

## Fiji – TC Winston recovery project

### Situation of Debris Clearance / Disaster Waste Management Activities

Date: 15/04/2016

#### 1. Main activities realized and targeted areas<sup>1</sup>

##### 1.1. Koro Island

<b>Youth project – My Fiji Initiative</b>	
<b>Funding available</b>	50,000 USD
<b>Main Government Counterpart</b>	Ministry of Youth and Sport
<b>Details of intervention</b>	Support in debris clearance of village and farming land: <ul style="list-style-type: none"> <li>- Cash for Work program (2 weeks in each village);</li> <li>- Providing of Tools and PPEs for debris clearance in village and farming land;</li> <li>- Training (good practices for debris management, safety, basic demolition techniques, etc.).</li> </ul>
<b><u>1<sup>st</sup> phase of intervention</u></b>	
<b>Number of villages targeted / population</b>	4 villages: Nasau, Naqaidamu, Sinuvaca, Namacu Total population: 1.020 people
<b>Timeframe</b>	28/03/2016 – 07/04/2016 <i>(preceded by training and preparation activities)</i>
<b>Number of people directly involved</b>	Men: 106 Women: 24 Total: 130 <i><u>Note: Only registered youth participated in the project</u></i>
<b><u>2<sup>nd</sup> phase of intervention</u></b>	
<b>Number of villages targeted / population</b>	4 villages: Nacamaki, Tuatua, Nakodu, Mudu Total population: aprox. 1.100 people <i><u>Note: exact population figures to be confirmed</u></i>
<b>Timeframe</b>	18/04/2016 – 02/05/2016 <i>(preceded by training and preparation activities)</i>
<b>Number of people directly involved</b>	Total: aprox. 130 people <i><u>Note: Exact number and gender distribution figures to be confirmed</u></i>

<sup>1</sup>See location and distribution of villages in figures 1 and 2

**1.2. Ra Province**

<b>CERF project</b>	
<b>Immediate assistance to re-establish food security in communities affected by TC Winston</b>	
<b>Funding available</b>	124,174 USD
<b>Main Government Counterpart</b>	Ministry of Agriculture
<b>Partner Agencies</b>	WFP / FAO
<b>Details of intervention</b>	Support in debris clearance focusing on farming land: <ul style="list-style-type: none"> <li>- Providing of Tools and PPEs for debris clearance in farming land;</li> <li>- Trainings: <ul style="list-style-type: none"> <li>- specific chainsaw handling training provided by Forestry training center (and delivery of certificate),</li> <li>- good practices for debris management, safety, etc.).</li> </ul> </li> </ul>
<b>Target</b>	210 hectares of farming land cleared 450 people involved in debris clearance activities
<b><u>1<sup>st</sup> phase of intervention</u></b>	
<b>Number of villages targeted / population</b>	3 villages: Saioko, Verevere, Namarai (Nakorotubu sub-district) Total population: 455 people
<b>Timeframe</b>	Starting from 18/04/2016 (training for chainsaw operators)
<b>Number of people directly involved</b>	Men: 79 Women: 47 Total: 126
<b><u>2<sup>nd</sup> phase of intervention</u></b>	
<b>Number of villages targeted / population</b>	Still to be determined (projection of around 12 villages in total)
<b>Timeframe</b>	Expected starting date: 02/05/2016 <i>Note: Start of activities preceded with preparation activities with selected villages</i>
<b>Number of people directly involved</b>	To be determined (projection of total > 450 people)

## 2. Assessment – situation on the ground and possible ways forward

### 2.1. Villages

#### 2.1.1. Debris clearance in the village (housing debris)

- Most of the debris clearance is being done manually, debris are being collected and piled inside the villages (temporary disposal);
  - Reusable material (roofing sheets, timber, concrete) is being stored for further use;
  - Massive practice of burning to reduce the debris/waste piles (see figure 5);
  - Potentially hazardous waste identified among the debris:
    - o Suspected asbestos (samples from Koro and Ra being analyzed at the moment with support of PacWaste program – SPREP);
    - o Chromated copper arsenate (CCA) treated timber;
    - o Electronic-waste (e-waste).
- ➔ The burning of waste, and in particular potentially hazardous waste brings a risk for health and environment (persistent pollution and long term affect on health and environment);
- ➔ Alternative solutions must be provided to be able to advocate effectively to the communities;
- ➔ Possible ways forward:

<u>Possible activities</u>	<u>Details on options</u>	<u>Opportunity / Risks</u>
<u>Minimization of the quantities of debris</u>	Processing of fallen trees to timber for reconstruction by portable sawmills  Processing of green waste (chain sawing, chipping, etc.)  Individual composting of kitchen waste (at household level)	Can support the campaign to prevent burning by showing to people the use of fallen trees  Storage of firewood for future use  Processed green waste (chipped material) can be used for gardening, landscaping, bedding for life stock, etc.), mulch for farming land (weed control, erosion minimization)
	Segregation and export of recyclable material (corrugated sheets, plastic bottle, etc.)	Very limited market at the moment – for most of the material (except aluminium cans), instead of making profit by selling it, the recyclers request to be paid to receive the material.
<u>Specific solutions for potentially hazardous waste</u>	Safe collection, segregation and temporary storage of the material (bulk bags)  Transport to Suva for adequate treatment/landfilling (if no solution locally)	SPREP has shown interest to support the treatment of hazardous waste and e-waste in the framework of the PacWaste program (Pacific Hazardous Waste Management)  Solutions have to be implemented quickly to avoid more burning of this material

<u>Possible activities</u>	<u>Details on options</u>	<u>Opportunity / Risks</u>
<u>Final disposal of debris</u>	<p>Providing heavy equipment for collection and transport of temporarily stored debris to final disposal</p> <p>Preparation of adequate dumpsite (need of heavy machinery)</p>	<p>Another value added to prevent people from burning debris/waste</p> <p>Potential solution for proper disposal of hazardous waste</p> <p>Possible of improvement on the long term of the waste management system in the villages</p>

### 2.1.2. Debris clearance in agricultural land

- Ongoing clearance with the use of chainsaws (private, government, NGOs, etc.);
  - Strong will of the communities to re-use the wood available in agricultural land for re-construction of **definitive housing** (priority expressed by all villages visited in Ra);
    - o re-construction of houses already started in some villages visited, using community hard wood resources (see figure 6 in attachment, house built with Mahogany wood);
    - o no solution currently available for local treatment of soft wood (the current orientations from Forestry is that all timber - *in particular soft wood* - shall be taken to Suva for treatment before utilization).
- ➔ If no solution is given for local treatment in the village of the soft wood available, there is a high risk of extended use of local resources of hardwood (even if not affected by the cyclone):
- o Hard wood community plantations (ex: mahogany plantations, long-term livelihood resources),
  - o Local hard wood in forests.
- ➔ Possible ways forward:

<u>Possible activities</u>	<u>Details on options</u>	<u>Opportunity / Risks</u>
<u>Basic processing of timber from fallen trees<sup>2</sup></u>	Use of chainsaws (free hand ripping)	Easily transportable – possibility to process wood in non-accessible areas.
	Guided Chainsaw mill	Intermediate solution (easily transportable / good quality of final product.
	Portable sawmill	<p>Need to be operated by a certified operator – not easily transportable.</p> <p>➔ This solution might not be adapted for small villages – remote areas.</p>

<sup>2</sup>See figures 7, 8 and 9

<u>Possible activities</u>	<u>Details on options</u>	<u>Opportunity / Risks</u>
<u>Carpentry workshop</u>	Set of tools and machines (drill, grinder, saw, sander, planer, etc.) to process wood/timber into furniture, etc.	Possibility of medium/long term livelihood support.
<p>All these solutions for processing of green debris can be an opportunity for reconstruction, livelihood, as well as mitigation of environmental effects of burning of timber (realize of CO2 in atmosphere). However several measures shall be taken in parallel to avoid counter-effects, in particular increase of pressure on existing wood resources (village plantations, forests):</p> <ul style="list-style-type: none"> <li>- Control of wood resources being cut/processed/marketed (affected or not by the cyclone);</li> <li>- Substitution / reposition of wood resources (village nurseries, etc);</li> <li>- Providing of local solutions for treatment of soft wood.</li> </ul>		

## 2.2. Cities/Towns

- The solid waste management sector in all main cities in Fiji<sup>3</sup> had to face the burden of collection and disposal of the high quantities of debris produced as a consequence of TC Winston.;
  - The floods occurred on 4-6<sup>th</sup> of April (Ba, Rakiraki, Tavua, Nadi and Sigatoka) generated additional quantities of debris, including sediments deposits;
  - A strong effort was made by the municipalities to clear most of the debris produced, but the need of debris collection still continues;
  - Some cities (Nadi, Lautoka, Suva) have been applying measures for minimization of debris, in particular green waste processing;
  - There are long-term impacts of the disposal of large volume of debris, in particular on the use of available space in existing landfill/dumpsites.
- ➔ Need of support to minimize long-term impact on waste management facilities (in particular disposal sites/landfill), with focus on waste minimization;
- ➔ Strong base of good practices available in different City Councils (previous experiences / projects in Ba, Lautoka, Suva, etc.) and a existing identification of needs by the City Councils;
- ➔ Possible ways forward:

<u>Possible activities</u>	<u>Details on options</u>	<u>Opportunity / Risks</u>
<u>Waste / Debris Minimization</u>	Processing of green waste (chain sawing, chipping, etc.)  Composting	Possible of improvement on the long term of the waste management system in the cities

<sup>3</sup> Source: Project proposal – Post Disaster Waste Management Rehabilitation / Tropical Cyclone Winston and Floodings (Ministry of Local Government, Environment and Housing, Fiji, 8<sup>th</sup> April 2016).

<b>Possible activities</b>	<b>Details on options</b>	<b>Opportunity / Risks</b>
	<p>Segregation and export of recyclable material (corrugated sheets, plastic bottle, etc.)</p> <p>Specific solutions for potentially hazardous waste</p>	<p>Establishment/strengthening of good practices of debris management for future disasters</p>
<p><u>Removal and final disposal</u></p>	<p>Preparation of adequate disposal conditions such as improvement of landfills/dumpsites (need of heavy machinery and materials)</p> <p>Transportation of temporarily stored debris and final disposal</p>	

### **3. Other actors / Possibilities of partnership**

In response to TC Winston, SPREP (Secretariat of the Pacific Regional Environment Programme) is planning to release part of the contingency its EU-funded PacWaste program (approximately Euro 200,000) to provide practical disaster waste management assistance.

The general approach foreseen, following previous intervention in TC Pam recovery in Vanuatu, is to intervene in partnership with JICA's J-PRISM project experts on the field. The implementation will also serve as a base for further developing of regional post disaster waste and response guidelines.

Considering the common field of the intervention, there is a strong interest of collaboration with MSB/UNDP and possibility of joint-interventions, such as for example:

- Scaling up of intervention on Koro Island;
- Implementation of integrated intervention in some of the affected cities.







Figure 3 – Debris clearance in Koro Island – Namacu village (photo credit: Faisal Ridwan)



Figure 4 – Agricultural land with need of debris clearance – river blocked in Verevere(photo credit: Camille Laude)



**Figure 5 – Pile of debris being burnt – Koro Island / Namacu village (photo credit: Faisal Ridwan)**



**Figure 6 – House being constructed with locally processed mahogany timber – Verevere (photo credit: Camille Laude)**



Figure 7 – Free-hand chainsaw milling – Namarai village (photo credit: Faisal Ridwan)



Figure 8 – Example of portable guided chainsaw mill (source: <http://www.logosol.us/sawmills/m8/>)



Figure 9 – Example of portable sawmill in Tanna, Vanuatu / TC Pam recovery (photo credit: Faisal Ridwan)



Figure 10 – Debris at Rakiraki dumpsite / high prevalence of green debris (photo credit: Faisal Ridwan)



Figure 11 – Minimization of waste/debris through chipping (credit: Lautoka City Council)