

FINAL EVALUATION:

URBAN DISASTER RISK REDUCTION PROJECT

March 2017

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LIST OF ACRONYMS

AMAGA	Mayors' Association of Grand'Anse
BME	The office of Mines and Energy
CIAT	Interdepartmental Territorial Planning Committee
CNIGS	National Geospatial Information Centre
CNSA	National Food Security Co-ordination
DFID	Department for International Development
DINEPA	National Directorate of Water Supply and Sanitation
DPC	Directorate of Civil Defence
ECHO	European Civil Protection and Humanitarian Aid Operations
LNBTPL	National Construction and Public Works Laboratory
MARNDR	Ministry of Agriculture, Natural Resources and Rural Development
MDE	Ministry of Environment
MDEFP	Ministry of National Education and Professional Training
MTPTC	Ministry of Public Works, Transport and Communication
MICT	Ministry of Interior and Local Government
MPCE	Ministry of Planning and External Co-operation
PPRN	Natural Risk Reduction Prevention Plan
TDR	Terms of Reference
UCLBP	Housing and Public Building Construction Unit
UEH	University of Haiti
UTE	Technical Execution Unit
UTS	Technical Earthquake Unit in BME
UNDP	United Nations Development Programme

EXECUTIVE SUMMARY

Considering Haiti's extreme vulnerability to natural disasters, the United Nations Development Programme (UNDP) in collaboration with the government of Haiti, implemented the Urban Natural Disaster Risk Reduction Project in Haiti, which includes two independent but complementary components: 1. The creation of a National Methodology Guide for Risk Reduction in Haiti, with the financial support from ECHO. Application of the Methodology Guide in Grand Anse, with financial support from DFID.

This evaluation is a final evaluation of the Urban Risk Reduction Project in Haiti. The two components of this project shared three common objectives: 1) The improvement of knowledge on urban risk and its application in urban planning; 2) Local capacity building at all levels (National, regional and local) in order to guarantee effective appropriation and local implementation; 3) Information provision and sensitization of key stakeholders at central and local level.

The report is structured as follows: section one outlines the evaluation framework; section two provides an overview of results achieved at output level; section three presents outcomes and impacts achieved; section four discusses factors relating to efficiency and cost-effectiveness and section five puts forward recommendations for donors, UNDP and the Government of Haiti.

The evaluation reports have been produced in both French and English and are summarised in the form of a power point presentation.

1. EVALUATION FRAMEWORK

This section describes what was evaluated, why and how (criteria and data collection methods).

1.1 What was evaluated?

In light of Haiti's extreme vulnerability to natural disasters, the United Nations Development Programme (UNDP) in collaboration with the government of Haiti, implemented the Urban Neural Disaster Risk Reduction Project in Haiti, which includes two independent but complementary components: 1. The creation of a National Methodology Guide for Risk Reduction in Haiti, with the financial support from ECHO 2. Application of the Methodology Guide in Grand Anse, with financial support from DFID. Table 1 below, presents project details.

Table 1. Details of the project

Component	Donor	Duration	Contribution
Integrated Risk Assessments and Urban Resilience in the Grand Anse Department.	DFID	1 October 2014–31 December 2016	£1,095,307.00
Strengthening Resilience in Haiti: Coordination and Preparedness of Urban Disaster Risk Reduction	ECHO	1 April 2015–31 March 2017	Euro 935.447.50

This evaluation is a final evaluation of the Urban Risk Reduction Project in Haiti. The two components of this project shared three common objectives: 1) The improvement of knowledge on urban risk and its application in urban planning; 2) Local capacity building at all levels (National, regional and local) in order to guarantee effective appropriation and local implementation; 3) Information provision and sensitization of key stakeholders at central and local level.

1.2. Why this evaluation?

The evaluation was commissioned for the following reasons:

- To ensure accountability to donors and beneficiaries, taking into consideration diverse experiences and perspectives, in particular those of project beneficiaries.
- To justify expenditure and demonstrate the extent to which results had been achieved.

- To contribute to a broader evidence base, demonstrate what worked well and why and to share good practice and lessons learnt.

1.3. Evaluation criteria

The evaluation measured success of the Urban Risk Reduction Project against the following evaluation criteria of the Organization for Economic Cooperation and Development (OECD), Development Assistance Committee (DAC).¹

Relevance: Relevance is the extent to which the aid activity is suited to the priorities of the target group. In assessing relevance, the following were considered: the extent to which the target group valued the intervention and the extent to which the objectives of the project are still valid.

Efficiency: Efficiency measures the outputs -- qualitative and quantitative -- in relation to the inputs. It is an economic term which signifies that the aid uses the least costly resources possible in order to achieve the desired results. This generally requires comparing alternative approaches to achieving the same outputs, to see whether the most efficient process has been adopted. It also assesses the extent to which project outputs were delivered on time.

Effectiveness: Effectiveness is a measure of the extent to which the project attained its objectives. In evaluating the effectiveness of the project the following were considered: the extent to which the objectives were achieved and major factors which influenced the achievement or non-achievement of the objectives.

Impact: These are the positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended. In assessing impact the following were considered: the real change/difference made by the intervention and the number of people that benefitted.

Sustainability: Sustainability is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn. When evaluating the sustainability of the project, the following were considered: the extent to which the benefits of the project will continue after donor funding has ceased and the factors which influenced the achievement or non-achievement of sustainability of the project.

¹ The *DAC Principles for the Evaluation of Development Assistance*, OECD (1991), *Glossary of Terms Used in Evaluation*, in 'Methods and Procedures in Aid Evaluation', OECD (1986), and the *Glossary of Evaluation and Results Based Management (RBM) Terms*, OECD (2000).

1.4 Data collection methods

The evaluation was qualitative, given the nature of the project. It involved bilateral interviews and focus group discussions with key stakeholders. In terms of sampling, all the project's direct beneficiaries were interviewed, except for all the trained masons. 365 masons were trained and a representative sample (130) of these were interviewed. Table 2 below provides an overview of the stakeholders interviewed.

Table 2. Stakeholders interviewed

Location	Designation	Total number
Port-au-Prince	Director Generals: Ministry of Planning and External Cooperation (MPCE), National Geospatial Information Centre (CNIGS), Bureau of Mines and Energy (BME) and National Construction and Public Works Laboratory (LNBTP)	5
	Directors: -Housing Division Director: Housing and Public Building Construction Unit (UCLBP), Public works Director: Ministry of Public Works, Transport and Communication (MTPTC) and Town and Country Planning Division Director: MPCE	3
	Scientific Community (Government of Haiti): -Coordinator: Scientific and Technical Coordination Platform and Geology Professor: University of Haiti (UEH)	2
	Technical staff at central level UCLBP, MTPTC, MPCE, Ministry of Environment (MDE), Ministry of Agriculture, Natural Resources and Rural Development (MARNDR) and Ministry of Education (MDEFP) representatives	11
	Donors: -DFID and ECHO representatives	2
	UNDP: -Director and Technical team:	5
Department	-President of Mayor's Association of Grand Anse	4

level Grand'Anse	in (AMAGA), Senior Engineer, Department of Civil Protection (DPC) Departmental Coordinator and Agricultural Engineer	
Communal level Grand'Anse	in Mayors, Deputy Mayors, Mayor's technical staff, civil society representatives Masons	30 130
TOTAL		192

For each result in the logical framework, specific evaluation questions were posed. Table 3 below, includes the evaluation questions and the data collection tools that were used to measure performance in relation to the achievement of key indicators.

Table 3. Assessment questions






Results	Evaluation questions	Data collection tools
<p>Expected results: Outcome 1 and Outputs 1.1 et 1.2 (DFID's logical framework)</p> <p>Specific Objective (ECHO's logical framework)</p>	<ul style="list-style-type: none"> • What was done, by whom and when? • What factors contributed or on the contrary hindered the achievement of results? • To what extent can the achievement of the results be attributed to UNDP? 	<p>Analysis of secondary data:</p> <ul style="list-style-type: none"> -Methodology Guide -Risk maps -Risk prevention plans -Recovery Plans -Major Risks: Departmental Dossier -Major Risks: Communal Dossier -Communication and information products -Workshop and training reports, lists of participants and mentoring reports -DFID Annual Review
<p>Expected results: Outcome 2 and Outputs 2.1 and 2.2 and 2.3 (DFID's logical framework)</p>		<p>Questionnaire targeting: UNDP Project Manager, and National specialists in Port-au-Prince (questionnaire 1A)</p> <p>Questionnaire targeting: Director Generals, Directors and Technical Specialists in key government institutions in Port-au-Prince (Questionnaire 2A)</p>
<p>Expected results: Outcome 3 and Outputs 3.1 and 3.2 (DFID's logical framework)</p>		<p>Questionnaire targeting: Mayors, Deputy Mayors and Technical Specialists in Grand Anse (Questionnaire 3A)</p> <p>Questionnaire targeting: Masons (Questionnaire 4A)</p>

Results	Evaluation questions	Data collection tools
<p>Impacts (DFID's logical framework)</p> <p>General objective (ECHO's logical framework)</p>	<p>Synthesis and action questions:</p> <ul style="list-style-type: none"> • To what extent was the Methodology Guide applied in Grand Anse? • How have the urban risk reduction plans impacted urban planning and development in Grand Anse, post-Mathew? • What is the level of government ownership of the risk maps and plans and their sustainability? • Was the project implemented efficiently (timeliness and cost)? • Were the key interventions relevant? • Which areas of the project could have been better implemented and how? • Did the project deliver value for money? • Which aspects of the project could be replicated and scaled up in Haiti? 	<p>Analysis of the above-mentioned documents</p> <p>Questionnaire targeting: UNDP Country Director (Questionnaire 5A)</p> <p>Questionnaire targeting: ECHO and DFID representatives (Questionnaire 6A)</p>

1.5. Results assessment

The traffic light system in Table 4 below was used to measure progress against the achievement of performance indicators in the logical frameworks of both ECHO and DFID.

Table 4. Assessment of results indicators

Progress against target	Colour Code
Fully achieved (100% of indicator target)	
More than partially achieved (51%-99% of indicator target)	
Partially achieved (50% of indicator target)	
Less than partially achieved (1-49% of indicator target)	
Not achieved (0% of indicator target)	

2. EFFECTIVENESS: RESULTS AHCIEVED

This section of the report covers the extent to which the results were achieved. It is based on a verification of the following documents: training and workshop reports, minutes of meetings, attendance lists of participants, progress reports and project deliverables. These secondary sources of information were triangulated with the results of key informant interviews and focus group discussions.

2.1. Methodology Guide: development, validation, and distribution

2.1.1. Development of the Guide

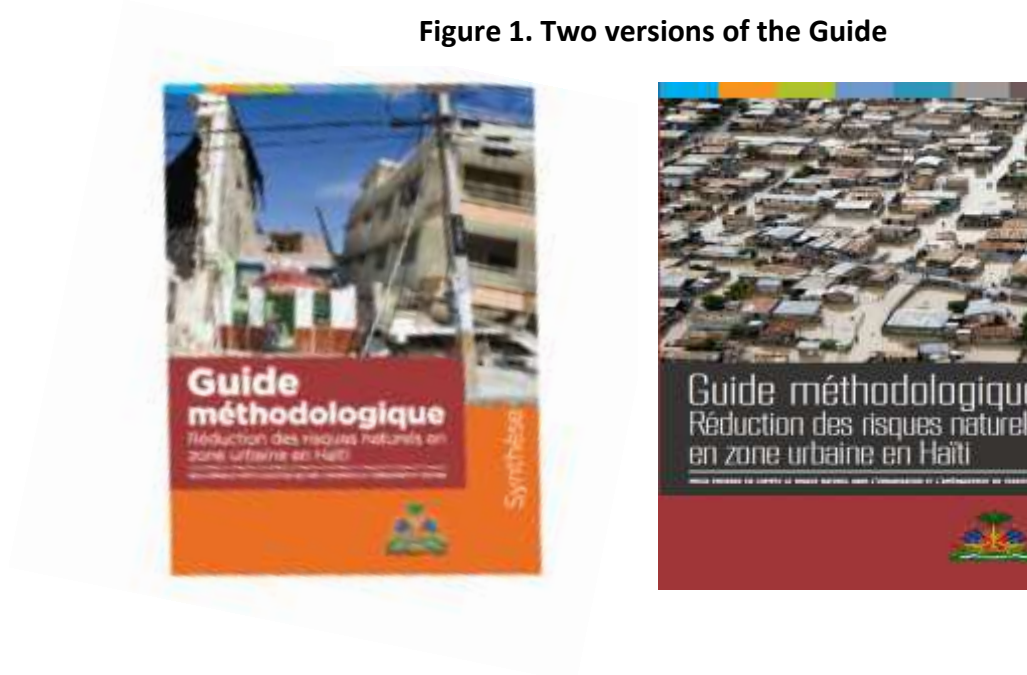
The 2010 devastating earthquake reaffirmed the need to invest in reducing urban risk. MPCE, initiated discussions in 2012, with planning, urbanisation and reconstruction actors as well as donors. Under the leadership of MPCE, with ECHO's financial support, and in collaboration with key national institutions involved in urban risk management, UNDP was tasked with the development of the Methodology Guide for Urban Risk Reduction.

A Steering Committee was set up including: MPCE, MICT, MTPTC, MDE, MARNDR, CAIT, CNIGS UCLBP, UEH, and DPC. A working group on urban risk reduction was also created, comprised of governmental and non-governmental actors, both national and international, with the objective of reinforcing coordination in this sector.

An analysis of existing methodologies first carried out by CAIT with financing from the World Bank and technical support from UNDP. The methodology Guide was then developed over a three year period in collaboration with key national institutions.

There are two versions of the Guide at the Ministry of Planning (simplified Guide and complete guide): <http://www.mpce.gouv.ht/fr/nouvelles/guide-methodologique-reduction-des-risques-naturels-en-zone-urbaine-en-haiti>. The Methodology Guide is a tool kit for decision makers and technical experts in the characterisation and management of urban risk. Figure 1 below presents both versions of the Guide.

Figure 1. Two versions of the Guide

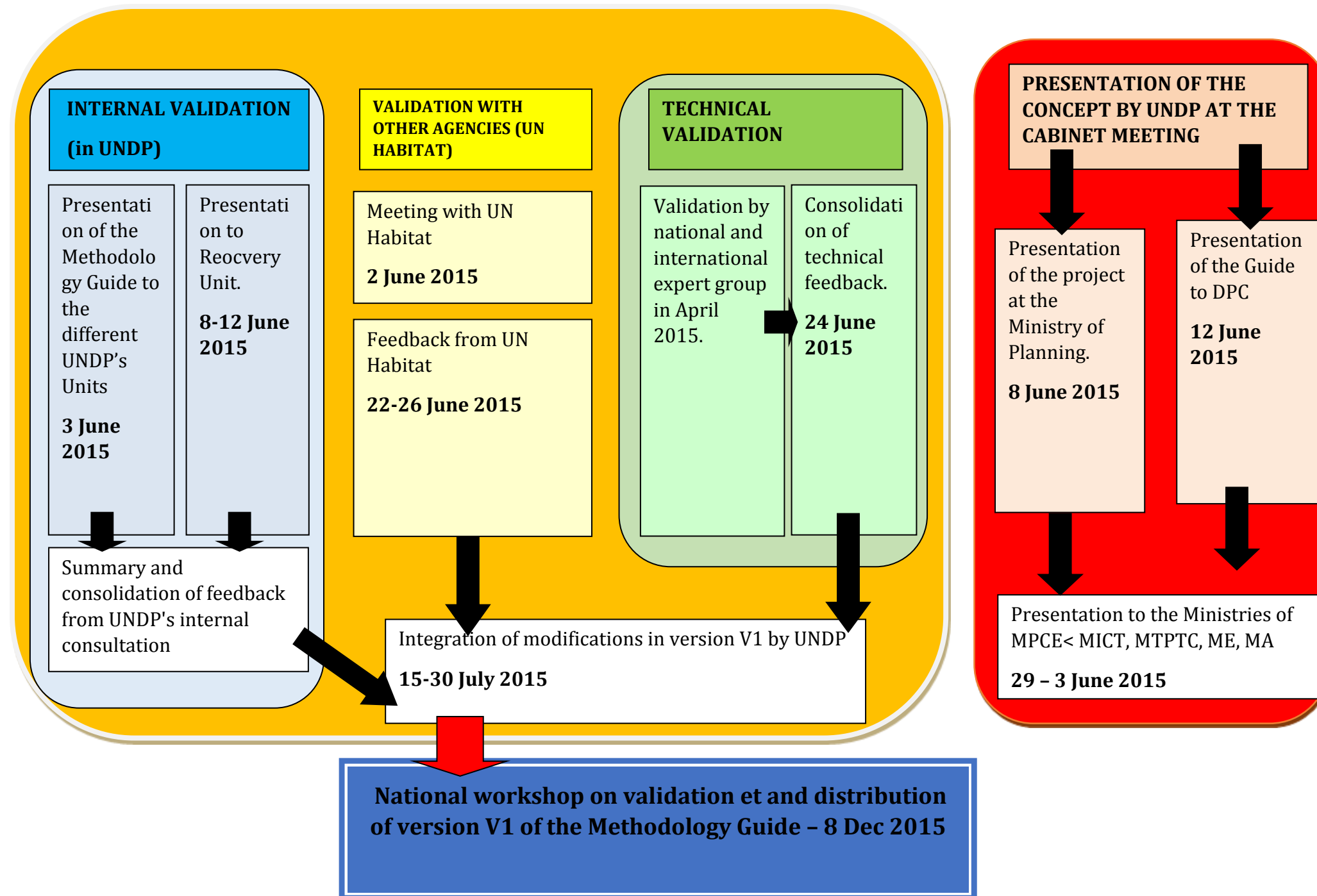


2.1.2. Validation of the Guide

The Guide was validated by a group of national and international experts, of the Scientific and Technical Coordination Platform. An evaluation grid, including a set of key questions was sent out to the experts. The UNDP Project Manager included comments from the experts, and a final series of validation workshops were organised, after which the first version of the Guide was released. According to an official report of the Methodology Guide validation meeting, held on 24 June 2015, the Scientific and Technical Coordination Platform, endorsed the Guide and recommended its implementation by urban risk reduction actors in the country.

Figure 2 below, shows the internal and external validation process.

Figure 2. Methodology guide validation process

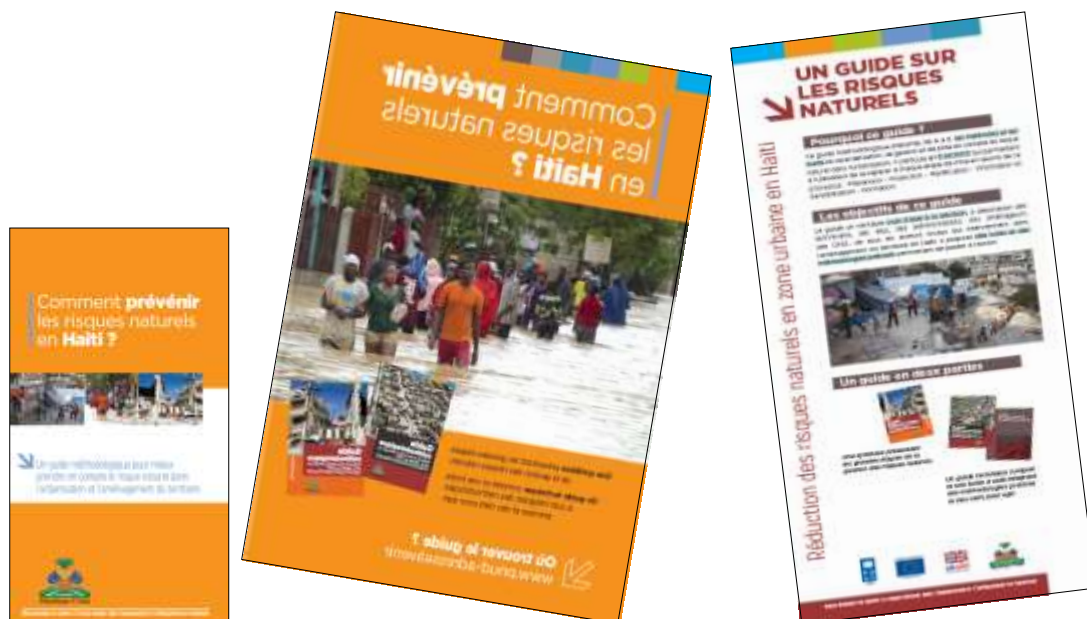


2.1.3. Dissemination of Methodology Guide

An advocacy strategy was developed with the aim of institutionalizing the methodology and to encourage the government to implement necessary technical and legal measures to ensure its integration in all the future urban development projects.

Brochures, booklets and communication documents on the guide were elaborated and 105 posters, 1,350 leaflets and 200 volumes of poetry on risk management were distributed. The book by the artist, poet and Nobel prize nominee for Literature, Frankétienne: "The night in the rubble" was produced alongside the Methodology Guide, considering social and cultural factors in Haiti. This book is the perfect alliance between art and science, instilling a culture of risk reduction in the Haitian consciousness, and this consciousness is most profoundly touched through art and poetry.

Figure 3. Communication products on the Guide



On 8 December 2015, MPCE, UNDP and key institutions involved in the elaboration of the Guide, launched the Guide at a public launch event at the Montana Hotel.

100% of stakeholders interviewed in Port-au-Prince, responsible for urban planning, territorial management and natural disaster risk reduction perceived the guide to be a useful and high quality product, that sets the national standard for urban risk knowledge and management in Haiti. They expressed the need for further dissemination of the Guide and its application throughout the country.

2.1.4. Training on the Guide

National actors were trained in urban risk management principles, the structures and content of the guide and its application. The training took place at Moulin sur Mer, from 18 - 21 July. Table 5 below provides the list of participants.

Table 5: General training

Institution	Number
Housing and public buildings construction unit	2
CIAT's administration department	6
CNGS	2
GRD's Permanent administration department	4
MTPTC / LNBTP & BME	6
MPCE (Urban planning team)	6
Scientific and technical Coordination(CST-RST)	4
Ministry of the Interior and territorial collectivities and DPC	4
Ministry of Environment	2
Ministry of Agriculture	2
Ministry of National Education	2
Collectivities: 3 communes (Petionville, PAP & Delmas), CCPC members	7
GRD's professionals (NGO, support projects) and actors involved in the RRN's project (NGO, UN)	6
The main current sponsors/ housing sponsor group	5

The assessment results (pre-and post-test) show an average improvement in knowledge of participants from **47% to 84%**.

. 2.2. Results achieved in the ECHO logical framework

Table 6 below shows the progress made in relation to the performance indicators in the ECHO logical framework.

Table 6. ECHO logical framework

Main objective				
Communities' resilience is reinforced through the appropriation and application of the urban risk reduction methodology by the different risk and planning actors in Haiti as well as disaster preparedness from the central to the local level				
Specific objective	Indicator	Final goal	Verification	Achievement
Reinforce the vulnerable populations' resilience through urban risk reduction and effective disaster preparedness at all levels.	The National Methodology Guide is adopted by the main Haitian institutions for its systematic implementation in urban planning in Haiti.	Methodology Guide integrating national consultation's recommendations: report on consultation/validation workshop. Roadmap for the institutionalisation of the guide.	<ul style="list-style-type: none"> ✓ Methodology guide integrating National consultation's recommendations (Guide Version 1) and official report (24 June 2015). ✓ Roadmap for the institutionalisation of the Guide. 	●
	Haitian institutions have increased knowledge and have the technical capacities for the application and operationalisation of the different components of the standard methodology.	25 people in 16 institutions trained.	<ul style="list-style-type: none"> ✓ Training report, attendance list and certificates. 	●

2.3. Application of the Methodology Guide in Grand Anse

The Grand Anse department was identified as a priority area by national authorities in collaboration with UNDP and DFID due to its high vulnerability to natural disasters. 35% of this department's total population is vulnerable to recurrent cyclones, floods and land movements. It is also close to a major seismic fault line, the Enriquillo's seismic fault. All the key steps in the Methodology Guide (apart from the development of contingency plans) were applied in the Grand Anse. These steps include:

- Characterisation and mapping of risks and challenges and definition of zoning and land-use regulations
- Identification of protection and mitigation works and measures
- Mobilisation and sensitisation of key stakeholders on urban risk reduction
- Development and application of training modules

2.4. Multi-risk mapping elaboration, validation and distribution

2.4.1. Development of risk maps

The Artelia /Géolithe/Beta-Conseils group was contracted in February 2016 in order to produce risk maps and to develop six natural disaster risk prevention plans (PPRN) for the following priority communes: Jérémie, Moron, Roseaux, Beaumont, Anricots and Dame-Marie. The process was introduced to key actors in Port-au-Prince on 22 February 2016, followed by a launch event in Jérémie on 25 February 2016.

The maps in Figure 4 below, were produced for Grand Anse department in digital form ((Tab, shp, kmz and PDF), on a scale of 1/50, 000 for urban areas and on a scale of 1/100,000 for rural areas.

Figure 4. Multi-risk mapping



Floods and torrential floods risk mapping.



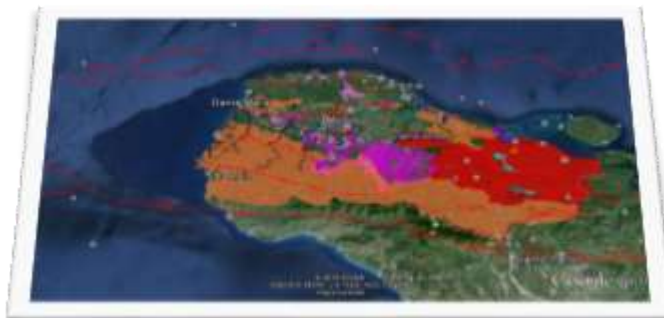
Earthquake risk mapping.



Land movement risk mapping.



Tsunami/marine submersion risk mapping.



Multi-risk mapping (1/50,000) covering the entire department on AO format and in the form of an A3 risk map (digital PDF document).

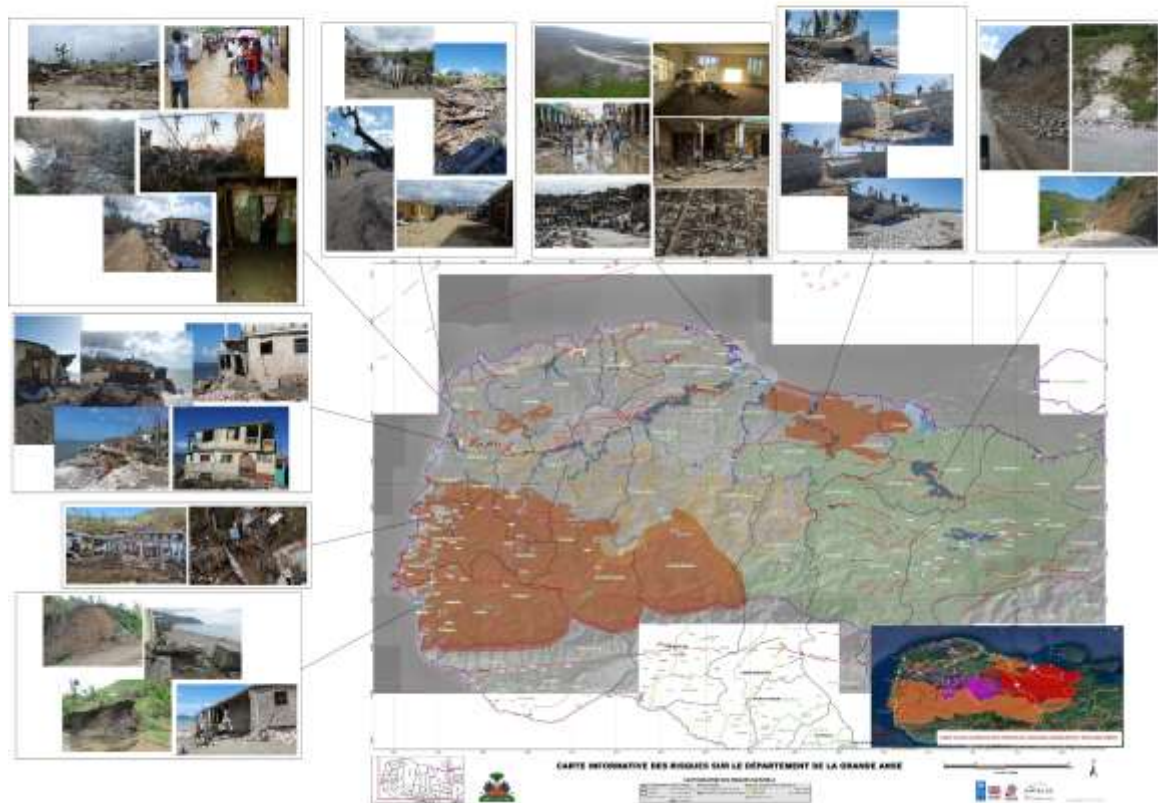
2.4.2. Multi-risk mapping validation.

The technical content of these products was presented for validation to national experts in Port au Prince in April, 2016. Thereafter, the maps were verified in the field by the UNDP Project Manager. Hurricane Mathew provided further validation. Post-Mathew assessments (Figure 5 below) showed a strong correlation between the multi-risk mapping and damage and loss associated with Hurricane Mathew. Finally, these maps were submitted on 14 March 2017, for final validation by the Scientific and Technical Coordination Platform.

Figure 5. Validation

PROJET DE REDUCTION DES RISQUES URBAINS

COHERENCE ENTRE LA CARTOGRAPHIE MULTIRISQUES ET LES DESORDRES POST-MATTHEWS



2.4.3. Diffusion of risk maps

Presentation of preliminary results: 19-21 April 2016

The Artella, Géolithe and Beta Conseil group charged with the development of these products, organised meetings from 19-21 April to present the results to key stakeholders in Port au Prince and in Grand Anse. A more in-depth training on the use and application of the risk maps took place in the Grand Anse from 15-16 June 2016, targeting local actors.

Extensive training (towards resilient towns): 25-28 July 2016

This in-depth training was intended for local representatives and authorities, NGO's, civil protection agents and communal civil protection committees. As a follow up to the training that place in Moulin sur Mer (18-21 July 2016), a more extensive and in-depth training was organised in Grand Anse from 25-28 July, 2016. The training involved a mix of field work and theory-based learning and at the end of the training participants had a better understanding of:

How to develop an urban risk prevention plan: elaboration of terms of references, selection of service providers, technical evaluation and validation of products (reports and maps) and implementation of plans.

Roles and responsibilities of decision makers: Development of urban plans based on risk maps and zoning regulations and implementation of current adaptation and mitigation measures to reduce vulnerability whenever possible.

Emergency management strategies: Elaboration of emergency management strategies bead on disaster risk.

2.5. Development and application of Risk Prevention Plans (PPRNs)

2.5.1. Elaboration and application of PPRNs

PPRNs are based on regulatory mapping which defines high risk areas (Figure 6 below) and determines measures to adopt with a view to prevent risks or mitigate the impact of disasters. The regulatory zoning is a public good and its implementation falls within the responsibility of the Commune. Once the hazards were identified, vulnerability maps of elements at risk in urban areas were developed, based on an analysis of urban land use and the building stock. These two maps were overlaid to generate the zonation map and associated land-use regulations. All this information was consolidated in the PPRNs. Six plans were developed for the priority Communes. The plans were presented to national actors on 6 September 2016 in Port-au-Prince and on 8 September 2016 in Jérémie.

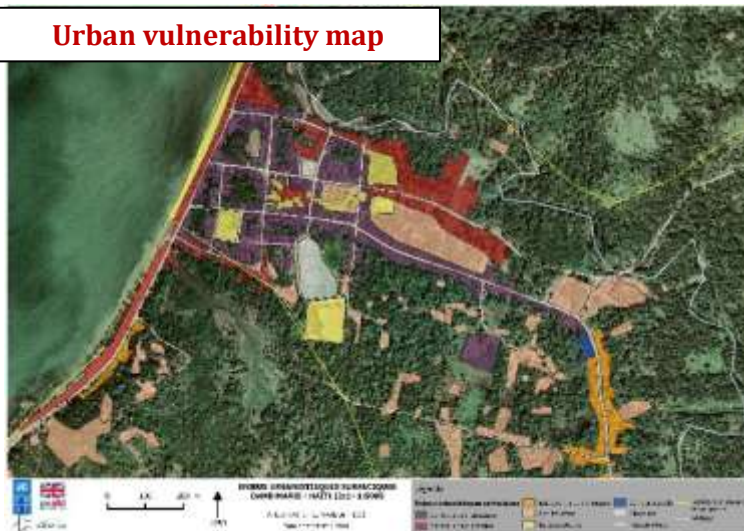
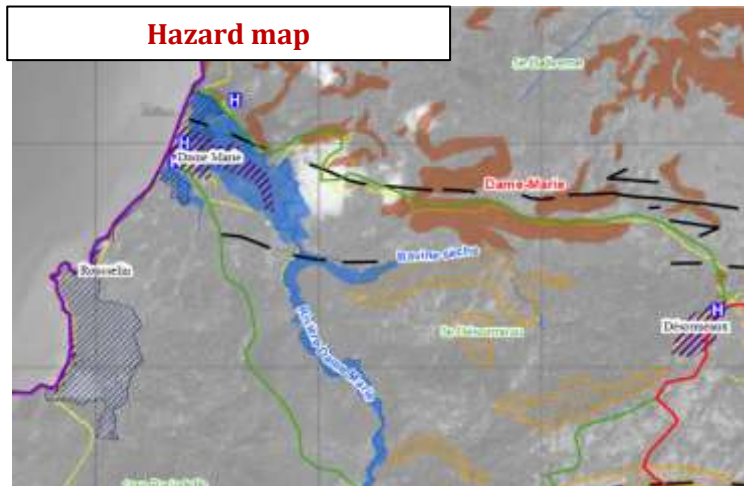
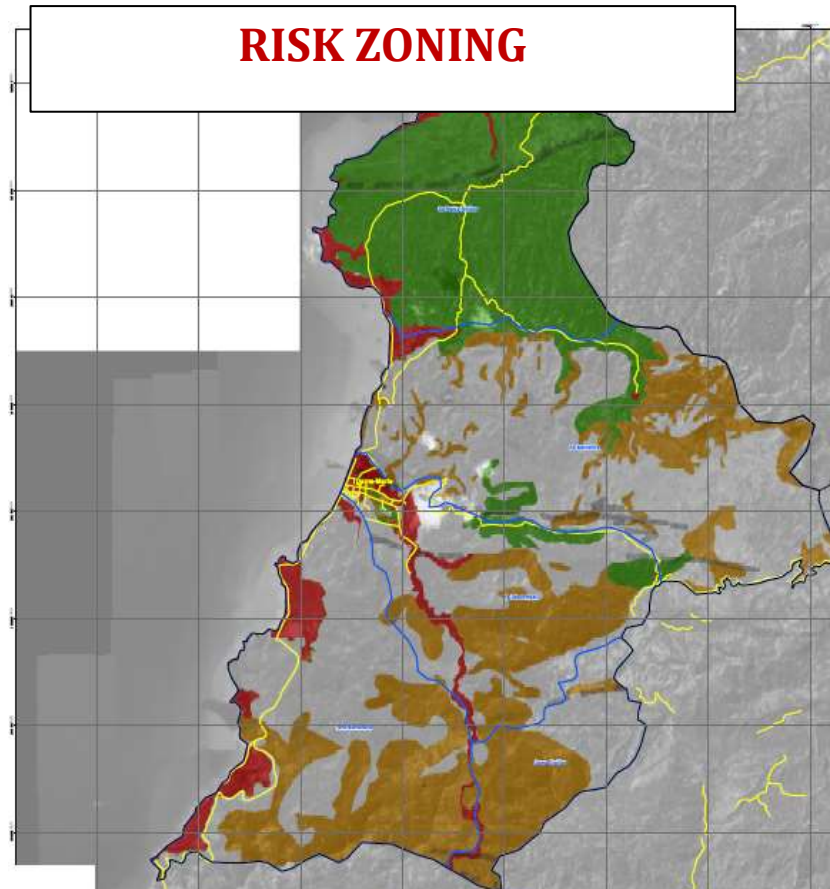


Figure 6. Regulatory mapping



Urban planification studio: September 28-29 2016

On the basis of the PPRNs a “planning studio” was conducted in September 2016 in Jérémie with the objective of operationalising the plans. On the basis of the risk zoning, local actors (elected representatives, technical staff, civil society, private sector and NGOs) devised concrete solutions to reduce vulnerability in the town of Jeremie through the practical application of urban regulations and migration measures. These were presented to donors just before Hurricane Mathew.

It was envisaged that similar exercises would be replicated in other Communes. However, Hurricane Mathew struck and therefore the training modules were adapted to the post-cyclone context. Six Communes that disposed of the PPRNs, applied them in the development of the recovery plans. The plans were developed in a participatory manner, involving Mayors, Deputy Mayors, technical specialists and civils society representatives. Table 7 below provides the dates and location of the planning exercises.

Table 7. Development of recovery plans

<u>Date</u>	<u>Commune</u>
07/11/2016	Dame Marie
12/11/2016	Jérémie
13-14/12/2016	Abricots
26/01/2017	Roseaux
<u>27/01/2017</u>	<u>Beaumont</u>
<u>30/01/2017</u>	<u>Moron</u>

The recovery plans elaborated by the priority Communes, were aimed at directing humanitarian and development actors' efforts in the post-cyclone response. The recovery plans focus on three key areas: housing, restoration of basic services and economic revitalisation. They fully integrate the concept of ‘building back better’ by adhering to the norms and regulations of the PPRNs.

2.5.2. Development of commutation products

Several communication tools were developed targeting the general public. These tools were validated, corrected and translated into Creole by the same group of local actors that worked on developing the recovery plans. The communication products included:

- DDRM: Departmental Dossier on Major Risks
- DICRIM: Communale Information Dossier on Major Risks (13 pages).
- DICRIM (3-page summary – leaflet)

Table 8 below shows where and when the working sessions to validate, correct and translate the communication products took place.

Table 8. Validation, correction and translation of communication tools

Date	Commune
December 13 2016	12 Communes
December 14 2016	Moron, Dame Marie, Chambellan, Irois and Anse D’Hainaut
December 15 2016	Jérémie, Abricots, Bonbon and Roseaux
December 15 2016	Beaumont, Corail and Pestel
January 31 2017	12 communes

Examples of these products are provided in Figure 7 and 8 below.

Figure 7. DICRIM (3-page summary - leaflet)



Figure 8. Billboard on preventive actions against major risks



2.6. Training of construction professionals and awareness raising

The training of construction professionals took place in Dame-Marie, Jérémie, Moron, Abricots, Beaumont & Roseaux. 365 builders and foremen were trained in earthquake and cyclone resistant construction techniques. This training was aimed at creating a pool of competent construction professionals in the Grand Anse capable of constructing earthquake and cyclone safe housing; small reinforced concrete and hollow concrete block buildings strengthened due to their adapted design, rigidity and weight. Table 9 below, shows where and when the trainings took place.

Table 9. Training of construction professionnelle

Training date	Commune
Decembre 15-17 2015	Jérémie
July 12-15 2016	Beaumont
February 23-26 2016	Dame Marie
February 29 and March 1-3 2016	Moron
April 19-22 2016	Abricots
April 25-28 2016	Roseaux

Figure 9. General public sensitisation by MTPTC



2 215 people were sensitised on disaster risks and safety measures. The awareness raising sessions took place every night after the training of masons in the six priority Communes.




2.7. Results achieved in the DIFID logical framework

The revised logical framework has the following short-comings which posed difficulties during the evaluation:





1. Impact indicator 2 and outcome indicator 2 (repetitive), are unrealistic. There was insufficient time or budget allocated in the project to execute urban planning policies in 6 Communes. This indicator is therefore not applicable.
2. Outcome indicators 1 and 3 refer to two Departments. Therefore, the number of beneficiaries targeted is higher than it should be. For the purposes of the evaluation, people directly involved in the project were interviewed, based on attendance lists of trainings.
3. Output indicators 2.1.2 and 2.1.3. should have been merged, as validation, diffusion and application of the PPRNs at Communal level took place through the same series of workshops. 24 workshops to validate and disseminate the PPRNS in 6 Communes is unrealistic.
4. Finally, Outcomes indicator 1 and Outcome indicator 3 are the same (reputation).



In future, higher quality logical frameworks need to be produced and carefully verified by donors prior to approval, as logical frameworks serve as the basis for final evaluations. Table 10 below shows the progress made in relation to the performance indicators in the DFID logical framework.

Table 10. DFID logical framework

Result	Performance indicator	Target (30 September 2016)	Verification	Achievement
Impact: Disaster resilience in the Grand'Anse urban centres is strengthened and urban planning of the targeted communes is influenced by disaster risk sensitive policies.	Impact indicator 1: % of targeted departments and communes that have strengthened their knowledge on their vulnerability to disaster risks.	100%	✓ 164 people interviewed in Grand Anse including masons	
	Impact indicator 2: % of targeted departments and communes that have reduced their vulnerability by implementing urban planning policies influenced by the developed disaster knowledge tools.	100%	✓ Not applicable	
Outcome 1: The departmental and communal stakeholders are aware of the most relevant urban disaster risks.	Outcome indicator 1: 75% of 92 interviewed departmental stakeholders (6 Institutional technicians (recruited and trained), 48 staffs for the 12 municipalities, 4 technical people of the delegations, 4 technical staff of two Departmental EOCs, 24 representatives of the Communal Committees Civil Protection (CCPV), 6 representatives of NGOs working in the study area) who demonstrate an appropriate knowledge of geographic distribution and degrees of the different risks affecting the Departement of Grand'Anse.	75%	✓ 164 people interviewed in Grand Anse including masons	
Output 1.1: An integrated departmental multi-risk assessment (earthquake,	Output indicator 1.1.1. 1 departmental integrated multi-risk map at an appropriate scale (1/50 000) is developed for the	5	✓ Five maps produced	

tsunami, marine submersion, flood, land slide, rock falling, debris flow, storm,..) is developed, disseminated and implemented in the departments of Grand'Anse.	department of Grand'Anse and 1 map for each specific risk.			
	Output indicator 1.2.1. 2 workshops to validate the developed risk assessments	2	<ul style="list-style-type: none"> ✓ Validation through field work and by Mathew ✓ Reports of preliminary results meetings (Port au Prince and Grand Anse): 19-21 April 2016 	●
	Output indicator 1.3.1. 2 of the events to present and disseminate the main steps/results/recommendations of the Departmental Risk Assessments	2	<ul style="list-style-type: none"> ✓ Reports of meetings in Grand Anse to disseminate maps: 15-16 June 2016 ✓ Report of in-depth training 25-28 July 2016 	●
Output 1.2: Dissemination, communication and awareness raising towards the public and major stakeholders on the integrated departmental multi-risk assessments.	Output indicator 1.2.1. 75% of interviewed individuals who affirm to have had adequate access to information related to the findings of the developed departmental multi-risk assessments	75%	<ul style="list-style-type: none"> ✓ 164 people interviewed in Grand Anse including masons 	●
Outcome 2: Departmental and communal stakeholders engage in the development and implementation of specific	Outcome indicator 2: Six of targeted communes that implement urban planning policies that have been influenced by the Risk Prevention Plans	6	<ul style="list-style-type: none"> ✓ Not applicable 	

Risk Prevention Plans for the six targeted communes.				
Output 2.1: Development of 6 Risk Prevention Plans in six (6) priority municipalities of Grand'Anse (Dame-Marie, Jeremie, Beaumont, Abricots, Roseaux and Moron)	Output indicator 2.1.1. Development of 6 Risk Prevention Plans in six (6) priority municipalities of Grand'Anse (Dame-Marie, Jérémie, Beaumont, Abricots, Roseaux and Moron)	6	✓ Six PPRNs elaborated	
	Output indicator 2.1.2. 12 workshops to validate the developed Risk Prevention Plan	12	<ul style="list-style-type: none"> ✓ Presentations resulting from Planning Studio: 28-29 September 2016 ✓ See Table 7 and 8 (workshops to develop recovery plans and communication products informed by PPRNs) 	
	Output indicator 2.1.3. 12 events to present and disseminate the recommendations of the Risk Prevention Plans to departmental and communal authorities and major urban risk stakeholders	12	✓ As above. It was 12 workshops in total for both validation and dissemination	
Output 2.2: Construction professionals from the public and private sector are trained on disaster resilient building practices in Grand'Anse.	Output indicator 2.1.2. 6 trainings of construction professionals from the public and private sector on adequate anti-risk measures	6	<ul style="list-style-type: none"> ✓ Training reports and lists of participants ✓ See Table 9 for dates and locations 	
Output 2.3: The general public in Grand'Anse (including donors and	Output indicator 2.1.3. 75% of (200) interviewed individuals who declare to have	75%	✓ 164 people interviewed in Grand Anse including masons	

<p>partners) is educated and sensitised around the findings and recommendations of the Risk Prevention Plans.</p>	<p>benefited from awareness raising initiatives related to urban disaster risk</p>			
<p>Outcome 3: The capacity of local government to absorb the findings and adequately implement the recommendations of the Departmental Risk Assessments and of the Risk Prevention Plans is reinforced in the three targeted departments.</p>	<p>Outcome indicator 3. 80% of 92 interviewed departmental stakeholders (6 Institutional technicians (recruited and trained), 48 staffs for the 12 municipalities, 4 technical people of the delegations, 4 technical staff of two operational centres Emergency Department, 24 representatives of the Communal Committees Civil Protection (CCPV), 6 representatives of NGOs working in the study area) who demonstrate an appropriate knowledge of geographic distribution and degrees of the different risks affecting the department of Grand'Anse</p>	<p>80%</p>	<p>164 people interviewed in Grand Anse including masons</p>	
<p>Output 3.1: 1 Institutional technicians support the technical capacity of local government to ensure the sustainability and implementation of the Departmental Risk Assessments and of the Risk Prevention Plans</p>	<p>Output indicator 3.1.1. One (1) technical staff to support the technical capacity of local government (MPCE or MTPTC) to ensure the sustainability and implementation of the Departmental Risk Assessments and of the Risk Prevention Plans</p>	<p>1</p>	<p>UNDP staff member based in Jérémie and a trained technical staff member from MPCE</p>	

3. OUTCOMES AND IMPACTS

3.1. Knowledge of natural disaster risks

3.1.1. Mayors, Deputy Mayors, technical staff and representative of civil society

87% of stakeholders interviewed in the Department of Grand Anse said that as a result of the project they had better understanding of disaster risks in the Department and in their Communes. All technical staff in the Mairie's could read and interpret the multi-risk maps, zonation maps and general rules/norms associated with the zonation maps. The knowledge is underpinned by scientific investigation and rigor. This new awareness marks the beginning of a shift in thinking; embedding the concept of risk reduction in the consciousness of national institutions at central level and in the Grand Anse. It marks a shift in collective consciousness from a limited focus on cyclone preparedness to holistic risk management.

3.1.2. Masons

As mentioned in section two, 365 construction professionals were trained by MTPTC. 130 masons were interviewed through four focus groups. The results are presented below:

- 100% of respondents reported that as a result of the training they had a better knowledge of construction techniques.

"We came to realize how little we knew before the training, because this training gave us so much. We were taught to respect norms related: reinforcements, shearing, distances between beams and posts and the types of rock to be used at each stage of construction." Mason from Rosseaux

"The training has changed the way we build. Now we can build seismic safe. In the past, we would build anywhere, sometimes even in riverbeds." Mason from Abricots

"We learned to build better, now we respect the rules." Mason from Beaumont

- 100% of respondents said that the training provided was high quality and this included the professionalism of trainers, curriculum and the training aids used.
- 45% of respondents have practically applied the techniques learnt post-Mathew.

"The training was useful because it deepened my knowledge. Post-Mathew, I worked on six different construction projects applying the new techniques learnt." Mason from Abricots

“There are several barriers that have impeded the effective implementation of the techniques post-Mathew:

-Owners often perceive the cost of materials for seismic and cyclone safe construction to be too high

-A lot more construction material is required to build safely

-Our clients dictate the law and we are forced to build as per the taste of the home owners.” Mason from Beaumont

- 100% of respondents said there was a need for additional training

“We would like to receive further training on cyclone safe construction techniques.” Mason from Dame Marie

3,1,3. Government ownership and application of tools

The Director General of MPCE indicated that the guide is an extraordinary document, and it's a Guide that belongs to and should be applied by Haitian institutions. As mentioned earlier the Guide was validated by national and international experts and all the stakeholders interviewed at national level, believe that the Guide sets the Haitian national standard/approach for urban risk reduction in Haiti.

The risk maps and PPRN were applied during the development of the plans de relevement. These plans were developed post-Mathew in a participatory manner. The Mayors, Deputy Mayors, technicians and representatives from civil society were all involved in developing the plans, despite the losses and difficulties that they suffered during the emergency response and continue to endure. The same group of people also remained engaged and available to work with the project's technical team to correct and validate the information and communication tools. This indicates a significant commitment to the project.

“Despite the terrible circumstances post-Mathew, we developed the recovery plans with pleasure, because it was something we really needed, and we are proud of the output. The ideas came from us and with the expertise of an Urbanist (UNDP) we were able to formulate them better. We are one of the poorest Communes and the Grand Anse has traditionally been neglected. The plans have also helped us realise our errors of the past. To execute the plan we really need external support.” Director General, Mairie de Dame Marie

The Mayors are familiar with the general principles and concepts and the technical cadre know how to use the tools, however day to day application of the tools can only occur when recovery and reconstruction work truly begins. The actual, practical implementation of the PPRN and the recovery plans will enable an even greater appreciation and appropriation of these tools.

All stakeholders interviewed in the six Communes that were not selected for the development of the PPRN's, the recovery plans and the training of masons, requested that the same exercise be replicated in their Communes too.

“We would really like to have the same exercise replicated in our Commune. We need the PPRNs as the zonation maps will help us identify safe zones and the training of our masons will enable safe construction.” Mayor, Les Irois

3.1.4. Discovery of new seismic faults

For the first time an identification of active seismic faults was carried out in the entire Grand Anse department, in line with a multidisciplinary scientific approach (seismotectonic approach) founded on:

- Collection, critical analysis and summary of existing studies (geological maps, reports and publications).
- Collection and analysis of instrumental and historical seismicity.
- Collection and analysis of geodetic measures (GPS measures).

Remote

- sensing: collection and morphostructural interpretation of terrain from satellite imagery, aerial photographs and digital elevation models (SRTM and LDAR) available in the study area.
- Analysis and detailed terrain observations.

The approach enabled the discovery of numerous, major, active tectonic incidents, likely to happen again in the future and likely to produce earthquakes of a significant magnitude. Several in-depth field studies enabled the characterization of these active faults through the analysis of quaternary sediment deformations and/or morphological disturbances.

All the active faults identified during this project were described in a detailed report and mapped at a scale of 1/50,000 and 1/10,000. See Figure. 10 below.

Figure 10. Active faults discovered in Grand Anse (1:50 000)



This work which was presented to the international scientific community during the Caribbean forum on "understanding seismic risk" in September 2016 in Port-au-Prince, aroused the interest of experts who recommended that the report be published in a scientific journal and the propagation of this type of study in the entire Caribbean region.

3.1.5. Science, politics and people

The project developed urban planning tools informed by scientific rigor, targeted these tools at decision makers and technicians in local authorities and converted this knowledge into information and communication tools for the public. The project combined disaster risk assessment, governance and community safety; engaging the scientific community, decision makers, politicians, technicians and the local community, in a holistic risk management approach.

“If it was not for all the trainings that we had between July – Dec 2016 and the risk maps we would not have been able to evacuate so many people before Mathew. The PPRN is our bible that we must consult it daily. People are ready to reconstruct, but if they lack the financial resources, knowledge about safe construction and a land title they will simply reconstruct by the sea or in areas affected by landslides. They will suffer losses once again the next time a disaster strikes. If we cannot implement the knowledge and tools, we have developed through the project we will simply restrict risk.” Mayor of Dame Marie.

4. EFFICINECY AND COST-EFFECTIVENESS

This section looks at the extent to which the project was delivered on target and on time and whether the investment represents good value for money.

4.1. Speed of implementation

The urban resilience project in Grand Anse began in October 2014 and initially targeted three Departments: Grand Anse, North and North East. Given a considerable delay in the recruitment of a service provider for the risk mapping, UNDP requested an amendment to the project in October 2015. Changes were made to the geographic scope of the project, budget, log frame and target end date. These changes are summarized in Table 11 below.

Table 11. Project amendment

Original scope	Post amendment (19 Nov 2015)
Geographic coverage: Grand Anse, North and North East	Geographic coverage: Grand Anse
Project duration: 1 Oct 2014 - 30 Sept 2016	Project duration: 1 Oct 2014 - 30 Dec 2016
Project budget: ££ 1,557,939.00	£1,095,307.00

The fact that it took over one year to recruit an international firm, and it was only when DFID threatened to withdraw the funding that, things started to move, highlights significant weakness in UNDP's operations at the time.

DFID made the decision to scale back the project and retracted £523,883.16. This amount was allocated in the initial budget to cover risk mapping, validation and dissemination activities in the North and North East. The work in the North and North East did not include the development of the PPRNs, communications products and training of masons. The amount withdrawn was therefore proportionate and included both direct output costs and operating costs (salaries and office running costs). Although the project was of an initial duration of 24 months, salaries of the technical team were covered for a total period 8 months, given the delays in imitating the risk mapping exercise. Table 12 below highlights the difference between the original budget and the revised budget.

Table 12. Difference in original and revised budgets

Outputs	Original budget	Revised budget
- 1 departmental integrated multi-risk map at an appropriate scale (1/50 000e) developed for each department (Grand-Anse, North and North East): 1 map for each specific risk and 1 multi-risk map for each Departement (so 5 maps for each department) -6 workshops to validate the risk assessments -4 events to disseminate the results of the risk assessments	£525,616	£206,784 (Cartographie multirisques pour La Garnd Anse, 2 atelier de validation et 2 atelier de dissémination)
Assessment of the human, socio-economic and environmental issues of the main agglomerations of the departments	£30,000	0.00
Development de 6 PPRN	214,848	£214,848
12 atelier de validation de PPRN	10,740	£10,740
12 atelier de dissémination de PPRN	17,904	17904
6 trainings of masons	35,808	35,808
Sensitisation de public general	35,808	35,808
Cade technique pour appuiera le gouvernement local pour assurer la durabilité d'intervention	60,000	20,000
HR	374,923	300,923
Office running and GSM	187,652	148,820.84
M&E	44,840	22,420

A no-cost extension of three months was provided to UNDP to complete all the activities in the Grand Anse.. UNDP achieved all the results in the revised logical framework, to a high standard, as per the new agreement. This was possible given the preparatory work that had been done by the project's technical team such as the collection of secondary data for the risk assessment, the development of a methodology specifically for risk mapping in Grand Anse, the assessment of seismic risk, and project kick-off meetings with Government during the first year of the project.

The results were achieved despite several external factors including:

- Three changes in Government and four different Director Generals in MPCE
- Political instability before and after elections leading to restrictions in movement due to security concerns
- Hurricane Mathew in October 2016 (during the no-cost extension period)

In conclusion, therefore, delivery on target was not achieved in the first year. Upon corrective measures taken by DFID and course correction by UNDP, quality results were delivered on time and as per target based on the revised work plan.

4.2. Cost of outputs

The ratio of operating costs (HR and office running) compared to direct project costs was 31%:69% which is within the recommended 30%:70% for humanitarian programmes. Although this project was a research and capacity development project, and therefore human resource intensive. The size of the project team was proportionate and comprised: four technical staff members, a Project Assistant and two drivers.

Given that the Project Manager was a Scientist and able to: write technical terms of reference to commission studies, provide technical guidance to sub-contractors, validate products, and train government officials, external consultants did not have to be hired for these tasks.

In future Haitian capacity, could be used to undertake the mapping, however at present this capacity does not exist in sufficient quality and quantity and an intermodal firm had to be contracted. In addition, strengthening and using local capacity is a long-term project. It cannot be achieved in two years.

4.3. Cost-effectiveness

In terms of quality to end user. 100% of stakeholders in interviewed at national level and in the Grand Anse said they were satisfied with the project. At national level, all

stakeholders interviewed cited the need for further dissemination and application of the Guide. In the Grand Anse all actors cited the need for continuity and replication of the project.

In terms of cost-effectiveness, investing in disaster risk reduction (technical studies, plans and durable development programmes) is far less costly than humanitarian response and reconstruction. See Tables 13 and 14 below. Especially in Haiti, where disasters strike regularly. The costs of humanitarian responses are huge and recurrent, compared to one-time, sustainable investments in disaster risk reduction and durable development.

Furthermore despite £88 million already spent on the response significant gaps remain in terms of food and shelter assistance, and recovery work has not even yet begun. While the humanitarian appeal covers Grand Anse, Sud and Nippes, Grand Anse was by far the worst affected.

Table 13. Humanitarian response costs

Humanitarian response	Cost
Flash Appeal (Oct 2017)	\$163,000,000 (88 million funded)
Humanitarian Response Plan 2017-2018	\$163.625,000 (residual humanitarian and early recovery needs)
TOTAL	\$251,000,000

The recovery needs post-Mathew amount to USD 2,72 billion for four Departments. Therefore, the humanitarian plus recovery needs amount to USD 378 million per Department $(2,72 \text{ billion} + 251 \text{ millions})/4 = 378 \text{ million}$). Clearly investing in risk reduction is more cost-effective.

Table 14. Resilience investments

Risk reduction investments	Cost
Risk assessment and PPRN in 12 Communes.	\$1,300,000
Preparation of Communal Development Plans. ¹	\$600,000
Investment in integrated, area based multi-sectoral resilient development projects – based on risk assessments and PPRNs.	\$240,000,000
TOTAL	\$241,900,000

The DFID investment represents good value for money and should be replicated in other Departments of the country to serve as a basis for durable development. The ECHO project will undergo a full financial audit and therefore this section does not comment on the use of ECHO funds.

5. RECCOMEDATIONS

This section of the report provides recommendations for the donors, UNDP and the Government. Many of these recommendations are time-sensitive and should be implemented at the earliest opportunity.

5.1. Recommendations for donors

5.1.1. Sustainability

The urban disaster risk reduction project illustrates the coherence between two key donors: DFID and ECHO. Appreciating the value of the Methodology Guide, DFID decided to fund its practical application in Grand Anse. This is good practice and other donors now need to come on board to sustain he work.

The recovery plans developed post-Mathew, outline immediate, medium-term and long-term actions that need to be implemented in priority Communes to enable a durable recovery post-Mathew. They present a good example of recovery that integrates disaster risks across key sectors and if not financed will leave populations in Grand Anse even more vulnerable than they were pre-Mathew.

In the six priority Communes where DFID applied the Methodology Guide, all the Mayors signalled that: they understood the concept of risk reduction; now possess the knowledge and the tools; have limited but strong technical capacity and have the political will, but lack the finance to advance.

Had DFID not financed the application of the methodology guide, it would have remained just an excellent approach on a shelf. If other donors fail to come on board and finance the plans, they too will remain just good practice documents and opportunities for change not realised. Given that the plans are multi-sectoral, what is required is an integrated multi-sectoral approach to recovery, implemented by agencies with core competencies in various sectors.

Day to day application of the tools can only occur when recovery and reconstruction work truly begins. The actual, practical implementation of the PPRN and the recovery plans will enable an even greater appreciation and appropriation of these tools. However technical backstopping and support will continue to be required during implementation.

5.1.2. Replication

The six Communes that did not benefit from the PPRNs and the recovery plans have requested them. These Communes were also affected by Mathew and if these Communes are neglected, risk will be reconstructed. The Communes in Grand Anse lack Communal Development Plans. A logical next step is to develop these based on the risk

maps, however before this is done, priority actions in the recovery plans must be financed.

There is a need to replicate the risk mapping and development of PPRNs across all Departments of Haiti through a phased approach. Building on learning from exercises already completed and using national capacity already created for training and replication. However, the most urgent priority remains Grand Anse.

5.2. Recommendations for UNDP

There were several weaknesses in the project relating to: insufficient use of Haitian capacity for the development of risk maps, belated validation by the Scientific and Technical Coordination Platform of the risk maps, retention of data within DFID, insufficient diffusion of mapping products and recovery plans, and finally the lack of a good communication strategy to accompany the sensitisation of the general public. Some of these weaknesses can be corrected immediately and others in future projects. Solutions are provided below.

5.2.1. National ownership

All stakeholders interviewed at national level pointed to a need to increase Haitian capacity in the development of risk maps. As mentioned in section four, this was a project design flaw and existing capacity is extremely limited.

However, the Faculty of Science of the University of Haiti is now offering a course in geo-sciences and geo-risks in collaboration with French and Belgian universities. According to a Professor in geology at the UEH the ambitious Masters programme was put in place for the following reasons:

- a. The Haitian scientific community must generate and own research and knowledge about the country.
- b. Natural disaster risks need to be better understood in order to put in place effective mitigation measures linked to territorial and environment management strategies.

The Masters programme will cover the following models

- Identification and mapping of natural hazards
- Collection and management of environmental data sets
- Management of risk reduction projects
- Development of risk prevention plans
- Research in geo-sciences

In two years from now, 20 students will graduate with a Masters Degree in Geo-science and there will be sufficient Haitian capacity in place to gradually replicate the project in other Departments, supported by international and national technical experts.

The UNDP Project Manager (currently managing the project in Grand Anse) is keen to engage these students in the North West (EU supported replication of Grand Anse project), during their Masters programme with the view to give them field exposure and to ensure national expertise is used where possible.

It is imperative that UNDP energies this capacity effectively moving forward and that the donors are aware of and find creative ways of using this expertise.

5.2.2. Validation of risk maps, data storage and dissemination

Upon recommendation of the evaluation, the maps were recently submitted to the Scientific and Technical Coordination Platform for validation. This is a useful step to complete and consolidate the exercise, and to ensure that all mapping exercises moving forward undertaken by UNDP and other organisations are validated using the same process. This should be followed up, very soon after, by ensuring that the data sets are available to key government institutions such as: MPCE, BME, LNBTP and CNIGS. The maps should also be made available electronically on websites such as: Haiti Data (World Bank), Haiti Response (OCHA) and the websites of MPCE and UNDP to enable easy access for humanitarian and development actors.

5.2.3. Sensitisation of the public

As mentioned above, UNDP developed a range of information and communication products tailored to each Commune, based on the risk mapping. These have been provided to each Commune for distribution. All the Mayors interviewed said that they would ensure the materials were distributed in schools, churches, through the civil protection committees and civil society organisations. However, given that the project has now ended, there is no way of knowing for certain if this will be done and assessing changes in knowledge, behaviours and practices amongst the target audience and attributing these changes to UNDP's communication products.

The materials are of a high quality and have been developed in collaboration with key actors in the Communes, however the following elements of a good communication strategy were missing: dissemination strategy, identification of key actors who can explain the content and get the message across clearly and accurately to the general population through trusted channels, monitoring of the target audience reached and a follow up knowledge, attitude and practice survey. In future, the risk maps could also be shared with the general public in the form of 3D models. In future projects, a communication strategy should be implemented and monitored and sufficient time should be built into the project to cater for this.

5.3. Recommendations for the Government of Haiti

5.3.1. Distribution and application of Methodology Guide (MPCE)

MPCE should ensure that the Guide is shared with concerned Ministries once the new government is entirely instituted. There is a need to ensure the Guide is also listed in relevant policy documents of key Ministries.

MPCE should consider funding the Guide's application, in at least one department and request donors to cover the remaining departments. The South and the West should be prioritized, since several Ministries are in dialogue with the European Union to develop an urbanization programme in Les Cayes, Jérémie and Port-au-Prince.

Nevertheless, before the exercise is replicated in other departments, the following immediate actions should be implemented:

Development of an operational institutional organogram for risk reduction in Haiti: based on an existing study of institutions involved in risk management and town planning (UNDP/ECHO 2013-2014).

Define the obligations/responsibilities of each institution (who does what?) in relation to their field of competence and their mandate, based on the above-mentioned organogram.

Develop a road map, time frame and budget for application of the Guide and replication of the DFID funded project in the other departments of Haiti.

5.3.2. Enhancing technical capacity at Commune level (MICT)

The Mayors are the primary decision-makers in the Communes, and should be supported by competent technical staff in the risk management and urban planning domain, to ensure the effective implementation of risk management strategies. There is a need for civil engineers, agricultural engineers, town planners and legal experts. It may not be possible to have all the expertise located in each Commune, however, there is a need to create a group of experts at the departmental level who can be available to the Mayors if needed. MICT should consider its implementation.

5.3.3. Use of rapid assessments to enable timely responses (DPC)

Based on the risk mapping and the typology of buildings and their exposure in the six priority Communes of Grand Anse as well as the 2009 population census, UNDP carried out a rapid pre-evaluation of damage and loss post-Mathew. The pre-assessment was later verified through helicopter flights and field assessments. The figures in the pre-assessment were found to be reasonably accurate. The availability of this type of data facilitates planning and permits a rapid aid response, especially when it is difficult to access the disaster affected area. In the future, DPC and humanitarian partners could make better use of these types of pre-assessments of damage and loss, where risk assessments are available.

5.3.4. Training of masons and review of building regulations (MTPTC)

All masons interviewed requested further training in cyclone safe constructions techniques. They also requested further training on the construction of one and two story buildings. Some of the barriers preventing the practical application of safe construction techniques post-Mathew include: resistance amongst home owners due to a perception that the costs of seismic safe and cyclone safe buildings are significantly higher, the lack of access to high quality building materials and the lack of sufficient employment opportunities.

There is a need for further training on cyclone safe construction and an effort should be made to modify forms for existing planning applications, to ensure that permits are only issued if home owners accept to construct safe housing. Existing laws and guidelines should also be reviewed and modified if necessary to include seismic and cyclone safe construction norms/regulations.

5.3.5. Strengthening the leadership of Haitian institutions in risk mapping (CNIGS)

By virtue of its mandate and technical competence, CNIGS must be involved in the development of risk maps and risk prevention plans in the following ways:

- Development of topographic and administrative maps at a scale of 1/25000 for the entire country.
- Development of urban land-use maps for major towns and urban centers in the country, which will serve as key inputs to the vulnerability analysis of risk prevention plans.
- Compilation of risk maps using GIS, based on risk data provided by technical experts in specific fields. For flood risks for example, the knowledge and data would be provided by: hydro-geo-morphologists, hydrologists, and hydraulics engineers.
- Serve as a repository for storage and dissemination of risk maps.

5.3.6. Strengthening the Scientific and Technical Coordination Platform

As per its structure and terms of reference, the Scientific and Technical Coordination Platform, plays a key role in the technical validation of risk knowledge products in Haiti. To ensure that the Platform continues its valuable quality assurance function and expands it to include the validation of all disaster risk knowledge products generated by international and national actors in Haiti, there is a need to grant the Platform legal status and ensure its effective integration in the national disaster management system of Haiti.