ENVIRONMENTAL RISK REGISTER TOOL

Introduction

CRS Shelter and Settlements team has recently developed an Environmental Risk Register tool that is aimed to provide rapid overview of the environmental risks and concerns existing in the regions where CRS programs are operational. It hopes to limit negative environmental impacts on the region and its community during the period of the program, and ideally consider mitigation measures that can be implemented to improve short and long term environmental benefits.

The Environmental Risk Register tool has been based on other environmental assessments and tools that are applicable to the humanitarian context.

The Environmental Risk Register Tool

The Environmental Risk Register tool will help establish immediate environmental risks during the initial phases of a new CRS country program or on-going programs following initial rapid risk assessment of the context, community, weather and environmental factors. Furthermore, the tool can be developed and utilised as an environmental database for the particular region for all future CRS programs, ensuring environmental awareness from the onset of a program.

The tool will help identify degree and scale of the environmental risk, its impact, likelihood, and whether it is deemed to be a long-term risk. It will further enable to identify existing mitigation measures that are being implemented by the local or national authorities, public or private sector, communities, private individuals or organisations that CRS can potentially tapped into to provide positive environmental benefits. In absence of existing mitigation measures, the tool can help identify potential mitigation measures that should be incorporated within the program, and whether particular environmental issues may require additional specialist technical support.

The environmental risks could be existing risks in the region, or may have been identified as future environmental concerns, or may arise from impacts following CRS program. The tool does not necessarily need to be populated by environmental technical expert (e.g. an environmental specialist) but can be completed by nominated CRS staff (e.g. Project Manager, Shelter Technical Advisor) that will be able to collate adequate and appropriate information through research, assessment and consultations on context, weather and environmental impacts.

The following possible uses have been envisaged for the tool, and reports can be filtered to focus on any one or combination of these:
- Assessment checklist
- Program design
- Project proposals
- Program Integration
- Advocacy
- Monitoring and Evaluation
- Stakeholder analysis

Implementation

The tool is an Excel based tool that consists of four steps from identifying risks to establishing likely mitigation measures for a program. It is divided into following fourteen categories that are typically encountered during shelter and WASH programs:

COMMUNITY establishes information about the people and communities in the program area. This category establishes the context.

SETTLEMENT establishes information about existing housing, infrastructure and services in the community. This category establishes spatial quality in the community.

CLIMATE establishes information on weather and seasonal patterns in the region. It will also identify on-going and future natural hazards and risks.

LAND establishes topographical and geological risks in the region.

AIR establishes scale and impacts of air pollution in the region including dust and noise pollution.

ECOLOGY establishes existing natural resources and habitats that may be at risk and may need conservation.

WATER establishes existing and likely water issues including demand, use, quality, availability, sourcing and distribution networks for water infrastructure. It also captures likely water recycling opportunities through CRS programs.

HEALTH & SANITATION establishes existing WASH infrastructure and its capacity. It also includes vector control issues.

OTHER HAZARDS establishes other hazards and risks that may be typical to the region including fire risks.

SHELTER DESIGN establishes quality of the existing and proposed shelter and housing designs including structural safety, durability and spatial needs.

CONSTRUCTION & WASTE establishes health and safety concerns during construction activities undertaken for CRS programs, and potential actions to reduce construction and waste related pollution including likely implementation of waste management plan.

MATERIALS & PROCUREMENT establishes procurement and use of local and responsibly sourced materials including likely implementation of green purchasing and procurement plan.

ENERGY establishes current and likely alternative fuel sources for cooking, heating and cooling, and existing energy infrastructure and its capacity.

COMMUNICATIONS establishes existing communications infrastructure and information access networks including internet.

Suggested Approach for the Use of the Tool

The suggested approach (Figure 1) to use the tool within optimum time frame would be through a filtering process by first completing **Step 1** for environmental issues listed

under all of the above fourteen categories. This will identify applicable environmental risks for a particular region. The issues that have not been identified as applicable need not be considered further, provided there is no long-term risk.

Following this, **Step 2** should be completed for the identified environmental risks. This step will give Gross Risk Ranking for the identified issues and determine whether further steps need to be undertaken. If the identified Gross Risk Ranking is 'High' or 'Medium' then proceed to Step 3.

Step 3 will in return identify environmental issues that are extremely critical. Based on the strength of existing mitigation measures, if Nett Risk Ranking has been identified as 'High', 'Medium' or 'Long-term', then Step 4 should be considered for those particular issues.

Step 4 will help to establish mitigation measures, responsibilities and constraints for the most critical environmental issues.

'HOW TO' USE THE ENVIRONMENTAL RISK REGISTER TOOL

Filtering process (STEP 1 to 4)

Complete STEP 1 for all categories and identify whether there is an immediate environmental risk:

COMMUNITY
SETTLEMENT
CLIMATE
LAND
AIR
ECOLOGY
WATER
HEALTH & SANITATION
OTHER HAZARDS
SHELTER DESIGN
CONSTRUCTION & WASTE
MATERIALS & PROCUREMENT
ENERGY
COMMUNICATIONS

If a risk has been identified (e.g. blue items) then,

Complete STEP 2 for the identified (e.g. blue) categories and determine 'Gross Risk Rating':

ECOLOGY
WATER
HEALTH & SANITATION
OTHER HAZARDS
CONSTRUCTION & WASTE
MATERIALS & PROCUREMENT

If GRR is identified as 'High' or 'Medium' (e.g. orange items) then,

Complete STEP 3 for the identified (e.g. orange) categories and determine 'Nett Risk Rating':

WATER
HEALTH & SANITATION
CONSTRUCTION & WASTE
MATERIALS & PROCUREMENT

If NRR is identified as 'High', 'Medium' or 'Long-term' (e.g. red items) then,

Complete STEP 4 for the identified (e.g. red) categories, and establish responsibilities, mitigation measures and constraints:
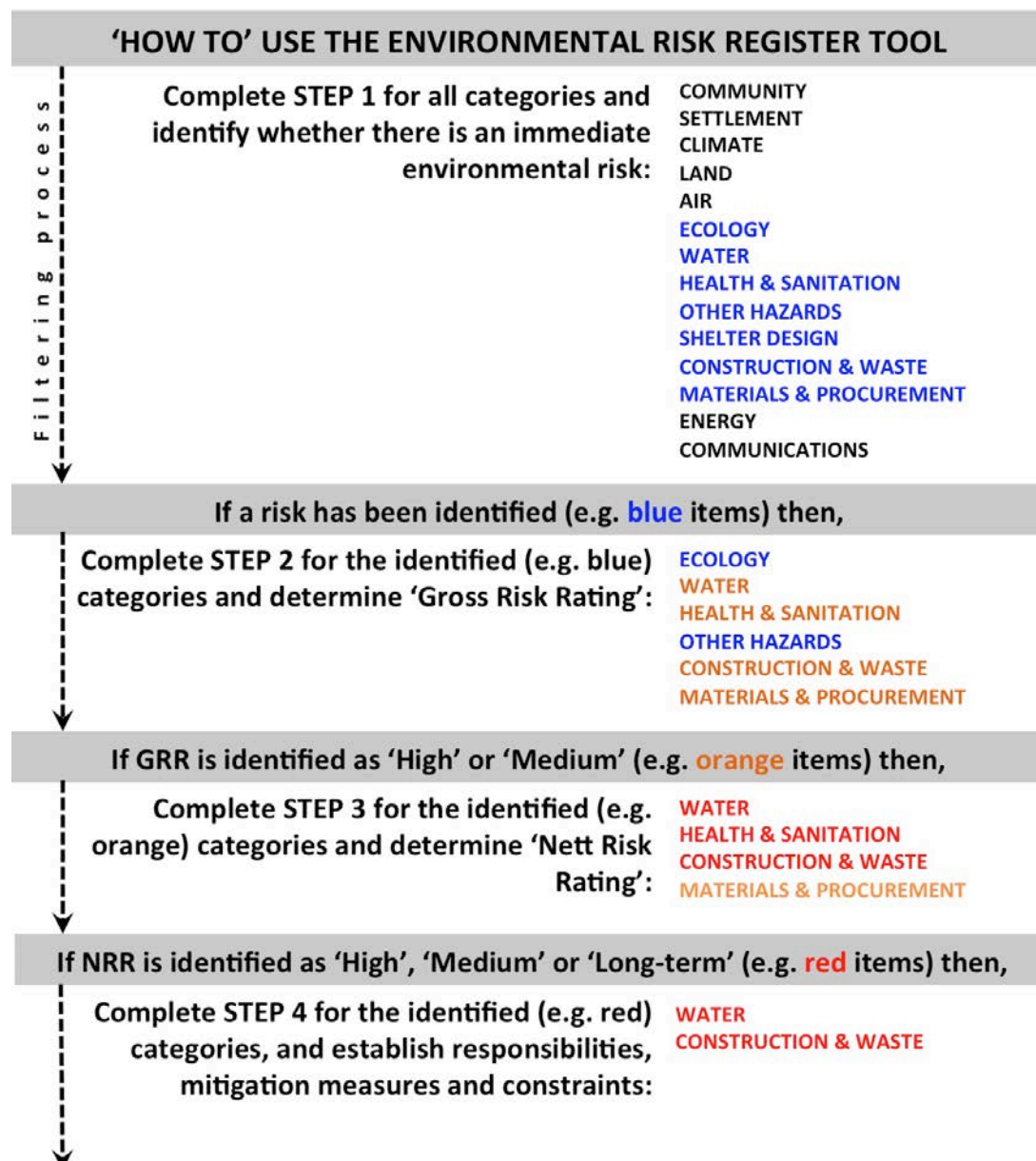
WATER
CONSTRUCTION & WASTE

Figure 1: 'How to' use the Environmental Risk Register Tool

A further diagram for each four steps has been created with some examples on how best to use the Excel based tool (Figures 2a to 2d: Implementation Process). In this example, 'Water Quantity & Sources' and 'Water Quality' issues under 'WATER' category have been identified as those that have critical environmental risks.

Step 1 will establish if there is a risk to a particular issue under a category listed above (e.g. quantity and quality issues under 'WATER'). The issues provide a brief description to the type of risk that is being considered. A drop-down list enables selection of 'Yes' or 'No' to confirm if there is a risk.
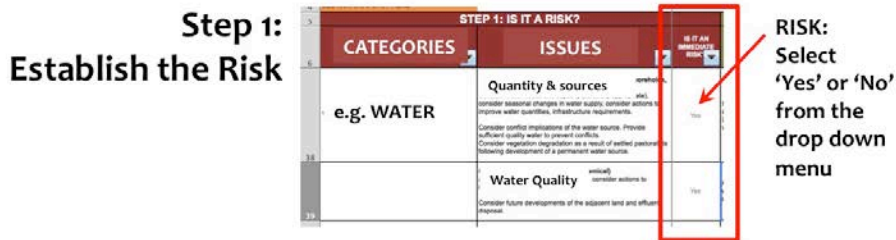

Figure 2a: Step 1 Implementation Process

Step 2 will ascertain the scope of the risk, its impact and likelihood, and whether it's 'High', 'Medium' or 'Low'. This also includes a risk statement that will highlight the cause and effect of the particular risk. This step will establish 'Gross Risk Ranking' for a particular issue based on its impact and likelihood.
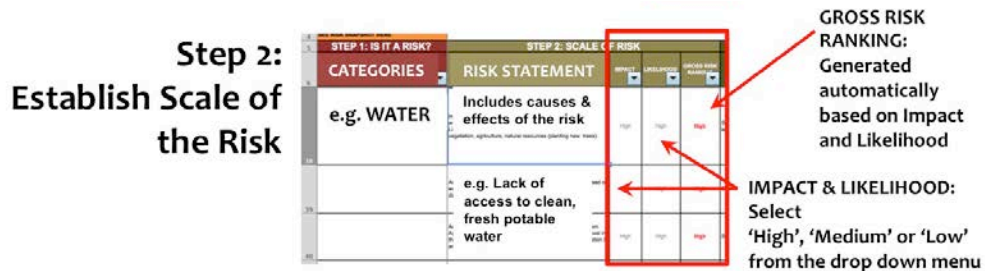

Figure 2b: Step 2 Implementation Process

Step 3 is to identify whether there are current mitigation measures being implemented either by the government, individuals, communities or other organisations. This section will enable CRS team to determine whether there is potential to tap into the existing mitigation projects to reduce negative impacts on the environment. This step will establish 'Nett Risk Ranking' for the issue based on the strength of the existing mitigation measures that could be 'Weak, 'Medium' or 'Strong'. Based on steps 1 and 2, it will be possible to identify whether the particular issue is a long-term risk.
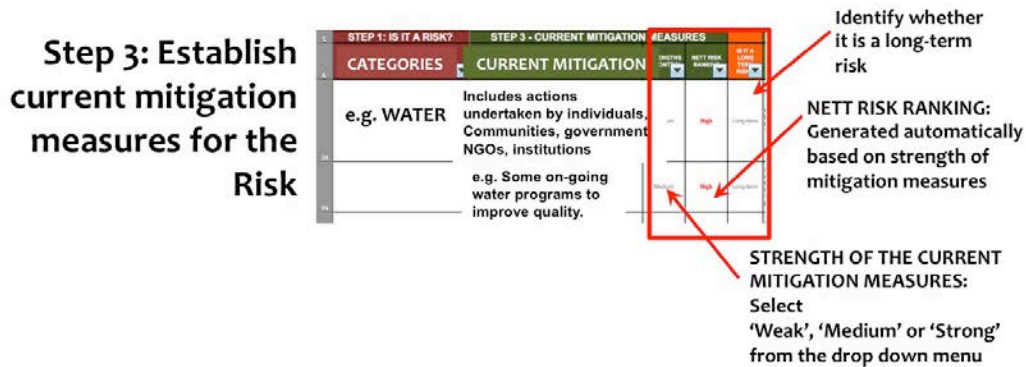
Figure 2c: Step 3 Implementation Process

Step 4 will help identify the type of mitigation measures that can be implemented by CRS team, including monitoring and evaluation strategies, and subsequent benefits or constraints to the CRS programs. This step will also help to determine whether further specialist technical support will be required to deal with the issue, and provide links to other environmental tools (e.g. QSAND) that can provide detailed information for the mitigation measures.
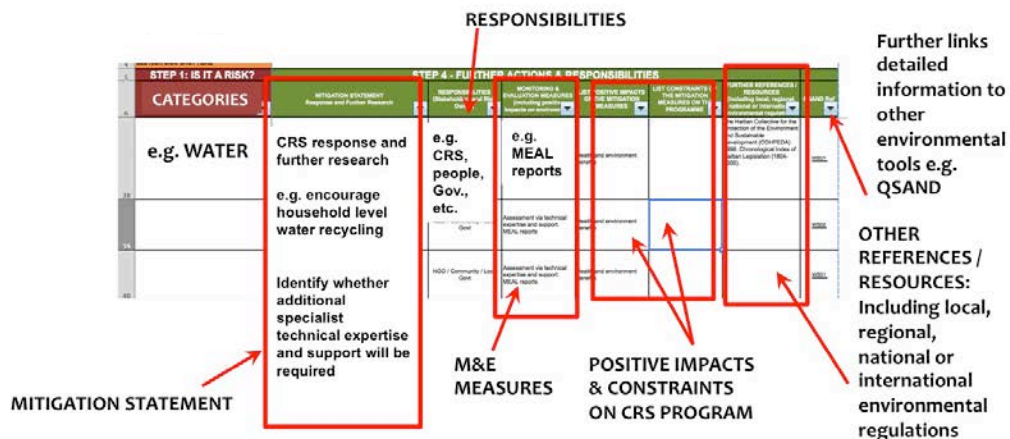

Figure 2d: Step 4 Implementation Process

A completed Environmental Risk Register tool has been included at the end of this report, which is a trial run undertaken for Haiti to illustrate the use of the tool. The results of this trial run are based on generic desktop study undertaken to illustrate an example. It is important to note that in real cases, risks and issues will also vary depending on urban and rural contexts.

The example 'Risk Snapshot' (Figure 3: Risk Snapshot: Haiti) provides a quick overview of all applicable risks for Haiti, and will help determine whether strong mitigation measures are required by CRS programs to reduce adverse impacts on the environment and the communities. As evident, the risk snapshot for Haiti here identifies large number of issues that are extremely critical ('High' and 'Long-term') and in need of appropriate mitigation measures to limit further environmental damage to the region.

RISK SNAPSHOT	Programme: Haiti			
NOTES: (Positive structures / issues, etc.)	Community connections are extremely strong, e.g. konbit (cooperative communal labour) structures can be encouraged to consider projects that would result in positive environmental conditions.			

CATEGORIES	GROSS RISK RANKING	ISSUES	NETT RISK RANKING	IS IT A LONG TERM RISK?
PEOPLE	Medium	Ethnic groups	Medium	Long-term
	High	Gender	High	Long-term
	High	Age	Medium	Long-term
	High	Disability	High	Long-term
	High	Other	Medium	Long-term
COMMUNITY	High	Safety Security	High	Long-term
	High	Spatial design	High	Long-term
	Low	Security of Tenure	Low	Long-term
	Low	Access to livelihoods	Low	Long-term
	Low	Access to social infrastructure	Low	Short
	High	Access to public health infrastructure	Medium	Long-term
	Low	Access to open spaces	Low	Short
	Low	Cultural Heritage	Low	Short
	Low	Other	Low	Short
CLIMATE	High	Rainfall	High	Long-term
	Low	Snow & ice	Low	Short
	High	Floods	High	Long-term
	High	Droughts	High	Long-term
	Medium	Windstorm	Medium	Long-term
	Medium	Temperature & Humidity	Low	Long-term
LAND	High	Topography	High	Long-term
	High	Geology	High	Long-term
	High	Geophysical	High	Long-term
AIR	High	Pollution	High	Long-term
	High	Dust & Smoke	High	Short
	Low	Noise	Low	Short
ECOLOGY	High	Natural habitats	High	Long-term
	High	Terrestrial & Aquatic life	High	Long-term
WATER	High	Quantity	High	Long-term
	High	Quality	High	Long-term
	High	Capacity	High	Long-term
	High	Infrastructure	High	Long-term
	High	Recycling	High	Long-term
HEALTH & SANITATION	High	Faecal waste	High	Long-term
	High	Grey water	High	Long-term
	High	Solid waste	High	Long-term
	High	Vector control	High	Long-term
OTHER HAZARDS	Medium	Fire	Low	Medium
	Low	Conflict related	Low	Short
	Low	Security	Low	Short
	High	Space requirement	Medium	Long-term
	Medium	Privacy	Low	Long-term
	Medium	Culturally appropriate	Low	Long-term
	High	Safe structural design	High	Long-term

CATEGORIES	GROSS RISK RANKING	ISSUES	NETT RISK RANKING	IS IT A LONG TERM RISK?
SHELTER DESIGN	High	Durability	High	Long-term
	Low	Affordability	Low	Short
	Medium	Thermal comfort	Medium	Long-term
	Medium	Ventilation	Medium	Long-term
	High	Internal lighting	High	Long-term
	High	Disability access	High	Long-term
	Low	Other	Low	Short
CONSTRUCTION & WASTE	High	Health & Safety	High	Long-term
	High	Demolition	High	Long-term
	High	Reclamation	High	Long-term
	High	Excavation	High	Long-term
	High	Waste Management	High	Long-term
MATERIALS & PROCUREMENT	Low	Sand, gravel, stone	Low	Long-term
	Medium	Bricks & Block work	Medium	Long-term
	High	Timber	High	Long-term
	Low	Other natural materials	Low	Short
	Low	Other materials (concrete, steel)	Low	Short
	Medium	Skills	Medium	Medium
ENERGY	High	Cooking	High	Long-term
	Low	Heating	Low	Short
	High	Lighting & power	High	Long-term
COMMUNICATIONS	Medium	Telecommunications	Medium	Long-term
	Low	Internet	Low	Short
	High	Access to information	High	Long-term

Figure 3: Risk Snapshot: Haiti

Integrated Shelter and Settlement Risk Register

Programme: *Haiti*

Identify person responsible for the risk register: e.g. *Name, Project Manager*	Date: *December 2016*	References used for the risk register: *e.g. expert interviews, documents, search engine, etc.*

SEE RISK SNAPSHOT HERE

	STEP 1: IS IT A RISK?			STEP 2: SCALE OF RISK				STEP 3 - CURRENT MITIGATION MEASURES			IS IT A LONG TERM RISK?	STEP 4 - FURTHER ACTIONS & RESPONSIBILITIES					
CATEGORIES	ISSUES Brief Description	IS IT AN IMMEDIATE RISK?	RISK STATEMENT (Causes and Effect) including: Social / Economic / Gender & Protection	IMPACT	LIKELIHOOD	GROSS RISK RANKING	CURRENT MITIGATION (if any) Individuals, Communities, Govt, NGO, Institutions	STRENGTHS OF CONTROL	NETT RISK RANKING		MITIGATION STATEMENT Response and Further Research	RESPONSIBILITIES (Stakeholders and Risk Owner)	MONITORING & EVALUATION MEASURES (including positive impacts on environment)	LIST POSITIVE IMPACTS OF THE MITIGATION MEASURES	LIST CONSTRAINTS OF THE MITIGATION MEASURES ON THE PROGRAMME	FURTHER REFERENCES / RESOURCES (including local, regional, national or international environmental regulations)	QSAND Ref
COMMUNITY	**Ethnic / Social / Religious / Political** Encourage participation and establish needs, vulnerabilities, capacities of different groups. Establish local networks through local NGOs and other stakeholders for effective participation.	Yes	There are some political tensions as due to limited infrastructure and general lack of realisation of people's expectations. There sometimes could be tensions between government authorities and people including assumed intimidation. Forced evictions from camps is a serious on-going issue.	Medium	Medium	Medium	Not known	Weak	Medium	Long-term	Stakeholders consulted and host community support to provide equity. Government authorities consulted from the onset of the project.	Govt / Community / UN / NGO	Sophisticated feedback systems in place. Regular consultations as a feedback process.	Promoting general satisfaction and equality.			SC01
	Gender Encourage participation and establish gender (especially cultural) specific needs, risks, sensitivities, vulnerabilities, safe places. Establish communication networks with male, female and LGBTIQ representatives.	Yes	There is strong separation between gender roles. There is also a large percentage of single female headed households, with higher percentage of single parents. Cases of exploitation have been noted. Gender based violence has also been an issue. Gender vulnerability is more evident in urban areas than rural areas.	High	High	High	USAID and other organisations' programs promoting gender equality and women empowerment.	Medium	High	Long-term	Community mobilisers and technical staff to provide household support. Regular consultations with gender promoting groups/networks	Shelter PM / Protection officer / Local Partner / Community	Sophisticated feedback systems in place. Regular consultations with women and girls.	Promoting general satisfaction and equality.	Potential conflicts at household levels? Beneficiary selection process may not be able to capture all vulnerable groups.		CC01
	Age Encourage participation and establish needs of different age groups (example: babies, children, youth, adults, elderly).	Yes	Elderly people often do not have access to appropriate resources. Furthermore they are unaccompanied and in physically vulnerable state. Children too have a higher than acceptable level of vulnerability, with issues around unaccompanied minors. There is a large percentage of uneducated and unemployed youths.	High	Medium	High	USAID and other organisations' programs promoting awareness around these issues.	Medium	Medium	Long-term	Community mobilisers and technical staff to provide household support. Consultations with diverse age groups.	Shelter PM / Protection officer / Local Partner / Community	Sophisticated feedback systems in place. Regular consultations with diverse age groups	Promoting general satisfaction and equality.	Beneficiary selection process may not be able to capture all vulnerable groups.		CC01
	Diversity Establish different types of vulnerable groups that may need effective representation. Encourage participation and establish needs, vulnerabilities, capacities of vulnerable groups.	Yes	This is an issues as mentally ill and physically handicapped people are not usually considered as a priority.	High	Medium	High	Not known	Weak	High	Long-term	Community mobilisers and technical staff to provide household support. Consultations.	Shelter PM / Protection officer / Local Partner / Community	Sophisticated feedback systems in place.	Promoting general satisfaction and equality.	Beneficiary selection process may not be able to capture all vulnerable groups.		CC01
	Governments & Civil Societies	No	USAID's research highlighted that decentralized governance is not sufficiently effective in the absence of laws and regulations. Local government entities do not have clear operational instructions.	High	Medium	High	Not known	Medium	Medium	Long-term		Govt / Community / UN / NGO	Sophisticated feedback systems in place.	Promoting general satisfaction and equality.	Potential implications in delivering the programme.		
	Other	No		Low	Low	Low		Weak	Low	Short							
	Other	No		Low	Low	Low		Weak	Low	Short							
SETTLEMENT	**Security and Safety** Establish vulnerability, proximity and intensity of risks to the reconstruction process (e.g. risk to health, land / property, etc.)	Yes	People are mostly living next to or inside of buildings damaged by earthquakes and at risk from further collapse due to aftershocks.	High	High	High	Some awareness projects including providing information on risks and durable shelter rebuilding.	Medium	High	Long-term	To provide the same shelter assistance to households where buildings were destroyed and damaged and provide public information through radio messages and community field staff. Awareness and training in risks in reconstruction process following earthquake.	NGO / Community / Local Govt	Needs assessment of houses, shelter, etc.	Limit further damage to people, surroundings and infrastructure.	Limit further damage to surroundings and infrastructure.		CC07
	Spatial Design Consider density and design risks; regionally and culturally appropriate designs	Yes	On-going housing crisis prior to the earthquake. High density in urban areas therefore high risk to people and surroundings. Coastal type properties are not built to desired good standards, with risks of landslides, road disrepairs, access issues.	High	High	High	Government have made public announcements that people are to stay away from damaged buildings and have employed the military to start demolition of the most dangerous buildings.	Medium	High	Long-term	Continued awareness and information to be distributed to the people.	NGO / Community / Local Govt	Structural assessments	Limit further damage to people, surroundings and infrastructure.	Limit further damage to surroundings and infrastructure.		SET03
	Security of Tenure Establish risks and vulnerabilities to land tenure	Yes	This is an issue. In rural areas, people typically have no documentation of ownership. Land ownership is established via word of mouth, family inheritance. In rural areas, this isn't an issue as people recognise that you live there and own the property.	Medium	Low	Low	Not known	Weak	Low	Long-term	Provide cash support to households and provide a template agreement that will meet the landlord requirements. Establish ownership issues, rental subsidies, etc.	Household / Landlord / NGO	Assessment of land ownership, rental subsidies, etc.	Fair and equal opportunities to all.	Potentials risks to loss of land / property?		SET02
	Access to Livelihood and Markets Consider access and opportunities to livelihoods and assets such as natural resources, land, etc.	No	Urban Haiti has a good range of imported goods markets and micro enterprises. There are no large employer industries. Though the informal markets are struggling especially informal agricultural markets, markets stores, supermarkets.	Medium	Low	Low	Some programs supporting livelihood opportunities. Sustainable livelihoods projects such as SOIL.	Medium	Low	Long-term	Support and integrate projects with livelihood opportunities. Introduce voucher fairs to boost local markets.	NGO / Community / Local Govt	Sophisticated feedback systems in place.	Fair and equal opportunities to all. Sustainable livelihood opportunities.	Loss or change of livelihood potentials.		CCO4
	Access to Social / Cultural Infrastructure E.g. roads, water, sanitation, drainage to schools, places of community gathering, places of worship, social services	No	Low development of infrastructure and services. Largely Catholic society, very ritualistic. Strong cultural ties and Konbit culture - means working together to complete a task.	Low	Low	Low	Programs such as Konbit Haiti or Konbit Shelter Projects empower impoverished communities to create sustainable change by developing the family, business, and the environment.	Strong	Low	Short	Establish social, cultural network groups e.g. konbit groups. Integrating konbit type of approaches to deliver projects.	NGO / Community	Sophisticated feedback systems in place.	Fair and equal opportunities to all. Strengthen community ties.	Potential conflicts between communities for competition of resources, livelihoods, etc?		SET04
	Access to Public Health Infrastructure E.g. roads, water, sanitation, drainage to Clinics and Hospitals	Yes	Earthquake destroyed the building housing the Haitian Ministry of Public Health and Population. Long-standing public health infrastructure and access problems.	High	Medium	High	Strong on-going programs from organisations like MSF.	Medium	Medium	Long-term	Establish access to services and health services. Consult with local authorities/community structures to establish possibilities of access and infrastructure issues.	NGO / Community / Local Govt	Sophisticated feedback systems in place.	Fair and equal access to all			SET04
	Access to open / public / recreational space E.g. parks, sports fields, playgrounds, etc	No	Urban areas usually have a central green space / park, more than an acre in size. Rural areas have common spaces for all.	Low	Low	Low	Not known	Weak	Low	Short	Integrate culturally appropriate use of open areas in shelter designs.	NGO / Shelter PM / Community	Assessment of neighbourhoods (houses and access to open spaces) Establish quality of open spaces.	Equal access to open space. Positive health impacts.			
	Cultural heritage Are there any important buildings of historical, cultural importance that need conservation / protection?	No	Culture plays a central role. Carnivals are a strong point.	Low	Low	Low	Strong rich and diversified culture.	Strong	Low	Short	Establish whether cultural activities can be used for project delivery, training and education activities. Establish if there are any good cultural environmental practices.	NGO / Shelter PM / Community	Effective project delivery strategies	Community may not be entirely happy with integrating cultural aspects with shelter and environment needs.			
	Other	No		Low	Low	Low		Weak	Low	Short							
	Other	No		Low	Low	Low		Weak	Low	Short							
CLIMATE / WEATHER / SEASONS	**Rainfall** Consider location of the site and resource availability in terms of rainfall, flooding, soil erosion, deforestation, etc.	Yes	Tropical climate, recent Hurricane Matthew impacts 2.1m people affected; 1.4m in need of humanitarian aid; 141,000+ in temporary shelters; more than 20,000 children out of schools	High	High	High	Limited legislation, guidelines, controls in place. Some disaster mitigation, flood and erosion Control on-going programs.	Weak	High	Long-term	Shelter design to establish how houses can be protected from rain. Establish mitigation measures such as tree planting, surface drainage, etc. Further technical expertise and support.	NGO / Community / Local Govt	Assessment via technical expertise and support such as flood risk assessments, surface drainage design.	Limiting flooding and damage to people and surroundings.			SET01
	Snow and Ice Consider location of the site and resource availability in terms of land slides, structural impact, etc.	No	N/A	Low	Low	Low	N/A	Weak	Low	Short	N/A	N/A	N/A	N/A			SET01
	Floods (Including Tsunami and Storm surge), Surface water management Consider location of the site and resource availability in terms of flooding, access issues, etc.	Yes	Recent heavy rain in November 2016 caused flash flooding and land slides in at least 15 municipalities. Potential for precipitation-triggered landslides that increase the amount of sediment and debris (e.g., trees, rocks, boulders) in river flows, blocked rivers, leading to the potential for rapid flooding upon the collapse of dams	High	High	High	Limited legislation, guidelines, controls in place. Some disaster mitigation, flood and erosion Control on-going programs.	Weak	High	Long-term	Shelter design to establish how houses and surroundings can be protected from flooding. Establish mitigation measures such as tree planting, surface drainage, etc. Further technical expertise and support.	NGO / Community / Local Govt	Assessment via technical expertise and support such as flood risk assessments, surface drainage design.	Limiting flooding and damage to people and surroundings.			SET01

Integrated Shelter and Settlement Risk Register

Programme: **Haiti**

Identify person responsible for the risk register:
e.g.
Name, Project Manager

Date:
December 2016

References used for the risk register:
e.g. expert interviews, documents, search engine, etc.

SEE RISK SNAPSHOT HERE

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	Drought Consider location of the site and resource availability in terms of impact on livelihoods, water and food resilience & access etc.	Yes	Feb 2016: World Food Program classified approximately 3.6 million Haitians 'severely food insecure' who are facing food insecurity; lack of access to a reliable and affordable food supply. Up to 70% of the crops in some areas of Haiti had been lost this past year. 2.5 million live in extreme poverty (below $1.25 per day), predominantly in rural areas. Largely informal economy and heavily dependent on subsistence agriculture.	High	High	High	USAID: Feed the Future Haiti: Launch of four Rural Research Centres for Sustainable Development, which collect agriculture and weather data. Also provides training in sustainable farming techniques and greenhouses	Medium	High	Long-term	Create sustainable livelihoods opportunities. Potential to team up with on-going sustainable livelihoods programs.	NGO / Community / Local Govt	Sophisticated feedback systems in place.	Fair and equal opportunities to all.			SET01
	Windstorm Consider location of the site and resource availability in terms of structural damage, hazards, access issues, etc.	Yes	Recent Hurricane Matthew impacts on wind speeds	Medium	Medium	Medium	Not known	Weak	Medium	Long-term	Safe and secure shelter, infrastructure design. Protection to trees. Investigate forest fire safety issues - additional technical support and expertise.	NGO / Community / Local Govt	Assessment of trees, surroundings and infrastructure.	Safe and secure environments. Limiting damage to natural resources.			SET01
	Temperature and Humidity Consider location of the site and resource availability in terms of extreme weather conditions	Yes	Humidity generally from moderate to high	Medium	Medium	Medium	Not known	Medium	Low	Long-term	Shelter design to include adequate ventilation strategies. Open spaces to be covered and shaded.	NGO / Community / Local Govt	Assessment of shelter designs.	Thermal comfort considerations.			SET01
LAND	Topography Consider location of the site and resource availability in terms of land slides, deforestation, etc., hazard risk assessment	Yes	Mostly mountainous region, and may have access issues to some areas.	High	Medium	High	Not known	Weak	High	Long-term	Consult local authorities to establish new strategies.	NGO / Local Govt	Assessment of access roads				SET01
	Geology Consider soil types such as high shrinkage clays, rock, and other difficult ground conditions. Consider geophysical hazards.	Yes	Tectonic faults lead to 2010 earthquake	High	High	High	Not known	Weak	High	Long-term	Earthquake resistant homes and infrastructure, protecting natural resources (trees, water sources, etc) from earthquake effects. Raise awareness on earthquake impacts	Government, NGOs	Training events on awareness of issues	Safety and security			SET01
	Geophysical (including Seismic / Volcanic) Consider geophysical hazards.	Yes	Tectonic faults lead to 2010 earthquake	High	High	High	Not known	Weak	High	Long-term	Earthquake resistant homes and infrastructure, protecting natural resources (trees, water sources, etc) from earthquake effects. Raise awareness on earthquake impacts	Government, NGOs	Training events on awareness of issues	Safety and security			SET01
AIR	Pollution Reduce health risks due to noise, smoke, vapour pollution (e.g. fumes and gases, such as traffic)	Yes	Heavily dependent on charcoal and fuel wood - burn a lot of diesel, engines and cars don't have regular maintenance. Pollution is an issue.	High	High	High	USAID's The Improved Cooking Technology Project (until 2015), and some other small schemes	Weak	High	Long-term	Raise awareness on pollution and health impacts and impacts on the environment. Protection mitigation measures to reduce impacts on natural resources.	NGO / Community / Local Govt	3 monthly assessments	Health and environment benefits		The Haitian Collective for the Protection of the Environment and Sustainable Development (COHPEDA) 1998. Chronological Index of Haitian Legislation (1804-2000).	SC03
	Dust & Smoke Reduce health risks due to dust, smoke, vapour pollution due to activities such as construction activities, mining, etc.	No	Heavily dependent on charcoal and fuel wood causing serious indoor pollution, respiratory illnesses.	High	High	High	USAID's The Improved Cooking Technology Project (until 2015), and some other small schemes	Weak	High	Short	Appropriate shelter design with outlets for smoke, adequate ventilation. Raise awareness health impacts and impacts on the environment.	NGO / Community / Local Govt	Health assessments in collaboration with other organisations delivering health projects.	Health and environment benefits			SC03
	Noise Reduce health risks due to excessive noise pollution due activities such as construction, mining, etc.	No	Some urban area noise pollution due to honking, yelling etc. Though not considered detrimental to health. No information on noise pollution from construction and deforestation activities.	Low	Low	Low	Not known	Weak	Low	Short	Ensure reconstruction activities do not generate noise pollution.	Shelter PM	On-site inspection	Health benefits			SC03
ECOLOGY AND CONSERVATION	Natural habitats Consider reconstruction impacts such as deforestation, soil erosion, loss of biodiversity, pollution of water sources, etc. Protect vulnerable natural resources.	Yes	Deforestation a major concern which also leads to frequent storms and hurricanes. Using firewood as fuel of cooking increases risk of deforestation and greenhouse gases. Not many forest fires reported.	High	High	High	USAID: Planting of over 5 million seedlings as part of a larger effort to stabilize watersheds, increase tree cover, and promote sustainable agricultural practices USAID: The Rivière Grise barrage: Permanent irrigation water and preventing flooding	Medium	High	Long-term	Protecting natural resources, planting trees, designing more green spaces.	NGO / Community / Local Govt	MEAL reports	Health and environment benefits	Provisions for alternative fuel for cooking.	The Haitian Collective for the Protection of the Environment and Sustainable Development (COHPEDA) 1998. Chronological Index of Haitian Legislation (1804-2000).	NE (1-3)
	Terrestrial and Aquatic life Consider livelihoods impacts and protect vulnerable natural resources.	Yes	Deforestation leads to loss of habitat. Timber also used as building materials. Plastics may be a hazard.	High	High	High	USAID: Planting of over 5 million seedlings as part of a larger effort to stabilize watersheds, increase tree cover, and promote sustainable agricultural practices USAID: The Rivière Grise barrage: Permanent irrigation water and preventing flooding	Weak	High	Long-term	Enforce use of sustainable and legal timber. Explore other building materials. Reduce use of plastic. Technical expertise and support on ecology.	NGO / Community / Local Govt	Assessment via technical expertise and support such as ecology reports.	Health and environment benefits			NE (1-3)
WATER	Quantity and Sources - surface supplies, springs, boreholes, wells, desalination Consider water needs and capacity (culturally appropriate), consider seasonal changes in water supply, consider actions to improve water quantities, infrastructure requirements. Consider conflict implications of the water source. Provide sufficient quality water to prevent conflicts. Consider vegetation degradation as a result of settled pastoralists following development of a permanent water source.	Yes	Inadequate supply and access to water infrastructure, which has an adverse impact on the local population. Limited information whether adequate water is available for vegetation, agriculture, natural resources (planting new trees).	High	High	High	Some on-going water programs to improve access and availability issues.	Medium	High	Long-term	Consider integrated shelter and WASH programs. Encourage household level water recycling. Consider local / community level water programs. Technical expertise and support.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits		The Haitian Collective for the Protection of the Environment and Sustainable Development (COHPEDA) 1998. Chronological Index of Haitian Legislation (1804-2000).	WS01
	Quality - Pollutants (organic and chemical) Avoid contamination, check portability, consider actions to improve water quality Consider future developments of the adjacent land and effluent disposal.	Yes	Access to clean, fresh water is a main concern including spread of waterborne illnesses, such as typhoid, cholera, and chronic diarrheal.	High	High	High	Some on-going water programs to improve quality.	Medium	High	Long-term	Awareness to clean and safe water practices. Awareness to proper hygiene practices. Establish water quality. Consider local / community level water programs. Technical expertise and support. Ensure toilets are not located close to water points.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS02
	Quality - Capacity Consider adequate water use and demand including domestic needs (drinking, cooking, sanitation, etc), agriculture, vegetation / planting, livestock, construction, other industries.	Yes	Access to clean, fresh water and its demand is a main concern. Agriculture is responsible for 94% of total freshwater withdrawal in the country - and sourcing water for agriculture and reforestation is an issue.	High	High	High	Some on-going water programs to improve demand.	Medium	High	Long-term	Awareness to water saving practices, and adequate water storage containers/structures. Awareness to recycling Consider local / community level water programs. Technical expertise and support.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS01
	Distribution - reticulation, tankers, storage, standpipes Avoid water contamination, sustainable supply and distribution, consider coverage area, storage and distribution equipment	Yes	Distribution networks are overloaded and face numerous problems.	High	High	High	Some on-going water programs to improve chlorination of municipal water supplies, rehabilitation of distribution networks and water treatment stations, distributions of household water treatment products and soap, and cholera prevention and hygiene promotion campaigns.	Medium	High	Long-term	Awareness to clean and safe water containers. Awareness to proper hygiene practices. Consider local / community level water programs. Locate central and regional distribution networks. Technical expertise and support.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS01
	Recycling Consider rainwater recycling potential at household and community level. Consider quality of recycled water. Consider grey water water recycling (if adequate infrastructure will be available)	Yes	Access to clean, fresh water and its demand is a main concern.	High	High	High	Few on-going water recycling programs.	Weak	High	Long-term	Awareness and education to recycling of water. Awareness to appropriate water use. Technical expertise and support.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS01
HEALTH AND SANITATION	Faecal waste Avoid contamination of water sources and food, consider sanitation / drainage infrastructure, encourage culturally appropriate hygiene practices, appropriate disposal and treatment of faecal waste Consider methods that will not increase flies for introduced faecal disposal infrastructure	Yes	Rising issues around maintenance of solid waste.	High	High	High	Some effective programs by SOIL and local authorities.	Weak	High	Long-term	Awareness to clean and safe water practices. Awareness to proper hygiene practices. Ensure toilets are not located close to water points. Awareness to food storage safety. Technical expertise and support in drainage infrastructure.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS03
	Grey Water Avoid contamination of water sources, consider waste water infrastructure, encourage culturally appropriate hygiene practices, appropriate disposal and treatment of waste water. (note, BOD5 weekly average not exceeding 30mg/l, or monthly average not exceeding 45mg/l. Or generally no more than 50mg/l)	Yes	Rising issues around maintenance of grey water discharge.	High	High	High	Some effective programs by SOIL and local authorities.	Weak	High	Long-term	Awareness to clean and safe water practices. Awareness to proper hygiene practices. Ensure toilets are not located close to water points. Awareness to food storage safety. Technical expertise and support in drainage infrastructure.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS03

Integrated Shelter and Settlement Risk Register

Programme: *Haiti*

Identify person responsible for the risk register: e.g. *Name, Project Manager*	Date: *December 2016*	References used for the risk register: *e.g. expert interviews, documents, search engine, etc.*

SEE RISK SNAPSHOT HERE

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CATEGORIES	**ISSUES Brief Description**	**IS IT AN IMMEDIATE RISK?**	**RISK STATEMENT (Causes and Effect) including: Social / Economic / Gender & Protection**	**IMPACT**	**LIKELIHOOD**	**GROSS RISK RANKING**	**CURRENT MITIGATION (if any) Individuals, Communities, Govt, NGO, Institutions**	**STRENGTHS OF CONTROL**	**NETT RISK RANKING**	**IS IT A LONG TERM RISK?**	**MITIGATION STATEMENT Response and Further Research**	**RESPONSIBILITIES (Stakeholders and Risk Owner)**	**MONITORING & EVALUATION MEASURES (including positive impacts on environment)**	**LIST POSITIVE IMPACTS OF THE MITIGATION MEASURES**	**LIST CONSTRAINTS OF THE MITIGATION MEASURES ON THE PROGRAMME**	**FURTHER REFERENCES / RESOURCES (including local, regional, national or international environmental regulations)**	**QSAND Ref**
	Solid Waste Avoid contamination of water sources, consider solid water / drainage infrastructure, encourage culturally appropriate hygiene practices, appropriate disposal and treatment of solid water that does not promote increase in flies population.	Yes	Rising issues around maintenance of solid waste.	High	High	High	Some effective programs by SOIL and local authorities.	Weak	High	Long-term	Awareness to clean and safe water practices. Awareness to proper hygiene practices. Ensure toilets are not located close to water points. Awareness to food storage safety. Technical expertise and support in drainage infrastructure.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS03
	Vector Control Educate and encourage culturally appropriate hygiene practices, be vigilant regarding threats, diseases, epidemics. Educate and encourage culturally appropriate faecal, solid waste and waste water disposal methods, be vigilant regarding threats, diseases, epidemics. Consider the capacity of the local authorities to manage solid waste.	Yes	Concerns around spread of waterborne illnesses and epidemics.	High	High	High	Some effective programs by SOIL and local authorities.	Weak	High	Long-term	Educate and encourage culturally appropriate faecal, solid waste and waste water disposal methods, be vigilant regarding threats, diseases, epidemics. Consider the capacity of the local authorities to manage solid waste.	NGO / Community / Local Govt	Assessment via technical expertise and support. MEAL reports	Health and environment benefits			WS03
OTHER HAZARDS	**Fire** Assess fire risks for existing and proposed sites, review design and building materials to avoid fire hazards, consider fire threat and safety at all times to people, animals and natural resources	Yes	Limited information on fires due from kitchens, and close proximity of houses built of timber.	High	Low	Medium	Not known	Weak	Low	Medium	Kitchen areas to be constructed away from the shelters and investigate the use of biomass fuel briquettes.	NGO / Community / Local Govt	MEAL reports and household assessments	Health and environment benefits			SET03
	Conflict related hazards Assess risk due to conflicts, consider safety and security to people, animals and natural resources; establish competition for resources in conflict situation	No	Access to clean, safe and adequate water.	Low	Low	Low	Not known	Weak	Low	Short	?	NGO / Community					
SHELTER DESIGN	**Security** Consider personal risks, risks to the built environment and natural resources, establish culturally appropriate safety and security perceptions	No	N/A	Low	Low	Low	Not known	Weak	Low	Short	Lockable doors, windows	NGO	MEAL reports	Personal safety			CC07
	Space Requirement Consider culturally appropriate space standards and privacy needs, consider Sphere guidelines	Yes	In some instances, humanitarian response often did not meet Sphere standards	High	Medium	High	Not known	Medium	Medium	Long-term	Ensure Sphere guidelines are considered as a minimum requirement. Consider cultural norms for spaces.	NGO / Community	MEAL reports	Health benefits			SC01
	Privacy Consider gender, age, disability privacy needs	Yes	Not much information available.	High	Low	Medium	Not known	Medium	Low	Long-term	Consider culturally appropriate gender, age, disability privacy needs for shelter design	NGO / Community	MEAL reports	Health benefits			SC02
	Culturally Appropriate Shelter design, public spaces, perceptions of natural resources (e.g. trees, water, etc.)	Yes	Not much information available.	High	Low	Medium	Not known	Medium	Low	Long-term	Consider culturally appropriate and traditional practices for shelter design	NGO / Community	MEAL reports	Health benefits			SC01
	Safe Structural Design Safety for existing and proposed structures	Yes	Reconstruction does not necessarily include earthquake safe designs.	High	High	High	Awareness and training for structurally safe rebuilding.	Medium	High	Long-term	Earthquake resistant homes and infrastructure, protecting natural resources (trees, water sources, etc) from earthquake effects. Raise awareness on earthquake impacts	Government, NGOs	Training events on awareness of issues	Safety and security			CC07
	Durability (Duration required / cost of replacement) Long lasting, resilient materials availability and selection	Yes	Issues around durability due to lack of technical knowledge e.g. quantity of connections is not know to secure different elements of the building, won't use as many nails as required.	High	High	High	Awareness and training for durable rebuilding.	Weak	High	Long-term	Raise awareness on durable buildings. Technical expertise.	Government, NGOs	Training events on awareness of issues	Safety and security			SC01
	Affordability Availability and cost of building materials, consider locally available materials	No	Lots of recycled goods, such as cgi, nails, rebar, - cheap - wood - are used.	Medium	Low	Low	N/A	Medium	Low	Short	N/A	N/A	N/A	N/A			SC01
	Thermal Comfort Establish appropriate internal thermal comfort levels for the region, consider passive design measures	Yes	Concrete buildings are too hot during day time and too cold at night with poor thermal bridging capacity. Rural areas have poor ventilation. Traditional homes have better thermal capacity e.g. lime plaster makes it pleasant inside.	Medium	Medium	Medium	Not known	Weak	Medium	Long-term	Consider shelter design to provide adequate shading, ventilation and protection. Consider traditional materials and building techniques.	NGO / Community	Training events on awareness of issues	Health benefits			SC03
	Ventilation Establish desired ventilation levels, wind patterns, culturally appropriate shelter and window designs	Yes	Concrete buildings are too hot during day time and too cold at night with poor thermal bridging capacity. Rural areas have poor ventilation. Traditional homes have better thermal capacity e.g. lime plaster makes it pleasant inside.	Medium	Medium	Medium	Not known	Weak	Medium	Long-term	Consider shelter design to provide adequate shading, ventilation and protection. Consider traditional materials and building techniques.	NGO / Community	Training events on awareness of issues	Health benefits			SC03
	Internal Lighting Energy efficient lighting sources, adequate lighting design, daylight design	Yes	Urban areas have approximately 60% reliability of electricity. No heating or cooling is required and no elecivity for cooking. In rural areas there is mostly no power. Some decentralised systems such as house may have a solar panel or generators in offices, public buildings, schools. Generators contribute to pollution.	High	High	High	Not known	Weak	High	Long-term	Consider provision of sustainable energy sources. Awareness on pollution due to generators.	NGO / Community / Local Govt	Training events on awareness of issues	Health benefits			SC03
	Disability Access Establish access needs and vulnerabilities	Yes	There is no much infrastructure for inclusive access.	High	Medium	High	Not known	Weak	High	Long-term	Shelters and infrastructure design to incorporate for access to all.	NGO / Community / Local Govt	Training events on awareness of issues	Health benefits			SC01
	Other	No		Low	Low	Low		Weak	Low	Short							
	Other	No		Low	Low	Low		Weak	Low	Short							
	Other	No		Low	Low	Low		Weak	Low	Short							
CONSTRUCTION & WASTE	**Health and Safety** Consider safety and security during construction for the workers and communities. Also consider waste management and protection of the environment from pollution and contamination due to construction activities.	Yes	Waste management is a serious on-going issue.	High	High	High	Some waste management programs by government and other organisations including SOIL.	Weak	High	Long-term	Consider waste management practices from the on-set of the program. Raise awareness and training for waste management and recycling practices.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			CC07
	Demolition Consider safety and security for everyone, and protection of the environment from pollution and contamination. Consider waste management, and recuse, recycling and appropriate disposal / debris removal activities post demolition.	Yes	Waste management is a serious on-going issue.	High	High	High	Some waste management programs by government and other organisations including SOIL.	Weak	High	Long-term	Consider waste management practices from the on-set of the program. Raise awareness and training for waste management and recycling practices.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			MW03
	Reclamation Consider safety and security for everyone, and protection of the environment from pollution and contamination. Consider waste management, and recuse, recycling and appropriate disposal activities post reclamation.	Yes	Waste management is a serious on-going issue. Safety practices are non-existent.	High	High	High	Some waste management programs by government and other organisations including SOIL.	Weak	High	Long-term	Consider waste management practices from the on-set of the program. Raise awareness and training for safety, waste management and recycling practices.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			MW02
	Excavation, Soil removal and disposal Consider safety and security for everyone, and protection of the environment from pollution and contamination. Consider contamination of soil and its appropriate disposal/removal.	Yes	Waste management is a serious on-going issue. Safety practices are non-existent.	High	High	High	Some waste management programs by government and other organisations including SOIL.	Weak	High	Long-term	Consider waste management practices from the on-set of the program. Raise awareness and training for safety, waste management and recycling practices.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			MW02
	Waste Management Consider recuse, recycling and appropriate disposal activities during construction activities. Avoid environment, water and ground water pollution and contamination.	Yes	Waste management is a serious on-going issue. Safety practices are non-existent.	High	High	High	Some waste management programs by government and other organisations including SOIL.	Weak	High	Long-term	Consider waste management practices from the on-set of the program. Raise awareness and training for safety, waste management and recycling practices.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			MW04
MATERIALS & PROCUREMENT	**Sand, gravel, stone sources and extraction** Consider health hazards and pollution during onsite sourcing. Consider reuse wherever possible. Consider green purchasing and procurement plan.	No	Damaged asbestos from destroyed building can cause risk to health if not properly disposed of.	Low	Low	Low	No controls by government or others	Weak	Low	Long-term	Asbestos surveys. Green purchasing plan	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			MW02
	Bricks and Block manufacture and supply Consider health hazards and pollution during onsite sourcing. Consider reuse wherever possible. Consider green purchasing and procurement plan.	Yes	Concrete buildings are not the best solution for this context.	Medium	Medium	Medium	No controls by government or others	Weak	Medium	Long-term	Educate people on appropriate use of materials and benefits of traditional materials.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			MW02

Integrated Shelter and Settlement Risk Register

Programme: **Haiti**

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	Timber Consider sustainable use and procurement for timber from responsible sources. Limit deforestation activities wherever possible. Consider reuse wherever possible. Consider green purchasing and procurement plan.	Yes	Deforestation a major concern, timber used for construction. Using firewood as fuel for cooking increases risk of deforestation and greenhouse gases.	High	High	High	Use of sustainable and legal timber sources.	Medium	High	Long-term	Promote use of sustainable and legal timber sources. Recycling of timber.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			MW02
	Other natural materials (grasses, bamboo) Consider sustainable use and procurement from responsible sources. Limit deforestation activities wherever possible. Consider reuse wherever possible. Consider green purchasing and procurement plan.	No	N/A	Low	Low	Low	N/A	Weak	Low	Short	N/A	N/A	N/A	N/A			MW02
	Other man made materials (e.g. concrete, steel, etc that have pollution potential and carbon footprint) Consider sustainable use and procurement from responsible sources. Consider green purchasing and procurement plan.	No	N/A	Low	Low	Low	N/A	Weak	Low	Short	N/A	N/A	N/A	N/A			MW02
	Skills Establish skill requirement, capacities and availability within the affected community.	Yes	There is a lot of unrealised potential and great opportunity, though people need technical support and training to understand good building practices and safety at work.	Medium	Medium	Medium	Not known	Weak	Medium	Medium	Consider training and support to building teams, as a part of livelihoods programs	NGO / Community	MEAL reports Training events on awareness of issues	Health benefits			CC08
ENERGY	**Cooking** Consider alternative and energy efficient cooking sources to avoid pollution, deforestation, loss of habitat, health hazards, thermal comfort, etc.	Yes	Timber is typically used as fuel which contributes towards pollution.	High	High	High	No controls by government or others	Weak	High	Long-term	Provide simple fuel efficient wood stove design and pressure cookers for cooking. Firewood to be trucked to the site from other areas of the district where this is sustainable. Alternative fuel supply options.	NGO / Community / Local Govt	MEAL reports Training events on awareness of issues	Health and environment benefits			EN (1-2)
	Heating Consider reliable, accessible, energy efficient, safe heating sources	No	Typically heating is not needed.	Low	Low	Low	N/A	Weak	Low	Short	N/A	N/A	N/A	N/A			EN (1-2)
	Lighting and power Consider applicability of local power sources, renewable sources, and other sustainable energy infrastructure. Consider lighting infrastructure for safety and security.	Yes	Very limited sustainable energy sources. Generators used which contribute towards pollution.	High	High	High	Not known	Weak	High	Long-term	Consider provision of sustainable energy sources. Awareness on pollution due to generators.	NGO / Community / Local Govt	Training events on awareness of issues	Health benefits			EN (1-2)
COMMUNICATIONS	**Telecommunication** Consider infrastructure for equitable access	Yes	Telecommunications infrastructure is among the least-developed; mobile-cellular teledensity is about 70 / 100 persons	Medium	Medium	Medium	Use of social media is strong.	Weak	Medium	Long-term	Potential opportunities to discuss communications infrastructure for local communities.	NGO / Community / Local Govt	Consultation feedback	Promoting general satisfaction and equality.			COM
	Internet Consider infrastructure for equitable access	No	10.9% of the population use internet	Low	Low	Low	N/A	Weak	Low	Short	N/A	N/A	N/A	N/A			COM
	Access to information Consider access to avoid discrimination, marginalisation and risk of violence	Yes		High	High	High		Weak	High	Long-term							CC01