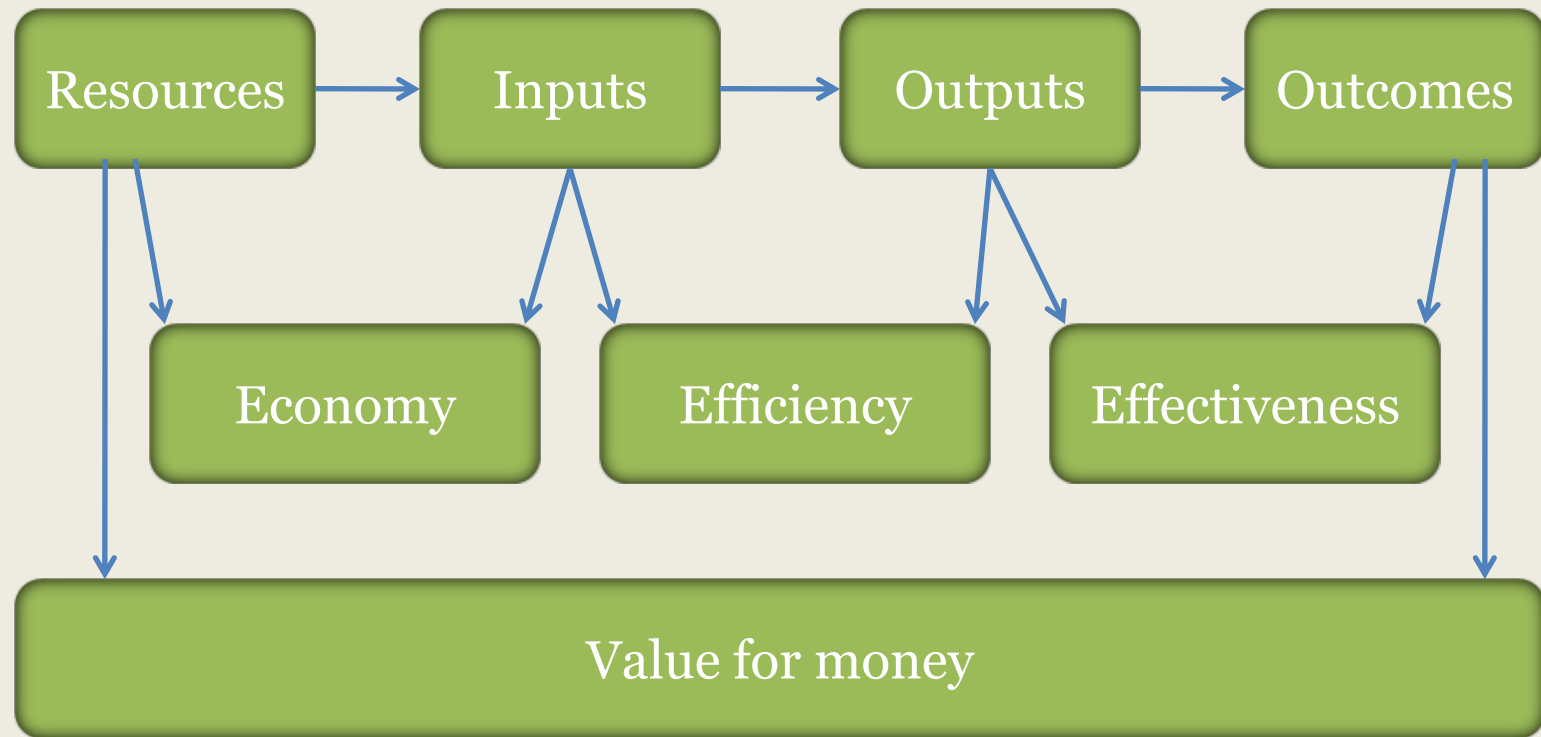
Evaluation analyses

- Logic chains
- Relevance
- Outputs, outcomes and impacts
- Gross to net additionality
- Strategic added value
- Distributional analyses
- Value for money
- Comparison with appraisal
- Sustainability
- Lessons learned

Reporting

- Evaluation framework / inception report
- Interim report (formative)
- Final report (summative)

Evaluation framework



Lessons learned

Assessment framework

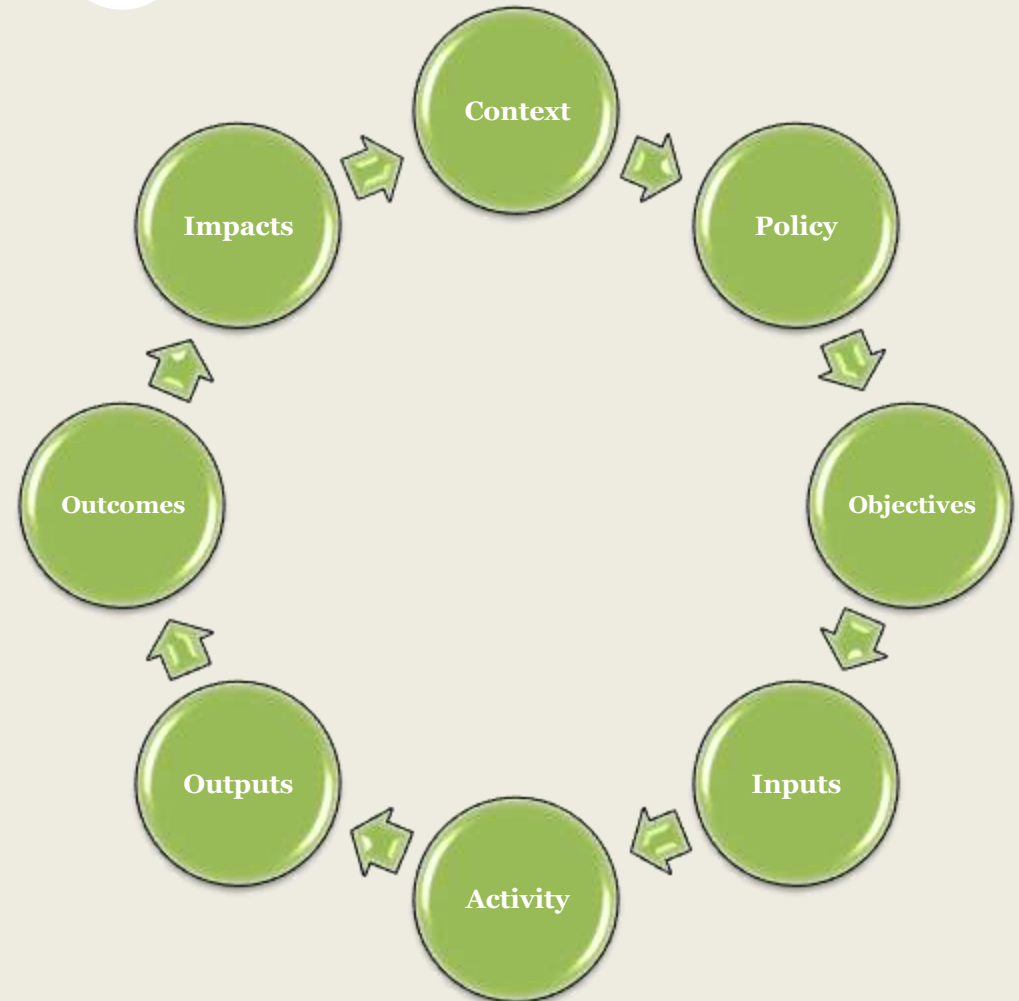


- Integrated approach, comprising three main components:
 - *Development of logic chains* – linkages between inputs, activities, outputs, outcomes and impacts
 - *Assessment of expected impacts (qualitative and quantitative)* – including the economic, social and environmental benefits expected to be generated
 - *Assessment of value for money* – including a CBA, where appropriate, and 3Es analysis
- Scale of the assessment should be proportionate to the complexity and size of the project

Assessment framework



- Development of logic chains will help to assess:
 - The extent to which benefits can be attributed to *gi*
 - Whether a rationale exists for public sector intervention
 - Whether the project is likely to achieve the desired objectives

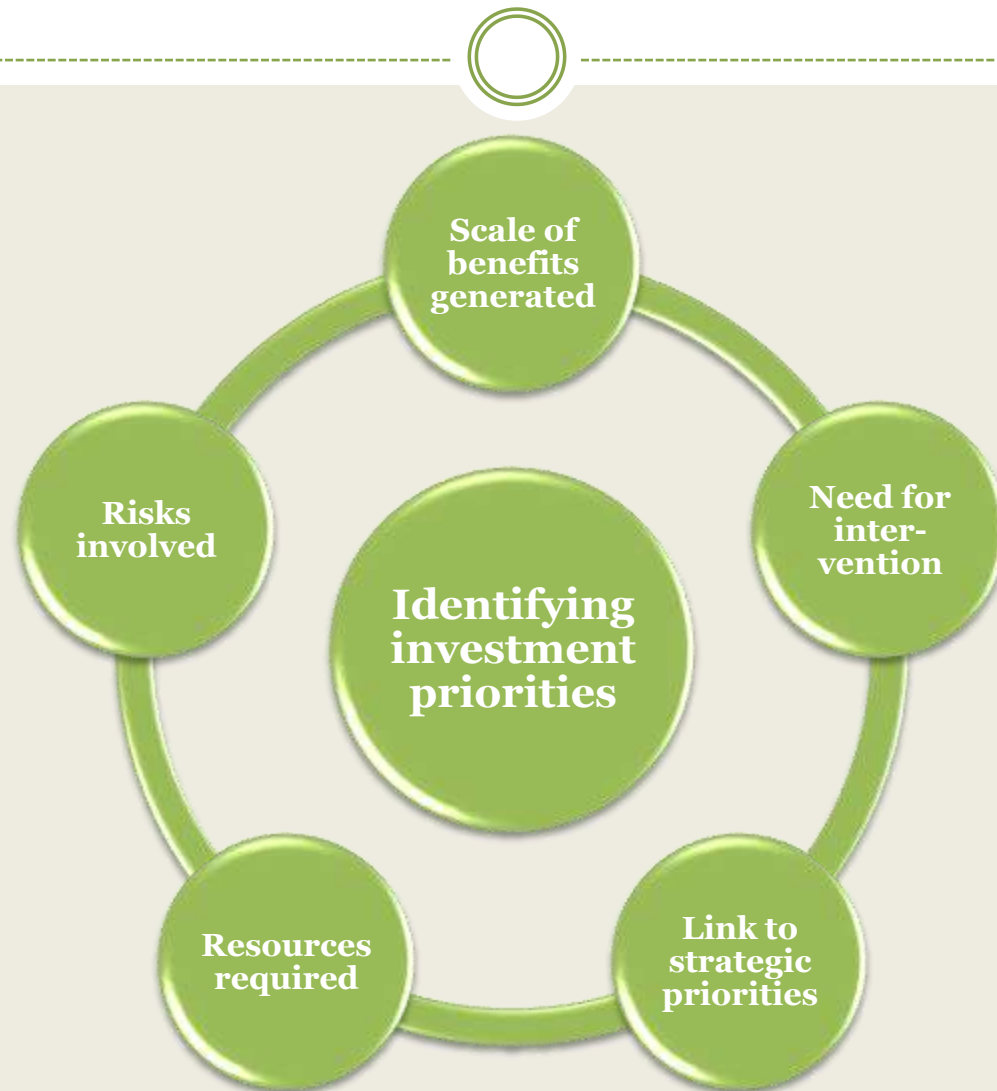


Assessment framework



Initial assessment checklist		
Impact criteria	Assessment of impact	Comment
<i>Economic value</i>		
Economic growth and investment		
Property and land values		
Labour productivity		
Tourism		
<i>Social value</i>		
Health and well-being		
Recreational and amenity value		
Community development		
Educational resource		
<i>Environmental value</i>		
Biodiversity and habitat		
Flood alleviation and water management		
Climate change mitigation		
Land restoration		
- = negative impact 0 = neutral impact + = positive impact ? = gaps in evidence		

Assessment framework



Summary



- *gi* has significant potential economic value – nature of this will depend on its form and function
- Investment in *gi* can generate a range of economic, social and environmental benefits
- Need to prioritise limited resources where will deliver greatest impact
- Important to understand what has worked well, what hasn't and why
- Identifying future priorities will involve considering a range of issues