

Assessment of strategies for linking the Damage and Loss Assessment Methodology to the Post-Disaster Needs Assessment

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Contents

Glossary of terms and definitions	7
Acronyms	9
Executive summary	11
I. Background.....	13
II. DaLA Methodology	15
III. PDNA Methodology	17
IV. DaLA and PDNA Methodologies in the Caribbean context	19
V. Other methodologies involved in the recovery process	21
A. Human Recovery Needs Assessment (HRNA).....	21
B. Sustainable livelihoods approach (SLA)	22
VI. Gap analysis in moving from the PDNA to the DaLA	23
A. Review of DaLA training materials	25
B. Review of recent PDNA and DaLA reports	27
VII. Challenges	31
VIII. Recommendations	33
Bibliography	35
Annex.....	37
Annex 1: Rationale for priority ranking of recovery projects (Turks and Caicos Islands)	38
List of Tables	
Table 1 Summary of review of DaLA reports	28
Table 2 Summary of review of PDNA reports	29
List of Figures	
Figure 1 Recovery process pathway	23

Glossary of terms and definitions

Damage:	Total or partial destruction of physical assets existing in the affected area. Damage occurs during and immediately after the disaster and is measured in physical units (i.e. square meters of housing, kilometers of roads, etcetera). Their monetary value is expressed in terms of replacement costs prevailing at the time of the event.
Disaster:	A serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using its own resources.
Disaster management:	The management of all hazards, through all phases of the disaster management continuum – prevention and mitigation, preparedness, response, recovery –by public and private sectors, all segments of civil society and the general population in hazard prone areas.
Hazard:	Natural or man-made occurrences that pose a threat to people, property and the environment and are capable of causing a disaster or emergency. Hazards include earthquakes, fire, explosion, chemical spillage, flood, epidemics, hurricanes, landslide, storm surge, tidal wave or volcanic eruption.
Losses:	Changes in the economic flows arising from the destruction of assets. They occur until full economic recovery and reconstruction of assets have been achieved, in some cases over several years. Typical losses include the decline in output in productive sectors (agriculture, livestock, fisheries, industry and commerce) and the lower revenues and higher operational costs in the provision of basic services (water and sanitation, electricity, transport), as well as the unexpected expenditures to meet humanitarian needs during the post-disaster emergency phase. Losses are expressed in current values.
Mitigation:	Measures taken to reduce both the effect of the hazard itself and the vulnerable conditions to it in order to reduce the scale of a future disaster. Therefore, mitigation activities can be focused on the hazard itself or the propensity for damage to those elements exposed to the threat.

Preparedness:	Measures taken beforehand to reduce to the minimum level possible, the loss of human life and damage to property, through the organizing of effective measures which will ensure timely and appropriate responses to a given hazard.
Recovery:	Short term rehabilitation and longer term reconstruction measures taken to achieve a rapid and durable recovery that does not reproduce the original vulnerable conditions.
Response:	Actions carried out immediately before, during and after a hazard impact, which are aimed at saving lives, reducing economic losses and alleviating suffering.
Risk:	A measure of the expected losses due to a hazard event of a particular magnitude occurring in a given area over a specific time period.
Vulnerability:	The extent to which a community, structure, service, or geographic area is likely to be damaged or disrupted by the impact of a particular hazard.

Acronyms

CARICOM	Caribbean Community
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDEMA	Caribbean Disaster and Emergency Management Agency
DaLA	Damage and Loss Assessment
DANA	Damage and needs analysis
ECLAC	Economic Commission for Latin America and the Caribbean
GDP	Gross domestic product
HRNA	Human Recovery Needs Assessment
MoU	Memorandum of Understanding
NDO	National disaster office
OECS	Organization of Eastern Caribbean States
PDNA	Post Disaster Needs Assessment
RF	Recovery framework
SIDS	Small island developing States
SLA	Sustainable livelihoods approach
UNDP	United Nations Development Programme

Executive summary

This report was prepared at the request of the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) with support from the Caribbean Catastrophe Risk Insurance Facility (CCRIF) to assess strategies for linking the ECLAC Damage and Loss Assessment (DaLA) Methodology to the Post Disaster Needs Assessment (PDNA).

Each methodology was individually outlined and their use in the Caribbean context was explored in detail to set the framework or lens through which their linking would be viewed. Other methodologies that are used within the recovery process were identified and outlined.

A gap analysis was conducted on moving from the PDNA with a focus on initial rapid response to DaLA. DaLA training materials were reviewed to assess where improvements can be made to seamlessly move from one methodology to the next. Additionally, both DaLA and PDNA reports were reviewed to identify specific areas of information which could serve as common data links, and note how this linkage could inform the overall disaster assessments in the region. This is in addition to noting any similarities or variance in the application of both methodologies.

Challenges to linking both methodologies were identified such as countries lacking well defined recovery frameworks and their ability to fund or finance recovery efforts, in addition to recurrent challenges in the Caribbean region such as inadequacy of baseline data, human resource and training, and identifying teams to conduct the data collection.

Recommendations made in terms of the strategies to be employed for the successful linking of both the DaLA and PDNA Methodologies included: creating and maintaining a recovery framework and baseline data; creation of a minimum requirements list for the successful implementation of PDNA and DaLA implementation; and increasing political will in addition to identify a champion to push the subject.

I. Background

The Caribbean is highly vulnerable to natural hazards (hurricanes, volcanic eruptions and earthquakes) which represent a significant risk to inhabitants and economies in the region. For example, between 2006 and 2012, the Caribbean was affected by a total of 24 tropical cyclones, while the region suffered two major earthquakes. Extreme rainfall also resulted in major flooding in several countries; for example, Guyana and Suriname, while one volcano in Montserrat remains active. Annual expected losses from wind, storm surge and inland flooding have been estimated at up to 6 per cent of gross domestic product (GDP) in some countries. Climate change has the potential to greatly exacerbate these risks, and could increase expected loss by 1 to 3 per cent of GDP by 2030 (ECLAC 2014).

Since the 1990s, the Economic Commission for Latin America and the Caribbean (ECLAC), through its subregional headquarters for the Caribbean, has supported Caribbean governments in undertaking economic assessments of the impact of these hazards on the affected countries. By applying its now well-known Damage and Loss Assessment (DaLA) Methodology, ECLAC has been able to provide evaluations of impacts on the economic, social, and environmental sub-sectors within countries and is also able to provide governments with meaningful metrics, both for mobilizing donor assistance and informing their post-disaster recovery development efforts.

Notwithstanding these efforts, a limited insurance coverage ratio in the region has resulted in long recovery periods for affected countries in the aftermath of disasters. In 2004, following the passage of Hurricane Ivan through the Caribbean region, the Caribbean Community (CARICOM) heads of government, held an emergency meeting to discuss critical issues surrounding the need for the provision of catastrophe risk insurance for its members. Out of this initiative, the Caribbean Catastrophe Risk Insurance Facility (CCRIF) was formed. CCRIF is the first multi-country risk pool in the world, and is also the first insurance instrument to successfully develop parametric policies backed by both traditional and capital markets. It is a regional catastrophe fund for Caribbean governments designed to limit the financial impact of devastating hurricanes and earthquakes, by quickly providing financial liquidity when a policy is triggered. Sixteen governments are currently members of the facility: Anguilla, Antigua and Barbuda, Bahamas, Barbados, Belize, Bermuda, Cayman Islands, Dominica, Grenada, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago and Turks and Caicos Islands.

In February 2010, CCRIF and ECLAC signed a Memorandum of Understanding (MoU). The purpose was to provide a framework within which collaborative activities will be undertaken and specific areas elaborated. The overall objective of this collaboration was to assist the governments of

Caribbean States in adopting policies on disaster risk reduction and mitigation that minimize the socio-economic, physical and environmental damage caused by natural disasters.

This report seeks to conduct an assessment of strategies for linking the ECLAC Damage and Loss Assessment (DaLA) Methodology to the Post-Disaster Needs Assessment (PDNA) with a specific focus on initial rapid response, as a means of strengthening both approaches.

The following approach was taken to conduct the assessment:

- 1) Review the methodologies employed in conduct of the DaLA and PDNA (initial rapid response);
- 2) Review methodologies undertaken by other entities in the conduct of both methodologies;
- 3) Undertake a gap analysis in transitioning from the PDNA phase to the DaLA phase;
- 4) Identify techniques, for example, specific areas of information which could be served by common data links between the DaLA and the PDNA, and note how this linkage could inform the overall disaster assessments in the region;
- 5) Identify specific challenges, and define the requisite institutional and technical resource framework that will be necessary for integrating PDNA and DaLA in the region;
- 6) Consult with the relevant disaster recovery stakeholders to validate the findings of the gap analysis;
- 7) Identify specific actions to be undertaken by countries in order to integrate PDNA/DaLA methodologies in a broader disaster recovery framework; and
- 8) Identify implications for disaster assessments through the application of the integrated PDNA/DaLA methodology especially in the context of CCRIF.

II. DaLA Methodology

The ECLAC DaLA Methodology captures the closest approximation of damage and losses due to hazardous events based on assessments of the overall economy of the affected country. It pays due consideration to the prevailing insufficiency of reliable quantitative information for the Caribbean region, the availability of which is even more limited after a disaster. The assessment usually takes place at least 21 days after the impact of the hazardous event. The amount of damage identified is used as the basis for estimating reconstruction needs while the amount and type of losses identified provide the means to estimate the overall socio-economic impact of the disaster and the needs for economic recovery (ECLAC 2003).

The socio-economic impact analysis includes the estimation of the likely effects of the disaster on the performance of the economy and the temporary macro-economic imbalances that may arise, as well as on the temporary decline in employment, income and well-being of affected individuals and households. With regard to the impact on the macro-economic variables, analyses are usually made of the post-disaster performance on GDP, the balance of payments and the fiscal sector. The impact of disaster damage on gross investments may not necessarily occur in the same year of the disaster, but would be measured in the following years as – depending on construction sector capacity and financial resource availability – asset restoration or replacement gets underway. The impact on the balance of payments involves the estimation of the increase in imports and decline of traditional exports arising from the disaster, as well as possible reinsurance payments and relief donations from the international community (World Bank 2009).

The analysis of disaster impacts on public finances takes into consideration both possible declines in government revenues due to lower income in government-owned enterprises and to possible lower tax revenues caused by a decline in economic activity after the disaster, as well as increased outlays to meet the unexpected demands of the emergency and rehabilitation stages. Considering the impact on personal or household well-being, the analysis normally includes the estimation of employment and income decline due to the losses sustained in the productive and services sectors as well as the increased family or personal expenditures arising from the disaster, in comparison to normal, non-disaster conditions (World Bank 2009).

III. PDNA Methodology

PDNA pulls together information into a single, consolidated report: information on the physical impacts of a disaster, the economic value of the damages and losses, the human impacts as experienced by the affected population, and the resulting early and long-term recovery needs and priorities (World Bank 2014). This definition provided by the World Bank includes elements that are beyond the initial rapid response of PDNA. In the Caribbean region PDNA is often called damage and needs analysis (DANA) which was formulated by the Caribbean Disaster and Emergency Management Agency (CDEMA). The framework establishes the process and timeframe within which damage assessment should take place if a timely and appropriate response is to be mounted and relief provided. The process also incorporates and makes the linkage between the physical and macro-economic assessment (CDEMA 2005). The methodology is generally partitioned into three stages and members of the damage and needs assessment sub-committees or equivalent within national disaster management organizations primarily have responsibility for data gathering at the various stages.

First stage: This stage occurs between 4 to 8 hours after the all clear has been given.

The objectives of this stage in the DANA process are:

- To obtain a general overview of the damages.
- To identify the initial needs of the impacted population so as to inform immediate response and relief actions

Second stage: This phase is usually conducted within the first 7 days after the all clear has been given.

- The main objective is to obtain more detailed and specific information on damages and needs. These data are primarily quantitative.

Third stage: This stage is normally conducted within 21 days of impact.

- The objective of this phase is to produce a *detailed* damage assessment report which includes quantification of physical damage, direct damage costs and recommendations to inform the recovery process.

IV. DaLA and PDNA Methodologies in the Caribbean context

Based on World Bank guidelines, the establishment of the PDNA management structure should include the following:

- (i) **High level management team** to oversee the process, provide strategic guidance, take key decision and ensure the availability of resources.
- (ii) **PDNA/recovery framework (RF) coordination team** to work under government leadership to manage day-to-day planning and management of assessment and development of recovery framework.
- (iii) **Sector teams** of line ministry experts and United Nations / World Bank/ European Commission or other sectoral specialists to collect and integrate data on damage, losses, human impacts and needs.
- (iv) **Technical support cell**, including information and communication technology, information, mapping, logistics, translation, etc.
- (v) **Report secretariat** to oversee and support the production of sector assessment reports and recovery frameworks.

Within the Caribbean context, it is important to note that the diversity of the small island developing States (SIDS) and the related human resource capacity constraints are such that it likely will not be practical to have a five tier management structure as proposed by the World Bank.

The experience of several Caribbean countries in implementing the PDNA points to this reality. For instance, in the Turks and Caicos Islands, following the impacts of Hurricanes Hanna and Ike in 2008, it was more practical to have a three-tiered management structure with a disaster recovery board, a recovery task force, and the department of economic planning and statistics as the secretariat. Similarly, Saint Lucia in 2010 following the passage of Hurricane Thomas was able to develop one of the most comprehensive DaLA reports in the region primarily because it had a well defined national DaLA committee prior to the impact event. The report captured elements of initial rapid response activities, damage and loss, in addition to a pathway for early recovery.

It is possible that within the Caribbean, the larger and better-resourced countries could use the system as designed. Smaller economies however, are typically forced to use a more condensed structure, in light of their limited human resource.

Given the clear linkage between both methodologies, an emphasis should be placed on the training of personnel in DaLA to build capacity on a local level which would ensure that the critical information that is needed will be gathered as soon as possible rather than having to wait for a team to be deployed to collect the relevant information for decision making. Moreover, since all CDEMA participating states have some capability in conducting both initial and detailed damage assessments, it would be useful to integrate the way the information is gathered at this stage with the DaLA requirements in order to reduce the need to gather similar information repeatedly from the same stakeholder who may grow frustrated.

Finally, the last piece of the puzzle is to encourage or mandate target countries, either CDEMA participating states and/or Organization of Eastern Caribbean States (OECS) members, to develop their disaster recovery framework and plan ideally before any impacts caused by hazards. This allows for the identification of personnel in country for training in PDNA who will work with persons deployed from United Nations Development Programme (UNDP), World Bank, or European Commission representative. The crafting of the recovery framework will also provide an opportunity to develop a priority ranking system (see Annex A) for projects considering some of the following: restoration of critical infrastructure or capacity; generation of significant revenue; preserving of or improving national security; reduction of vulnerability to hazards; contribution to sustainable development; and having a major economic benefit.

Also, selection criteria for housing beneficiaries similar to that which was developed as a part of the Turks and Caicos Islands recovery plan could be developed. Such criteria included: age; income; ability/disability; single parents; and number of children. In both cases the idea was to ensure objectivity throughout the selection process as much as possible. The development of a selection criteria coupled with the integration of DaLA at a local level will allow for a smooth process such that the country's ability to gather relevant information and the process to prioritize needs will be largely in place before a hazardous impact. Such preparedness will leave funding availability as the one major remaining element which will dictate how fast a country can recover.

V. Other methodologies involved in the recovery process

There are a number of alternate methodologies that are involved in the recovery process but the following were found to be used frequently as a part of both the DaLA and PDNA processes:

A. Human Recovery Needs Assessment (HRNA)

The methodology used by the United Nations for Human Recovery Needs Assessment (HRNA) has made it possible to produce a detailed analysis of communities' short-term needs and an action plan to be implemented over a period of 18 months, with the results and programs of which are assessed. The HRNA is usually initiated 6 weeks after the initial hazardous impact. Priorities are defined in the immediate recovery activities in order to best respond to the communities' most pressing needs by consolidating them around the following government priority themes: governance, regional development, risk reduction, environmental management, the social sectors, the production sector, infrastructure, cross-cutting themes, and the macro-economic framework. Thus, the recovery action plan comprises all the priority activities coherently consolidated around these priority themes. A review of the HRNA shows it to have the following key elements:

- HRNA's significance lies in understanding the impact of a disaster event on the people.
- HRNA brings out impact on social and development indicators.
- It analyzes how people meet their basic needs and access social services.
- It assesses the peoples' capacity to cope with and recover from the impact of disasters.
- It is people focused.
- It includes several concepts which are not included in the DaLA: gender equity, human rights, social justice, etc.
- It identifies early recovery interventions as well as long-term recovery needs.

B. Sustainable livelihoods approach (SLA)

The sustainable livelihoods approach (SLA) is based on two concepts: sustainability and livelihoods. Livelihoods refer to the capabilities, assets and activities required for a means of living. It is understood that for livelihoods to be considered sustainable, they should demonstrate:

- Resilience in the face of external shocks and stresses;
- Capacity to maintain the long-term productivity of natural resources; and
- Ability not to undermine the livelihoods of, or compromise the livelihood options open to others.

The unit of analysis for the SLA is the household. To ensure a rigorous undertaking, sound household data disaggregated by the basic demographic characteristics of age, sex of the head of the household, family structure, education levels, health status, livelihoods/income streams and expenditures are required. The sources of baseline data are the country's most recent population and housing census, the survey of living conditions, the core welfare indicators questionnaire and the most recent agricultural survey. The livelihoods analysis seeks to gain an accurate and realistic understanding of the strengths (assets or capital endowments) of households and how these assets are converted into positive livelihood outcomes.

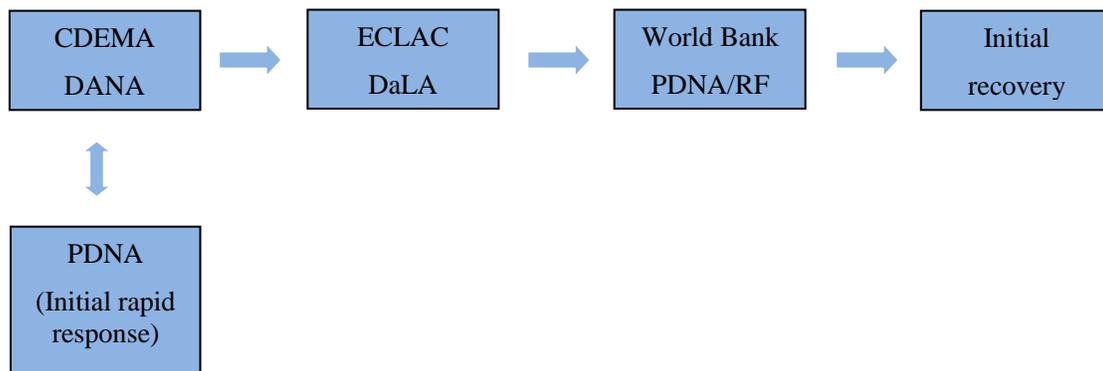
A disaster assessment using the SLA seeks to ascertain the following:

- Where were the affected communities located;
- Which households were affected (how many and to what extent);
- What were the damage and losses suffered by each household with regard to their assets;
- How were their income-earning activities affected;
- What would it take to get them back up and running;
- What assistance was required to build resilience and reduce future risk; and
- What would it take to make the livelihoods of the affected household sustainable.

VI. Gap analysis in moving from the PDNA to the DaLA

A meeting with disaster recovery stakeholders was held on 26 February 2014 in Saint Lucia to discuss linking PDNA to DaLA methodology. The meeting was used to validate the initial findings of the gap analysis to date and to get feedback on the practical implications of using both methodologies and present the initial recommendations which forms a part of this report.

FIGURE 1
RECOVERY PROCESS PATHWAY



Source: Author's compilation.

Figure 1 above illustrates how the various methodologies interact to form what can become a seamless recovery process. The information that is required for the CDEMA DANA is collected via an initial damage assessment followed by a detailed damage assessment over a defined period of time. This essentially is equivalent to the initial rapid response of the PDNA. This information in turn forms the basis or the baseline on which the ECLAC DaLA expands in even greater detail but also covers aspects of socio-economic loss. The World Bank version of PDNA/RF seeks to further build on this information by coupling the ECLAC DaLA methodology with that of the HRNA methodology in attempt to close what it sees as a gap. Further it puts an emphasis on creating a management structure

that will not only navigate the process but also develop an RF which allows for the prioritisation of initial recovery efforts. Essentially, if the CDEMA DANA is tweaked to fit better within the ECLAC DaLA's needs and the DaLA is expanded to compensate for the recovery framework, there would only be a need for two well-designed methodologies for use within the Caribbean region. This is important because both methodologies are already widely used.

DaLA and PDNA are complementary methodologies such that elements of an initial PDNA are used to conduct the DaLA and DaLA forms a part of a PDNA/RF. Both processes involve a data gathering exercise so that objective decisions may be made by relevant authorities. As noted by Kambon (2011), "the DaLA attempts to value the opportunities that arise from the disaster. The methodology is intended to facilitate ways to find policies and strategies that seek to address how the quality of life may be improved, how counties may return to normalcy, and how to reduce vulnerability for future disasters". Reports that are generated by the use of both methodologies are only as good as the data which are collected and the available baseline data which are used to compare the pre-disaster situation against the post-disaster situation.

Considering gaps which are evident in comparing the DaLA and the PDNA, there is a clear separation between the initial humanitarian needs of the affected population and their short- to long-term needs, such as the immediate emergency food supplies versus the long term housing needs. The needs analysis process is a key parameter of likely success of the overall recovery process. While there are clearly defined systems to collect data which describe damage and loss, DaLA is lacking it terms of a framework for prioritizing needs. The PDNA process provides for this assessment through its elaboration of a more detailed recovery framework. This framework helps governments to make objective decisions as to how funds will be spent when funding for reconstruction becomes available through various financial mechanisms. A case in point is demonstrated by the experience of Louisiana in the United States where almost 9 years later, New Orleans is still in recovery from Hurricane Katrina which made landfall in 2005. This is likely because of the absence of a recovery framework with a mechanism to prioritize needs prior to the hazardous impact. This reality brings into focus the importance of objectivity and clarity in the planning and implementation of the recovery process.

Ultimately, both DaLA and PDNA seek to provide insights into the likely costs of recovery, following the occurrence of a disaster. As was noted in the 2004 DaLA for the Cayman Islands, "the result of such an assessment provides a quantitative approximation to the overall damage and reconstruction costs of the event and looks into the effect on the country's macroeconomic performance as compared to the pre-hurricane targets"(Cayman 2004). The assessment also complemented and expanded on the emergency and humanitarian needs identified previously by the Cayman Islands government. A proper valuation would assist any government in determining whether it has enough resources to respond to a disaster/hazard or whether it needs to seek external support. Damage or loss assessments assist countries in determining whether the cost of mitigation or reconstruction may present an undue burden on the resources of the affected country (OECS 2011).

The availability of baseline data is another key element to any successful implementation of the DaLA or PDNA. This is particularly the case should key stakeholders be traumatized or unavailable for any reason due to a hazardous event. In this situation, external experts will have the initial required information to complete the task. This is also especially applicable in the case of multi-island states or larger countries with several municipalities or parishes where data are required for and from multiple locations. Establishing of baseline data in-house is important because "assessment is where the socio-economic impact of the hazard is assessed. This can only be measured by looking at the information against the baseline data" (OECS, 2011).

Poverty assessments are also an important part of the baseline data needed for the DaLA and PDNA assessment, and in this regard, census and statistic departments in country offices have a critical role to play. Therefore, staffing levels need to be adequate in order to collect, maintain and update baseline data. The formatting of the relevant data pre-event is also critical and both methodologies have to be flexible enough to utilize the varying data formats across SIDS. Statistical significance may not present a problem within smaller populations and economies because a best

approximation of the damages and loss captured is what is needed to for reporting purposes. The ability to collect the right data versus using best estimates is vital. For example, the quality of the collection of rainfall data may have an effect on the accuracy of the report.

Another important issue with respect to the link between DaLA and PDNA relates to the treatment of socio-economic variables in the assessments. It is generally agreed that a socio-economic assessment can be requested for any event whether natural or man-made for which a Government deems that valuation is necessary. While the decision is usually a collaborative one with regional agencies, the proposal should be made that OECS, CDEMA or any other regional bodies monitoring a situation within their member countries be more proactive and reach out or suggest consideration for conducting assessments rather than waiting for the request. Similarly, there should be ongoing dialogue among multilateral stakeholders such as the United Nations systems partners, World Bank, and European Union, and relevant government institutions regarding the need for a PDNA. Any of these stakeholders may initiate the dialogue thereby obviating the need to wait for government to formally request a PDNA to begin the conversation.

Typically, this situation may occur for disasters that do not fall under the traditional category of hazardous events, natural, man-made or otherwise. This for instance was done with a gender impact assessment in Grenada in 2004, five months following the passage of Hurricane Ivan and cultural assessment in Samoa, 2012. Given that a major incident requiring outside intervention is not required to implement the methodology, its application to minor hazards could be adjusted to fit the scale and scope of the incident. An example of this would be an assessment conducted on the socio-economic impacts of irregular migration on the Turks and Caicos Islands which is a significant expenditure of that country's recurrent budget.

With specific reference to the DaLA process, King (2011) noted several implementation issues. These were: ownership of the process; challenge to get governments to sign off on the reports; and aligned to this, the inadequacy of the regional capacity (OECS 2011). The need to mainstream the damage assessment process, which requires not just having persons trained, but also the institutional arrangements to expedite or apply this training in real life situations, was also observed. The PDNA/RF methodology generally uses a qualitative approach using focus group sessions with the affected population and the policy makers. This was a difficult process when applied to Haiti in 2010 following the earthquake given the extent of the impacted areas. Despite this, Haiti provided perhaps one of the more comprehensive PDNAs ever produced.

A final relevant conclusion is that, even though most damages occur in the private sector, it often falls to governments to take care and assist those affected segments of the population with lower income and who is highly dependent on basic agricultural or fishing activities for their livelihood. Productive activities rank high in the estimation of the amount of damage and losses. Further, ensuing losses measured as economic flows are deemed to persist for a long period of time into the future, thereby adding to the estimated long term impact of the disaster. Infrastructure vulnerability is enhanced by poor environmental management and environmental degradation, with resultant high productive risks and huge human suffering. These hold true within both methodologies (Presentacion L645 2004).

A. Review of DaLA training materials

A review of the DaLA training material allows for the identification of techniques which could be served by common data links between the DaLA and PDNA, and notes how this linkage could inform the overall disaster assessments in the region. The handbook and training materials were developed in the early 1970s and were revised as recent as 2002. Training recognizes the need to transfer knowledge from the trainer to the trainee and takes place over a five day period in a workshop environment. Transfer of knowledge is one of the main planks for building sustainability in SIDS. The development of this capability will ensure that the countries have enhanced capacity to assemble and retrieve relevant data for conducting the damage assessment.

Some of the topics covered in the DaLA training manual include: an examination of the vulnerabilities, applying the methodology, overall effects of the damage and loss, and case studies on how to apply the DaLA methodology. The DaLA includes assessing damage to road infrastructure, the agricultural sector, tourism infrastructure, environmental resources, and affected populations. These training materials however generally need updating to better reflect the lessons identified and learnt within the Caribbean over the last 10 to 15 years. For example, there is a need to place a greater emphasis on the use of a disaster continuum over that of the traditional representation of a disaster cycle. This is the case because within the Caribbean, given the length of time it takes to recover from hazardous event, the country will likely be experiencing several phases of the continuum at different times, that is, from mitigation or preparing to responding or rehabilitating from another hazardous event.

The training materials should also include more field and table-top exercises in addition to more recent case studies. Moreover, consideration should be given to whether the training should be conducted on sector specific areas such that you have a general overview of the methodology with half day or full day modules that are specific to the relevant stakeholders. With the OECS objective being to train at least 24 persons in each OECS member state, this might be a more practical option since more response personnel could be trained, and they would primarily learn and be exposed to information gathering techniques which they would use to collect information relevant to their sector in the aftermath of a disaster. Another option could be to use an interactive online model where various modules of the methodology can be introduced and completed by participants before a facilitator visits the respective country to complete the course.¹ This approach lends itself to the issuance certificates of completion which would certify a person's ability to conduct part or all of the DaLA or by extension PDNA methodologies, instead of certificates of participation which simply document a person's attendance at a training session. Once again, this strengthens the development of a cadre of trained practitioners in the assessment methodologies within the region.

The distinction between essential data and additional data requirements is vital. Additional data is generally information that can be collected pre-event or easily accessed post-event. Additional data essentially can be considered as baseline data while essential data is collected in the post impact environment and is required for the assessment. It is good practice to update and/or compile the required data quarterly or every six months where appropriate so that the additional data available is fairly current should a country be impacted by a hazardous event. The ability to conduct this exercise will depend primarily on the human resources within statistics offices to keep up with the demand. The national disaster office (NDO) can be the repository for the specific data requirements needed for the conduct of the DaLA and PDNA. The frequency of the update of the data/information can be generally determined based on how quickly it is likely to change. Development of flexible guidelines for updating of data will be necessary.

In relation to infrastructure, costing for repairs of roads per mile/km, cars, trucks etc. can be recorded/estimated pre-event and assessed yearly or every 6 months or before hurricane season each year. MoUs with major contractors or service providers should be signed with governments on a yearly basis as to what the costs would be for those services for a calendar year. This will provide a realistic idea of how much it will cost to reconstruct fairly rapidly. Most improvements will be tied to tendering processes. After this period the MoU can be reviewed and updated accordingly. This function primarily rests with public works departments as they generally have information about heavy equipment in country that is available for use. MoUs can be written in this area too. That information will especially be needed for multi-island nations where equipment will have to be moved among them. All relevant agencies should be aware of what pertains to the whole country.

Getting information from private/commercial sectors can be problematic for some governments in the region because of lack of trust regarding how the information may be used. Terrestrial environment data can be collected and stored beforehand. Information that is required in a baseline of scenic value is information that is useful to policy makers of a country in general, who

¹ One such example could be found at: www.gfdrr.org/about_pls308.

need to have it at their fingertips to address multiple needs pre and post disaster. But clarity is needed on the techniques used to estimate loss of beach. The issue of the environment is one of the emerging areas demanding some form of economic valuation and calls for improvement in environmental information collection. This issue was echoed once again at the stakeholders meeting as a proper valuation of the environment is a tough task.

B. Review of recent PDNA and DaLA reports

The insurance distribution in Grenada and the Cayman Islands in 2004 illustrated the level of exposure to a major hurricane of very small territories, where Grenada had almost no insurance coverage or endogenous resources to cope and the Cayman Islands had a high level of insurance and, hence, had a capacity to rebuild albeit with a shortage of immediate resources and a consequence on the country's government budget and cash flow. This speaks to the use of insurance and reinsurance to some extent as risk transfer facilities as seen in table 1 by many countries. It was noted that having a good idea of the insurance distribution throughout the country gave a good idea of how much help/assistance would be needed in the event of a hazardous event: that is, if 30 per cent of persons are insured then at least 70 per cent may need help. The challenge would however be to decipher who truly needs help because persons may not refuse long term assistance even if they do not need it.

Given the stringent economic conditions in donor countries and the multiple demands on the funds of multilateral financial institutions, the full complement of resources required to recover from a hazardous event might not materialize from aid and soft loans. CCRIF payout can act as an immediate boost to resourcing immediate humanitarian needs and initial recovery. It suggests that the setup of a disaster recovery fund with clear guidelines is practical. CCRIF payouts can be legislated to be deposited into the fund rather than into the consolidated fund for budgetary use. It may also be logical that a government undertake some borrowing on favorable interest terms to accelerate the recovery of the productive sectors and to repair roads, bridges and other vital infrastructure. Such necessary debt could be viewed as public investment and should have a relatively high rate of return in the medium to longer-term.

Generally, estimations for indirect damage across sectors were harder to quantify in comparison to direct damage. In some cases damages to replacement value might be a one to one proposition but in the social aspects a costing approximation would be necessary to identify the cost to address the identified need. For example, the replacement cost of a totaled vehicle versus running a public awareness campaign.

DaLA reports primarily deal with what has taken place not how to deal with it or provide the framework and guidelines for dealing with recovery. Over the years, however, recovery and rehabilitation recommendations have got better and more detailed showing the evolution of the application of the DaLA methodology and process. Several reports recommended training to be conducted in the DaLA methodology. The reports also noted that PDNA as outlined by the World Bank is not widely used in the Caribbean region, but in relation to its use as a rapid response assessment, it took the form of an initial damage assessment or DANA as outlined by CDEMA.

There must be an effective working relationship between the NDOs and the ministries of finance as the NDO is often the central reporting and coordinating unit in the times of disaster response. But does this relationship hold up? NDOs are primarily responsible for response and coordination initially, but Ministry of Finance takes the lead in the transition to the recovery process because they are best positioned because of ongoing relationships with the donor community for other projects and housing the economic and statistics offices.

While the ECLAC DaLA methodology was used to produce a World Bank PDNA/RF in both Haiti experiences in 2008 and 2010, there was a change in the needs assessment methodology used. There was a move from the needs assessment for immediate recovery methodology for 2008 hurricane season to the HRNA for 2010 earthquake. This likely caused confusion between local and international experts as the requirements for the needs assessments would have changed since the last

major incident just two short years earlier. This coupled with a change in government or personnel in general could have resulted in delays to produce information and data needed to conduct the assessments. The needs assessment for immediate recovery methodology was used to produce a detailed analysis of short-term needs of communities and a plan of action to be implemented over a period of 18 months. Support for a mission at the international level is usually critical, as there are requisite skills which may not be available locally or even regionally and must be brought in from international sources. For this reason, resources to support a mission must be clearly identified. In the case of Hurricane Tomas in Saint Lucia where the country experienced severe landslides, a geo-technician was deemed necessary for the mission (Saint Lucia 2010).

Tables 1 and 2 below show the similarity and variance in the application of both methodologies.

TABLE 1
SUMMARY OF REVIEW OF DALA REPORTS

DaLA report summary	Country							
	TCI 2008	Bel 2007	Jam 2001	CI 2008	Bah 2004	SVG 2010	SLU 2010	CI 2004
Background/event description	✓	✓	✓	✓	✓	✓	✓	✓
Satellite images used								✓
Use of multiple methodologies (SLA or DANA)		✓					✓	
Recent poverty assessment report/national assessment of living conditions		✓	✓	✓		✓	✓	
Summary of costs	✓	✓	✓				✓	✓
Sectoral strengths and weaknesses identified	✓	✓						
Sectoral legislation		✓	✓		✓	✓		
Short term recommendations	✓		✓	✓	✓	✓	✓	✓
Long term recommendations	✓		✓	✓	✓	✓	✓	✓
Mitigative measures	✓		✓	✓		✓	✓	✓
Project costing	✓						✓	
Recovery suggestions	✓		✓	✓	✓		✓	
National recovery fund					✓			✓
National recovery fund recommended	✓							
Challenges and opportunities identified	✓					✓		
Fiscal challenges/opportunities and realities	✓			✓		✓		
Risk transfer facility	✓			✓	✓			✓

Source: Author's compilation.

Note: TCI - Turks and Caicos Islands, Guy – Guyana, Bel – Belize, CI – Cayman Islands, Bah – Bahamas, SVG – St. Vincent and the Grenadines, SLU – Saint Lucia.

TABLE 2
SUMMARY OF REVIEW OF PDNA REPORTS

PDNA report Summary	Country					
	Haiti 2008	Haiti 2010	CAR 2009	Ban 2008	Ken 2008-2011	Samoa 2012
Disaster risk country profile	✓	✓	✓	✓	✓	✓
Initial response lead by country with donor support	✓	✓	✓	✓	✓	✓
Used DaLA as part of PDNA	✓	✓	✓	✓	✓	✓
Use of multiple methodologies	✓	✓	✓	✓	✓	✓
Total and short-term need costing identified	✓	✓	✓	✓	✓	✓
Recovery plan/priorities developed	✓	✓		✓	✓	✓
Disaster risk reduction needs I.D.	✓	✓	✓	✓	✓	✓
Change of methodology from one event to next		✓				
Recovery needs clearly identified		✓	✓	✓	✓	
Desire to build back better		✓	✓	✓		✓
Build institutional capacity		✓	✓	✓	✓	
Pre-disaster situation understood	✓	✓	✓	✓	✓	✓
Baseline data available	✓	✓	✓	✓	✓	✓
Supporting community risk assessments at the district level		✓		✓	✓	✓
Catastrophe risk financing and transfer (proposed or have)		✓		✓	✓	
Climate change adaptation consideration		✓		✓	✓	✓
Adequate legal framework to operate				✓	✓	✓
Proposed amendments to legal framework		✓				
Gender consideration		✓			✓	
Political consideration		✓				
Regional/donor support	✓	✓	✓	✓		
Contingency funds allocated					✓	

Source: Author's compilation.

Note: CAR- Central Republic of Africa, Ban –Bangladesh, Ken-Kenya.

VII. Challenges

The following are the main challenges identified in linking the DaLA and PDNA methodologies:

- 1) Training in both DaLA and PDNA methodologies has to be an on-going process, specifically because of high turnover in staff within NDOs and throughout the civil service. This is a result of disaster management personnel being highly skilled and having the ability to adjust and adapt to new roles making them targets for promotional opportunities. As of 2011, 263 nationals across the Caribbean were trained to conduct the assessment of damage in accordance with the ECLAC methodology but a lot more is needed. For example, over 2000 persons conducted the PDNA in Haiti after the 2010 earthquake.
- 2) How countries source financing to conduct recovery and rehabilitation after a hazardous impact can be a challenge. This is notwithstanding the fact that the cost of doing the DaLA or PDNA may be prohibitive. Several funding avenues exist such as: capital budget, recurrent budget, disaster recovery funds, grants, soft or hard loans, donor assistance, or risk transfer facilities like CCRIF on a global or individual level. Unfortunately, depending on the economic state of the country before and after an event, several of these options might not be viable in the short or long term. This highlights the viability of CCRIF and the need to use a widely accepted process such as DaLA as the basis for seeking donor funding.
- 3) The question of whether donor countries trust information produced by Caribbean governments based on their own internal assessments is an underlying theme. This has been advanced as the rationale for use of international expertise in the conduct of assessments. A case in point is Jamaica, which needed external assistance in conducting assessments in 2001, but has since developed its own capacity to do so. Still, countries may continue to face difficulties in accessing multilateral funds after a disaster, if such requests are based purely on locally generated evaluations.
- 4) Many countries do not have a well-defined recovery framework or the legal framework and institutional arrangements to support the successful implementation for DaLA. However, CDEMA is in the stage of currently tendering a consultancy for development of a model disaster recovery framework. Once widely implemented, countries will be in a better position to respond to and recover from hazardous events.
- 5) Development of DaLA and PDNA teams will be more challenging for multi-island states with minimal or limited resources. This is the case because each island would need to

develop a team to collect the relevant data; otherwise, the process can become quite lengthy as the team that is co-located with the central government makes its way to each individual island. This may apply to the Greater Antilles countries as well.

- 6) Ownership of the final document by the beneficiary country can sometimes be problematic because it is unmanageable and has a very large scope with the resulting report being so huge that it was unusable. While it was noted that Haitian technocrats wanted to own the assessment process, as their government had desired, it was very challenging. Many of them had lost immediate family members, which presented emotional challenges. The state of mind of responders must be considered when assigning responsibility to carry out the assessments in both DaLA and PDNA.
- 7) Inadequacies of baseline information and equipment, in addition to information sharing across respective ministries in resident countries presented a problem. The real challenge here may be gate keeper mentality where holders of information release data based on a personal basis rather than by an agreed protocol.

VIII. Recommendations

- 1) Conduct of vulnerability/risk assessment prior to events will give a better knowledge of the areas likely to be impacted. Governments might be hesitant due to the fact that the information can be used against them in the aftermath of a disaster as they may have been aware of the problems but did little or not enough to address them. Topographic and bathymetric surveys (LiDAR etc.) can be costly and may not be a priority for governments with other pressing needs in the Caribbean. Utilization of existing donor projects may be an avenue to be explored.
- 2) Recovery frameworks should be established pre-event such that the key driver of the recovery process becomes available data and funding prioritization (see Annex) rather than the establishing of a recovery framework post impact. The recovery framework must be *inclusive of* contingency funds. Similarly, regional projects must move beyond the pilot stage where only the more well-resourced countries, human and otherwise, can participate, creating a furthering of the haves and the have nots.
- 3) Reviewing/updating of ECLAC DaLA training material is needed to reflect current and or more recent disasters in the Caribbean. New data, graphs, and experiences should be incorporated. Data may be over 10 years old. The audience may not be cognisant of some of the previous hazard events because they may have been too young to know or remember. Additionally, training material should be developed for the CDEMA DANA and/or the agreed upon initial rapid response PDNA.
- 4) Train trainers within each Caribbean country in both methodologies to create a cadre of Caribbean-based and island specific trainers. This will allow for the integration of the needs of DaLA and DANA into the day to day operations of departments to ensure their usefulness.
- 5) Develop a trained cadre of nationals who can conduct the assessment of damage in accordance with the ECLAC methodology. The use of the ECLAC methodology will impart objectivity and a quality level to the valuation that would gain ready acceptability in the international donor community. The local officials who will form the assessment team will have the benefit of training from the ECLAC team and will collect relevant data in the format required for analysis. The idea is that the best estimate will be developed as soon as possible and although all funds will not come from donors, it is still important for the officials to indicate how they will spend/program the money that is needed.

- 6) Set up community level training and/or education conducted with a focus on interpretation of early warning signals and in following evacuation protocols and requirements, through sustained public information and behavioral change/sensitization campaigns.
- 7) Create a check list or minimum criteria for the successful implementation of DALA and PDNA. Legislative framework, human resource, and technology requirements should be considered. Also conduct an assessment similar to that of the CDEMA Audit Tool or B-Tool which could inform the likelihood of a successful implementation.
- 8) Satellite images should be used more frequently for assessments to give a quick overview of damages of large areas and cross-referenced with on-the-ground facts. This is especially in initial damage assessment situations where the use of space technology can help to assess quickly the damage before and after to infrastructure and households.
- 9) Establish face-to-face working group meetings, planning and training exercises in real hazard situations to build capacity.
- 10) Much like green hotel certification, promote disaster risk reduction/ climate change adaptation certified hotel/tourism products as this could also improve the attractiveness of the country as a tourist destination as more tourists look for “green destinations”. As the consciousness of the tourists develops, they would be more willing to stay further away from a beach once they have the understanding. Additionally, governments have to act for the wellbeing of their citizens because the same tourist who gets to live seconds away from the beach can get on a plane before a storm hits.
- 11) Identify a champion at the highest level for national statistics and develop a team that will ensure consistent data management.
- 12) Strengthen the capacity of emergency response personnel to prevent and respond to the emergencies caused by natural disasters. This capacity is a main ingredient for development and poverty eradication in many poor countries.
- 13) Conduct an assessment to update where the country has moved since the original post disaster assessment was conducted. Capacity building is something that is often recommended after a disaster but does it actually happen? This assessment will be a new benchmark in seeing the penetration of the recommendations previously made. ECLAC sponsored national and regional exercises would be beneficial to support ongoing capacity building, refinement of processes and reinforcement of the methodologies to be employed.
- 14) Support the utilization and expansion of CCRIF Livelihood Protection Insurance Policy, which only currently available in Jamaica, Saint Lucia, and Grenada, throughout the region. Because it is parametric it will be useful as payouts are triggered by the occurrence of an event rather than the specific damage to one’s home or property.
- 15) Create documentation in the form of a simple reference handbook (no more than 20 double sided 8.5 inches x 5.5 inches laminated pages) with key points for the assessment (similar to the USAID DANA booklet). This will help with the formatting and overall usability of the final assessment reports.
- 16) Political will is needed for adaptation measures and vulnerability reduction. This must be a priority. At this point stakeholders by and large know what to do thanks to CDEMA, ECLAC, NDOs and others, but do they have the will or the funds to do it? Policy makers can legislate and enforce regulations to improve vulnerability reduction, as well as citizens and residents of countries can ensure they build better and/or carry insurance to allow them to recovery and return to normalcy faster post event.

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Annex

Annex 1

Rationale for priority ranking of recovery projects (Turks and Caicos Islands)

Sectorial projects

- 1) Provides protection from the elements for workers and critical assets or equipment
- 2) Contributes to the quality of life and wellbeing
- 3) Generates revenue
- 4) Reduces expenditure
- 5) Provides linkages with other sectors

National projects

- 1) Restores of critical infrastructure or capacity
- 2) Generates significant revenue
- 3) Preserves or improves national security
- 4) Reduces vulnerability to hazards
- 5) Contributes to sustainable development
- 6) Provides major economic benefit
- 7) Satisfies a multi-island need
- 8) Contributes to climate change adaptation



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