

QSAND

Quantifying Sustainability in the Aftermath of Natural Disasters

Online E-learning Tutorial Workbook

This QSAND E-learning Tutorial Workbook should be used in conjunction with the QSAND E-learning Tutorial video available at www.QSAND.org. Also available at this website is the QSAND Guidance Manual and Assessment and Scoring Tool.

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Introduction

This delegate workbook has been created by BRE Global as a learning aid for the Core Assessment tool (CAT) section of the QSAND online e-learning tutorial. Each exercise has been created to help delegates achieve the tutorials learning objectives. The learning objectives are designed to ensure delegates understand the CAT assessment process and, where relevant, can pass this learning on to others.

Please note the answers to this exercise are based on mock scenarios. In general further information would be required from the field to determine the relevance of issues to the community through participatory approaches.

Part 1 - Relevance of Assessment Issues

In order to begin a CAT assessment the user must first determine which issues within the tool are of relevance to the programme and how these should be prioritised in terms of biggest positive impact and resource. This will mean the assessment will be focused on the issues that are of priority to the beneficiaries and their recovery.

This exercise is designed to get delegates thinking about the type of information they will need to define which issues should be applicable to an example programme.

Exercise 1

The following information is provided as a reference for the exercise:

Case Study: Reconstruction in the aftermath of a fictional cyclone

- The construction of the 1,500 shelters began one year after the cyclone struck and took 12 months to complete.
- Water infrastructure is already of a good standard and was not damaged by the cyclone
- There is significant donor funding provided to develop the energy infrastructure for the affected community
- There are significant health and social issues arising from the disposal and burning of waste in the community
- The shelter design was based on a successful design used in the aftermath of a 1997 cyclone in the regional area.
- The shelters were more substantial than the ones they replaced, which will be more able to resist damage in future events. Shelter features:
 - Constructed in the same location as the original dwellings, negating the need to displace the population
 - Mud footing for protection against flooding
 - 5-foot deep concrete foundations
 - Bracing
 - Steel truss roof which was connected to the structure using rigid column connections
 - Roofing sheets were fixed with cyclone-resistant techniques
 - The shelters were designed with a timber ring beam two metres from the ground so that a mezzanine level could be built for emergency use
 - Walls were made from woven bamboo mats which were cost-effective and allowed families to repair them themselves
 - Built using local contractors, benefiting the local economy

Using Table 1 please determine whether each issue is not relevant (Relevance Factor (RF) 0), partially relevant (RF1) or very relevant (RF2) to the above case study. When determining the relevance of each issue refer to the aim and consider:

- The extent of the damage which has occurred as a result of the natural disaster
- The local community's priorities
- The sustainable use of resources to make the biggest positive impact
- Available funding

Where sufficient information is not provided to determine the relevance factor, please specify what further information/additional assessments should be carried out to set these factors.

Relevance of Issues

Category	Issue Title	Issue Aim	Relevance Factor (0,1,2)	Justification
Shelter & Community	Privacy	To recognise and encourage shelter and layout design measures that respect and promote privacy within the disaster-affected community and where possible eliminates the risk of privacy invasion.		
	Internal Environment	To ensure that the internal environments of shelters are healthy and comfortable for the occupants.		
	Community Sensitive Design	To promote integration of community-sensitive shelter and settlement layout design features which support inclusivity and accessibility for community members.		
	Construction Approach	To recognise and encourage the specification of construction methods that are environmentally sound and appropriate to the location and needs of the community.		
Settlement	Site Selection	To ensure that the site selected for development or redevelopment is suitable for the affected community and other relevant parties, enabling long term sustainable development.		
	Security of Tenure	To recognise and support tenure arrangements relating to housing, land and property and provide transparency and accountability towards the community, to make them aware of what is being done to address and respond to security of tenure issues.		
	Spatial Planning	To ensure that a settlements layout, amenities, other designated land uses and infrastructure sustainably support social, cultural and economic activities, providing		

		the necessary basis for the community to develop and grow.		
	Infrastructure	To recognise and encourage provision of infrastructure systems that are well planned, resource efficient, environmentally friendly, secure, culturally sensitive and economically viable.		
Materials & Waste	Post Disaster Waste Management	To promote the sustainable management of post disaster waste, by ensuring efficient use, removal and disposal.		
	Construction Waste Management	To promote the sustainable management of waste generated on site during the construction process, by encouraging the efficient use, removal and where necessary disposal of waste.		
	Operational Waste Management	To promote sustainable operational solid waste management throughout the disaster-affected community by proper and effective waste management, solid waste reduction and community education.		
	Materials Properties & Selection	To encourage the use of construction materials of an appropriate quality and which consider climate, culture, durability, local supply and environmental impact.		
	Materials Sourcing	To encourage and promote procurement of construction materials based on quality, environmental, social and economic considerations.		
Energy	Energy Demand & Supply	To establish and optimise the energy demands of the community ensuring that these can be sustainably met in the future through the specification of reliable, affordable and sustainable energy supplies that meet needs of the community.		
	Energy Consumption	To ensure that energy is consumed by the affected community in an efficient and sustainable way.		

Water & Sanitation	Water Demand & Supply	To ensure that the water demand of the affected community is optimised and met for all needs, through a sustainable and secure water supply.		
	Water Quality	To ensure that potable water is palatable, of sufficient quality to be consumed and ensures that communities health is not compromised by water resources.		
	Sanitation	To ensure that adequate sanitation solutions and infrastructure are available for beneficiaries and the importance of hygiene is promoted.		
Natural Environment	Human Relationship to Ecosystem Services	To recognise and communicate the potential benefits of existing ecosystem services and effectively manage human relationships with the natural environment.		
	Ecological Protection	To protect the ecological value of the site during the re-settlement phase and support on-going ecological protection over the life of the development.		
	Ecological Rehabilitation & Restoration	To encourage the rehabilitation and restoration of the ecological value of the site during settlement or re-settlement and the operation of the site.		

Table 1: Relevance of issues

Part 2 - Issue Assessment

The Core Assessment Tool is made up of 21 issues. Those that are relevant to the assessment need to be evaluated against the project/programme to determine the Performance Level that has been achieved.

The following exercises are designed to guide delegates through the assessment process of issues, to determine which performance level can be demonstrated to be achieved.

Exercise 2

The following information is provided as a reference for the exercise:

A Shelter and Settlement project/programme is targeting Performance Level 2 of the Community Sensitive Design Issue. They have confirmed the following:

In order to determine appropriate shelter provision community insights are gathered through public kick-off meetings and community workshops. Particular efforts have been made to hold focus group discussions with women, elderly, disabled, young people and other minority groups. Throughout the design contact is maintained with these groups to include their opinions/requirements in the re-construction process

A community sensitive development plan is produced through facilitation of a working group that covers built environment issues. The plan covers key areas of relevance to the community including cultural traditions, gender requirements and age related needs. Discussions with individual householders have also been opened up to understand built environment needs.

As a result of the community sensitive development plan the shelter and settlement design incorporates considerations that are relevant to the community. Local knowledge is also integrated into the construction programmes being implemented.

International best practice community sensitive design guidance is adapted for the context (as local alternatives are not available) to support inclusivity and accessibility of the built environment. The design of shelters and the settlement reflect community preferences, although as not all features can be included justification is provided on the limitations of some design features.

Questions

1. Has the baseline evaluation been achieved based on the information provided above? Please justify your answer.
2. Please provide some examples of community-sensitive design considerations that may be of relevance to the community (based on the information provided above)?
3. Which performance level would you award the programme (based on the information provided above)?
4. Is there any further information you would like to confirm in order to award performance level 2?

Exercise 3

The following information is provided as a reference for the exercise:

A Shelter and Settlement project/programme is targeting Performance Level 1 of the Materials Properties/Specification Issue . They have confirmed the following:

An initial evaluation has been carried out to determine the material requirements and material availability for the reconstruction project. Opportunities for re-using demolition materials have been considered. Timber for the reconstruction project is being sourced from a sustainable forestry operation.

Debris material has been sorted and a significant amount of inert concrete/block waste has been identified for use as filling material. Many other materials can be re-used in new constructions.

New construction materials have been selected following a cost analysis and taking into account contextual issues such as weather and potential hazards, local material sources, and the skills and abilities of the affected community. Training and up-skilling for those involved in the reconstruction of the settlement will be provided.

Questions

1. Has the baseline evaluation been achieved based on the information provided above? Please justify your answer.
2. Please provide some examples of material specification considerations that should be considered to ensure that construction materials are fit for purpose.
3. Which performance level would you award the programme (based on the information provided above)?
4. What further information you would be required in order to award the next performance level?
5. Have the cross-cutting issue considerations<considerations or criteria? Or just 'issues'? been met? If any, what further activities/evidence is required?

Exercise 4

The following information is provided as a reference for the exercise:

A Shelter and Settlement project/programme is targeting Performance Level 1 of the Energy Consumption Issue. They have confirmed the following:

A detailed energy demand model has been produced for the affected community, which is met by the energy supply system. A significant proportion of the energy demand is met through a centralised grid for electricity.

The safety of the community has been considered, with appropriate access to and storage for necessary fuels. The electrical energy supply is maintained regularly by qualified individuals, who also undertake assessments for illegal tapping.

A community engagement programme addresses energy usage in order to promote safe and efficient usage of energy.

Questions

1. Has the baseline evaluation been achieved based on the information provided above? Please justify your answer.
2. Is the energy supply a *simple* or *complex* system as defined in the issue?
3. Which performance level would you award the programme (based on the information provided above)?
4. What further information would be required in order to award the next performance level?

Exercise 5

The following information is provided as a reference for the exercise:

A Shelter and Settlement project/programme is targeting Performance Level 3 of the Security of Tenure Issue. They have confirmed the following:

The existing settlement site will be redeveloped. Prior to the natural disaster, the tenure arrangements relating to the settlement were well-defined and these records have been preserved. A damage assessment has been carried out, demonstrating any effects on land boundaries.

Tenure has been discussed with the affected community to communicate that previous tenure arrangements will be reinstated, with a clear plan to address related costs and disputes. The local land administration will receive assistance to develop their capabilities and to digitise relevant documentation, improving security and communication.

Questions

1. Which performance level would you award the programme (based on the information provided above)? Please justify your answer.
2. What additional information would be beneficial to support the assessment?

Exercise 6

The following information is provided as a reference for the exercise:

A Shelter and Settlement project/programme is targeting Performance Level 1 of the Water Demand Issue. They have confirmed the following:

The water supply to the affected community has been interrupted by a natural disaster. A context-specific water strategy has been developed in consultation with the local community. The strategy estimates the water demand for the community, assessing individual requirements, communal needs and drawing upon recognised performance benchmarks. There is a significant water demand as a result of crop irrigation, but no other livelihood activities have been identified as having high water usage.

Questions

1. Has the baseline evaluation been achieved based on the information provided above? Please justify your answer.
2. Which performance level would you award the programme (based on the information provided above)?
3. What further information would be required in order to award the next performance level?
4. Has the Economic Viability of the issue been addressed? If not, what further information is required?
5. What ongoing issues should be addressed/considered as part of the Water Demand issue?

Exercise 7

The following information is provided as a reference for the exercise:

A Shelter and Settlement programme is targeting Performance Level 1 of the Human Relationship to Ecological Services Issue. They have confirmed the following:

Extensive consultation has been carried out with the affected community and local government to gain an understanding of the ecological situation and how the community interact with ecological services.

A Natural Environment Action Plan has been developed with ongoing community involvement, which acts upon how human relationships to surrounding ecological features have changed as a result of the disaster. The plan has been implemented by the local community, with ecology 'champions' being appointed to ensure the Plan is effectively being met.

Questions

1. Has the baseline evaluation been achieved based on the information provided above? Please justify your answer.
2. Which performance level would you award the programme (based on the information provided above)?
3. What further information would be required in order to award the next performance levels?
4. What Resources should be considered as sources of information to support the assessment of the issue?
5. How is the term Ecosystem Services defined for this issue?

Part 3 - Scoring and Rating

The way the scoring is calculated within the Core Assessment Tool (CAT) is based on the relevance of the issues and the achievement of the baseline evaluation and performance levels within issues.

This exercise is designed to guide delegates through the process of scoring and provide an understanding of how a programme is rated.

Exercise 8

A project/programme has used the CAT to demonstrate the sustainability of the approach taken. The relevance factors of the selected CAT assessment issues were determined at the beginning of the programme and performance has been measured against these issues to determine the actual score for each issue.

Determine the actual and maximum relevance score for each issue and therefore calculate the final percentage score for the project.

Category	Issue Title	Relevance Factor (A)	Actual points achieved (B)	Maximum points achievable (C)	Actual score (A*B)=D	Maximum score (A*C)=E
Shelter & Community	Privacy	1	3	4	3	4
	Internal Environment	0	N/A	0	N/A	N/A
	Community Sensitive Design	2	2	4	4	8
	Construction Specification	2	1	4		
Settlement	Site Selection	2	4	4		
	Security of Tenure	2	1	4		
	Spatial Planning	2	2	4		
	Infrastructure	0	N/A	0	N/A	N/A
Materials & Waste	Post Disaster Waste Management	2	3	4		
	Construction Waste Management	1	2	4	2	4
	Operational Waste Management	0	N/A	0	N/A	N/A
	Materials Properties & Selection	2	2	4		
	Materials Sourcing	1	1	4		
Energy	Energy Demand & Supply	1	2	4		
	Energy Consumption	1	2	4		

Water & Sanitation	Water Demand & Supply	2	2	4		
	Water Quality	2	2	4		
	Sanitation	2	3	4		
Natural Environment	Human Relationship to Ecosystem Services	1	2	4		
	Ecological Protection	1	4	4		
	Ecological Rehabilitation & Restoration	0	N/A	0	N/A	N/A
Totals:						
Final Percentage Score:						

Table 2: Programme score

Exercise 9

Once the overall score has been established, this is associated with a 'Scoring band' to provide an easily recognisable measure of performance. The table below shows these banding levels:

CAT rating	Percentage of maximum score achieved
Excellent	90%
Very Good	65%
Good	45%
Minimum	30%

Table 3: CAT rating and associated % score

Determine the potential rating for the project/programme.

Please explain why this scoring band cannot be achieved for this assessment, based on the relevance scores applied to each issue.

Congratulations!

You have completed the CAT exercises associated with the QSAND Online E-learning Tutorial.

For further information, please visit www.QSAND.org