Speaker effect of climate shocks on gender in fishery value chains: A case of Sri Lanka

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Introduction

- Modern fisheries and aquaculture value chains are diverse, often complex and dynamic, with men and women undertaking different and changing roles depending on culture, concerning resource access and control, mobility, type of technology involved, the extent of commercialization, and the product involved (De Silva, 2011).

- Female roles in Sri Lankan fisheries are always outside the boats and nets but inside processing factories of which men govern every step of the value chain.

- Sri Lankan Fisheries: The overview

<table>
<thead>
<tr>
<th>Particulars</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active fishers</td>
<td>221,350</td>
</tr>
<tr>
<td>Fishing House Holds</td>
<td>190,780</td>
</tr>
<tr>
<td>Fishing House Hold population</td>
<td>825,120</td>
</tr>
<tr>
<td>Av. Fishermen/House Hold</td>
<td>1.2</td>
</tr>
</tbody>
</table>
Districts vulnerable to coastal hazard

Districts vulnerable to drought hazard

Cyclone hazard areas
Districts vulnerable to flood hazard

Vulnerable districts with multi hazard

People affected
Houses damaged 10yrs

Human life losses 10yrs
• **Research questions:**

• What’s the magnitude of effects of climate shocks on fishery value chains?
  - Quantitatively?
  - Qualitatively?

• Are their gender disparities?

• Are their impacts on local economy?
Significance

• Climate change ranked among top 5 global perceived risks in terms of impacts

• Three of other top 10 risks have explicit relationships with climate change; Food & water crisis, & extreme weather events (Global Risks, 2015)

• Climate change has recognized as “threat multiplier” (CAN, 2007; DOD, 2014)

• Threat Multiplier: Economic risk, Geopolitical risk, Societal risk (Werrel & Femia, 2015)

• Fisheries industry have incurred many challenges: climate shocks, cyclones, coastal flooding, drought, etc. & impacts may decrease the quality & quantity of it’s services to others….Which intern affects other sectors in terms of inputs, outputs, income  and prices

• Shrinking local economies & experiencing the closure of many important businesses, facilities, local shops in one hand and on the other hand increase the debt burden…

• Visible effect shows hidden crisis that need to understand..

• Our efforts to identify the crisis on gender basis, their resilience to climate shocks, potentials of diversification of livelihood options, etc.
Objectives

• To investigate the multiplier effect of climate shocks on gender in selected fishery value chins of Sri Lanka; small scale fisheries & Tuna
• To recognize how men and women are differently vulnerable to and able to cope with climate shocks
Production

Resource use decisions:

Fishery & gear type decisions:

Labour and technology use decisions

Financing & insurance decisions

Policy decisions

Socio-economic decisions:

Postharvest & Processing

Harvesting decisions: Postharvest management:

Handling & grading

Quality, quantity & timing

Storage:

Packing: material

Value addition

Transport to market places: when & how?

Wholesale & Retail

Inventory management decisions: quantity, variety, quality, price, storage, etc.

Marketing decisions: product, price, place & promotion

Imports & exports: policies, regulations & politics

Retailing options: type of market

Market segmentation

Market communication

Consumption

Product decisions: quantity, quality, price attributes (health, nutrient, types, etc)

Supply: seasonal supply & demand

Regulations, policy & political decisions:

Consumer behaviour

Socio-cultural decisions

Preparation & cooking decisions

Fish

Fish & fishery products

Inbound logistics: Administration

Outbound logistics: Administration

Climate shocks

Financing & insurance decisions
Methodology

• **Research Locations:**
  
  1. small-scale fisheries – Balapitiya, Beruwala
  2. Tuna fisheries: Beruwala & Negambo

• **Sampling:**

  - Stratified random sampling
  - Value chain actors formed Stratums & each stratum split into 2 based on gender except production node, where female were off the net
  - 40 participants from each value chain node representing both sexes were selected
Methodology (ctd.,)

- **Data collection tool:** Pre-tested structured interviewer administered questionnaire for spending survey

- **Primary Data: 3 rounds of spending;**
  - Round 1. Income of the fishing households from fisheries (initial income)
  - Round 2. Amount of money they spent locally for various household requirements
  - Round 3. Amount of money that local people, businesses & organizations receive, re-spend

- **Analysis:**
  1. **LM3 (Local Multiplier effect);** \( R1 + R2 + R3 / R1 = LM3 \)  
     (Source: Sacks, Justin. (2002))
  2. **Herfindahl Diversity Index (HDI)** to measure the diversification of fishery & secondary export data were used to develop the index (share of exports to total exports)
  3. **Vulnerability level of fishery:** Ability of a fishery to cope with the potential climate shocks;
### Local multiplier (LM3): Up stream of the value chains

<table>
<thead>
<tr>
<th>Fishery</th>
<th>Local Multiplier (LM3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Small Scale Fishery: SC1: F</td>
<td>3.16</td>
</tr>
<tr>
<td>3. Small Scale Fishery: SC2: M</td>
<td>2.78</td>
</tr>
<tr>
<td>4. Small Scale Fishery: SC2: F</td>
<td>2.87</td>
</tr>
<tr>
<td>1. Tuna Fishery: SC1: M</td>
<td>2.11</td>
</tr>
<tr>
<td>2. Tuna Fishery: SC1: F</td>
<td>2.46</td>
</tr>
<tr>
<td>3. Tuna Fishery: SC2: M</td>
<td>2.08</td>
</tr>
<tr>
<td>4. Tuna Fishery: SC2: F</td>
<td>2.17</td>
</tr>
</tbody>
</table>

SC1:M = Scenario 1: Male; SC1:F Scenario 1: Female  
SC1: Scenario 1 = Fishery in normal condition  
SC2: Scenario 2 = Fishery affected by climate shock, i.e. Tropical cyclones
## Local multiplier (LM3): Downstream of the value chains

<table>
<thead>
<tr>
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<th>Local Multiplier (LM3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Small Scale Fishery: SC1: M</td>
<td>2.52</td>
</tr>
<tr>
<td>2. Small Scale Fishery: SC1: F</td>
<td>2.36</td>
</tr>
<tr>
<td>3. Small Scale Fishery: SC2: M</td>
<td>2.28</td>
</tr>
<tr>
<td>4. Small Scale Fishery: SC2: F</td>
<td>2.17</td>
</tr>
<tr>
<td>1. Tuna Fishery: SC1: M</td>
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Impact of climate shocks & diversification

Magnitude of Impacts

- Small-scale fisheries
- Tuna fisheries
- Prawn farming
Conclusions

• Climate shocks affected negatively on both up stream and down stream nodes of the value chains considered; small-scale fisheries & tuna

• Both up stream nodes of the small-scale and tuna value chains experienced low multiplier effect compared to before shocks

• Local multiplier of up stream nodes bigger compared to down stream nodes

• Especially, local multiplier effects of female in up stream nodes of both value chains were high compared to male

• Therefore, female contribution on local multiplier is very important on local economy

• Female contribution on local multiplier in down stream nodes less compared to male; where majority of female processing workers located in down stream spend outside the local area

• Climate shocks affect negatively on value chain members of the fishery as well as local economy
Recommendations

Local Economy

Fishermen

Intermediaries

Local Economy

Consumers

Local Economy
• **References:**


2. Wererl, C.E. and Femia, F. (2015). Climate change as threat multiplier: understanding the broader nature of the risk, BRIFER, The Center for Climate security


• **Acknowledgement:** Endeavor Research Fellowship, Australia (2015)