

Building Community Resilience

Food Security through Nature Conservation and Protected Areas

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The 9th Pacific Islands Conference on Nature
Conservation and Protected Areas

2–6th December 2013



Food Security : Global Challenge



- **7 billion (b)** world population to feed – **9 b** by 2050
- **868 million (m)** - 12.5% global population undernourished;
- **2 billion** – affected by micronutrient deficiencies;
- **1.4 b** people overweight;
- **26%** children stunted;
- **rising costs** in treating under-nutrition & managing chronic nutrition related diseases;
- **No of hungry increasing**

Global Food System Overstretched:



- **Land** – degradation & competition
– biofuels, urban expansion (e.g. 1.6 to 3.3 m ha/ yr expected to be lost between 2000 – 2030);
- **Water** – dwindling resources, competing use & declining quality;
- **Biodiversity** - loss
- **Fisheries** – marine stocks depleted (3%), fully exploited (53%), over-exploited (28%);
- **Food prices** - increased by 138% between 2002 -2012;
- **Farm sizes** - declining;

The need for nature conservation and protected areas: Supply -Demand

Food Security : Pacific Challenge

Towards a Food Secure Pacific



Framework for Action on
Food Security in the Pacific

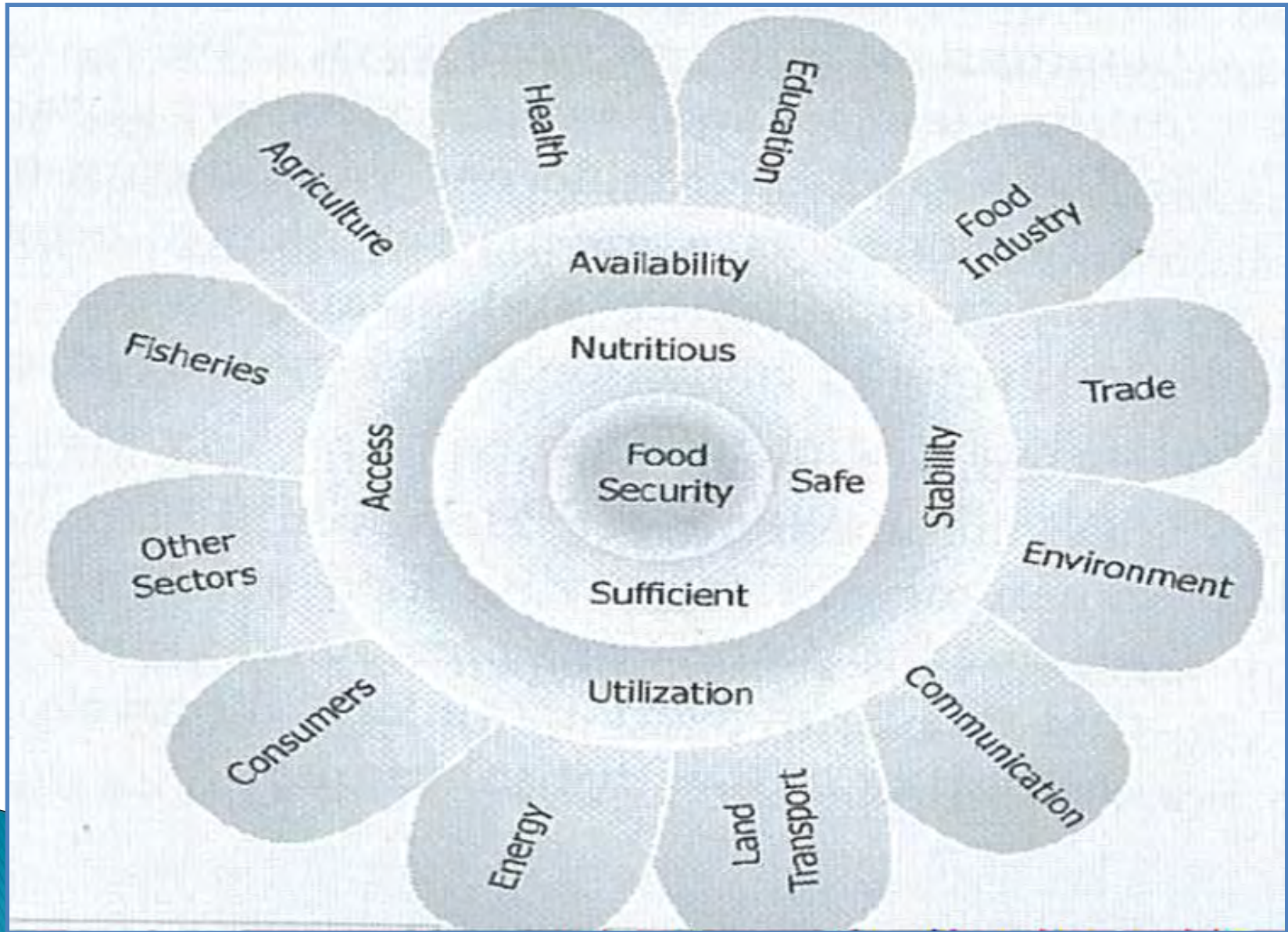
- Shift from traditional to conventional diets (e.g. higher in fat, lower in fibre);
- Iron deficiency anemia (32.4% in 2004);
- Rising nutritionally chronic diseases e.g. diabetes; obesity, CVD, etc
- Food import bill (FJ \$126m 1990 & FJ\$ 520m 2008)

Pacific Food System Challenge



- Too much or too little water;
- Atoll agriculture;
- Sea level rise;
- Land/soil erosion
- Salt intrusion;
- Genetic loss;
- Micro-climates/ change
- etc

Food Security in the Pacific



GEF–Small Grants Programme– Totoya Island Project



How the project attempted to build community resilience and boost local food security through natural resource management?

“Food security as a community catalyst for Climate Change adaptation and enhancing watershed management and restoration of Totoya Island”



The TDC focus was to encourage better protection, management and restoration of the islands forests and watershed as a measure to curb the prevalent problem of landslides and soil erosion, to raise community awareness on climate change impacts and promoting food security through better and improved land management practices and to initiate better community planning for sustainable development on the island.

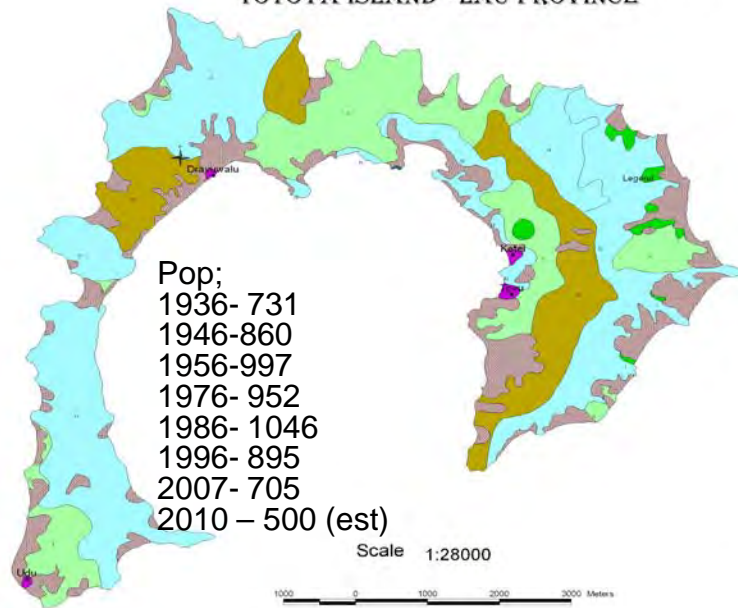
Background



- Volcanic island total Area- 23sqkm, highest point- 366 meters
- Relative isolation
- Lack of infrastructural development
- Minimal access to information to strengthen independent coping ability.

TOTAL LAND AREA
[3433.17 ha] – 23sq km

PRESENT LAND USE / LAND CLASSIFICATION
TOTOYA ISLAND - LAU PROVINCE



Present Land Use

1. Coconut Plantation
[334.14 ha = 9.7%]
2. Suitable Arable Land
(Class I to III combine)
[101.21 ha = 3%]
3. Suitable for Tree Crop
or Grazing
(Class IV & V combined)
[943.31 ha = 27.5%]
4. Marginal Forest- Grazing
Land
[1546.55 ha = 45%]
5. Unsuitable Land
(Class VII & VIII)
[507.69 ha = 14.8%]

Four villages all coastal and located along the fringes of the remnant caldera.

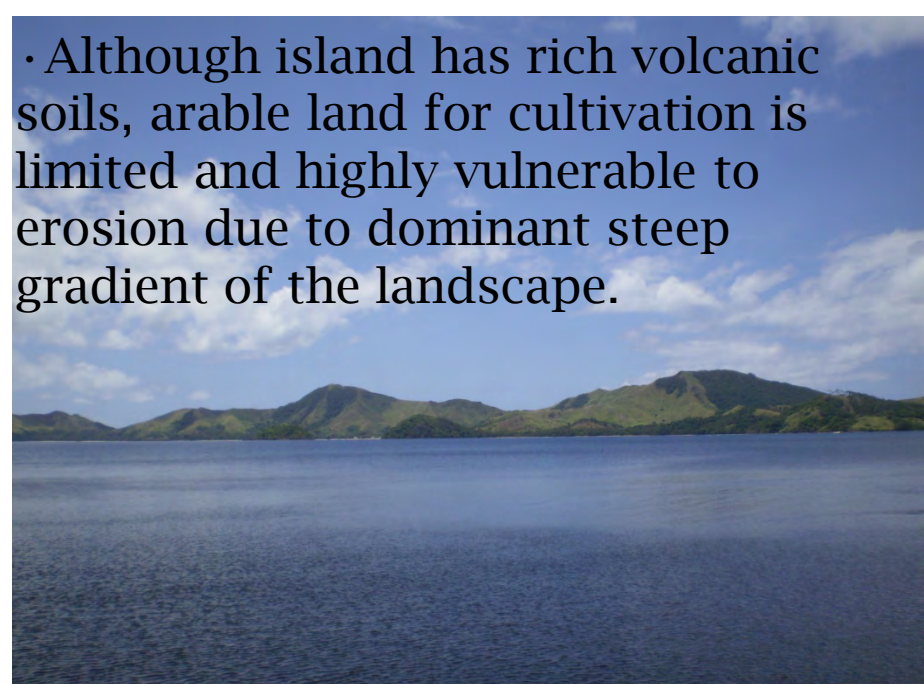
Island economy is predominately subsistence, with copra production being the major commercial activity, as well as fishing supplemented by pandanus (*voivoi*) and *yaqona*.

Transport system: fibre, on foot.
(Ministry of Agriculture)

• Island Landscape has been altered significantly by human activity, island is predominately grassland, coconut and pine plantation and remnant native forest.



• Although island has rich volcanic soils, arable land for cultivation is limited and highly vulnerable to erosion due to dominant steep gradient of the landscape.



Island Vulnerabilities



**Coastal Erosion- Ketei Village
(March 2010)**

**Coastal Erosion and
inundation - resulting in
coconut trees destroyed
- Udu Village (Jan 2010)**



**Coastal Erosion-
Dravuwalu Village
(March 2010)**



**Rivers become shallow
due to frequent flooding
- Ketei Village (Jan 2010)**

**Coastal Sea Level Rise- King tide now
reaches village hall on beachfront**



Former Beach front- 10m retreat





Poor land management including repeated burning of landscapes,



Over-harvest and exploitation of marine food resources

Climate Change Induced Vulnerabilities on Totoya

- ▶ Rainfall variability (drought conditions and excessive rainfall)– impacts crop productivity and localised water shortage (Udu Village), landslide, etc
- ▶ Coastal flooding and erosion– loss of coastal farm land (majority of arable 3% land for cultivation is coastal and limits future expansion of infrastructure
- ▶ Coral bleaching and beach erosion– change in fisheries dynamics and abundance and food security.

These vulnerabilities on Totoya are further exacerbated by unsustainable human activities

- Poor Land management including burning, cutting down of trees, etc- exacerbates severity of flooding and landslides
- Lack of Crop diversification and Minimal Land Utilization- external food dependency
- Poor Water source management and reticulation- water shortage
- Poor long term planning- increases loss of infrastructure and initial investment

Climate Induced Impacts + Degradation of Environment by Human Activities = Increases Vulnerability

How the Totoya Development Committee (TDC) tried to build and strengthen community resiliency?

Through implementation 7 major activities;

1. Awareness and outreach programme on Totoya Island focusing on ecosystem and watershed function, biodiversity and the need for better use and management of land and marine resources.

Also included threat analysis, solution development and broad community needs assessment for enhancing sustainable development on the island





Awareness and Actions to change community attitude to poor land management and Repeated burning of landscape- STRONGLY LINKED TO FOOD SECURITY

- ▶ 2. Development and establishment of a community forest and crop seedling nursery as part of reforestation programme to reforest cleared land areas and promoting integrated model farms on the island in collaboration with Land-Use and Forestry departments.





Land Use Planning, Training & Application

Community Forest Nursery Developed with Restoration Plan, targeting native wood & fruit trees

Working with youth to apply model farming Methods- integrated & organic farming

3. Community land use planning workshop and sustainable farming training for the Totoya community targeting food security and limiting land degradation on the island. suitable for the island.



Model farms and Biophysical data



- ▶ 4. Youths attended a training the trainers programme at OISCA-OFETA in Sigatoka . The training included land use, plant propagation, mangrove planting and nursery management training and monitoring technique, poultry farming and piggery.



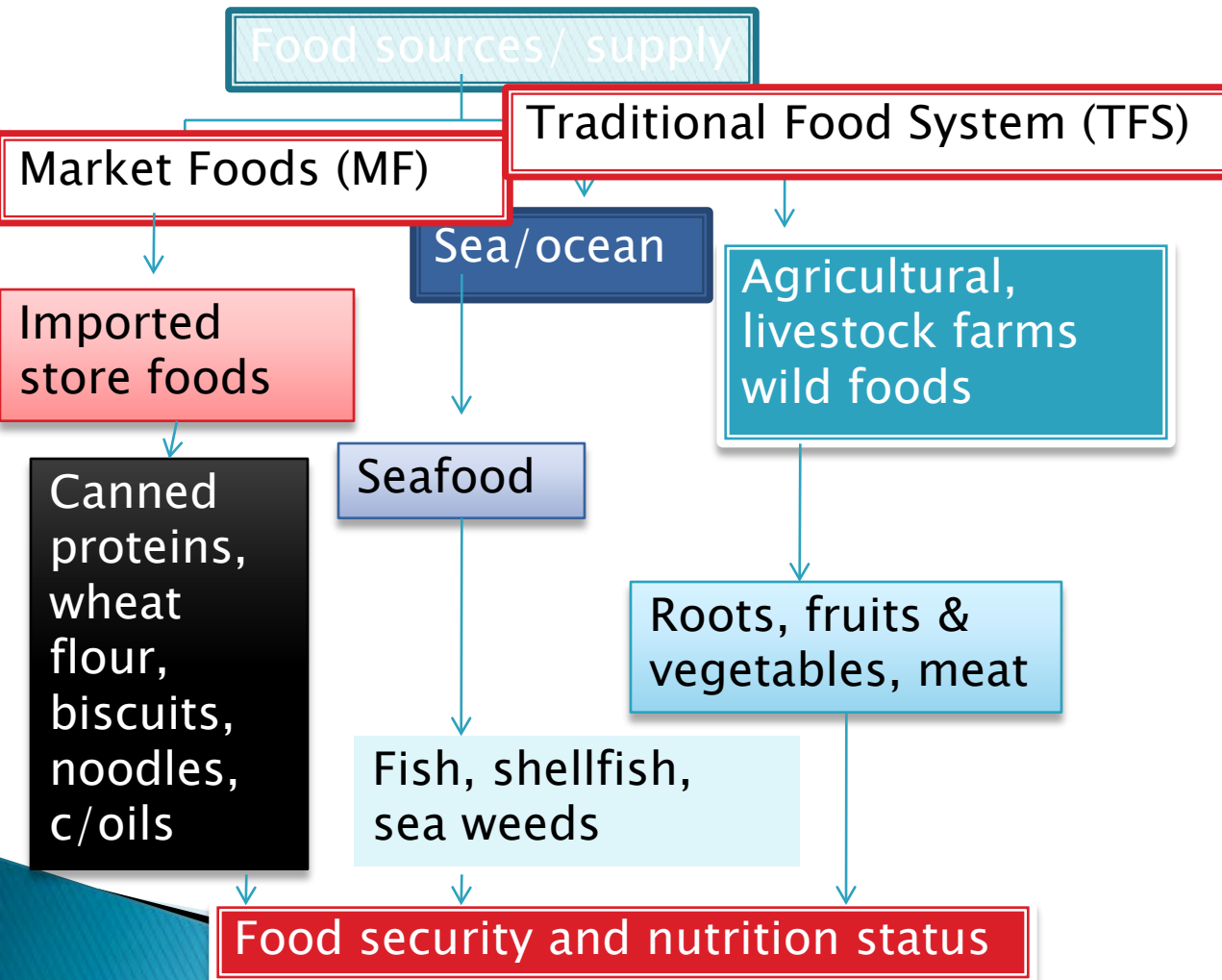
The Food System and Food Security on Totoya

▶ 2/3 reliance on TFS

- Lunch
- Dinner

1/3 reliance on MF

- Breakfast
 - Wheat flour based products, biscuit, rice – jam, margarine
 - Cooking oil
- Bad-weather conditions
 - Canned meat/fish
 - Noodles
 - Cordial
 - T/sauce



Food survey: 24 hr recall (N= 40 households)

► 5. Trainings on Small Scale Food Preservation and Processing Development



Low Tech Food Processing Methods & Encouraging Local Food Production

- 1. Set up of community solar drier**
- 2. Drying of breadfruit and for flour**
- 3. Drying of Excess Fruit for Storage & Later Use**



**Production of Coconut and Breadfruit
Flour for Composite Bread Making and spreads and condiments**

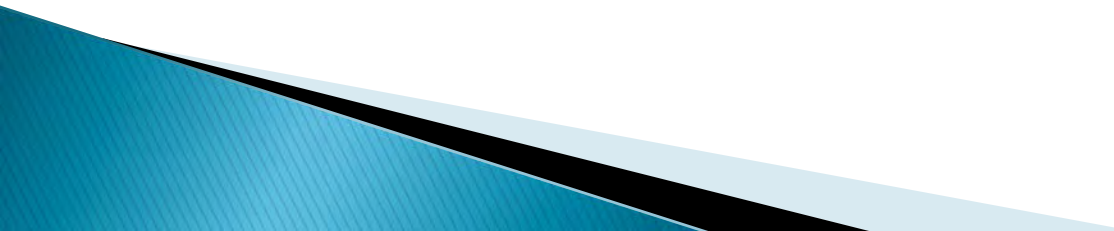


Low Tech Food Processing Methods & Encouraging Local Food Production

1. Production of virgin coconut oil for cooking and for soap making



Imported Foods and corresponding local alternatives taught

- ▶ Soya bean oil– coconut virgin oil (soap making)
 - ▶ Imported Jams– Local Fruit Jams
 - ▶ Wheat Flour– Local Flour– breadfruit, cassava, sweet potato, banana, coconut, etc
 - ▶ Imported Vinegar– Local Vinegar– Pineapple, Banana, Coconut
 - ▶ Processed Goods– peanut butter, tomato sauce, banana sauce, soursop sauce, etc
 - ▶ Tea– dried lemon leaves and lemon grass
 - ▶ Cordial – fresh fruit concentrates
- 

6. Climate Change awareness and mainstreaming adaptation action plans as part of the district community development



Facilitating Community Plans & Maps

Climate Change Awareness & the Development of Adaptation Action Plans

Long term Planning- District Level Development Plan and Baseline Village Maps through PLA



- ▶ 7. Development of a 20yrs district development plan within the context for long term sustainable development and strengthening alternative livelihoods on existing natural sources for income generation



Handicraft training for men and youth



Handicraft training for women targeting income generation



Totoya Project Approach in Building Community Resilience in sustainable Food Security

Improve Community Land Management & Promote Sustainable Farming Practices

Active Restoration of island Landscape using native trees especially fruit trees and Local cultivars

Community effort to encourage Local crop production through Village competitions & Reviving traditional Practices

ENSURES LOCAL FOOD ACCESS, AVAILABILITY, UTILIZATION

IMPROVED KNOWLEDGE OF FOOD PRESERVATION & LOCAL MANUFACTURE

SUSTAINABLE FOOD SECURITY

Training to expose community to low tech food processing methods

Encouraging local production And alternatives to imported foods



Key messages

- ▶ Ridge to reef natural resource management enhances food security
 - *Food system that depletes its natural resource base is not sustainable and leads to food insecurity*
- ▶ Science/research should be used as the basis for planning to harmonise biodiversity, natural resource use to meet community needs
 - *Well educated community members to take lead, build capacity & empower*
- ▶ Biodiversity conservation, food security and economic development need to be complimentary;
 - not to be treated as isolated entities
- ▶ Building resilience through empowerment to increase local food production, processing and preservation will boost self-reliance, sufficiency and independence

Thank you for your attention!!

