A Strategic Health Impact Assessment Approach to Food-Related Policy Development:

A Case Study in Tonga

BY

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THESIS

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This thesis is dedicated to my parents, family, and friends for their love, constant encouragement, and unwavering support.
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<table>
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<th>Abbreviation</th>
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<tr>
<td>CAP</td>
<td>Common Agricultural Policy (European Union)</td>
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<td>EIA</td>
<td>Environmental Impact Assessment</td>
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<td>EOHSP</td>
<td>European Observatory on Health Systems and Policies</td>
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<td>HIA</td>
<td>Health Impact Assessment</td>
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<tr>
<td>HFSS</td>
<td>Household Food Security Survey</td>
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<tr>
<td>NCD(s)</td>
<td>Noncommunicable Disease(s)</td>
</tr>
<tr>
<td>PICT</td>
<td>Pacific Island Country or Territory</td>
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SUMMARY

Current food-related policy development often considers economic and developmental impacts; however, such policy decisions may have long-term health impacts that outweigh anticipated immediate benefits. Health Impact Assessment (HIA) is a systematic approach that uses evidence for identifying the potential short- and long-term impacts of a policy on the health of a population. Although the benefits of HIA have been established in the literature, many limitations have been also identified. Strategic HIA is an enhanced form of HIA which incorporates aspects of strategic planning into the HIA approach to policy development to address the common limitations of traditional HIA. The elements of strategic planning that were included in Strategic HIA included establishment of a vision and mission and assessment of the policy context (i.e., internal and external environmental assessment of the situation around the policy).

The purpose of this study was to implement and evaluate the feasibility of applying the Strategic HIA approach to food-related policy development. The Strategic HIA was applied to the national-level Food Bill in the Kingdom of Tonga as a case study using a mixed methods approach that included both quantitative and qualitative data collection and analyses procedures. The major methodological components included planning meetings with the coordinating organization; a household-level food security survey of individual community members; and a systems food security interview of, and workshop with, senior-level government and non-government representatives, and evaluation of these components.

The Strategic HIA was found to be a feasible approach to food-related policy development that addressed many of the common limitations of HIA including: lack of clarity
about the steps and purpose of a HIA; conflicting agendas of policy-makers; incomplete application of key steps of HIA; lack of involvement by key policy makers; recommendations of HIA disregarded or considered irrelevant by decision-makers; and lack of evidence to support health impact claims. Findings and recommendations from this study contribute to filling gaps within the current HIA practice literature and may further enhance future applications of HIA in policy development.
I. INTRODUCTION

A. Introduction and Problem Statement

There is a global tendency to consider the economic and developmental impacts of food-related policies; however, policy decisions may have long-term negative consequences that outweigh anticipated immediate benefits.\textsuperscript{1,2} Concern for the potential health impacts of policies on populations merits the application of a policy assessment approach which specifically considers health impacts.\textsuperscript{2} Assessing health impacts likely enhances the potential health benefits and mitigate the potential harm that a policy may directly or indirectly induce.\textsuperscript{3}

The aspiration of developing nations to achieve economic growth has impacted the policy development process, particularly in food-related sectors such as agriculture and trade.\textsuperscript{1,2} As a result, the potential health impacts of policies are often overlooked.\textsuperscript{2} HIA is a systematic approach using evidence to identify the potential effects of a policy on the health of a population.\textsuperscript{3,4} Therefore, the application of a policy assessment approach, such as Health Impact Assessment (HIA), may strengthen the opportunity to make sure that health is also considered in the decision-making process.\textsuperscript{3} HIA guides participants through steps to identify the potential health impacts of a proposed policy and to develop recommendations to decision-makers as to how to mitigate potentially negative impacts and promote potentially positive impacts. Although the benefits of HIA have been established in the literature, many common limitations of HIA have been identified including: lack of clarity about the steps and purpose of HIA; conflicting agendas of policy-makers; incomplete application of key steps of HIA; lack of involvement by key policy makers; recommendations of HIA disregarded or considered irrelevant by decision-makers; and lack of evidence to support health impact claims.\textsuperscript{5-7}
Strategic Health Impact Assessment (HIA) is an enhanced approach to HIA, which aims to mitigate the commonly identified challenges of traditional HIA. Since policy makers use elements of strategic planning to guide their work; the elements of strategic planning are familiar to them. Strategic HIA innovatively incorporates aspects of strategic planning in order to enhance the HIA approach. Specifically, Strategic HIA includes: 1) coordination by a politically neutral team; 2) establishment of a vision and mission to guide the HIA process; 3) assessment of the policy context (i.e., internal and external environments) related to the policy making institutions as well as to the specific policy; and 4) dissemination of Strategic HIA outputs (e.g., reports) to stakeholders.

According to the literature, traditional HIA has been applied in various sectors such as housing, transportation, and land-use; however it has been rarely applied in food or agriculture. HIA has also been applied at various levels of policy-making ranging from local to international; however, it has less frequently applied at the national level. HIA has occurred largely in developed countries with only 6% of HIAs world-wide applied in developing nations. For these reasons, application of Strategic HIA to food-related policy at a national level in a developing nation was warranted. Therefore, this case study of the Strategic HIA approach was applied to a food-related policy in Tonga. Implementing the Strategic HIA approach in Tonga allows for the opportunity to: involve key policy makers who are more accessible than those in most nations; collect primary data to strengthen the appraisal step; and train policy makers of a developing nation in the implementation of a policy assessment approach that considers health. In order to determine the feasibility of the Strategic HIA approach to policy development, this study was comprised of four major methodological components described in further detail in the Methods section.
B. **Purpose and Research Question**

The purpose of this study was to implement and evaluate components of an enhanced approach to Health Impact Assessment (HIA) called Strategic HIA. Specifically, this study sought to answer the research question: *What is the feasibility of using the Strategic Health Impact Assessment approach for food-related policy development?*

The primary hypothesis of this study was: The Strategic HIA approach is feasible as measured by the *Strategic HIA Process Evaluation* tool.

The proposed primary aims of this proposal were:

A) to pilot test the Strategic HIA approach; and
B) to assess the feasibility of Strategic HIA.

After implementing the Strategic HIA, *secondary aims* were:

A) to assess the applicability of Strategic HIA;
B) to assess the acceptability of Strategic HIA;
C) to assess the readiness of participants to undertake the Strategic HIA.

Peripheral aims of this study that aimed to inform the Strategic HIA approach were:

A) to assess and describe the perception of food security at the household level in Tonga using a Household Food Security Survey; and
B) to assess and describe the perception of food security at the systems- (i.e., policy-making) level using a Systems Food Security Interview.
C. **Background and Context**

1. **Health Impact Assessment**

   a. **What is Health Impact Assessment?**

   HIA is defined by the World Health Organization (WHO) as “a combination of procedures, methods, and tools by which a policy, programme or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.” The HIA approach emphasizes the establishment of an evidence-base to inform the policy assessment and development processes by encouraging a thorough exploration and review of any information that affects the policy being assessed; such information may include other policies, established mandates, ordinances, prior policy assessments, research, surveillance data, or existing support or opposition. The HIA approach raises awareness among participants about “the relationship between health and the physical, social, and economic environments, thereby ensuring that” health consequences are considered in the policy development process.

   Generally, the steps of a traditional HIA include: 1) identification of a policy for which the HIA approach would add new information regarding health impacts that otherwise would not be considered in the decision-making process (screening); 2) identification of the ways in which health may be affected by the policy, the ways by which the health impacts can be assessed, and development of an assessment plan (scoping); 3) assessment of the nature and magnitude of health impacts of the policy using available evidence (primary and/or secondary data) (appraisal); 4) development and report of findings and recommendations to decision-makers (reporting); and 5) evaluation of the HIA approach and of the impact of the HIA approach on decision-making (monitoring). It should be noted that the appraisal step is also known as “assessment” in the U.S., whereas internationally, it is known as “appraisal”.

3,4
The types of HIA are categorized based on the time dedicated and the scope of data used in the appraisal step; the established types of HIA include rapid, intermediate, and comprehensive. Rapid HIAs are conducted within a shorter time frame (generally ranging from a few days to a couple of weeks) and can be conducted with limited resources; rapid HIAs are used to determine a broad overview of possible health impacts and uses secondary data in the appraisal step. Intermediate HIAs are more time and resource consuming (usually requiring a few weeks), involve community input, lead to more detailed information about possible health impacts, and may involve the collection of primary data. Comprehensive HIAs are the most time and resource consuming (ranging from a few to several months), include thorough assessment of potential impacts, and often involve collecting primary data. It should be noted that some HIA literature describes other types of HIAs in regards to their implementation in the policy development timeline; these types are: retrospective, concurrent, and prospective. However, prediction is a key feature of HIA; “retrospective HIA is no more than evaluation; concurrent HIA [is] no more than monitoring.” Therefore, this Strategic HIA case study was implemented in the prospective form.

Regardless of the type of HIA applied, the essential features of HIA include supporting “decision-making in choosing between or among options” by “predicting the future consequences of implementing the different options,” and encouraging stakeholder participation. The HIA approach to policy assessment aims to identify and address health determinants which are often “interrelated, can build complex causal pathways,” and can cause distribution inequities that impact health. Health determinants include: biological factors (e.g., age); individual lifestyle factors (e.g., diet); social and community networks; living and working conditions; and general socioeconomic, cultural, and environmental conditions. Social and
economic determinants are “more likely to be amenable to change from political decisions.” The primary output of HIA is a “set of evidence-based recommendations geared toward informing the decision-making process.”

b. Why Health Impact Assessment?

Health Impact Assessment is an approach which aims to identify the health impacts of a policy on a population. The need for HIA is based on the observation that in national policy-making, “scientific evidence cannot substitute decisions made for political reasons;” This situation engenders the need to inform policy makers of evidence-based potential long-term positive and negative health-related impacts which may outweigh the anticipated political impacts.

The HIA approach has its roots in Environmental Impact Assessment (EIA), but grew from the need to focus on all components affecting health, not just the physical environment. Another form of impact assessment that stems from the EIA approach, is Social Impact Assessment (SIA). Like EIA, SIA does not emphasize health, but rather economic and developmental impacts. The lack of health-specific assessment in the EIA and SIA approaches makes HIA a good alternative approach for developing a policy that seeks to improve, or at the very least not harm, the population’s health.

Policy development occurs in a wide array of food-related sectors ranging from trade to agriculture. When policies are developed outside of the health sector, the direct and indirect health impacts are more likely to be overlooked, thereby increasing the risk of developing policies which cause greater harm to, than benefit for, the population. For example, an important issue to consider when it comes to public policy development is that some activities carried out “to improve one country's economic situation can have a negative effect on the health of
another...”\textsuperscript{10} Therefore, the way in which the HIA approach identifies health impacts of proposed policies may decrease the potential of such an outcome because HIA attempts to identify both intentional and unintentional effects on health.\textsuperscript{11}

Health Impact Assessment is very conducive to promoting stakeholder engagement.\textsuperscript{11} The approach encourages collaboration and public participation as a way of increasing the impartiality and potentially enhancing the validity of the approach.\textsuperscript{3,11} Involving a diverse array of stakeholders also allows for the HIA approach to potentially assess how a policy will affect the entire community including vulnerable populations.\textsuperscript{12}

The HIA approach is intended to promote an impartial, evidenced-based appraisal of a policy under consideration for implementation; the results may then be presented to decision-makers to help them make informed decisions.\textsuperscript{13} The specific values associated with HIA include: openness, equity, sustainability, and ethical use of evidence; these values may be thought of as the philosophy of the HIA approach. Openness is defined as “the best protection against unsatisfactory practice.”\textsuperscript{5} Equity is “using participatory methods” and identifying how a policy “affects various populations and in what ways.”\textsuperscript{5}

2. \textbf{Review of the Literature}

\textbf{a. Health Impact Assessment in the United States}

A review of completed HIAs compiled by the Robert Wood Johnson Foundation (RWJF) and Pew Charitable Trusts (Pew) Health Impact Project from 2009-2011 are presented in Appendix A.\textsuperscript{14} The review represents a variety of HIA types ranging from retrospective to prospective, rapid to comprehensive, and includes stand-alone HIAs as well as HIAs that were a part of other impact assessments.\textsuperscript{14} A total of 74 completed HIAs were included in the RWJF/Pew review.
b. United States-based Food-Related Health Impact Assessment

Of the 74 identified HIAs, only three were from the agriculture and food sectors. One state-level HIA assessed the potential health impacts of a law “requiring chain restaurants to provide nutritional information.”14 Another HIA assessed the potential major health impacts of the 2002 Federal Farm Bill. A third agriculture and food HIA assessed a local proposal to consider “three alternative scenarios for proposed changes to a farmer’s market in New Jersey.”14

c. Health Impact Assessment Internationally

A literature search was conducted to identify HIA reviews, which occurred internationally through 2010. A GoogleScholar search of “Health Impact Assessment” and “systematic reviews” resulted in reference to an introductory HIA book as well as a link to the University of California Los Angeles School of Public Health website which provided additional links to Campbell Collaboration and WHO HIA websites.7,15 The Campbell Collaboration did not result in the identification of any systematic reviews. A publication by Erlanger and colleagues provided an overview of HIAs applied internationally, but no case-specific or country-specific information was provided.6 The international HIA case studies identified in the introductory HIA book edited by Kemm are presented in Appendix B.7 This review identified that 17.6% of the 17 HIAs were conducted in developing countries. This is higher than the rate of six percent observed by the Erlanger’s systematic review, but this may be due to the fact that the number of case studies in the publication was much fewer than the number included in the Erlanger and colleagues review.6

Additionally, the literature review included the use of NCI PubMed and ISI Web of Knowledge applying the search terms “Health Impact Assessment” and “Review”. Only English language peer-reviewed articles were included. Of the 106 articles identified by the initial search,
a review of the titles and abstracts revealed that only three articles were relevant HIA reviews or articles that specifically describe a HIA case study. The three articles are not included in Appendix B because they were not reviews of the HIA process. They simply identified the results of the HIA appraisal step or of the HIA institutionalization process in a specific nation.

The World Health Organization HIA website provided access to the European Observatory on Health Systems and Policies (EOHSP) *Effectiveness of Health Impact Assessment* literature review.\(^5\) The EOHSP publication edited by Wismar and colleagues, provided a literature review of HIA in Europe and was identified as “the most current and the most comprehensive” review of its kind.\(^5\) This review consisted of “17 cases from 16 countries which included 9 HIAs, 3 other assessments that include a health component (EIA, SIA) and 5 case studies that, although not dealing with HIA in the strict sense of the definition, do use elements of HIA.”\(^5\) The cases highlighted were selected from among a total of 158 HIAs for which data was obtained through this literature review’s literature search. The authors added that, according to their “effectiveness analysis,” “HIA can be employed universally,” and “can be effective on different levels.”\(^5\) Also finding that “the benefits derived from HIAs outweigh the cost of undertaking them, suggesting that HIA is cost-effective.”\(^5\)

The methodology used in the EOHSP literature review for case identification consisted of conducting interviews with government representatives.\(^5\) The inclusion and exclusion criteria of this literature review include\(^5\):

1) “inclusion of an HIA was based on the dominant domestic definition of HIA”;

2) “exclusion of informal prospective assessments”;

3) “only a sample of HIAs were included”;

---

\(^5\) The W...
4) “only one reference region and reference locality were selected at sub-national level”
   (i.e., per country);

5) “some HIAs may not have been identified if they were fully integrated in the routines of
   an administrative structure,” or as part of EIA or SIA.

The EOHSP literature review revealed that community participation decreased as level of
HIA increased in reach (i.e., from local to national).\textsuperscript{5} This literature review identified HIAs
conducted in many different sectors including, but not limited to, transportation, energy, and
agriculture; specifically, in Europe, the “four main sectors are transport, housing, finance, and
health.”\textsuperscript{5} Only 65\% of HIAs in this review were of the prospective type. The screening step of
HIA was conducted in 53\% of the 158 cases; scoping in 65\%; appraisal in 77\%; reporting in
87\%; and monitoring and evaluation in 31\%. In only 29 of the 158 cases were all steps
completed and “in only 39 cases four stages of the HIA were completed.”\textsuperscript{5} Thirty-two percent of
HIAs were of the rapid or “desktop” type; 40\% were intermediate HIAs, and 28\% were
comprehensive HIAs.\textsuperscript{5}

The authors of this review concluded that\textsuperscript{5}:

1) “HIA has proven its capacity to be used in various countries at various levels and in
   various sectors”;

2) Equity and participation play a substantial role in the practice of HIA; and

3) Barriers to HIA include a “lack of government support, funding, capacity building
   and establishing mechanisms for delivery,” and challenges related to “proving its
   usefulness to other sectors.”

A significant limitation of the EOHSP literature review, as noted by the editors, was that
very few countries has a database of previously conducted HIAs (i.e., many HIAs may have been
The authors also noted that “it was not always possible to identify the objectives of [the] HIA” based on the published information from the case studies. The available data for each case study was derived from resources made available by each country such as “HIA websites” (38% of the 21 countries included in this review), “HIA databases” (19%), and “HIA reviews/overviews” (33%). Another limitation of this literature review was that some of the identified HIAs “were linked to the broader policy process but not to a specific pending decision.” This indicates that this review included incomplete HIAs since the screening step should have screened out policies which are not timely (i.e., had no potential effect on the decision). Likewise, the review observed that in some cases, decision-makers were disinterested in HIA and according to commonly accepted HIA practices, such policies should not have undergone the HIA process.

d. **International Food-Related Health Impact Assessment**

A literature search was conducted using NCI PubMed and ISI Web of Knowledge to identify English-language, peer-reviewed articles about food-related HIAs; a search using the terms “Health Impact Assessment” and “Food” or “Agriculture” resulted in 27 articles. Upon review of the abstracts, three articles about two unique HIA case studies were identified as topically applicable to this search. An additional GoogleScholar search was conducted using the same search terms and three additional unique case studies were identified. This search of existing HIA literature has identified few, but substantive case studies about the application of the HIA approach in an international, food-related policy development context which helped to inform this study (Table I). These studies identified both strengths and weaknesses of the traditional HIA approach.
Although there have been very few cases in which HIA has been applied to the food-policy development process, one case study from Slovenia demonstrated that HIA can be a “useful approach to more integrated policy-making across sectors…” which included socioeconomic and cultural sectors.² Traditional HIA was applied in Slovenia at the federal government-level to the “proposed agricultural and food policies due to its accession to the European Union.”² Specifically, they focused on “the broad effects of Common Agricultural Policy (CAP) adoption.”¹⁶⁻¹⁷ The experience in Slovenia demonstrated that HIA is a “useful mechanism for raising broader public health issues” of a food-related (agricultural) policy agenda.² However, the authors noted that there is a need for more case examples of HIA implementation in order to learn more about the successes and limitations encountered. Specifically, a key limitation was the challenge of selecting a timely policy. That is, if a policy is still too nascent in its development, then the HIA subsequently results in vague assessments, and if it is implemented too late, the assessment has little effect on the decision-making process.² Likewise, it was noted that it was “never an option to stop the accession process” to the European Union and therefore adoption of the CAP was inevitable.⁵ Additionally, the authors cited lack of clarity on the part of participants with regards to the purpose of HIA before undertaking the approach. The authors also cited the fiscal and time-related burdens on the entity undertaking HIA as two additional limitations of the traditional HIA approach.²

The Swedish Institute for Public Health reported on the application of HIA to the European Union’s CAP. The very brief report stated that the HIA successfully identified the health impacts of the CAP and made recommendations for changes to the CAP reform of 2008.¹⁷ The recommendations included: “phasing out all consumption aid to dairy products with a high fat content; limiting the school milk measure to include only milk products with a low fat
content; introducing a similar school measure for fruits and vegetables; redistributing agricultural subsidies so that it favours the fruit and vegetable sector and increase the consumption of fruits and vegetables; phasing out support for the promotion of wine consumption; improving and putting a time limit on the support to farmers who wish to cease wine production; and developing a plan to phase out tobacco subsidies” as part of the revised CAP.\textsuperscript{16-17} Unfortunately the brief report did not provide details of the process evaluation of the HIA approach and no long-term monitoring plans or outcomes have been reported or published as of the time of the literature search was conducted for this study. Perhaps this reflects a challenge with completing the final step of HIA (monitoring). The exclusion of this last step would reduce the ability to evaluate the impact of HIA and any potential sustainability of the outcomes.\textsuperscript{18}

A partial version of HIA was implemented in Tonga previously by Snowdon and colleagues.\textsuperscript{19} A benefit of HIA is to be able to identify all health-related impacts, not just specific health outcomes.\textsuperscript{3} Snowdon and colleagues applied the first step (screening) of HIA which aims to identify a set of policy alternatives and the second step (scoping) of HIA which aims to identify the appraisal plan a version of the third step of HIA, a rapid appraisal of the policy alternatives, in which they evaluated the likelihood and the magnitude of the policy impact.\textsuperscript{19} Snowdon and colleagues did not examine a variety of health outcomes, but rather examined the impact of the policy on non-communicable diseases only.\textsuperscript{19} Additionally, Snowdon and colleagues chose to apply a feasibility assessment to the policy alternatives. That is, the authors sought to determine how feasible the implementation of the policy alternatives would be considering technical, cost, political, cultural, and trade-related issues.\textsuperscript{19} A severe limitation identified by the authors included having a narrow range of participants which did not include “key policy makers”.\textsuperscript{19} Since a rapid appraisal was applied and the research evidence supporting
the likelihood and magnitude values of the policy impacts were not reported in the manuscript, this HIA was severely limited by its lack of evidence to support its claims.\textsuperscript{19} Although the authors recognized that HIA “enabled a more comprehensive assessment of the advantages and disadvantaged of different policy options,” the authors noted that there was no public input in the process and that the political landscape was stifling; thereby identifying opportunity for continued adaptation of HIA better tailored for application in Tonga.\textsuperscript{19}

Quigley and Watts Ltd used HIA to assess the health impacts of the draft \textit{Wairarapa Alcohol Strategy} in New Zealand.\textsuperscript{20} This HIA sought to determine how the “implementation of the draft \textit{Strategy} affect[s] the health and well-being of the local Māori population.”\textsuperscript{20} The Wairarapa focused on a single category of health determinant (i.e., socio-cultural, e.g., partnerships and consistency between organizations) which limited the ability of the HIA to identify all potential health impacts of the policy.\textsuperscript{20} The authors performed a process evaluation to evaluate the HIA approach.\textsuperscript{20} A limitation identified by the authors included lack of clarity regarding the HIA approach.\textsuperscript{20}

HIA was applied in Hungary as described by Adam and colleagues in order to identify the potential health impacts of legislation in the wine sector.\textsuperscript{21} This case study used secondary data sources to appraise the linkages.\textsuperscript{21} Like other case studies there was no mention of reporting recommendations to decision makers and limited assessment of the HIA process.\textsuperscript{21}

From this literature review, it is evident that there is limited literature on the application of HIA to food-related policies in an international context. The HIA approach in Slovenia and the partial HIA approach in Tonga identified key limitations of HIA in both experiences even though formal process evaluations did not take place.\textsuperscript{2,19-20} The Whānau Ora HIA provided a
comprehensive report of the HIA approach including a process evaluation that provided guidance for the development and evaluation of this case study.\textsuperscript{20}
<table>
<thead>
<tr>
<th>HIA Step</th>
<th>Description of Step</th>
<th>Slovenia CAP Case Study</th>
<th>Tonga Case Study</th>
<th>European Union CAP Case Study</th>
<th>New Zealand Wairarapa Case Study</th>
<th>Hungary Case Study</th>
</tr>
</thead>
</table>
| Screening |  • Identify & define the policy that will be assessed  
    • Decide whether HIA is appropriate | Policy mandating all residential facilities in San Francisco compost food waste will be considered by the City Council in six months | Agricultural, food, nutrition policies under considerations by law makers. | Identified many policy alternatives (e.g., add 5% import tariff to cooking oils) | The Common Agricultural Policy (CAP) e.g., subsidies to dairy | Draft Wairarapa Alcohol Strategy to district councils for adoption |
| Scoping   |  • Identify the potential health effects  
    • Establish an appraisal plan (establishing parameters) | Bioaerosols; air pollution; water usage; employment  
    • Due to time & resource limitations, secondary data is used to appraise the policy | Income; employment; housing; import/export; occupational health; environment  
    • Secondary evidence | Oil consumption; oil purchasing; NCD risk | Dairy consumption; (type of dairy) | Increased Partnership  
    • Social contacts; Family cohesion; nutrition; employment |
| Appraisal |  • Use evidence to assess the potential health impacts of the policy  
    • EPA report establishes the bioaerosol rate per kilo-gram of food waste compost | Cited evidence to support the link between agricultural policy and positive environmental impacts | Mention of using "available evidence and local data" to conclude only "speculative positive impact" | Used national statistics to measure dairy purchasing & consumption | Collection of community perception of Wairarapa | Use secondary data available in the literature and national statistics |
<table>
<thead>
<tr>
<th>HIA Step</th>
<th>Description of Step</th>
<th>Hypothetical example</th>
<th>Slovenia CAP Case Study</th>
<th>Tonga Case Study</th>
<th>European Union CAP Case Study</th>
<th>New Zealand Wairarapa Case Study</th>
<th>Hungary Case Study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reporting</td>
<td>Develop recommendations for mitigating negative health impacts &lt;br&gt; Develop a report &amp; plan for sharing HIA results with decision-makers and stakeholders</td>
<td>Establish compost pick-up schedule which would limit accumulation of bioaerosols &lt;br&gt; A report discussing health impacts</td>
<td>A final report was presented to the &quot;intergovernmental committee on health&quot;</td>
<td>Report of ratings of each policy alternative and ranked by participant</td>
<td>&quot;Phase out all consumption aid to dairy products&quot; &lt;br&gt; &quot;Limit the school milk measure to include only low-fat products&quot;</td>
<td>&quot;Little evidence was located to directly link cross-sectoral collaboration with health outcome&quot;</td>
<td>Established a set of recommendations, but no mention was made of presentation to decision-makers</td>
</tr>
<tr>
<td>Monitoring</td>
<td>Evaluate the HIA process &lt;br&gt; Establish a plan for monitoring the impact of the HIA (e.g., to what extent did decision makers take into account the HIA recommendations?)</td>
<td>Who was involved in HIA? &lt;br&gt; Were all steps completed? &lt;br&gt; Were findings shared?</td>
<td>No information available</td>
<td>No information available</td>
<td>No information available</td>
<td>HIA process evaluation</td>
<td>Suggests continuation of monitoring health outcomes</td>
</tr>
</tbody>
</table>

Note: *Not all policy components, health determinants, or health impact relationships are displayed here.*
II. CONCEPTUAL AND ANALYTIC FRAMEWORK

A. Conceptual Framework

The theoretical framework underlying this study is the socio-ecological model. This multi-level model recognizes the interrelationships between and among the household, the community, and the environment (e.g., social, physical, and policy). A conceptual framework based on the socio-ecological model was developed by the principal investigator with input from local public health advocates in Tonga prior to the implementation of this study and was used to guide the development of this study (Figure 1).

The food system of Tonga involves interrelationships among various sectors of government and respective jurisdictions. These government departments or ministries make up the majority of what can be identified as the food system. The food system is comprised of multiple sectors ranging from agriculture to education. The work of each sector impacts the state of the food environment, which is often measured and defined by how nutritious, safe, and sufficient it is. Policies developed at a systems level can determine the standards of expected handling of food to ensure its safety for consumers, the extent to which a variety of foods of varying nutritional quality are available, and the amounts of food that should be available to be considered sufficient. Work at the food systems level determines what the food environment will include (i.e., safe, nutritious, and/or sufficient food). The food environment impacts household food security because the state of the food environment affects the availability and stability of food and may impact utilization behaviors. The food system has numerous direct effects on the dimensions of food security which include: “availability (sufficient affordable quantities, appropriate quality), access (adequate resources for acquiring appropriate foods for a nutritious
diet), stability (no risk of losing access to food as a consequence of events such as economic or climatic crisis), and utilization” (consumption patterns) through food-related programs and policies as well.²³
Figure 1. Conceptual Framework for the Strategic Health Impact Assessment
Policy-level change requires thorough comprehension of the interplay among systems components as well as the contexts impacting system dynamics. The socio-ecological model, which focuses on the complex interactions affecting the individual, lends itself well to the application of an assessment approach which aims to identify multi-dimensional effects of a policy on the food environment and food security. This conceptual framework depicts that an individual is a part of a household and a larger community. Utilization is the component of food security that is a result of the other aspects of food security (availability, accessibility, and stability) in combination with individual choice. The scope of this research includes an emphasis on the dynamics among food system components (e.g., political, economic, and social sectors of government) that make policy and their effect on the food environment and food security.

B. Strategic Health Impact Assessment

The policy development process can take many forms. Establishing an approach that develops policy with consideration to context, capacity, and vision, can enhance stakeholders’ experience as well as increase the likelihood of developing beneficial and healthy policies. Enhancing HIA with elements of strategic planning that aim to address commonly identified limitations of HIA, strengthens the policy assessment process by emphasizing relevancy and applicability to policy-makers’ work and policy efforts. Table II describes each step of how Strategic HIA enhances traditional HIA.
### TABLE II

**DESCRIPTION OF TRADITIONAL HEALTH IMPACT ASSESSMENT AND STRATEGIC HEALTH IMPACT ASSESSMENT ENHANCEMENTS**

<table>
<thead>
<tr>
<th>Description of Steps of Traditional HIA</th>
<th>The Common Limitation of Traditional HIA addressed</th>
<th>Strategic HIA Enhancements of Traditional HIA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Screening</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify a policy for which HIA is appropriate</td>
<td>Conflicting agendas of policy makers</td>
<td>Coordination of the Strategic HIA by a politically neutral party helps to ensure preparation for mediation of policy-makers who may have conflicting agendas if required; this party also helps to ensure a variety of applicable sectors are recruited for participation and are involved in the policy making process</td>
</tr>
<tr>
<td>Determine efficient &amp; effective use of resources for undertaking HIA</td>
<td>Lack of involvement by key policy makers</td>
<td></td>
</tr>
<tr>
<td><strong>Scoping</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify potential links between the policy and health outcomes for appraisal</td>
<td>Conflicting agendas of policy makers</td>
<td>Establishment of a vision and mission for the Strategic HIA process helps to unify participating policy makers around the same agenda</td>
</tr>
<tr>
<td>Identify any gaps within the policy</td>
<td>Lack of clarity about the steps and purpose of HIA</td>
<td>Clear identification and definition of (Strategic) HIA steps helps to ensure that participants have a firm understanding of each step and its purpose</td>
</tr>
<tr>
<td>Determine how the <strong>Appraisal</strong> and the <strong>Recommendation &amp; Reporting</strong> steps will proceed</td>
<td>Lack of evidence to support health impact claims</td>
<td>Carrying out brief internal and external environmental assessments as part of Strategic HIA helps to ensure that the links between policy components and health outcomes identified are considered within the context of the political, economic, and social contexts to support impact claims</td>
</tr>
<tr>
<td>Set the parameters for the <strong>Monitoring &amp; Evaluation</strong> step</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Description of Steps of Traditional HIA</td>
<td>The Common Limitation of Traditional HIA addressed</td>
<td>Strategic HIA Enhancements of Traditional HIA</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td><strong>Appraisal</strong></td>
<td>Incomplete application of key steps of HIA</td>
<td>Designation of responsibility for carrying out the remaining steps helps to ensure that they are completed</td>
</tr>
<tr>
<td>Appraisal</td>
<td>Lack of evidence to support health impact claims</td>
<td>Use of a logic framework to guide the appraisal process helps to ensure that evidence is sought for the identified linkages</td>
</tr>
<tr>
<td>Recommendations &amp; Reporting</td>
<td>Recommendations of HIA disregarded or considered irrelevant by decision – makers</td>
<td>Sharing the draft Strategic HIA report with participants on an individual basis and creating an opportunity for dialogue helps to ensure that the final recommendations are reflective of the Strategic HIA process and communicated to decision makers</td>
</tr>
<tr>
<td>Monitoring &amp; Evaluation</td>
<td>Incomplete application of key steps of HIA; M&amp;E being the least commonly completed step</td>
<td>Inclusion of a process evaluation helps to identify whether steps of (Strategic) HIA were implemented as intended</td>
</tr>
<tr>
<td>Monitoring &amp; Evaluation</td>
<td>Establish a plan to monitor the actual impacts of the recommendations for the policy</td>
<td>Establishing an M&amp;E plan helps to strengthen the opportunity to fully carry out all steps of (Strategic) HIA and to evaluate the outcome(s) of the (Strategic) HIA</td>
</tr>
</tbody>
</table>
Strategic planning fosters the identification of a scope of examination that is appropriate for and supports the policy development process using a vision and mission as a guide.\textsuperscript{8} Likewise, the HIA approach emphasizes the establishment of an evidence-base to inform the policy assessment and development processes by encouraging thorough exploration and review of any information that affects the policy being assessed;\textsuperscript{3} such information may include other policies, established mandates, ordinances, prior policy assessments, research, surveillance data, or existing support or opposition. The HIA approach raises awareness among participants about “the relationship between health and the physical, social, and economic environments,” thereby ensuring that health consequences are considered in the policy development process.\textsuperscript{3}

The relationships among the behavioral, physical, and social determinants of health are complex. Thus, the HIA and Strategic HIA approaches require multi-sectoral collaboration and cultural understanding of the contexts related to the policy under development to identify and potentially address such complexities. The Strategic HIA approach involves diverse stakeholders at each step who would likely enhance “understanding of key issues…creating effective, sustainable change.”\textsuperscript{18} Specifically, the values which drive Strategic HIA approach stem from the collaborative nature of both strategic planning and HIA. The strategic planning approach has been successfully applied in the public health sector to produce stakeholder-supported “decisions and actions that shape and guide” what an entity is, what it does and why it does it.”\textsuperscript{8} The HIA approach assesses the health impacts of policies through means which aim to uphold values which include: “democracy, equity, sustainable development, and ethical use of evidence.”\textsuperscript{2} As such, multi-sectoral stakeholder collaboration is an imperative factor to have at every stage of Strategic HIA.
It should be noted that a publication by Fehr and colleagues uses the term “strategic HIA” to reference the strategic selection of a specific health indicator or outcome to appraise through the HIA. In the Fehr paper, “strategic” did not refer to the participants’ approach to the entire HIA process itself, but rather, to the “strategic” methods used to select a policy or health indicators.

C. **Strategic Health Impact Assessment Case Study**

1. **Steps of Strategic Health Impact Assessment**

   The major steps of Strategic HIA are the same as those used in traditional HIA, which include: screening, scoping, appraisal, reporting, and monitoring & evaluation. However, Strategic HIA incorporates strategic enhancements, which aim to address common limitations of HIA (Table II). In this section, the steps of Strategic HIA are described and the ways by which it enhances traditional HIA are highlighted.

   **Screening.** In the screening step, participants determine whether a policy should undergo HIA, and identify the resource capacity available to undertake HIA. The ways by which Strategic HIA enhance the screening step include having a politically neutral party (i.e., an individual or group who is/are not (a) representative(s) of the department, unit, or organization that authored the policy) coordinate the Strategic HIA, and using a snowballing technique to identify a variety of systems-level stakeholders (e.g., senior-level Ministry or organization representatives). These enhancements address some of the commonly identified challenges such as conflicting agendas of policy makers and lack of involvement of policy stakeholders. HIA is enhanced by having a mediator that is invested in the policy development process, and by expanding the recruitment process to include suggestions of participants from more than one organization across government and non-government sectors.
A Screening Tool may be used during the screening step to help guide participants through policy selection. The screening tool is a checklist of questions used by HIA participants to determine appropriateness based on timeliness of, relevancy of, stakeholder support for, supporting evidence for, and supporting capacity for, the policy. Specifically, the tool asks participants to identify whether:

- the Strategic HIA can be conducted within the decision-making timeframe; (i.e., whether the Strategic HIA can be conducted in a timeframe that allows decision makers to consider recommendations prior to finalizing or ratifying the proposed policy);
- there exists potential health impacts of the proposed policy;
- there is awareness and/or concern about the policy’s topic among the public and policy makers;
- there is evidence to inform the Strategic HIA appraisal of the potential health impacts of the policy; and
- there are sufficient resources to carry out the Strategic HIA.⁶

Scoping. The second step of Strategic HIA and HIA is scoping. The scoping step helps participants decide what impacts, linkages, and gaps should be appraised and how they will be appraised.⁵ The first component of the scoping step that is enhanced in the Strategic HIA approach is the establishment of a guiding vision and mission for the policy development process. This component serves to reduce the risk of conflicting agendas among policy-makers that might otherwise limit the effectiveness of HIA. Secondly, Strategic HIA includes clear identification and definition of the Strategic HIA steps to participants prior to implementation of the steps. This helps to ensure that participants know and understand the purpose of each step, and aims to reduce the challenge regarding the lack of clarity about the steps and purpose of
HIA. A third enhancement included in Strategic HIA is having participants define the socio-cultural, environmental, political, and economic contexts impacting the policy. According to a HIA literature review, case studies have demonstrated that “context is highly relevant when realizing the full potential of HIA.”\(^5\) This addition helps to ensure that the participants, who are from diverse sectors, are aware of the broader policy-making context. This enhancement would potentially increase the likelihood that the potential impacts and recommendations identified by the stakeholders are relevant to policy- and decision-maker interests.\(^8\) A fourth enhancement of the scoping step is concretely designating responsibility of, and timeline for, the scoping and subsequent steps.

A *Scoping Tool* may be used to help participants: a) identify the potential health impacts related to the proposed policy; b) identify relationships of the policy with any existing policies, regulations, or mandates; c) identify level of public and political interest; d) identify populations potentially affected by the policy and the ways they may be affected; and e) establish an appraisal plan driven by evidence.\(^6,9\)

*Appraisal.* In the appraisal step, evidence is sought to define the linkages between the policy components and health outcomes for the potential health impacts identified. Specifically, magnitudes and directions of the impacts are defined and information gaps are further explored.\(^5,12\) The Strategic HIA enhancement of traditional HIA in the appraisal step is the use of the *Logic Framework* to guide this step. The *Logic Framework* is a graphical display of potential relationships among the policy components proximal impacts, intermediate outcomes, and health outcomes.\(^2,12\) Although the *Logic Framework* is not a mandatory component of HIA, nor a novel component of Strategic HIA, development of a *Logic Framework* is included as an imperative component of the Strategic HIA appraisal step. Using the *Logic Framework*, participants identify
which linkages already have supporting evidence and which do not. The *Logic Framework* guides the collection of evidence (e.g., publicly available databases, published literature) to define the direction and magnitude of the relationships between policy components and health impacts based on identified evidence.\(^2,12\) The completed *Logic Framework* is a product of Strategic HIA/HIA that graphically summarizes health impact findings.\(^11\)

*Recommendations and Reporting.* A set of recommended modifications for the policy is drafted in the recommendations and reporting step. A report of the outcomes of the Strategic HIA is developed and used as a communication tool to share recommendations with policy-makers.\(^5\) Although communication of recommendations in an assumed part of this step in traditional HIA, it is often not completed or the recommendations are not considered by decision-makers.\(^5\) Therefore, Strategic HIA includes an enhancement that emphasizes the need to develop a report with recommendations as well as the communication of those recommendations through meetings and discussions with stakeholders.

*Monitoring and Evaluation.* The fifth and final step of Strategic HIA and HIA is Monitoring and Evaluation. The aim of this step is to develop a plan to evaluate whether the Strategic HIA impacted the policy- and decision-making process and to monitor the extent to which recommendations are implemented.\(^5\) The enhanced monitoring and evaluation step of Strategic HIA includes a process evaluation. Understanding whether the Strategic HIA steps are feasible and acceptable to policy-makers and applicable to their work would help identify whether this policy development approach may potentially impact policy making if applied in the future.\(^3,4\) An enhancement of the monitoring and evaluation step is establishing a monitoring and evaluation “plan of action,” which includes identification of an agency to monitor the
impacts of the Strategic HIA which will increase the likelihood that policy-related progress is monitored.

2. **Case Study Setting**

   a. **Rationale for Tonga as a Setting for Strategic HIA Case Study**

   Tonga is a Polynesian island nation located in the South Pacific that is an ideal setting for a Strategic HIA case study. The sizes of Tonga’s population and government allow for active engagement by policy-makers and other stakeholders. The food security-related challenges in Tonga are similar to the challenges of other Pacific Island countries and territories (PICTs).

   Beginning in the 20th century, the Kingdom of Tonga experienced a pronounced shift in leading causes of death. Deaths attributable to non-communicable diseases (NCDs) were less than six percent in 1950 and increased to an estimated 74% in 2008. Various social, economic, environmental, and political factors have contributed to this shift. Many organizations, such as the World Health Organization (WHO) and Food and Agriculture Organization (FAO), have identified a changing food environment as a contributor to the rise in diet-related NCDs such as diabetes and heart disease. The burgeoning rate of NCD-related risk factors such as obesity and low rate of fruit and vegetable consumption has been associated with the increased availability of and access to foods high in saturated fat, sugar, and sodium. This trend merits the application of interventions to address food environment-related challenges such as policy-centered approaches.

   According to Hughes and Lawrence, “improving dietary habits is a societal problem. It requires a population-based, multi-sectoral and culturally relevant approach.” Implementing the
Strategic HIA approach in Tonga allowed for the opportunity to test the feasibility of this enhanced approach to HIA and to engage policy makers of a developing nation in the implementation of a policy assessment approach that considers health impacts. It was anticipated that lessons learned from this case study would contribute to the HIA literature and as such, be useful to other countries planning to conduct HIA.

b. **Policy Development in Tonga**

Tonga is a constitutional monarch. At the time of study development (2010), the executive branch was composed of the king, the prime minister, the deputy prime minister, ten cabinet members and two governors (*ex officio*).³⁴ The legislative branch of government was comprised of 17 elected representatives and nine appointed representatives. The Legislative Assembly of Tonga makes laws and the executive branch can “make major policy decisions.”³⁴ Therefore, policies can be introduced to the legislative parliamentarians or directly to a cabinet member who can make a policy proposal to the legislature. It is important to note that in Tonga, community and other non-governmental (e.g., businesses and NGOs) stakeholder input may potentially have greater impact on the decisions of policy-makers now that democracy-centered changes have taken effect.

c. **Food Policy in Tonga**

Food-related policies often consider economic and political impact on a nation; however, the impacts of food-related policy (including agricultural policies) on population health are less frequently considered, if at all.¹⁶ Food-related policy development in developing, resource limited countries like Tonga, is often constrained by international relationships and trade agreements.³³ Therefore, the application of a comprehensive policy assessment approach is necessary to ensure that food policies aiming to improve a challenged food environment are
driven by the best interests of the population, and not by special interests.¹ In order for food-related policy change efforts to engender effective systems and environmental changes that protect the population, the policies should ideally be assessed for potential health impacts.¹⁶ The WHO’s NCDnet collaborative has recognized that “considerably more gains can be achieved by influencing policies of non-health sectors than by health policies alone.”³¹ Therefore, application of a multi-sectoral approach to policy assessment that considers potential health impacts is merited for the food-related policy development process in Tonga. The Strategic HIA approach is a policy assessment approach that may be effective in ensuring that food-related policies consider impacts on population health.

\[ \textbf{d. Strategic Health Impact Assessment Case Study Coordinating Organization:} \]

\[ \textbf{Tonga Health Promotion Foundation} \]

In order to reduce potential bias in carrying out the Strategic HIA process, the organization facilitating the Strategic HIA would ideally not be a representative of the Ministry, department, or organization that authored the policy.⁷ An ideal facilitating organization would have: 1) a firm understanding of the policy development process, 2) positive working relationship with a variety of stakeholders (including policy makers), and 3) the resource capacity to coordinate the Strategic HIA.⁷ According to a review of HIAs by Davenport, a noted challenge of HIA is that they are often “limited organizational one offs conducted by champions external to the decision making organization.”³⁵ For this reason, it was important to have an established organization coordinate the Strategic HIA so as to ensure that the Strategic HIA was not a one-time event, but rather a useful tailored policy development approach that produced a helpful set of policy recommendations that are eventually implemented.
The Tonga Health Promotion Foundation (TongaHealth) was the facilitating organization of this Strategic HIA case study. TongaHealth is a quasi-governmental organization that was established through government legislation to “promote health and reduce harm from NCDs through activities such as advocating “for healthy public policy and healthy environments.” TongaHealth has worked with the Ministries of Health; Agriculture, Food, Forestry, and Fisheries; and Education on a variety of health promotion activities. Therefore, TongaHealth is in a prime position to bring together various stakeholders and policy-makers to develop and assess food-related policies due to its quasi-governmental status and its leadership in NCD prevention.
III. METHODS

A. Study Design

The tools applied in this study were approved, through a claim of exemption, by the University of Illinois at Chicago Institutional Review Board (Appendix C). A mixed methods approach was applied to this case study in order to take contextual understandings and stakeholder perspectives into account.\textsuperscript{35,37} Methods included both quantitative (e.g., close-ended questionnaires) and qualitative (e.g., interviews and open-ended questionnaires) data collection approaches to answer the research question and address the aims of this study. This study consisted of four major methodological components, which included planning meetings, the Household Food Security Survey (HFSS) (Appendix D), the Systems Food Security Interview (SFSI) (Appendix E), and the Strategic HIA Workshop with respective evaluation (Appendix F).

The description of the case study activities and how they relate to achieving each step of Strategic HIA is described in Table III. The planning meetings in combination with the Strategic HIA Workshop addressed the primary aims of this study. The post workshop evaluations addressed the secondary aims, and the HFSS and SFSI addressed the peripheral aims. Planning meetings included open-ended discussion and the application of a quantitative screening tool. The HFSS was a questionnaire contained close-ended questions that collected continuous, categorical, and dichotomous quantitative data about household food security. The SFSI was a semi-structured interview through which qualitative data was collected. The Strategic HIA Workshop included formative discussions around policy impacts on health as well as questionnaires that captured close-ended quantitative data and respective open-ended qualitative data which allowed for further elaboration and triangulation of the data.
## TABLE III

**DESCRIPTION OF STRATEGIC HEALTH IMPACT ASSESSMENT CASE STUDY ACTIVITY OBJECTIVES**

<table>
<thead>
<tr>
<th>Step of Strategic Health Impact Assessment</th>
<th>Case Study Activity Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Screening</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Planning Meetings</strong></td>
<td></td>
</tr>
<tr>
<td>1. To train the staff of the organization leading the Strategic HIA in the steps</td>
<td></td>
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<tr>
<td>2. To conduct the Systems Food Security Interviews to identify workshop participants and a policy to undergo Strategic HIA</td>
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<tr>
<td>3. To apply the Screening Tool to identified policy</td>
<td></td>
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<tr>
<td>4. To determine a mission, vision and goals of the Strategic HIA</td>
<td></td>
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<tr>
<td>5. To plan the logistics of the Strategic HIA Workshop</td>
<td></td>
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<tr>
<td><strong>Scoping</strong></td>
<td></td>
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<tr>
<td><strong>Workshop</strong></td>
<td></td>
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<tr>
<td>1. To define the steps of Strategic HIA for the workshop participants</td>
<td></td>
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<tr>
<td>2. To share the vision and mission of the Strategic HIA for the workshop participants</td>
<td></td>
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<tr>
<td>3. To explain the screening step and method of policy selection</td>
<td></td>
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<tr>
<td>4. To define capacity &amp; plan for appraisal process</td>
<td></td>
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<tr>
<td>5. To complete a <em>scoping tool</em>, identify potential health effects to consider</td>
<td></td>
</tr>
<tr>
<td>6. To define the socio-cultural, environmental, economic, and political contexts impacting the selected policy</td>
<td></td>
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<tr>
<td>7. To begin to draft a <em>Logic Framework</em> to identify potential linkages between the policy &amp; health outcomes</td>
<td></td>
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<tr>
<td><strong>Appraisal</strong></td>
<td></td>
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<tr>
<td><strong>Workshop &amp; Post-Workshop Meetings</strong></td>
<td></td>
</tr>
<tr>
<td>1. To identify available and needed evidence to support or reject the identified potential health impacts</td>
<td></td>
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<tr>
<td>2. To conduct a literature search to identify evidence to support or challenge the identified potential health impacts</td>
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<tr>
<td>3. To include direction and magnitude of potential impacts to the <em>Logic Framework</em></td>
<td></td>
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<tr>
<td><strong>Recommendations &amp; Reporting</strong></td>
<td></td>
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<tr>
<td><strong>Workshop &amp; Post-Workshop Meetings</strong></td>
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</tr>
<tr>
<td>1. To identify recommendations based on appraisal</td>
<td></td>
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<tr>
<td>2. To plan for reporting and communication of Strategic HIA report</td>
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<tr>
<td><strong>Monitoring &amp; Evaluation</strong></td>
<td></td>
</tr>
<tr>
<td>1. To establish a plan for monitoring and evaluation</td>
<td></td>
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<tr>
<td>2. To complete the <em>Strategic HIA Process Evaluation</em> (Coordinating Organization &amp; Facilitator)</td>
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<tr>
<td>3. To complete the <em>Workshop Evaluation Survey</em> (Workshop Participants)</td>
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<tr>
<td>4. To complete the <em>Strategic HIA Facilitator Evaluation</em> (Coordinating Organization &amp; Facilitator)</td>
<td></td>
</tr>
<tr>
<td>5. To analyze and report the <em>Strategic HIA Process Evaluation, Workshop Evaluation Survey &amp; Strategic HIA Facilitator Evaluation data</em></td>
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</table>
Figure 2. Logic Model of Strategic Health Impact Assessment Case Study Methodology
The logic model of this case study’s methodology is depicted in Figure 2. The activities of this case study which included planning meetings, a household food security survey, a systems food security interviews, and a Strategic HIA workshop were designed to plan for, inform, and implement the steps of Strategic HIA; thereby addressing the study aims. The outputs of the case study are the results produced from each step of the Strategic HIA such as selection of a policy and evaluation of the steps (Appendices G, H, I). The major outcomes of the study were: 1) understanding the feasibility, applicability, and acceptability of the Strategic HIA approach to policy makers and 2) participants developing the skills and feeling ready to implement the Strategic HIA approach. It was assumed that senior-level ministry and organization representatives would fully engage in the activities, that the workshop approach was appropriate for participants, and that the evaluation tools would accurately measure the experience of the Strategic HIA approach. The environmental influences affecting the development and implementation of this case study included the social culture, the political culture (e.g., systems culture), and the resources and capacity of the various parties involved.

B. Household Food Security Survey

The Household Food Security Survey (HFSS) is a cross-sectional descriptive questionnaire that was developed from a combination of existing measures and informed by themes in food security- and Tonga-related diet and food literature. In this study, the HFSS aimed to describe household food security including perceptions of food availability, accessibility, utilization, and stability. Understanding perceptions of household food security was expected to inform the Strategic HIA.
1. Participants

The HFSS participants were selected through sampling of representative households stratified by each of the 7 districts on the main island of Tongatapu, Tonga based on the 2006 government census data. The total number of households in Tonga was 17,529 with 68.5% living on Tongatapu. An a priori analysis showed adequate power for estimating a population proportion with a sample size of 100 respondents with the 95% confidence interval at +/- 9.8%. Based on the number of households in each district, a target number of households within each district was calculated based on a target sample size of 100 respondents; however, towns within districts were not systematically sampled. Using a publicly available satellite map, the research team divided the selected towns into sections based on the roads which formed a grid on the maps. These sections of selected towns were assigned numbers. The research team then used random number selection to identify the section from which to draw household participants. The research team assigned a number to each household within the selected section and used random number selection to identify the households for participation. If a house was unoccupied due to abandonment, migration, or no female was home, the research team selected the next home on the map.

Inclusion criteria were that participants were between 18-65 years of age, female, lived in the household for at least one year, and self-acknowledged as knowledgeable about household food consumption and purchasing. Adult women were the target population of the HFSS because they are traditionally the food purchasers and meal preparers in Tonga. A total of 100 household representatives participated in the HFSS.
2. **Procedure**

The HFSS is a questionnaire delivered via face-to-face interview. The HFSS interviewers were Tongan university students majoring in the health sciences. The principal investigator trained interviewers on how to deliver the questionnaire according to a standard protocol and these trainees observed an interview conducted by the principal investigator. The principal investigator then observed trainees conducting interviews at least twice and provided feedback to them before they conducted interviews independently.

All surveys were conducted in the Tongan language. The HFSS was not conducted on Mondays because Sunday meals are atypical and would likely skew the respondent 24-hour diet recall component of the HFSS. The HFSS was conducted between late August and early December (2011).

Once the interviewer explained the purpose of the HFSS, verbal informed consent was obtained before commencing the questionnaire. For categorical or dichotomous questions, index cards with answer choices were shown to the participant. For questions about diet recall, participants were asked to use their own hand for serving size estimations.

C. **Systems Food Security Interview**

The Systems Food Security Interview (SFSI) is a descriptive measure that was developed based upon themes from the food policy literature specific to developing nations. The SFSI captured data about perceptions of the current state of the food environment and about challenges with the food environment perceptions. Understanding system representatives’ perceptions of the food security situation in Tonga informed the coordinating team and facilitator of existing current perspectives.
1. **Participants**

   The SFSI participants were senior-level representatives selected through initial suggestions of ministry, department, or organization representatives made by the Tonga Health Promotion Foundation (TongaHealth) staff. Participant selection continued through a subsequent snowballing-like technique and recruitment stopped once representation and response saturation occurred. When non-ministry or non-governmental organization representatives were suggested, they were invited to participate in the SFSI if TongaHealth staff confirmed the person’s food-related work. Ten participants were identified and participated in the SFSI. This group was comprised of at least one senior-level representative from at least five different Ministries and/or NGOs in order to ensure confidence in the common themes identified across sectors.47

2. **Procedure**

   The SFSI was administered in a face-to-face interview format by two trained TongaHealth staff members using a standard interview protocol. The interviews took place in October of 2011 in a location of the participant’s designation. Interviewers explained the purpose of the SFSI and participants gave verbal consent prior to the commencement of the interview. Interviews were conducted in the participant’s language of choice (English or Tongan).

D. **Strategic Health Impact Assessment Workshop**

1. **Participants**

   It was determined that a minimum of four Ministries should be represented in the Strategic HIA process to promote multi-sectoral representation similar to that of the successful National NCD Subcommittees in Tonga. It was imperative that workshop participants be senior-level staff because they have more direct access to, and impact on, policy decisions. A total of 42 individuals from 22 different organizations were invited to participate in the workshop. A total of
15 ministry departments, organizations, and businesses were represented by 17 participants at the Workshop. The coordinating team of three individuals included TongaHealth staff members and the external facilitator. The facilitator of the workshop was a bi-lingual (Tongan-English) volunteer and was considered to be a neutral participant in the process.

2. Procedure
   a. Planning Meetings

   TongaHealth agreed to conduct Strategic HIA to determine if this enhanced HIA approach is feasible, applicable, and acceptable to policy-makers. The steps of Strategic HIA were carried out through a specific set of sequenced activities including: planning meetings, a workshop (with respective evaluation), and post-workshop meetings (with respective evaluations) (Table III). Through planning meetings, four TongaHealth staff members, took steps to plan for the application of Strategic HIA. First, the staff was trained in the steps of traditional HIA and in understanding how and why the approach is enhanced through Strategic HIA (Table III). Second, the SFSI guide was used to help identify potential participants and policies for undergoing Strategic HIA (Appendix E). A TongaHealth staff person carried out the SFSI with senior-level government, non-governmental representatives, and local business owners. (Results of the SFSI are discussed in Manuscript Two of the Results section.) Third, TongaHealth staff identified the policy that would proceed through the next steps of Strategic HIA by using a Screening Tool (component of Appendix F). Fourth, the TongaHealth staff identified vision and mission statements for the Strategic HIA to help guide the process. Fifth, as the coordinating organization, TongaHealth staff worked with the workshop facilitator to plan the logistics of the workshop.
Screening Step. The screening tool that was slightly tailored for, and used in this case study, was developed by the New Zealand Ministry of Health. The Food Bill was selected as the policy to undergo the Strategic HIA process. The objective of the Food Bill was “to regulate the manufacture, sale, import and export of food, to guarantee food safety and fitness for human consumption, to promote fair trade practices in food and for related matters.” The Food Bill was identified as an appropriate piece of legislation for Strategic HIA because there was increasing stakeholder concern regarding the growing rates of diet-related NCDs in Tonga. The Food Bill was legislation under the jurisdiction of the Ministry of Agriculture, Food, Forestry, and Fisheries (MAFF), but would involve collaboration among multi-sectoral government sectors and non-governmental organizations in its implementation. Additionally, the Food Bill was expected to pass through Parliament for deliberation in the near future. Therefore, the outcomes of the Strategic HIA informed recommendations that could help to ensure that the best possible bill is passed, and once passed, that implementation and enforcement would occur efficiently.

b. Workshop

The scoping, initial appraisal, and recommendations development steps were conducted in a workshop format. These steps were conducted in a workshop format with the intent to maximize participant competency and to enhance feasibility. The facilitator began the workshop by presenting the aim of the workshop, which was to collaboratively assess the health impacts of the Food Bill before it was to be reviewed by Parliament. The facilitator presented the pre-established guiding vision and mission of the Strategic HIA, which was based on the Pacific Island Ministers of Health “Healthy Islands Initiative.” The participants were then asked to
modify and agree to these statements. Upon agreement by participants, the facilitator reminded participants to consider the vision and mission throughout the Strategic HIA process.

The steps of Strategic HIA were introduced to workshop participants as described in the previous “Steps of Strategic Health Impact Assessment” section and in Table II. The facilitator described the screening steps involved in Strategic HIA that resulted in the Strategic HIA policy selection that was conducted prior to the workshop. Policy selection steps included: conducting the SFSIs; reviewing the minutes and reports from recent national and regional food-related summits; and completing the Screening Tool. The facilitator introduced the selected policy (the Food Bill) and stated its purpose according to the Bill itself.

Scoping Step. For the scoping step, the workshop participants were divided into three multi-sectoral small groups and assigned a different section of the Food Bill (Labeling & Standards; Import & Export; or Licensing & Administration). The participants were asked to complete the Scoping Tool, which the participants used to identify existing and needed evidence to help appraise the Food Bill (component of Appendix F). The scoping tools used in this case study included a slightly modified version of questions developed by the New Zealand Ministry of Health.12 Participants identified and discussed internal and external environmental contexts (e.g., socio-cultural, environmental, political, and economic) related to the Food Bill components. Each group also identified components or gaps of the policy that required discussion or clarification.

Appraisal Step. In the appraisal step, participants began to identify potential intermediate outcomes of policy components and establish recommendations for addressing gaps. Small groups began developing Logic Frameworks during the workshop. Each small group presented
preliminary findings to the large group. Participants collectively decided that TongaHealth staff would continue the appraisal process and advocate for the recommendations established through the Strategic HIA. The continuation of the appraisal process included the identification of additional secondary data as evidence to define the linkages (e.g., the link between food safety labeling requirements and change in consumer/retailer knowledge; the link between consumer/retailer knowledge and food handling behavior) and to determine their magnitudes and directions. This evidence, along with the components identified, discussed, and presented during the Workshop, was incorporated into a comprehensive final versions of the Logic Frameworks.

**Reporting and Recommendations Step.** Recommendations from the Strategic HIA were informed by general group discussions and agreed to by participants prior to the conclusion of the workshop. For the reporting step, TongaHealth staff drafted a report of the outcomes of the Strategic HIA process completed up through the end of the workshop. This report was shared with participants and suggested modifications and later approval of final version were requested from them. The report included a list of workshop attendees, outcomes of small group presentations, subsequent appraisal, final Logic Frameworks, and a list of recommendations established by participants during the Strategic HIA Workshop (Appendix J). This case study also included the development and use of a fact sheet that highlighted the evidence outlined in the Logic Frameworks, as a tool to share the outcomes and recommendations with other stakeholders (Appendix K).

**Monitoring and Evaluation Step.** The workshop participants agreed that TongaHealth would monitor the progress of the recommendations established. The coordinating organization staff and the facilitator completed evaluations of the feasibility of the Strategic HIA process. The
workshop participants completed evaluations assessing the feasibility, applicability, and acceptability of the Strategic HIA case study. TongaHealth developed an outline for a monitoring plan to determine the impact of the Strategic HIA process (i.e., extent to which recommendations were considered by policy makers) on policy development. (The details of this plan are outside the scope of this paper and are not reported.)

E. **Data Collection, Analysis and Interpretation Plan**

Data collected in this study included a household food security survey, a systems-level food security interview, a Strategic HIA process evaluation, and workshop assessments. These tools collected a mix of both quantitative and qualitative data as described in Table IV. Tools in this study were preceded by an appropriate informed consent process. The results of these questionnaires and surveys contributed to the outputs of this study.
## TABLE IV
### DATA ANALYSIS PLAN

<table>
<thead>
<tr>
<th>Component</th>
<th>Data Collection</th>
<th>Analysis Methods</th>
</tr>
</thead>
</table>
| **Household Food Security Survey** | • Survey questionnaire  
• Quantitative (close-ended questions) | • Frequencies  
• T-test  
• Wald Chi-Square Test |
| **Target Population:** Adult female representatives of households  
**Constructs:** Access, availability, utilization, stability | | |
| **Systems Food Security Interview** | • Semi-structured Interview  
• Qualitative (open-ended questions) | • Coding Themes |
| **Target Population:** Senior-level Ministry, NGO, and food-related business representatives  
**Constructs:** Perception of food security, and of policy work (realized and theoretical/planned) | | |
| **Strategic HIA Process Evaluation** | • Quantitative (close-ended questions)  
• Qualitative (open-ended questions) | • Frequencies  
• Anecdotal summaries |
| **Target population:** Coordinating staff and facilitator  
**Constructs:** Feasibility | | |
| **Workshop Evaluation Survey** | • Quantitative (close-ended questions)  
• Qualitative (open-ended questions) | • Frequencies  
• Anecdotal summaries |
| **Target population:** Workshop participants  
**Constructs:** Applicability, acceptability, readiness | | |
| **Facilitator Process Evaluation** | • Qualitative (open-ended questions) | • Anecdotal summaries |
| **Target population:** Coordinating staff and facilitator  
**Constructs:** Strategic HIA process and logistics | | |
1. **Household Food Security Survey**

Utilization items included questions about food purchasing behaviors as well as food consumption behavior using a self-reported 24-hour respondent diet recall.\(^4^6\) The stability constructs were assessed by asking respondents how often throughout a year their household is affected by challenges related to food availability and access. The availability and access constructs were assessed by asking respondents about their household’s ability to obtain nutritious foods and the availability of such foods to them.

The nutrition contents of diet recall were calculated using values obtained through publicly available international food databases from the Secretariat of the Pacific Community, United States Department of Agriculture, and the Food and Agriculture Organization.\(^5^1^-^5^3\) The calorie, saturated fat, sugar, and sodium contents of each food were identified using the databases and totals were calculated based on reported serving sizes.

The HFSS data was analyzed using SPSS Statistics 19 (IBM, Inc.) quantitative data analysis software. T-tests were performed to compare means of consumption-related variables of imported versus local foods. Wald Chi-Square Tests were performed to determine the significance of individual covariates on various dichotomous (e.g., purchase of specific foods) and categorical (e.g., access and availability barriers) outcomes.

2. **Systems Food Security Interview**

The SFSI was conducted through a face-to-face interview and aimed to capture quantitative and qualitative data about the perception of food security-related issues and current food-related work of government and non-government representatives. Specifically, participants were asked to describe the current food environment and to identify the main challenges of the food environment in Tonga. Additionally, they were asked to identify potential interventions to
address the challenges. The SFSI also captured information about which ministries, departments, and/or organizations are responsible for ensuring a safe and healthy food environment in Tonga to potentially establish an understanding about perceptions of inter-sector responsibilities.

Prior to data analysis, the TongaHealth staff person who was not involved in the analysis, collected and de-identified SFSI data. For qualitative measures, interview responses were transcribed as notes. Then, the principal investigator categorized comments made by respondents using an open coding technique.\textsuperscript{47,54} Likewise, a researcher unrelated to this study independently coded the interview responses. For the purposes of this study, codes were defined as a basic part of the raw data and themes were derived from code patterns.\textsuperscript{47,54} Any coding discrepancies were discussed between the coders and consensus was reached about the code; during this process, some codes were combined.\textsuperscript{54} The principal investigator used the codes to derive food security-related themes and reported them as frequencies.

3. **Post-Workshop Evaluations**

According to Mindell and colleagues (2004), “process evaluation of HIA is important as a source of learning, as part of the drive towards quality improvement.”\textsuperscript{18} The evaluation of the Strategic HIA implementation process included a Strategic HIA Process Evaluation (Appendix G), a Workshop Evaluation Survey (WES) (Appendix H), and a Strategic HIA Facilitator Evaluation (Appendix I). The workshop facilitator and two TongaHealth Strategic HIA coordinating staff completed the Strategic HIA Process Evaluation and the Strategic HIA Facilitator Evaluation after the final Strategic HIA report was drafted and distributed. All 17 workshop participants completed the WES within one week after the workshop (prior to receiving the workshop report).
The Strategic HIA Process Evaluation captures quantitative and qualitative data to evaluate the feasibility of implementing the steps of Strategic HIA (Appendix I). The Strategic HIA Process Evaluation was developed based on a literature review of studies measuring the processes of previously implemented HIAs.\textsuperscript{2-3,5-6} The Strategic HIA Process Evaluation included dichotomous items examining whether each major and minor step of Strategic HIA workshop was conducted to determine the feasibility of Strategic HIA (Table V). These items are reported as frequencies (as to whether each respondent believed the step to have been completed). The steps conducted post workshop such as appraisal, recommendations & reporting, and monitoring & evaluation were not formally measured by a survey item, but were considered completed if a report was developed which included the logic framework, recommendations, and monitoring & evaluation plan. Along with each quantitative measure respondents were given the option to provide comments (qualitative) that they considered valuable regarding each step of the Strategic HIA process. These qualitative data were not formally analyzed, but rather reported as anecdotal evidence.

The WES captured both quantitative and qualitative data to assess acceptability, applicability, and participant readiness to undertake the Strategic HIA approach in the future (Appendix H). The WES was developed based on a literature review of other HIA process evaluations for the potential ease of comparison with the experiences of other HIAs. The applicability items sought to determine whether participants felt the Strategic HIA approach was relevant to their work. Acceptability items sought to determine whether participants considered the steps of Strategic HIA appropriate for their work role and capacity. The readiness items sought to determine whether participants felt confident in their ability to carry out Strategic HIA
in the future. All quantitative WES response choices were based on a four-point scale. Qualitative data were collected as additional comments participants may have had about the quantitative items asked. These data were not formally analyzed and reported anecdotes.

The Strategic HIA Workshop Facilitator Evaluation included qualitative measures that aimed to document the activities applied in this proposed study (Appendix I). Specific information collected in the Strategic HIA Facilitator Evaluation included qualitative details about the logistical details of the planning and implementation of the Strategic HIA steps. It should be noted that “most evidence that HIA is effective comes from anecdote and case history.” Therefore, the qualitative data collected through the Strategic HIA Workshop Facilitator Evaluation, provided detailed observations about the Strategic HIA process. These data were reported as anecdotal evidence to document the Strategic HIA process.
<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
<th>Measurement Tool</th>
<th>Sample Question</th>
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</thead>
<tbody>
<tr>
<td><strong>Feasibility</strong></td>
<td>The participants are capable of implementing the steps of Strategic HIA.</td>
<td>Strategic Health Impact Assessment Process Evaluation</td>
<td>Was <em>(step of Strategic HIA)</em> completed? Please note any observations and opinions about this step you would like to share.</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>The participants feel the Strategic HIA approach is relevant to their work.</td>
<td>Strategic Health Impact Assessment Workshop Evaluation Survey</td>
<td>How useful was this workshop in providing information relevant to your policy-related work?</td>
</tr>
<tr>
<td><strong>Acceptability</strong></td>
<td>The participants consider the steps of Strategic HIA appropriate for their role and capacity.</td>
<td>Strategic Health Impact Assessment Workshop Evaluation Survey</td>
<td>How would you rate the overall quality of the Strategic HIA approach as applied in the workshop?</td>
</tr>
<tr>
<td><strong>Readiness</strong> (Self-efficacy)</td>
<td>The participants feel confident in their ability to carry out Strategic HIA.</td>
<td>Strategic Health Impact Assessment Workshop Evaluation Survey</td>
<td>Based on what you learned/did in this workshop, how confident do you feel that you will be able to carry out Strategic HIA?</td>
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</table>
IV. RESULTS

The results from this study are presented in the form of two publication-ready manuscripts. The first manuscript, “A Strategic Health Impact Assessment Approach to Food-Related Policy Development: A Case Study in Tonga,” describes the Strategic HIA case study development process, the methodology applied, and the evaluation results with respect to its feasibility, applicability, and acceptability as well as the readiness of participants to implement Strategic HIA. The second manuscript, “Perception of Food Security from Households to Systems in Tonga,” describes two methods for identifying food security perceptions at the household and systems levels, describes the perceptions of food security based on the two methods, and compares the perceptions for congruence.

A. Manuscript I

The first manuscript, “A Strategic Health Impact Assessment Approach to Food-Related Policy Development: A Case Study in the Kingdom of Tonga,” addresses the primary and secondary aims of this thesis which were to pilot test the Strategic HIA approach to policy development and to assess its feasibility to, applicability to, acceptability to, and readiness of participants. This first manuscript describes the steps Strategic HIA approach and discusses the evaluation results of the Strategic HIA case study. While the outputs of the Strategic HIA case study are identified as part of the case study outcomes, the details of the contents of those outputs are not discussed. This study did not collect data on the impact of Strategic HIA (e.g., impact of the Strategic HIA approach on the actual actions of policy makers). The targeted journal for this manuscript is the WHO Bulletin because its readership is global and it has a specific section for policy and practice-based articles. Additionally, the WHO has advocated the HIA approach and
the *Bulletin* previously published a lessons learned paper in 2003 about a Health Impact Assessment applied in Slovenia.$^{2,53}$
A Strategic Health Impact Assessment Approach to Food-Related Policy Development: A Case Study in the Kingdom of Tonga

Abstract

Food-related policy development in lower-middle income Pacific islands often considers economic and developmental impacts; however, such policies may have long-term health impacts that outweigh anticipated immediate benefits. Health Impact Assessment (HIA) is a systematic approach that uses evidence for identifying the potential short- and long-term impacts of a policy on the health of a population. Although the benefits of HIA have been established in the literature, limitations have been identified. This paper presents the methods of applying an enhanced form of HIA called SHIA, which incorporates elements of strategic planning to address the common limitations of traditional HIA.

This case study assessed and supported the feasibility of the SHIA approach to the development of a food policy in the Kingdom of Tonga. However, this study revealed that some of the challenges of traditional HIA still persisted with SHIA. These persisting challenges included missing some important stakeholders during the recruitment process and lack of confidence on the part of participants about implementing the steps of Strategic HIA. Ways to refine the approach were identified including dedicating more time to participant recruitment and to training on the steps of SHIA. The experience in Tonga also revealed that in order to maximize the benefits of the SHIA approach, it is ideal to have a politically neutral coordinating organization with a firm understanding of the policy development process and contexts, a positive working relationship with a variety of stakeholders, and the resource and skill capacity
to coordinate the SHIA. Future application of SHIA will enable practitioners to further refine the HIA approach for health-cognizant policy development.

**Introduction**

Health Impact Assessment (HIA) is defined as “a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population and the distribution of those effects within the population.”¹ The need for HIA is based on the observation that in practice, “scientific evidence cannot substitute decisions made for political reasons” in national policy-making.² This situation engenders the need for policy makers to be aware of potential long-term positive and negative health impacts which may outweigh the anticipated economic, developmental, or political impacts of a policy. While the benefits of HIA have been established in the literature, many common limitations or challenges of HIA have been identified including: 1) lack of clarity about the steps and purpose of HIA among participants; 2) conflicting agendas of policy-makers; 3) incomplete application of the key steps of HIA; 4) lack of involvement by key policy makers; 5) recommendations of HIA not considered or considered irrelevant by decision-makers; and 6) lack of evidence to support health impact claims.³⁻⁵

Strategic HIA is an enhanced form of HIA which incorporates aspects of strategic planning into the HIA approach to policy development to mitigate some of the commonly identified challenges of traditional HIA (Box 1). This paper will describe Strategic HIA, its implementation, and its evaluation through a case study. This paper does not discuss the specific outcome results or impact of Strategic HIA, but rather it discusses the implementation of strategic HIA and the evaluation of the process. First, the steps of Strategic HIA are described
and followed by the description of a conceptual framework for the case study. Next, the rationale for applying Strategic HIA to a food-related policy, and the rationale for having Tonga as the setting for this case study are presented. Finally, the methodology, results, and discussion of the Strategic HIA case study are described.

**Steps of Strategic Health Impact Assessment**

The major steps of Strategic HIA are the same as those used in traditional HIA, which include: screening, scoping, appraisal, reporting, and monitoring and evaluation. However, Strategic HIA incorporates elements of strategic planning, which aim to address common limitations of HIA. These strategic enhancements include coordination by a politically neutral party, establishment of a vision and mission to guide the Strategic HIA, assessment of the policy context (i.e., internal and external environmental assessment of the situation around the policy), and dissemination of Strategic HIA outputs to stakeholders (Box 1). In this section, the steps of Strategic HIA are described and the ways by which it enhances traditional HIA are highlighted.

**Screening.** In the screening step, participants determine whether a policy should undergo HIA, and identify the resource capacity available to undertake HIA.\(^6\) The ways by which Strategic HIA enhances the screening step include having a politically neutral party (i.e., an individual or group who is not a representative of the department, unit, or organization that authored the policy) coordinate the Strategic HIA, and using a snowballing technique to identify a variety of systems-level stakeholders (e.g., senior-level Ministry or organization representatives). These enhancements address some of the commonly identified challenges such as conflicting agendas of policy makers and lack of involvement of policy stakeholders. HIA is enhanced by having a mediator that is invested in the policy development process, and by
expanding the recruitment process to include suggestions of participants from more than one organization across government and non-government sectors.

_A Screening Tool_ may be used during the screening step to help guide participants through policy selection. The screening tool is a checklist of questions used by HIA participants to determine appropriateness based on timeliness of, relevancy of, stakeholder support for, supporting evidence for, and supporting capacity for, the policy. Specifically, the tool asks participants to identify whether:

- the Strategic HIA can be conducted within the decision-making timeframe; (i.e., whether the Strategic HIA can be conducted in a timeframe that allows decision makers to consider recommendations prior to finalizing or ratifying the proposed policy;
- there exists potential health impacts of the proposed policy;
- there is awareness and/or concern about the policy’s topic among the public and policy makers;
- there is evidence to inform the Strategic HIA appraisal of the potential health impacts of the policy; and
- there are sufficient resources to carry out the Strategic HIA.7

_Scoping_. The second step of Strategic HIA and HIA is scoping. The scoping step helps participants decide what impacts, linkages, and gaps should be appraised and how they will be appraised.6 An enhancement of the scoping step in the Strategic HIA approach is the establishment of a guiding vision and mission for the policy development process. This component serves to reduce the risk of conflicting agendas among policy-makers that might otherwise limit the effectiveness of HIA. Secondly, Strategic HIA includes clear identification and definition of the Strategic HIA steps prior to implementation of the steps. This helps to
ensure that they know and understand the purpose of each step, and aims to reduce the challenge regarding the lack of clarity about the steps and purpose of HIA. A third enhancement included in Strategic HIA is having participants define the socio-cultural, environmental, political, and economic contexts impacting the policy. This addition helps to ensure that the participants, who are from diverse sectors, are aware of the broader policy-making context. This enhancement intended to increase the likelihood that the potential impacts and recommendations identified by the stakeholders are relevant to policy- and decision-maker interests. A fourth enhancement of the scoping step is concretely designating responsibility for, and timeline for, the scoping and subsequent steps within an agreed upon timeline.

A Scoping Tool may be used to help participants: a) identify the potential health impacts related to the proposed policy; b) identify relationships of the policy with any existing policies, regulations, or mandates; c) identify level of public and political interest; d) identify populations potentially affected by the policy and the ways they may be affected; and e) establish an appraisal plan driven by evidence.

Appraisal. In the appraisal step, evidence is sought to define the linkages between the policy components and health outcomes for the potential health impacts identified. Specifically, magnitudes and directions of the impacts are defined and information gaps are further explored. The Strategic HIA enhancement of traditional HIA in the appraisal step is the use of the Logic Framework to guide this step. The Logic Framework is a graphical display of potential relationships among the policy components proximal impacts, intermediate outcomes, and health outcomes. Although the Logic Framework is not a mandatory component of HIA, nor a novel component of Strategic HIA, development of a Logic Framework is included as an essential component of the Strategic HIA appraisal step. Using the Logic Framework participants identify
which linkages already have supporting evidence and which do not. The *Logic Framework* guides the collection of evidence (e.g., publicly available databases, published literature) to define the direction and magnitude of the relationships between policy components and health impacts based on identified evidence.\textsuperscript{2,9} The completed *Logic Framework* is a product of Strategic HIA/HIA and graphically summarizes findings of the health impacts.\textsuperscript{10}

*Recommendations and Reporting.* A set of recommended modifications for the policy is drafted in the recommendations and reporting step. A report of the outcomes of the Strategic HIA is developed and used as a communication tool to share recommendations with policy-makers.\textsuperscript{6} Although communication of recommendations is an assumed part of this step in traditional HIA, it is often not completed or the recommendations are not considered by decision-makers.\textsuperscript{6} Therefore, Strategic HIA includes an enhancement that emphasizes the need to develop a report with recommendations as well as a plan for communication of those recommendations through meetings and discussions with stakeholders.

*Monitoring and Evaluation.* The fifth and final step of Strategic HIA and HIA is Monitoring and Evaluation. The aim of this step is to develop a plan to evaluate whether the Strategic HIA impacted the policy- and decision-making process and to monitor the extent to which recommendations are implemented.\textsuperscript{6} The enhanced monitoring and evaluation step of Strategic HIA includes a process evaluation. Understanding whether the Strategic HIA steps are feasible and acceptable to policy-makers and applicable to their work will help identify whether this policy development approach is likely to impact participant policy making behavior in the future.\textsuperscript{3,4} An enhancement of the monitoring and evaluation step is establishing a monitoring and evaluation “plan of action,” which includes identification of a monitoring agency to increase the likelihood that policy-related progress is monitored.
Logic Model

The logic model for this case study is depicted in Figure 1. The activities of this case study were designed to plan for, and implement the steps of Strategic HIA. The outputs of the case study are the results produced from each step of the Strategic HIA such as selection of a policy and evaluation of the steps. The major outcomes of the study were: 1) understanding the feasibility, applicability, and acceptability of the Strategic HIA approach to policy makers and 2) participants developing the skills and feeling ready to implement the Strategic HIA approach. It was assumed that the workshop approach was appropriate for participants, and that the evaluation tools would accurately measure the experience of the Strategic HIA approach. The environmental influences affecting the development and implementation of this case study included the social culture, the political culture (e.g., systems culture), and the resources and capacity of the various parties involved.
Figure 1. Logic Model for Strategic Health Impact Assessment Case Study Methodology
Rationale for Application of Strategic Health Impact Assessment to Food-Related Policy

According to the HIA literature, traditional HIA has been applied in various sectors such as housing, transportation, and land-use; however it has rarely been applied in food or agriculture.\textsuperscript{2} HIA has been applied at various levels of policy-making ranging from the community level to cross-national level; however, it has been less frequently applied at the national level.\textsuperscript{2} HIA has occurred largely in developed countries with only 6\% of HIAs worldwide applied in developing nations.\textsuperscript{3} For these reasons, application of Strategic HIA to food-related policy at a national level in a developing nation is warranted.

Rationale for Tonga as a Setting for Strategic HIA Case Study

Tonga is a Polynesian island nation located in the South Pacific. The small sizes of Tonga’s population and government allow for active engagement by policy-makers; therefore, it is an ideal setting for a Strategic HIA case study.\textsuperscript{3} The food security-related challenges in Tonga are similar to the challenges faced in other Pacific Island countries and territories (PICTs).\textsuperscript{11} Beginning in the 20\textsuperscript{th} century, the Kingdom of Tonga experienced a pronounced shift in leading causes of death. Deaths attributable to non-communicable diseases (NCDs) were less than 6\% in 1950 and are estimated to be as high as 74\% in 2008.\textsuperscript{12} Various social, economic, environmental, and political factors have contributed to this shift.\textsuperscript{13} The burgeoning rate of NCD-related risk factors such as obesity and low rate of fruit and vegetable consumption, merits the application of policy-centered approaches to addressing food environment-related challenges. According to Hughes and Lawrence (2005), “improving dietary…habits is a societal problem. It requires a population-based, multi-sectoral and culturally relevant approach.”\textsuperscript{14} Implementing the Strategic HIA approach in Tonga allows for the opportunity to test the feasibility of this enhanced
approach to HIA and to engage policy makers of a developing nation in the implementation of a policy assessment approach that considers health impacts. It is anticipated that lessons learned from this case study could contribute to the HIA literature and as such, be useful to other countries planning to conduct HIA.

**Case Study Description and Methodology**

The steps of Strategic HIA are carried out through specific case study activities. The case study activity objectives are described in Box 2.

*Coordinating Organization and Strategic HIA Planning Procedure.* According to U.S. National Research Council, HIA has been and may be “conducted by a variety of agencies, organizations, or individuals” with varying degrees of experience with the approach. In order to reduce potential bias in carrying out the Strategic HIA process, the organization facilitating the Strategic HIA should not be a representative of the Ministry department or organization that authored the policy.

According to a review of HIAs by Davenport (2006), a noted barrier to HIA having an impact on the decision-making process includes “limited organizational one offs conducted by champions external to the decision making organization.” For such a reason, it was important to have an established organization coordinate the Strategic HIA so as to ensure that the Strategic HIA was not a one-time event, but rather a useful tailored policy development approach.

The Tonga Health Promotion Foundation (TongaHealth) was the facilitating organization of this Strategic HIA case study. TongaHealth is a quasi-governmental organization that was established through government legislation to “promote health and reduce harm from NCDs through activities such as advocating “for healthy public policy and healthy environments.”
TongaHealth is in a prime position to bring together various stakeholders and policy-makers to develop and assess food-related policies due to its quasi-governmental status and its leadership in NCD prevention. TongaHealth agreed to conduct Strategic HIA to determine if this enhanced HIA approach is feasible, applicable, and acceptable to policy-makers. The steps of Strategic HIA were carried out through a specific set of sequenced activities including: planning meetings, a workshop (with respective evaluation), and post-workshop meetings (with respective evaluations) (Box 2).

Planning Meetings. Through planning meetings, TongaHealth staff members, took steps to plan for the application of Strategic HIA. First, the staff was trained in the steps of traditional HIA and in understanding how and why the approach is enhanced through Strategic HIA (Box 1). Second, a Systems Food Security Interview (SFSI) tool was used to help identify potential participants and policies for undergoing Strategic HIA. A TongaHealth staff person carried out the SFSI with senior-level government, non-governmental representatives, and local business owners. (Results of the SFSI are discussed in a separate paper.) Third, TongaHealth staff identified the policy that would proceed through the next steps of Strategic HIA by using a Screening Tool. Fourth, the TongaHealth staff identified vision and mission statements for the Strategic HIA to help guide the process. Fifth, as the coordinating organization, TongaHealth staff worked with the workshop facilitator to plan the logistics of the workshop.

It was determined that a minimum of four Ministries should be represented in the Strategic HIA process to promote multi-sectoral representation similar to that of the successful National NCD Subcommittees in Tonga. It was imperative that workshop participants be senior-level staff because they have more direct access to, and impact on, policy decisions. A total of 42 individuals from 22 different organizations were invited to participate in the
workshop. A total of 15 ministry departments, organizations, and businesses were represented by 17 participants at the Workshop. The coordinating team of three individuals included TongaHealth staff members and the external facilitator. The facilitator of the workshop was a bilingual (Tongan-English) volunteer and principal investigator of the study.

The screening tool that was slightly tailored for, and used in this case study, was developed by the New Zealand Ministry of Health. The Food Bill was selected as the policy to undergo the Strategic HIA process. The objective of the Food Bill was “to regulate the manufacture, sale, import and export of food, to guarantee food safety and fitness for human consumption, to promote fair trade practices in food and for related matters.” The Food Bill was identified as an appropriate piece of legislation for Strategic HIA because there was increasing stakeholder concern regarding the growing rates of diet-related challenges in Tonga. The Food Bill was legislation under the jurisdiction of the Ministry of Agriculture, Food, Forestry, and Fisheries, but involved collaboration among multiple government sectors and non-governmental organizations in its implementation. Additionally, the Food Bill was expected to pass through Parliament for deliberation in the near future. Therefore, it was anticipated that the Strategic HIA would inform recommendations that may help to ensure that the best possible bill is passed, and once passed, that implementation and enforcement would occur efficiently.

Workshop. The scoping, initial appraisal, and initial development of recommendations steps were conducted in a workshop format with the intent to maximize participant competency and to enhance feasibility. The facilitator began the workshop by presenting the aim, which was to collaboratively assess the health impacts of the Food Bill before it was to be reviewed by Parliament. The facilitator presented the pre-established guiding vision and mission of the Strategic HIA, which was based on the Pacific Island Ministers of Health “Healthy Islands
The participants were then asked to modify and agree to these statements which were used to guide the Strategic HIA.

The steps of Strategic HIA were introduced to Workshop participants as described in the previous “Steps of Strategic Health Impact Assessment” section and in Box 1. The facilitator described the screening steps involved in the Strategic HIA that resulted in the Strategic HIA policy selection that was conducted prior to the Workshop. Policy selection steps included: conducting the SFSI; reviewing the minutes and reports from recent national and regional food-related summits; and completing the Screening Tool. The facilitator introduced the selected policy (the Food Bill) and stated its objective.

Scoping Step. For the scoping step, the workshop participants were divided into three multi-sectoral small groups and assigned a different section of the Food Bill (Labeling & Standards; Import & Export; or Licensing & Administration). The participants were asked to complete the Scoping Tool, which the participants used to identify existing and required evidence to help appraise the Food Bill. The scoping tools used in this case study included a slightly modified version of questions developed by the New Zealand Ministry of Health. Participants discussed internal and external environmental contexts (e.g., socio-cultural, environmental, political, and economic) related to the Food Bill components. Each group also identified components or gaps of the policy that required discussion or clarification.

Appraisal Step. In the appraisal step, participants began to identify potential intermediate outcomes of policy components and establish recommendations for addressing gaps. Small groups began developing Logic Frameworks during the workshop. Each small group presented preliminary findings to the large group. Participants collectively decided that TongaHealth staff
would continue the appraisal process and advocate for the recommendations established through the Strategic HIA. The continuation of the appraisal process included the identification of additional secondary data as evidence to define the linkages (e.g., the link between food safety labeling requirements and change in consumer/retailer knowledge; the link between consumer/retailer knowledge and food handling behavior) and to determine their magnitudes and directions. This evidence, along with the components identified, discussed, and presented during the Workshop, was incorporated into the comprehensive final versions of the Logic Framework.

**Reporting and Recommendations Step.** Recommendations from the Strategic HIA were informed by general group discussions and agreed to by participants prior to the conclusion of the workshop. For the reporting step, TongaHealth staff drafted a report of the outcomes of the Strategic HIA process. This report was shared with participants and modifications and approval of final version were requested. The report included a list of workshop attendees, outcomes of small group presentations, subsequent appraisal, final Logic Frameworks, and a list of recommendations established by participants during the Strategic HIA Workshop. This case study also included the development and use of a fact sheet that highlighted the evidence outlined in the Logic Frameworks, was used as a tool to share the outcomes and recommendations with other stakeholders.

**Monitoring and Evaluation Step.** The workshop participants agreed that TongaHealth would monitor the progress of the recommendations established. The workshop participants completed evaluations assessing the feasibility, applicability, and acceptability of the Strategic HIA case study. TongaHealth developed an outline for a monitoring plan to determine the impact of the Strategic HIA process (i.e., extent to which recommendations were considered by policy
makers) on policy development. (The details of this plan are outside the scope of this paper and are not reported.)

Post-Workshop Process Evaluations

Measures and Analyses. According to Mindell and colleagues (2004), “process evaluation of HIA is important as a source of learning, as part of the drive towards quality improvement.” The evaluation of the Strategic HIA implementation process included a Strategic HIA Process Evaluation, a Workshop Evaluation Survey (WES), and a Strategic HIA Facilitator Evaluation. The workshop facilitator and the TongaHealth Strategic HIA coordinating staff completed the Strategic HIA Process Evaluation and the Strategic HIA Facilitator Evaluation after the final Strategic HIA report was drafted and distributed. All 17 workshop participants completed the WES within one week after the workshop (prior to receiving the workshop report).

The Strategic HIA Process Evaluation captures quantitative and qualitative data to evaluate the feasibility of implementing the steps of Strategic HIA. The Strategic HIA Process Evaluation was developed based on a literature review of studies measuring the processes of previously implemented HIAs. The Strategic HIA Process Evaluation included dichotomous items examining whether each major and minor step of Strategic HIA workshop was conducted to determine the feasibility of Strategic HIA (Box 3). These items are reported as frequencies (as to whether each respondent believed the step to have been completed). The steps conducted post-workshop such as appraisal, recommendations and reporting, and monitoring and evaluation were not formally measured by a survey item, but were considered completed if a report including the logic framework, recommendations, and monitoring and evaluation plan was
developed. Along with each quantitative measure respondents were given the option to provide equivalent comments that they considered valuable regarding each step of the Strategic HIA process. These qualitative data were not formally analyzed, but rather reported as anecdotal evidence.

The WES captured both quantitative and qualitative data to assess acceptability, applicability, and participant readiness to undertake the Strategic HIA approach in the future (Box 3). The WES was developed based on a literature review of other HIA process evaluations for the potential ease of comparison with the experiences of other HIAs.\textsuperscript{2,4,21} The applicability items sought to determine whether participants felt the Strategic HIA approach was relevant to their work. Acceptability items sought to determine whether participants considered the steps of Strategic HIA appropriate for their work role and capacity. The readiness items sought to determine whether participants felt confident in their ability to carry out Strategic HIA in the future. All quantitative WES response choices were based on a four-point scale and reported as frequencies. Qualitative data were collected as additional comments participants may have had. These data were not formally analyzed and reported as anecdotes.

The Strategic HIA Workshop Facilitator Evaluation included qualitative measures that aimed to document the activities applied in this study.\textsuperscript{24,25} Specific information collected in the Strategic HIA Facilitator Evaluation included qualitative details about the logistical details of the planning and implementation of the Strategic HIA steps. It should be noted that “most evidence that HIA is effective comes from anecdote and case history.”\textsuperscript{16} Therefore, the qualitative data collected through the Strategic HIA Workshop Facilitator Evaluation, provided detailed observations about the Strategic HIA process. These data were reported as anecdotal evidence to document the Strategic HIA process.
Results

The results section presents the Strategic HIA feasibility results according to the Strategic HIA Process Evaluation, participant perceptions of applicability, acceptability, and readiness according to the WES, and Strategic HIA implementation process details from the Strategic HIA Facilitator Evaluation.

*The Strategic Health Impact Assessment Process Evaluation.* To measure feasibility, the Strategic HIA Process Evaluation included questions to identify whether each step of Strategic HIA was implemented. The workshop facilitator and coordinators noted that all (100%) of Strategic HIA steps were implemented as part of this case study.

The screening step and the Strategic HIA step of identifying a vision and mission were carried out prior to the workshop. The coordinators noted that the screening step was “not difficult” because the Food Bill was “agreed to by most stakeholders as the most urgent policy to select.” Specifically, the political and social environments were identified as “ideal environments to push for the Food Bill to be passed by Parliament” according to a representative of the coordinating organization. The scoping step was fully implemented during the workshop. The appraisal, recommendations and reporting, and the monitoring and evaluation steps were all conducted after the workshop. The scoping and appraisal tools were completed by two of the three groups and 88.2% of participants rated the tools as “very helpful” or “extremely helpful.” One coordinator noted “perhaps the skills of participants to use and follow the tools needs [development] for future [implementation].”

*Workshop Evaluation Survey.* The Workshop Evaluation Survey (WES) included items that aimed to measure applicability and acceptability of the workshop experience to participants.
as well as their readiness to undertake Strategic HIA. The WES also asked participants about workshop logistical and process factors such as participation representation and tools (Box 4).

Over 94% of participants rated the workshop as either “very” or “extremely” applicable to their work. Approximately 94.1% of participants reported that the quality of the Strategic HIA Workshop was “good” or “excellent.” Likewise, 94.1% of participants rated the steps of the Strategic HIA Workshop for the identification of health impacts of the selected policy as “somewhat appropriate” or “very appropriate.”

Participants were asked to rate various process-related aspects of Strategic HIA. For example, 76.5% of participants felt that participants at the workshop were “very” or “extremely representative” of policy-making sectors. When asked to rate the extent of participant engagement, 88.2% felt that it was “good” or “excellent” while 94.1% of participants felt “extremely comfortable” or “very comfortable” expressing his or her opinions during the workshop. When asked about the helpfulness of workshop tools, 88.2% of participants reported feeling that the tools were “extremely” or “very helpful.” Of participants who responded, only 62.5% rated the availability of evidence to support the Strategic HIA process during the workshop as “good” or “excellent.”

In order to measure readiness, the WES asked participants to rate their confidence in understanding the steps of Strategic HIA and their ability to carry out the steps of Strategic HIA in the future. Approximately 94.1% of participants felt at least “somewhat confident” in their understanding of Strategic HIA. While over 82.3% of participants felt at least “somewhat confident” in their ability to implement Strategic HIA in the future, only 23.5% reported feeling “very confident.” When asked if (s)he planned to apply what (s)he learned/did in the Strategic
HIA Workshop to their future work, of the 16 participants who answered, over 76.5% responded affirmatively.

*Strategic Health Impact Assessment Facilitator Evaluation.* The Strategic HIA Facilitator Evaluation collected implementation-related information. The planning for the Strategic HIA process with the local coordinating organization required a cumulative time of four weeks. Planning steps included identifying participants, conducting SFSI, conducting the screening step, preparing the Strategic HIA workshop presentations and activities, and logistical preparation for the workshop. The coordinators and facilitator noted that the coordinating organization dedicated extensive human and fiscal resources to the Strategic HIA. The costs associated with planning and implementation were estimated to be about 1,300 USD. This amount includes stationery, catering, printing, and facilities rental; however, it did not include the cost of human resources which was an estimated total of 60 work hours. Sources of evidence identified for the appraisal of the Food Bill included existing Tongan legislation, Codex Alimentarius, previous health and food-related regional and national summit reports, and studies specific to the intermediate relationships between proximal outcomes and health impacts. The coordinating team noted that although a snowballing-like technique was used to ensure a representative and varied participant sample, two important stakeholders, Crown Law and Customs, were inadvertently omitted.

*Workshop Process Outcomes.* During the Strategic HIA Workshop, participants engaged in the following activities:

- described and discussed the Strategic HIA approach;
- applied Strategic HIA to the Food Bill;
- identified potential health impacts and/or gaps within the Food Bill;
• drafted a set of outputs based on the Strategic HIA; and
• evaluated the Strategic HIA Workshop.

The specific outputs produced during this Strategic HIA Workshop included a *Logic Framework*, a Strategic HIA Workshop Report (Appendix H), and a summary fact sheet with the process overview and final recommendations (Appendix I). Several gaps in the Food Bill were identified by participants and prompted discussion covering more than the potential health impacts. Although the scope of this paper does not include discussion about the outputs of the Strategic HIA, an example of such a gap included the lack of resource identification and designation for the regulatory policy components. The *Scoping Tool* was completed by two of three groups. However, all three groups developed a *Logic Framework* and presented the results of their discussions on identified potential health impacts and gaps. TongaHealth staff carried out the appraisal and reporting steps after the workshop. A set of recommendations based on discussions was compiled during the Workshop and included in the Strategic HIA report.

**Discussion**

There were several lessons learned from this case study that may help improve the Strategic HIA approach for future implementation. The Strategic HIA Process Evaluation reflected that all Strategic HIA steps were completed which supports the feasibility of the approach. Some workshop participants may have rated steps implemented before (e.g., screening) or after (e.g., appraisal) the workshop as more challenging or less acceptable than the steps completed during the workshop because only the coordinating team was tasked to complete those steps.
This case study revealed ways in which the strategic enhancements were able to help address the commonly identified challenges of HIA. There were specific components of Strategic HIA and the political environment that enabled implementation of Strategic HIA. A guide developed by the U.S. National Research Council identifies and describes types of HIA coordinators, but does not advise as to what specific characteristics a coordinator or a coordinating agency should have.\textsuperscript{15} In the current study, a component considered helpful to Strategic HIA included having a coordinating organization that has: a) a firm understanding of the policy development process and contexts, b) a positive working relationship with a variety of stakeholders (including policy makers), and c) the resource and skill capacity to coordinate the Strategic HIA. It is ideal for there to be a range of stakeholder support (including policy-maker support) for wanting to assess the policy proposed for undergoing Strategic HIA. Additionally, in agreement with the current HIA practice literature, the current study identified that the policy must also be timely (i.e., recommendations that result from Strategic HIA have the potential for consideration by policy makers before the policy decision is made).\textsuperscript{18}

This case study also demonstrated that some of the commonly identified limitations of HIA were addressed through the Strategic HIA enhancements. The coordination and facilitation of Strategic HIA by a politically neutral team and establishment of a vision and mission to guide the Strategic HIA helped to reduce the potential impact of conflicting agendas of policy makers. Additionally, the coordinating team was able to ensure that the steps of Strategic HIA were completed, that a report of recommendations was shared with policy-makers, and that a monitoring and evaluation plan was established. Designating a committee or organization to lead the Strategic HIA, particularly the completion of the appraisal, reporting, and evaluation and monitoring steps, resulted in an efficient and less burdensome experience for participants.
Based on the case study findings, having a coordinating organization lead the Strategic HIA promoted well-organized coordination of participant recruitment, logistical arrangement, and step implementation. The political environment of a policy undergoing Strategic HIA should ideally have particular characteristics in order to ensure the benefits of Strategic HIA. For example, the screening step was essential to ensuring the selection of a timely policy which had stakeholder support for assessment.

This case study revealed that some of the challenges of traditional HIA still persisted with Strategic HIA. These persisting challenges included missing some important stakeholders during the recruitment process and lack of confidence on the part of participants about implementing the steps of Strategic HIA. Ways to refine the Strategic HIA approach were identified and such ways include dedicating more time and effort to ensure comprehensive participant recruitment, and providing more extensive training on the steps of Strategic HIA prior to its application to a policy. Good coordination resulted in having a wide-variety of Ministries, departments, and organizations represented in the workshop. However, some sectors/organizations were still overlooked for participation. Therefore, it is recommended that a greater amount of time and resources be dedicated to the participant recruitment step.

The majority of participants understood the purpose of Strategic HIA. However, one of the participants expected Strategic HIA to be retrospective; that is, applied to a previously implemented policy to assess the actual outcome(s) and impact(s) of the policy. In order to ensure clarity about the purpose of Strategic HIA, a training workshop for general awareness and capacity building about the purpose, benefits, and steps of Strategic HIA would ideally be held prior to its full application. According to the results of the Strategic HIA Workshop Facilitator Evaluation, the coordinating staff also support having more time spent on Strategic HIA training
for policy makers and stakeholders. Specifically, the coordinating team suggested that the Strategic HIA training should emphasize the tools to ensure that participants “understand each tool and its applicability” to the Strategic HIA approach. Although the readiness item revealed that most participants felt only “somewhat confident” in their ability to apply Strategic HIA in the future, several participants noted that they would like to apply Strategic HIA to future work-related policy development. This too supports a need to provide more training and include all participants in carrying out every step of Strategic HIA.

Uncertainty about linkages in the causal chain (i.e., connections between proposed policy components to health impacts and outcomes) is an identified limitation of HIA and is a limitation of Strategic HIA as well. In order to strengthen the causal chains, a variety of evidence must be considered during the appraisal step. Establishing and applying a standard literature review methodology is a potential way to ensure that a variety of evidence is collected in an unbiased manner. Previous summit and subject matter-relevant meeting reports and notes also helped to identify potential health impacts.

*Limitations.* A limitation of case studies in general is low external validity (i.e., generalizability to other groups or settings). A method for increasing the external validity of the case study approach is to follow a set of guidelines to enable future implementation and assessment of the Strategic HIA; this will potentially allow for further assessment of the generalizability of the approach. Existing tools and guidelines may be found from the New Zealand Ministry of Health, the Centers for Disease Control and Prevention, and the U.S.-based Health Impact Partners. Another limitation of this case study was the use of evaluation tools that have not been formally validated. No established measures for measuring the feasibility,
acceptability, applicability, and readiness of HIA were found during the literature review for this paper.

Due to limited resources and capacities, the principal investigator of this study acted as the facilitator of the Strategic HIA workshop. Additionally, the principal investigator analyzed the data collected in this study. The involvement of the principal investigator to this extent may have introduced bias. To prevent potential bias during the workshop facilitation process, the principal investigator was not involved in the policy content discussion beyond explanation of the Strategic HIA steps. The data from this study was collected by members of the coordinating team (TongaHealth staff) and given to the principal investigator in a de-identified manner for analysis.

**Conclusion.** The aim of the Strategic HIA is to enhance traditional HIA by incorporating elements of strategic planning such as establishment of a guiding vision and mission, and assessment of the policy context to address commonly cited challenges of HIA. Strategic HIA addresses the challenges by including enhancements that specifically aim to clarify steps, increase involvement of policy makers, promote a shared agenda, communicate recommendations directly to decision makers, and ensure a comprehensive scope of evidence procurement. This case study supports the feasibility of applying Strategic HIA to a food-related policy at a national level in a small country. It also demonstrates the applicability and acceptability of Strategic HIA to national-level policy makers. This case study identified additional enhancements that would further strengthen the ability of Strategic HIA to address the challenges of traditional HIA. Future application of Strategic HIA will enable practitioners to further refine this approach.
References


17. Tonga Health Promotion Foundation. *Tonga Health Promotion Foundation: Promoting an active and healthy Tonga* (Information pamphlet). Nuku’alofa, Tonga: TongaHealth


Box 1. Traditional Health Impact Assessment and Strategic Health Impact Assessment\textsuperscript{3-5}

<table>
<thead>
<tr>
<th>Description of Steps of Traditional HIA</th>
<th>The Common Limitation of Traditional HIA addressed</th>
<th>Strategic HIA Enhancements of Traditional HIA</th>
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<tbody>
<tr>
<td><strong>Screening</strong></td>
<td></td>
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<tr>
<td>Identify a policy for which HIA is appropriate</td>
<td>Conflicting agendas of policy makers</td>
<td>Coordination of the Strategic HIA by a politically neutral party helps to ensure preparation for mediation of policy-makers who may have conflicting agendas if required; this party also helps to ensure a variety of applicable sectors are recruited for participation and are involved in the policy making process</td>
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<tr>
<td>Determine efficient &amp; effective use of resources for undertaking HIA</td>
<td>Lack of involvement by key policy makers</td>
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<td><strong>Scoping</strong></td>
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<tr>
<td>Identify potential links between the policy and health outcomes for appraisal</td>
<td>Conflicting agendas of policy makers</td>
<td>Establishment of a vision and mission for the Strategic HIA process helps to unify participating policy makers around the same agenda</td>
</tr>
<tr>
<td>Identify any gaps within the policy</td>
<td>Lack of clarity about the steps and purpose of HIA</td>
<td>Clear identification and definition of (Strategic) HIA steps helps to ensure that participants have a firm understanding of each step and its purpose</td>
</tr>
<tr>
<td>Determine how the Appraisal and the Recommendation &amp; Reporting steps will proceed</td>
<td>Lack of evidence to support health impact claims</td>
<td>Carrying out brief internal and external environmental assessments as part of Strategic HIA helps to ensure that the links between policy components and health outcomes identified are considered within the context of the political, economic, and social contexts to support impact claims</td>
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<td>Set the parameters for the Monitoring &amp; Evaluation step</td>
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<td>Appraisal</td>
<td>Assessment of the health impacts (including magnitude and direction) using available evidence or gathered data</td>
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<td></td>
<td>Identify any information gaps and unsupported impacts that need to be further explored</td>
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<td></td>
<td>Incomplete application of key steps of HIA</td>
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<td>Lack of evidence to support health impact claims</td>
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<td>Designation of responsibility for carrying out the remaining steps helps to ensure that they are completed</td>
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<td></td>
<td>Use of a logic framework to guide the appraisal process helps to ensure that evidence is sought for the identified linkages</td>
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<thead>
<tr>
<th>Recommendations &amp; Reporting</th>
<th>Identify recommendations to enhance the positive impacts &amp; mitigate the negative impacts of the proposed policy</th>
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<tbody>
<tr>
<td></td>
<td>Recommendations of HIA disregarded or considered irrelevant by decision –makers</td>
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<td></td>
<td>Sharing the draft Strategic HIA report with participants on an individual basis and creating an opportunity for dialogue helps to ensure that the final recommendations are reflective of the Strategic HIA process and communicated to decision makers</td>
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</table>

<table>
<thead>
<tr>
<th>Monitoring &amp; Evaluation</th>
<th>Establish a plan to monitor the actual impacts of the recommendations for the policy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Incomplete application of key steps of HIA; M&amp;E being the least commonly completed step</td>
</tr>
<tr>
<td></td>
<td>Inclusion of a process evaluation helps to identify whether steps of (Strategic) HIA were implemented as intended</td>
</tr>
<tr>
<td></td>
<td>Establishing an M&amp;E plan helps to strengthen the opportunity to fully carry out all steps of (Strategic) HIA and to evaluate the outcome(s) of the (Strategic) HIA</td>
</tr>
</tbody>
</table>
Box 2. Steps and activity objectives for conducting Strategic Health Impact Assessment

<table>
<thead>
<tr>
<th>Step of Strategic Health Impact Assessment</th>
<th>Case Study Activity Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Screening</strong></td>
<td></td>
</tr>
<tr>
<td><em>Planning Meetings</em></td>
<td>1. To train the staff of the organization leading the Strategic HIA in the steps</td>
</tr>
<tr>
<td></td>
<td>2. To conduct the SFSI to identify workshop participants and a policy to undergo Strategic HIA</td>
</tr>
<tr>
<td></td>
<td>3. To apply the Screening Tool to identified policy</td>
</tr>
<tr>
<td></td>
<td>4. To determine a mission, vision and goals of the Strategic HIA</td>
</tr>
<tr>
<td></td>
<td>5. To plan the logistics of the Strategic HIA Workshop</td>
</tr>
<tr>
<td><strong>Scoping</strong></td>
<td><em>Workshop</em></td>
</tr>
<tr>
<td></td>
<td>1. To define the steps of Strategic HIA for the workshop participants</td>
</tr>
<tr>
<td></td>
<td>2. To share the vision and mission of the Strategic HIA for the workshop participants</td>
</tr>
<tr>
<td></td>
<td>3. To explain the screening step and method of policy selection</td>
</tr>
<tr>
<td></td>
<td>4. To define capacity &amp; plan for appraisal process</td>
</tr>
<tr>
<td></td>
<td>5. To complete a <em>scoping tool</em>, identify potential health effects to consider</td>
</tr>
<tr>
<td></td>
<td>6. To define the socio-cultural, environmental, economic, and political contexts impacting the selected policy</td>
</tr>
<tr>
<td></td>
<td>7. To begin to draft a <em>Logic Framework</em> to identify potential linkages between the policy &amp; health outcomes</td>
</tr>
<tr>
<td><strong>Appraisal</strong></td>
<td><em>Workshop &amp; Post-Workshop Meetings</em></td>
</tr>
<tr>
<td></td>
<td>1. To identify available and needed evidence to support or reject the identified potential health impacts</td>
</tr>
<tr>
<td></td>
<td>2. To conduct a literature search to identify evidence to support or challenge the identified potential health impacts</td>
</tr>
<tr>
<td></td>
<td>3. To include direction and magnitude of potential impacts to the <em>Logic Framework</em></td>
</tr>
<tr>
<td><strong>Recommendations &amp; Reporting</strong></td>
<td><em>Workshop &amp; Post-Workshop Meetings</em></td>
</tr>
<tr>
<td></td>
<td>1. To identify recommendations based on appraisal</td>
</tr>
<tr>
<td></td>
<td>2. To plan for reporting and communication of Strategic HIA report</td>
</tr>
<tr>
<td></td>
<td>1. To establish a plan for monitoring and evaluation</td>
</tr>
<tr>
<td></td>
<td>2. To complete the <em>Strategic HIA Process Evaluation</em> (Coordinating Organization &amp; Facilitator)</td>
</tr>
<tr>
<td></td>
<td>3. To complete the <em>Workshop Evaluation Survey</em> (Workshop Participants)</td>
</tr>
<tr>
<td></td>
<td>4. To complete the <em>Strategic HIA Facilitator Evaluation</em> (Coordinating Organization &amp; Facilitator)</td>
</tr>
<tr>
<td></td>
<td>5. To analyze and report the <em>Strategic HIA Process Evaluation, Workshop Evaluation Survey &amp; Strategic HIA Facilitator Evaluation</em> data</td>
</tr>
</tbody>
</table>
### Box 3. Strategic Health Impact Assessment Strategic Health Impact Assessment Process

**Evaluation and Workshop Evaluation Survey (WES)**

<table>
<thead>
<tr>
<th>Construct</th>
<th>Sample Question</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Feasibility</strong></td>
<td>Was (step of Strategic HIA) completed? Please note any observations and opinions about this step you would like to share.</td>
<td>The participants are capable of implementing the steps of Strategic HIA.</td>
</tr>
<tr>
<td><strong>Applicability</strong></td>
<td>How useful was this workshop in providing information relevant to your policy-related work?</td>
<td>The participants feel the Strategic HIA approach is relevant to their work.</td>
</tr>
<tr>
<td><strong>Acceptability</strong></td>
<td>How would you rate the overall quality of the Strategic HIA approach as applied in the workshop?</td>
<td>The participants consider the steps of Strategic HIA appropriate for their role and capacity.</td>
</tr>
<tr>
<td><strong>Readiness</strong> (Self-efficacy)</td>
<td>Based on what you learned/did in this workshop, how confident do you feel that you will be able to carry out Strategic HIA?</td>
<td>The participants feel confident in their ability to carry out Strategic HIA.</td>
</tr>
</tbody>
</table>
### Box 4. Strategic Health Impact Assessment (HIA) Workshop Evaluation Survey (also known as National Health Impact Assessment Workshop Evaluation)

<table>
<thead>
<tr>
<th>Question</th>
<th>Response, (N) (%)</th>
<th>Example Range of Responses for Qualitative Items</th>
</tr>
</thead>
</table>
| How would you rate the overall quality of the National Health Impact Assessment Workshop? | Excellent: 6 (35.3)  
                      Good: 10 (58.8)  
                      Fair: 1 (5.9)  
                      Poor: 0 (0)  
                      | N/A                                                                                     |
| How would you rate the extent to which the steps of the National Health Impact workshop were appropriate for the identification of health impacts of the selected policy? | Very appropriate: 8 (47.1)  
                      Somewhat appropriate: 8 (47.1)  
                      Slightly appropriate: 1 (5.9)  
                      Not at all appropriate: 0 (0)  
                      | Positive:  
                      “Evoked good discussions which led to some good recommendations.”  
                      Constructive:  
                      “Needed a bit more time to understand and apply the steps.”  
                      |}
| How useful was this workshop in providing information relevant to your policy-related work? | Extremely useful: 10 (58.8)  
                      Useful: 6 (35.3)  
                      Somewhat useful: 1 (5.9)  
                      Not at all useful: 0 (0)  
                      | Positive:  
                      “The information/work during the workshop will assist in achieving our organization’s objectives regarding protecting/ensuring the rights (safety of consumers).”  
                      Constructive:  
                      “Would be better if [included] previous policy impact experiences.”  
                      |}
| How representative of the various policy-making sectors were the participants of the National Health Impact Workshop? | Extremely representative: 1 (5.9)  
                      Very representative: 12 (70.6)  
                      Somewhat representative: 4 (23.5)  
                      Not at all representative: 0 (0)  
                      | N/A                                                                                     |
| How would you rate the overall extent of participant engagement in the steps of the National Health Impact Workshop? | Excellent: 6 (35.3)  
                      Good: 9 (52.9)  
                      Fair: 2 (11.8)  
                      Poor: 0 (0)  
                      | Positive:  
                      “[In groups], participants were fully engaged.”  
                      Constructive:  
                      “Engagement by participants was good though other ministries should have attended such as customs who directly deal with border control issues.”  
                      |}
| How comfortable did you feel expressing your views, opinions, and ideas during the National Health Impact Workshop? | Extremely comfortable: 7 (41.2)  
                      Very comfortable: 9 (52.9)  
                      Somewhat comfortable: 1 (5.9)  
                      Not at all comfortable: 0 (0)  
                      | Positive:  
                      “We listened to each other and seemed to understand.”  
                      Constructive:  
                      None  
<pre><code>                  |
</code></pre>
<table>
<thead>
<tr>
<th>Question</th>
<th>Rating</th>
<th>Positive</th>
<th>Constructive</th>
</tr>
</thead>
<tbody>
<tr>
<td>How would you rate the helpfulness of the tools used in the National Health Impact Workshop?</td>
<td>Extremely helpful: 4 (23.5) Very helpful: 11 (64.7) Somewhat helpful: 2 (11.8) Not at all helpful: 0 (0)</td>
<td>“The tools identified and used in this workshop were easy to follow.”</td>
<td>“…if an expert in food was also available as a resource person this will also be a [resource]/tool to further strengthen our assessment.”</td>
</tr>
<tr>
<td>How would you rate the overall availability of evidence for the National Health Impact Workshop?</td>
<td>Excellent: 3 (17.6) Good: 7 (41.2) Fair: 5 (29.4) Poor: 1 (5.9) Missing Data: 1 (5.9)</td>
<td>“Background information for exercises was available.”</td>
<td>“There could [have been] more evidence available. “Anecdotal evidence from other implemented food policies should have been available.”</td>
</tr>
<tr>
<td>Based on what you learned/did in this workshop, how confident do you feel you understand Strategic HIA?</td>
<td>Very Confident: 6 (35.3) Somewhat confident: 10 (58.8) A little confident: 1 (5.9) Not at all confident: 0 (0)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Based on what you learned/did in this workshop, how confident do you feel that you will be able to carry out Strategic HIA?</td>
<td>Very confident: 4 (23.5) Somewhat confident: 10 (58.8) A little confident: 3 (17.6) Not at all confident: 0 (0)</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Do you plan to apply what you learned/did in this workshop to your future work? (% Yes)</td>
<td>Yes: 13 (76.5) No: 1 (5.9) Maybe*: 2 (11.8) Missing: 1 (5.9)</td>
<td>“The steps used in HIA are all very useful...because health is important to the nation and to us all. Policy makers should follow the steps in order to produce a good policy, whether it is a national policy or a work place policy.”</td>
<td>“[The] aspects involving labeling issues and food testing is important...”</td>
</tr>
</tbody>
</table>

Notes: Statistical significance comparisons were not appropriate for these questions because cell values were too small.
*The “maybe” response was not an answer choice, however, two respondents wrote in “maybe” or “depends.”
B. Manuscript II

The original peripheral aims of this thesis were to conduct the Household Food Security Survey (HFSS) and the Systems Food Security Interview (SFSI) and make the results available to inform the Strategic HIA case study. The SFSI results were used to inform the Strategic HIA case study, but the Strategic HIA case study was conducted prior to the completion of the HFSS. Therefore, the HFSS data served a different purpose than originally proposed.

The perceptions of policy makers about an issue impacts the policies they develop. Therefore, it is important to understand whether the perceptions of policy makers are congruent with the experience of populations impacted by the issue. For example, if a food-related policy does not meet community-level food security needs or impact the food environment, then the positive impacts of that policy would be limited. The results of the HFSS provide insight into the status of household food security and may inform future food security-related work in Tonga and possibly elsewhere in the Pacific. The results of the SFSI provide insight into the perceptions of food security at the systems (i.e., policy-making) level. The HFSS and SFSI data were analyzed and used to develop this “Perception of Food Security from Households to Systems in Tonga,” manuscript. This manuscript addresses the peripheral aims of this thesis study. The aim of this particular manuscript was to determine if and how perceptions about the status of food security at the policy-making level are or are not congruous to perceptions at the household level. The journal targeted for this manuscript is the Pacific Health Dialogue. This journal is a PICT-centered public health journal that publishes articles related to a specific health theme each quarter.
Perception of Food Security from Households to Systems in the Kingdom of Tonga

Abstract

Small Pacific island nations face complex food security challenges due to a variety of factors such as climate change, limited resources, globalization, and trade obligations. According to the literature, addressing food security challenges requires interventions ranging from the individual- to the policy-level in order to impact food-related behaviors and the food environment. Therefore, it is important to determine whether policy-level interventions are positively impacting food security. This study aimed to determine whether the perceptions and the interventions applied at the systems (i.e., policy-making) level are congruent with the food security-related perceptions and needs at the household-level in the Kingdom of Tonga.

Two methods for examining food security perceptions were applied; a survey at the household-level and an interview at the systems-level with policy makers. The Household Food Security Survey indicated that households experience challenges with utilization, availability, access, and stability. The Systems Food Security Interview indicated that policy-makers’ perceptions of food security challenges include lack of coordination and cooperation among policy-makers; need for nutritional awareness; a food environment with limited nutritional quality; and lack of standards, regulations, and enforcement.

Several points of congruence related to food utilization, availability and access were identified between household and systems perceptions about food security. There was observed misalignment between the perceptions of the impact of food instability at the household- and systems-levels. The results of this study support the notion that interventions should ideally
target all dimensions of food security (utilization, availability, access, and stability) through individual and population (e.g., policy) approaches.

**Introduction**

Food security is defined by the Food and Agriculture Organization (FAO) as “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” Food security issues facing Pacific island countries and territories (PICTs) are complex because the dimensions of food security, which include availability, access, utilization, and stability, are often affected by physical, social, political, and environmental factors such as climate change, limited resources, globalization, and trade agreement obligations. These factors have unique impacts on PICTs. For example, climate change causes shifts in patterns of rainfall which cause drought, excessive rain, and change in sea level. Likewise, the geography of PICTs increases their vulnerability to natural disasters. These circumstances subsequently produce challenges to planting and harvesting food. When any dimension of food security is impaired, food consumption patterns are impacted, and subsequently, nutrition and health can be negatively affected.

For smaller island nations, globalization has led to challenges of the food environment such as increased availability of processed foods high in saturated fat, sugar, and sodium, thereby contributing to unhealthy diets, which has been linked to the development of noncommunicable diseases (NCDs). Such diseases become a burden on individuals, and subsequently, on health care systems. For example, in Tonga, 19.6% of the inpatient public expenditure was spent treating NCDs.

According to the literature, food utilization is impacted by more than preference and knowledge of nutrition. Food utilization is directly related to food availability and access.
Therefore, interventions affecting food security need to exist at various levels ranging from individual- to policy-level in order to impact individual-level food-related behaviors (e.g., purchasing and consumption), the food environment (e.g., availability of foods), and access to healthy foods such as micro-nutrient-rich foods.\textsuperscript{2,8} For example, currently in Tonga, government and non-governmental organizations (NGOs) work at multiple levels to address food security ranging from increasing food-related knowledge and skills to developing food-related policy that impacts food utilization and subsequently diet-related NCDs.

According to the FAO, achieving food security requires systems-level policies that are complemented by community-level food security action.\textsuperscript{9} Therefore, it is important to determine whether the perceptions and interventions applied at the systems (or policy-making) level are congruent with the food security experience and need at the household-level in order to ensure that interventions are positively impacting food security.\textsuperscript{10} Since Tonga has a comparatively average population and fiscal sizes among PICTs and is a PICT affected by, and actively attempting to address NCDs through multi-sectoral diet-related policy development, it is an appropriate Pacific island for examining food security.\textsuperscript{3,11}

This descriptive study applies two major methods to identify how perceptions about the status of food security at the policy-making level are or are not congruous to perceptions at the household level. The objectives of this paper are to: 1) describe two methods for examining food security, one for household-level and one for systems-level; 2) describe the results from application of these two methods; and 3) discuss perspectives of food security at the policy-making level and the food security-related needs at the household-level in Tonga based on the results of two methods applied in this study.
Conceptual Framework

The food system is comprised of multiple sectors ranging from agriculture to transport. The work of each sector impacts the state of the food environment, which is often measured and defined by how nutritious, safe, and sufficient it is. Policies developed at a systems level can determine the expected handling of food to ensure its safety for consumers, the extent to which a variety of foods of varying nutritional quality are available, and the amounts of food that should be available to be considered sufficient. The food system impacts the dimensions of food security which include: “availability (sufficient affordable quantities, appropriate quality), access (adequate resources for acquiring appropriate foods for a nutritious diet), stability (no risk of losing access to food as a consequence of events such as economic or climatic crisis), and utilization” (consumption patterns) through food-related programs and policies as well. The food environment impacts household food security because the state of the food environment affects the availability of food and may impact utilization behaviors.

A conceptual framework based on the socio-ecological model was developed to provide a model of how the factors that impact food security are inter-related and to identify constructs that could be measured to determine congruence, or lack thereof, between perceptions of food security at the household and systems levels (Figure 1).
Figure 1. Conceptual Framework of the Household Food Security Survey and the Systems Food Security Survey
The socio-ecological model focuses on the complex interactions that affect the individual. Utilization is the component of food security that is a result of the other aspects of food security (availability, accessibility, and stability) in combination with individual choice. This framework emphasizes the dynamics among food system components (e.g., political, economic, and social sectors of government) that make policy and their effect on the food environment and food security. It also depicts how food systems perceptions and work (as measured in this study by the SFSI) and community food security affects household and subsequently individual food utilization behavior (as measured in this study by the HFSS).

Methods

In order to determine if food-related perceptions are congruent between the individual- and the systems-levels, two methods were applied; representatives of households were surveyed and policy-makers were interviewed. Brief descriptions of constructs measured by the Household Food Security Survey (HFSS) and the Systems Food Security Survey (SFSI) are provided in Table 1. Based on the conceptual framework, the HFSS sought to define the perception of food security at the household level by gathering data about utilization, availability, access, and stability. Relatedly, the SFSI sought to define government and non-government representatives’ perceptions of the food environment and its challenges. The results of the HFSS and the SFSI were compared to determine whether there is congruence between household and systems perceptions of particular food security components and constructs.

Household Food Security Survey

The Household Food Security Survey (HFSS) is a cross-sectional descriptive questionnaire that was developed from a combination of existing measures and informed by themes in food security- and Tonga-related diet and food literature. In this study, the HFSS
aimed to describe household food security including perceptions of food availability, accessibility, utilization, and stability.

Participants

The HFSS participants were selected through sampling of representative households stratified by each of the 7 districts on the main island of Tongatapu, Tonga based on the 2006 government census data. The total number of households in Tonga was 17,529 with 68.5% living on Tongatapu. An a priori analysis showed adequate power for estimating a population proportion with a sample size of 100 respondents with the 95% confidence interval at +/- 9.8%. Based on the number of households in each district, a target number of households within each district was calculated based on a target sample size of 100 respondents; however, towns within districts were not systematically sampled. Using a publicly available satellite map, the research team divided the selected towns into sections based on the roads which formed a grid on the maps. These sections of selected towns were assigned numbers. The research team then used random number selection to identify the section from which to draw household participants. The research team assigned a number to each household within the selected section and used random number selection to identify the households for participation. If a house was unoccupied due to abandonment, migration, or no female representative was home, the research team selected the next home on the map.

Inclusion criteria were that participants were between 18-65 years of age, female, lived in the household for at least one year, and self-identified as knowledgeable about household food consumption and purchasing. Adult women were the target population of the HFSS because they are traditionally the food purchasers and meal preparers in Tonga. A total of 100 household representatives participated in the HFSS.
**Measures**

Utilization items included questions about food purchasing behaviors as well as food consumption behavior using a self-reported 24-hour respondent diet recall. The stability constructs were assessed by asking respondents how often throughout a year their household is affected by challenges related to food availability and access. The availability and access constructs were assessed by asking respondents about their household’s ability to obtain nutritious foods and the availability of such foods to them (Table 1).

**Procedure**

The HFSS is a questionnaire delivered via face-to-face interview. The HFSS interviewers were Tongan university students majoring in the health sciences. The principal investigator trained interviewers on how to deliver the questionnaire according to a standard protocol and these trainees observed an interview conducted by the principal investigator. The principal investigator then observed trainees conducting interviews at least twice and provided feedback to these before they conducted interviews independently.

All surveys were conducted in the Tongan language. The HFSS was not conducted on Mondays because Sunday meals are atypical and would likely skew the respondent 24-hour diet recall component of the HFSS. The HFSS was conducted between late August and early December (2011).

Once the interviewer explained the purpose of the HFSS, verbal informed consent was obtained before commencing the questionnaire. For categorical or dichotomous questions, index cards with answer choices were shown to the participant. For questions about diet recall, participants were asked to use their own hand for serving size estimations.
**Analysis**

The nutrition contents of diet recall were calculated using values obtained through publicly available international food databases from the Secretariat of the Pacific Community, United States Department of Agriculture, and the Food and Agriculture Organization.\(^{18-20}\) The calorie, saturated fat, sugar, and sodium contents of each food were identified using the databases and totals were calculated based on reported serving sizes.

The HFSS data was analyzed using *SPSS Statistics 19* (IBM, Inc.) quantitative data analysis software. The data analysis was controlled for income as well as residential status (i.e., urban versus rural). In order to control for residential status, the ‘district of residence’ data was transformed into either urban or rural. Two of the districts were considered urban while the 5 remaining districts were considered rural. T-test analyses were performed to compare means of consumption-related variables of imported versus local foods. Wald Chi-Square Tests were performed to determine the significance of individual covariates on various dichotomous (e.g., purchase of specific foods) and categorical (e.g., access and availability barriers) outcomes.

**Systems Food Security Interview**

The Systems Food Security Interview (SFSI) is a descriptive measure that was developed based upon themes from the food policy literature specific to developing nations.\(^{2,7,10,14,21-22}\) The SFSI captured data about perceptions of the current state of the food environment and about challenges with the food environment perceptions (Table 1).

**Participants**

The SFSI participants were senior-level representatives selected through initial suggestions of ministry, department, or organization representatives made by the Tonga Health Promotion Foundation (TongaHealth) staff. Participant selection continued through a subsequent
snowballing technique and recruitment stopped once representation and response saturation occurred. When non-ministry or non-governmental organization representatives were suggested, they were invited to participate in the SFSI if TongaHealth staff confirmed the person’s food-related work. Ten participants were indentified and participated in the SFSI. This group was comprised of at least one senior-level representative from at least five different Ministries and/or NGOs in order to ensure confidence in the common themes identified across sectors.

**Measures**

The SFSI was conducted through a face-to-face interview and aimed to capture quantitative and qualitative data about the perception of food security-related issues and current food-related work of government and non-government representatives. Specifically, participants were asked to describe the current food environment and to identify the main challenges of the food environment in Tonga. Additionally, they were asked to identify potential interventions to address the challenges. The SFSI also captured information about which ministries, departments, and/or organizations, respondents felt are responsible for ensuring a safe and healthy food environment in Tonga to potentially establish an understanding about perceptions of inter-sector responsibilities (Table 1).

**Procedure**

The SFSI was administered in a face-to-face interview format by two trained TongaHealth staff members using a standard interview protocol. The interviews took place in October of 2011 in a location of the participant’s designation. Interviewers explained the purpose of the SFSI and participants gave verbal consent prior to the commencement of the interview. Interviews were conducted in the participant’s language of choice (English or Tongan).
Analysis

Prior to data analysis, the TongaHealth staff person who was not involved in the analysis, collected and de-identified SFSI data. For qualitative measures, interview responses were transcribed as notes. Then, the principal investigator categorized comments made by respondents using an open coding technique. Likewise, a researcher unrelated to this study independently coded the interview responses. For the purposes of this study, codes were defined as a basic part of the raw data and themes were derived from code patterns. Any coding discrepancies were discussed between the coders and consensus was reached about the code; during this process, some codes were combined. The principal investigator used the codes to derive food security-related themes and reported them as frequencies.

Results

Household Food Security Survey (HFSS)

A total of 134 households were selected for participation in the HFSS, but 34 of these household were either unoccupied (e.g., due to family migration) or no female resident was home at the time. All 100 women approached agreed to participate in the HFSS. Approximately 56% of HFSS respondents were rural residents and 44% were urban residents. T-tests reveal that there was no statistical difference between rural and urban respondents in total income (including wages, loans, and remittances), t (89) = 1.607, p=0.58, in per capita income, t (89) = 0.282, p= 0.69, or in number of people living in the households, t (89) = 1.623, p= 0.62.

Utilization

Overall, the average respondent consumed 1934.8 calories, 34.8 grams of saturated fat, 52.5 grams of sugar, and 2868.7 milligrams of sodium, per day (Table 2). The results of t-test analyses of consumption data are displayed in Table 2. The majority of calories consumed were
from imported foods (59.1%). The foods most frequently reported in the one-time 24-hr diet recall were: tapioca (cassava), taro, chicken quarters, instant noodles, white bread, flour, vegetable cooking oil, onion, coconut milk, and table salt. Although not statistically significant, mean saturated fat intake from imported food was higher than that from local foods (54.8% and 45.2%, respectively). The majority of saturated fat grams from local foods came from mature coconut, while the majority of saturated fat grams from imported foods were from cooking oils. A significant amount of mean sodium intake was from imported sources such as table salt (88.9%). Although not statistically significant, imported foods were also the source of higher sugar intake with 57.2% of mean sugar intake attributable to imported food. Some HFSS items asked participants to rate the healthiness of different foods using a 5-point Likert scale ranging from “not healthy” to “very healthy” (Table 3).

Participants were asked to describe, on a 4-point scale how important (“not important,” “slightly important,” “important,” and “very important”) particular factors are to their consumption and/or purchasing of foods. Ninety percent of participants described nutritional value as “important” or “very important,” while 76% described cost, 54% described convenience, and 68% described preference (e.g. taste) as “important” or “very important.”

**Availability & Access**

Overall, 80% raised farm animals, 76% of respondents cultivated root crops, 40% had a household member who fished, and 31% cultivated vegetables. Chi-square analyses revealed that rural respondents were more likely than urban respondents to raise their own farm animals $\chi^2(1, \text{N}=100) = 6.859, p=0.01$, farm their own root crops $\chi^2(1, \text{N}=100) = 15.85, p<0.01$, and grow their own vegetables (including local vegetables such as pele (Hibiscus manihot)) $\chi^2(1, \text{N}=100) = 6.035, p=0.01$. Respondents were also asked to rate on a 5-point scale (“sometimes” being the
midpoint), the extent to which aspects of access and availability were challenging. Forty-eight percent of households reported having access challenges, while 28% reported having availability challenges at least “sometimes” in the past year.

**Stability**

After the interviewer defined the availability and access constructs as they pertain to food, respondents were asked to identify the frequency with which their households experience challenges with availability and access over a one-year time frame. These questions provide insight into household food stability. More than half (53%) of respondents reported experiencing food availability-related challenges at least an average of one to two times per month. Likewise, a majority of respondents (70%) reported experiencing food access-related challenges an average of one to two times per month. These proportions were averaged to obtain the extent to which households were affected by stability challenges (61.5%) (Table 4).

**Systems Food Security Interview**

All representatives recruited for the SFSI agreed to participate. The participant sample included senior-level representatives from government agencies (50%) such as the Ministry of Health (MOH), Ministry of Agriculture, Food, Forestry, & Fisheries (MAFFF), Ministry of Labour, Commerce & Industries (MLCI), Ministry of Education, Women’s Affairs, and Culture (MEWAC), the private sector (20%) such as private food business, and non-governmental organizations (30%).

In the descriptions of the current food environment, the major themes identified through coding included: affordability, awareness, coordination, importation, local, nutritional quality, regulation and standards, safety, and stability. In the descriptions of the challenges with the food
environment, the major themes identified included: access, availability, awareness, cooperation and effort, quality, and regulation and enforcement (Table 4).

Several SFSI participant responses described the current state of the food environment as “unhealthy” because imported processed foods are ubiquitous and available at low cost while many healthy foods are not. Participants who elaborated on their definitions of “unhealthy” included descriptions such as “micro-nutrient poor”, “processed”, and “high in fat, sugar, or salt (sodium).” The food environment was also described as “unsafe” by many participants due to lack of standards and regulations; the specific example cited was the availability and sale of unlabeled and expired foods. The participants also described the food environment as “unstable” with local food production as “satisfactory” in the short term, but susceptible to instability if encountered by inclement weather or natural disaster. It was noted that the food environment has a large number of convenience food outlets such as fast food restaurants and shops that provide less healthy food options. For example, one participant expressed concern saying, “Our children eat junk foods which are easily available to them.”

The SFSI asked participants to identify the current challenges of the food environment. Eighty percent of all respondents noted a lack of national food standards to protect the public from unsafe food and a need to regulate the food supply (e.g., to regulate what food is imported into and manufactured in Tonga) as a major challenge to the food environment. Many respondents noted that there is a lack of cooperation among government departments and communities with regard to food protection efforts. Challenges identified by participants at the community level include a lack of consumer awareness and impaired access to healthy foods “due to cost.”
Participants most frequently identified the MAFFF, MOH, and MLCI as the ministries, departments, or organizations that are responsible for ensuring a healthy and safe food environment in Tonga. MAFFF’s role was identified as being the authority on food-related matters particularly regarding food entry into the country, providing agricultural support, ensuring food safety, and establishing food standards. MOH’s role was identified as being the provider of healthy eating education, laboratory food testing services (although not currently available), and food and food premises safety inspection. MLCI’s role was identified as ensuring that food sold in-country is compliant with international food standards (e.g., Food and Agriculture Organization’s *Codex Alimentarius*), providing licensing to food businesses, establishing trade regulations that prevent the import or export of unhealthy foods, and establishing food taxes. Other organizations identified as responsible included the Department of Marine & Ports, MEWAC, Ministry of Lands, Survey, Natural Resources, and Environment, Tonga Health Promotion Foundation, and Crown Law.

Several ideas for interventions to address the challenges to the food environment were suggested during the SFSI. Proposed interventions centered on the theme of impacting consumer choice, which included: 1) raising awareness and increasing knowledge about the value of foods among the public; 2) improving communication between the government ministries and the community (e.g., improving government communication of standards and regulations to the community); and 3) increasing availability of, and access to, healthy food through policy and programming such as developing food standards and agricultural opportunities.

**Discussion**

Food security literature acknowledges that access to and availability of food, affects utilization; this is supported by the results of the HFSS. At the household-level, people spent
the majority of their food budget on imported foods and the majority of calories, saturated fat, sugar, and sodium consumed came from imported foods. These results are congruent with the observations of policy-making representatives who noted high availability of imported processed foods in the current food environment.

Respondents were evidently aware of the health value of nutritious foods such as fresh vegetables, fish, and fruit. However, in comparison, a large portion of respondents’ ratings of processed foods revealed a potential overestimation of the health value of those foods such as refined flour products and tin fish. This indicated a need to increase the knowledge of nutritional value of foods at the household level, which is consistent with the SFSI participants’ identification of need for increased awareness of the nutritional value of foods. The HFSS demonstrated that healthy eating awareness and education programs are important interventions to address household food security since people do consider nutritional value as an important factor impacting their utilization behavior.

Among factors impacting utilization behaviors, respondents of the HFSS identified cost as one of the most important determinants of food purchasing and consumption behavior. Similarly, policy-making representatives noted challenges associated with the high cost of healthy food. For example, they noted the demand for cheaper convenience foods over nutritious foods in their description of challenges of the food environment.

Policy-makers identified the current food environment as stable. However, the high consumption and purchase of imported foods implies high reliance on potentially volatile food sources (i.e., dependence on food sources outside the country’s control). Food access depends on having resources such as land, money, transportation, and other equipment needed for farming and fishing. The results of the HFSS revealed that having access to a food (for example through
home gardens or personal farming) is likely to reduce the purchase of that food. Therefore, access issues are not only a result of the cost of food, but of the ability to obtain food as well (e.g., skills to grow, catch, raise and fish for food). HFSS participants had uneven household access to foods of various food groups; specifically, more households had access to the body-building food group through raising animals and fishing (80% and 40% respectively) as well as to the energy food group through growing of root crops (76%), than they did to the protective food group through growing vegetables (31%) or fruit (62%).

Perceptions on stability were somewhat disparate between households and systems levels. While only one SFSI participant noted that stability of the food supply, particularly in relation to natural disaster, is an important issue to address to achieve a food-secure nation, 61.5% of household respondents identified having experience instability of access to or availability of nutritious food choices. There is great potential for natural disasters to impair food security because such a large portion of PICT households grow local foods such as root crops.

According to the results of the HFSS and SFSI, there was congruence between household food security needs and policy-maker perceptions in several areas. In order to enhance the alignment of food security interventions with community food security needs, policy-makers recommended expanded coordination and cooperation amongst themselves. Based on the findings of this case study, during the intervention planning phase the ministry, department, or organization should ideally involve stakeholders at both the target-population-level and at the partnership-level. For example, the planning of a knowledge and skill-building intervention may include representatives from the target population such as community members as well as partner organizations with varying expertise in various sectors such as nutrition and agriculture. The planning of a policy-level intervention may include the target population affected by the
policy as well as the organizations that may be involved in the implementation, enforcement or monitoring of the policy.

Although there is limited generalizability of the Tonga-specific food security-related data, the HFSS may be tailored for socio-cultural appropriateness if applied in other countries and cultures. The methods applied in, and the conclusions derived from this study may be implemented and beneficial to, other nations.

**Limitations**

The generalizability of household food security findings derived from the HFSS may be limited since respondents were representative of only the main island of Tongatapu and did not include respondents from outer islands or other island groups. However, presently, the food security profiles of residents from outer islands are expected to be similar to residents of the main island due to access to similar foods through increased transport of food-related goods.\(^{21,25}\) The HFSS results may be affected by potential selection bias since the research team may have overlooked properties that did not clearly appear on the satellite-generated map used for sample selection. Additionally, unoccupied homes were skipped and may contribute to selection bias since it is not known whether there was a difference between women who were at home, and those who were not home at the time of data collection. Another limitation of this study was that the HFSS did not account for seasonal differences since survey data were collected over five months (August through December, which represents only parts of the summer (humid), the wet, and cooler dry seasons. Some common food items that were not available seasonally during this time include lime and some types of yams.

There are limitations with using an open coding technique for qualitative data analysis including “failing to identify key categories.”\(^{24}\) This limitation may be abated through
application of a technique such as “peer debriefing,” or in this case of this study, discussion between coders. As such, the data analysis procedure in this study utilized two separate coders to attempt to increase validity of data interpretation. The small sample size for the SFSI may have limited the reliability of conclusions made from the results. However, the sample consisted of representatives from a diversity of organizations and similar responses emerged even with the small sample size.

Conclusion

Food security in the Pacific Islands is challenged by having limited resources to effectively address the issues affecting food availability, access, stability and utilization. Having food security intervention efforts that address such issues in resource-limited Pacific Islands such as Tonga is critical in order to efficiently utilize resources and effectively address community needs. In order to ensure that policy-level interventions effectively and sustainably meet household food security needs, multi-sectoral collaboration and multi-level interventions are required. The HFSS and SFSI results support the notion that interventions to address food security should ideally address all dimensions of food security. For example, while there are awareness programs aimed at impacting utilization, there needs to be policies to increase availability of nutritious foods, to help increase access to such foods, and to increase stability of such foods.

In this descriptive study, many ministries, departments, and organizations were identified as being responsible for ensuring a healthy and safe food environment. However, SFSI participants noted that there is a lack of cooperation and coordination among them. The results of the HFSS and SFSI indicated several commonalities between community-level and policy-level identification of issues and needs regarding food security, which likely require interventions at
multiple levels. Therefore, it is imperative that these ministries, departments, and organizations work together to address the challenges of the current food environment since each works with the community, and with one another, in unique ways.
Table 1. Description of food security-related constructs assessed through the Household Food Security Survey (HFSS) and the Systems Food Security Interview (SFSI)

<table>
<thead>
<tr>
<th>Survey</th>
<th>Construct</th>
<th>Definition</th>
<th>Sample Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>HFSS</td>
<td>Availability</td>
<td>Food supply readily obtainable for human consumption (i.e., physical supply present)</td>
<td>“Thinking about the last year, how often was lack of availability a problem for your household being able to obtain nutritious food?”</td>
</tr>
<tr>
<td></td>
<td>Accessibility</td>
<td>Food supply obtainable by an individual or household (i.e., ability to purchase or get for oneself or one’s family)</td>
<td>“I am going to read another list of foods. Please tell me if your household grows, catches, farms, or raises any of the following food items.”</td>
</tr>
<tr>
<td></td>
<td>Utilization</td>
<td>Food supply consumed or purchased by an individual or household</td>
<td>“Yesterday, did you eat an evening meal? [If yes.] Please tell me everything you ate for evening meal. Please also tell me how much of each food you ate.”</td>
</tr>
<tr>
<td></td>
<td>Stability</td>
<td>Security of availability, access, and utilization over time.</td>
<td>“Thinking about the last year, how many times was your household affected by not having nutritious food available for purchase or use?”</td>
</tr>
<tr>
<td>SFSI</td>
<td>Perception of Food Environment</td>
<td>Description of the Food Environment</td>
<td>“How would you describe the current state of the food environment of Tonga?”</td>
</tr>
<tr>
<td></td>
<td>Challenges in the Food Environment</td>
<td></td>
<td>“What do you see as the main challenges of the food environment of Tonga?”</td>
</tr>
</tbody>
</table>
Table 2. Household Food Security Survey Socio-demographic Characteristics and Results

<table>
<thead>
<tr>
<th>Utilization</th>
<th>Local Food</th>
<th>Imported Food</th>
<th>t-value</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$M (SD)$</td>
<td>$M (SD)$</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consumption</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calorie Intake, <em>calories</em></td>
<td>790.4 (479.8)</td>
<td>1144.4 (603.0)</td>
<td>-3.975</td>
<td>99</td>
<td>p&lt;0.01</td>
</tr>
<tr>
<td>Saturated Fat Intake, <em>grams</em></td>
<td>15.8 (19.8)</td>
<td>19.1 (13.3)</td>
<td>-1.262</td>
<td>99</td>
<td>p=0.21</td>
</tr>
<tr>
<td>Sugar Intake, <em>grams</em></td>
<td>22.5 (24.7)</td>
<td>30.1 (28.1)</td>
<td>-1.776</td>
<td>99</td>
<td>p=0.08</td>
</tr>
<tr>
<td>Sodium Intake, <em>milligrams</em></td>
<td>317.5 (633.7)</td>
<td>2551.2 (2322.9)</td>
<td>-9.382</td>
<td>99</td>
<td>p&lt;0.01</td>
</tr>
</tbody>
</table>

*Value in Tongan Pa‘anga (USD exchange: 0.5876); this value included remittances, gift, wages, and loans
**p< 0.05
Table 3. Summary of ‘Healthiness’ Rating of Various Food Items by Household Food Security Survey Participants

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Very Healthy or Healthy (%)</th>
<th>Fairly Healthy or Very Slightly Healthy (%)</th>
<th>Not Healthy (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>89</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>Banana or Plantain</td>
<td>97</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bread</td>
<td>41</td>
<td>51</td>
<td>8</td>
</tr>
<tr>
<td>Butter</td>
<td>22</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>Canned Corn Beef</td>
<td>20</td>
<td>48</td>
<td>32</td>
</tr>
<tr>
<td>Capsicum</td>
<td>93</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Carrot</td>
<td>99</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Chicken</td>
<td>15</td>
<td>47</td>
<td>38</td>
</tr>
<tr>
<td>Cracker</td>
<td>61</td>
<td>33</td>
<td>6</td>
</tr>
<tr>
<td>Coconut</td>
<td>86</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Egg</td>
<td>74</td>
<td>18</td>
<td>8</td>
</tr>
<tr>
<td>Fresh Fish</td>
<td>99</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Fried Cake</td>
<td>18</td>
<td>55</td>
<td>27</td>
</tr>
<tr>
<td>Fruit Juice</td>
<td>44</td>
<td>36</td>
<td>20</td>
</tr>
<tr>
<td>Hibiscus Manihot (Pele)</td>
<td>99</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Hot Dog</td>
<td>14</td>
<td>54</td>
<td>32</td>
</tr>
<tr>
<td>Instant Noodles</td>
<td>6</td>
<td>36</td>
<td>58</td>
</tr>
<tr>
<td>Lard</td>
<td>1</td>
<td>7</td>
<td>92</td>
</tr>
<tr>
<td>Mutton Flaps</td>
<td>24</td>
<td>40</td>
<td>36</td>
</tr>
<tr>
<td>Roasted Pig</td>
<td>34</td>
<td>36</td>
<td>30</td>
</tr>
<tr>
<td>Root Crops</td>
<td>84</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Soda</td>
<td>0</td>
<td>15</td>
<td>85</td>
</tr>
<tr>
<td>Tin Fish</td>
<td>35</td>
<td>50</td>
<td>15</td>
</tr>
<tr>
<td>Tomato</td>
<td>99</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Turkey Tails</td>
<td>4</td>
<td>29</td>
<td>67</td>
</tr>
</tbody>
</table>
Table 4. Summary of food security themes from Household Food Security Survey and Systems Food Security Interview

<table>
<thead>
<tr>
<th>Constructs/Themes of food security</th>
<th>Household-level (%)*</th>
<th>Systems-level (%)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>48.0</td>
<td>40.0</td>
</tr>
<tr>
<td>Availability</td>
<td>28.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Stability</td>
<td>61.5</td>
<td>10.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Additional themes related to food security</th>
<th>Systems-level (%)²</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coordination and cooperation among policy-makers</td>
<td>40.0</td>
</tr>
<tr>
<td>Nutritional quality</td>
<td>20.0</td>
</tr>
<tr>
<td>Safety, regulation and enforcement</td>
<td>80.0</td>
</tr>
<tr>
<td>Utilization awareness/education</td>
<td>30.0</td>
</tr>
</tbody>
</table>

*This value is a percent of respondents reporting the factor as a challenge at least ‘sometimes’ in the past year

²This value is a percent of respondents who identified the theme as a challenge of the food environment
References


V. DISCUSSION

This section will summarize the conclusions of the study and reflect upon the leadership implications of this thesis work. Specifically, the discussion will include an overview of the major findings and results, limitations, and the leadership aspects of the study.

A. Conclusions: Summary of Findings, Results, and Limitations

The purpose of the study was to implement and evaluate components of Strategic HIA through a case study. Specifically, this study examined the feasibility, acceptability, and applicability of the Strategic HIA approach to food-related policy development. The results of this study support the feasibility, applicability, and acceptability of conducting a Strategic HIA at a national level in a small country. This study also sought to identify the status of food security at the household level and to understand perceptions of the policy-makers regarding the food environment and food system. There were several points of congruence between perceptions of food security at the household and systems-levels.

Lessons from pilot testing the Strategic Health Impact Assessment Approach. Strategic HIA is an enhanced form of HIA, which incorporates aspects of strategic planning into the HIA approach to policy development. The elements of strategic planning were incorporated to mitigate the common limitations of traditional HIA including: lack of clarity about the steps and purpose of HIA; conflicting agendas of policy-makers; incomplete application of key steps of HIA; lack of involvement by key policy makers; recommendations of HIA disregarded or considered irrelevant by decision-makers; and lack of evidence to support health impact claims. The enhancements of Strategic HIA included: coordination of Strategic HIA by a politically neutral party; establishment of a vision and mission to guide the Strategic HIA process;
assessment of the policy context (i.e., internal and external environments) related to the policy making institutions as well as to the specific policy; and dissemination of Strategic HIA outputs (e.g., reports) to stakeholders. The specific enhancements enabled the coordinating organization to: a) increase involvement of policy makers, b) clarify steps of HIA for participants, c) promote a shared agenda, d) communicate recommendations directly to decision makers, and e) ensure that a wide scope of relevant evidence is collected and considered.

The skills required for implementing HIA according to the literature and supported by this case study, include: a) project management skills, b) negotiation skills, c) team-work skills, d) community organizing skills, and e) research skills.\textsuperscript{3,18} The entire approach is time-consuming and demands that the coordinating team have the capacity to establish connections with appropriate stakeholders; be able to facilitate strategic discussions; and be well trained in conducting literature searches. This study confirmed that an ideal coordinating organization for the Strategic HIA process is an organization that is not directly invested in the outcomes as they relate to the workshop content (i.e., policy results), but which is familiar with the policy context and the stakeholders.

This study revealed that some of the challenges found with traditional HIA still persisted with Strategic HIA. These persisting challenges included missing some important stakeholders during the recruitment process and lack of confidence on the part of participants about implementing the steps of Strategic HIA. As a result, ways to refine the Strategic HIA approach were identified for future application such as dedicating more time and effort to ensure comprehensive participant recruitment; and a training workshop should be held prior to full application of the Strategic HIA to increase general awareness and capacity building about the purpose, benefits, and steps of Strategic HIA.
In Strategic HIA, it is ideal to have a study outcome-neutral party conduct the evidence search using a replicable protocol. It is also important to have the neutral party to summarize the health impact recommendations that resulted from the workshop discussions. Establishing and applying a standard literature review methodology is a potential way to ensure that a variety of evidence is collected in an unbiased manner. Training the coordinating organization to develop such skills also helps to increase their capacity to lead the Strategic HIA process. The involvement of TongaHealth staff helped to ensure that various forms of primary, secondary, quantitative, and qualitative data were collected. TongaHealth’s coordination and application of a standardized method for conducting literature searches (e.g., keyword searches in multiple databases) ensured that the workshop appraisal process (e.g., applying a systematic literature search procedure) resulted in evidence-supported and context-appropriate recommendations.

*Lessons from the Assessment of Food Security at the Household and Systems Levels.* The Household Food Security Survey (HFSS) provided insight about food utilization, availability and accessibility at the household-level. This survey revealed that people spent most of their food budget on imported foods and a majority of calories, saturated fat, sugar, and sodium consumed came from imported foods. A large portion of respondents indicated an overestimation of the health value of processed foods such as refined flour products and tin fish. This signified a need to increase the knowledge of the nutritional value of foods at the household level.

Policy-making representatives provided their perspectives on the food environment and identified challenges through the Systems Food Security Interview (SFSI). These representatives noted the high availability of imported processed foods in the current food environment and identified the need for increased awareness of the nutritional value of foods. Among the factors impacting utilization behaviors, household respondents of the HFSS identified cost as one of the
most important determinants of food purchasing and consumption behavior. Likewise, policy-
making representatives noted challenges associated with the high cost of healthy foods.

HFSS participants had uneven household access to foods of various food groups; specifically, more households had access to the body-building and energy food groups, than they did to the protective food group. Such access can be attributed to raising animals, fishing, and growing root crops as opposed to growing vegetables or fruit. Furthermore, the HFSS revealed that having access to food (such as through home gardens or personal farming) is likely to reduce the purchase of that food.

The HFSS and SFSI results support that interventions to address food security should ideally address all dimensions of food security. Even if programs that focus on impacting utilization exist, policies and programs that will increase the availability, access and stability of nutritious foods are needed. The results of the HFSS and SFSI indicated several points of congruence between community-level and policy-level identification of issues and needs regarding food security.

**Mitigating Study Limitations.** Possible limitations of this study include issues regarding the evaluation tools used and the overall study design. This section identifies specific limitations and the efforts exerted to mitigate them.

A limitation of this case study was the use of survey and evaluation tools were not formally validated. No established metrics for measuring the feasibility, acceptability, applicability, and readiness of HIA were found during the literature review for this paper. The process evaluation tools used in this study (such as the Workshop Evaluation Survey) were developed based on a literature review of studies measuring the processes of previously implemented HIAs.2,4-6,14
Although validated food security measures exist in the literature, those found through the literature search for this study mainly focused on hunger as a construct of food security.\textsuperscript{56-59} Many of the studies that measured food security either applied the United States Core Food Security Module from the United States Department of Agriculture (U.S. CFSM), or some variation.\textsuperscript{57-60} It should be noted that studies that applied the U.S. CFSM in Hawaii (survey samples included Asian and Pacific Islanders) had disparate conclusions regarding reliability and validity of the measure. One study concluded that the U.S. CFSM was valid and reliable among a Pacific Islander population while another study concluded that the U.S. CFSM did “not reliably or accurately categorize food secure households based on the face validity of affirmative responses.”\textsuperscript{57,61} Instead of using the U.S. CFSM, the HFSS utilized themes in food security- and Tonga-related diet and food literature and a variety of existing measures.\textsuperscript{33,36-42}

The small sample size for the SFSI may have limited the reliability of conclusions made from the results. However, the sample consisted of representatives from a diversity of organizations and similar responses emerged even with the small sample size.

The principal investigator acting as the facilitator and the principal data analyst potentially holds limitations, such as impacting the internal validity of the study. It is advisable to have a separate data analyst and facilitator in future iterations of Strategic HIA case studies. For this particular study, time and resource capacity constraints limited the ability to have a separate facilitator and data analyst. To limit the potential bias, TongaHealth staff and university research assistants collected the data (e.g., surveys and interviews) and the principal investigator analyzed them. According to Yin, certain tactics can be applied with regards to enhancing the validity of a case study; such tactics that were applied including collecting data from multiple
sources of evidence to increase construct validity and pattern matching during analysis to increase internal validity.\textsuperscript{47,62}

Although I was the principal investigator and the facilitator, I was not directly invested in the content of the outputs of the Strategic HIA process (e.g., the impacts or recommendations identified) and did not have any political or financial ties to any policymakers. Additionally, I was not involved in carrying out the actual steps of the Strategic HIA approach. Therefore, I feel that I was able to act as a neutral facilitator. My knowledge of the HIA approach, experience with strategic planning, and familiarity with the Tongan language, social and political culture, in addition to prior experience working with the stakeholders, enabled me to carry out this study.

A challenge of the HIA approach is the issue of uncertainty about linkages in the causal chain; that is, connecting the determinants of health to health impacts related to the proposed policy.\textsuperscript{18} In order to strengthen this chain, a variety of evidence must be considered.\textsuperscript{63} Often, evidence that is context-specific (e.g., relatable setting, culture, etc.) is unavailable; therefore, evidence from other countries were considered in this case study.

Another possible limitation of the strategic HIA process may be the biases of participants (particularly during the scoping and appraisal steps). If the participants are all biased in one direction (i.e., are already for or against a proposed policy) or apathetic to the policy and its potential impacts on the population, then the HIA may produce less comprehensive and/or distorted results. The ways by which the negative impact of participant biases were prevented included noting the biases during the Systems Food Security Interviews and clear description of the benefits of thinking of all (i.e., both positive and negative) potential impacts during the implementation of Strategic HIA; ensuring that as many sectors of government as possible were
involved increased impartiality through representation; and emphasizing the vision and mission collectively set by participants.

As with any case study, the external validity of this Strategic HIA case study is limited. One way to increase the external validity of the Strategic HIA approach is to repeat the case study by applying Strategic HIA to another policy under development. (Although outside the scope of this proposal, future plans would include repeating the Strategic HIA approach with another policy.)

B. Leadership Implications

This section describes the ways in which the topic of this study applied the core functions of public health and provided an essential service of public health. Also discussed in this section are the ways by which this thesis experience afforded me the opportunity for personal leadership growth. I will describe my personal leadership growth in the context of achieving the WHO global competencies.

1. Public Health Core Functions and Essential Services

This case study applied the core functions of public health including assessment, assurance, and policy development. Strategic HIA ensures policy development is informed by needs and capacity assessment. In practice, assessments frequently occur; however, the translation of these assessments into action occurs less frequently. The Strategic HIA encourages participants to use available evidence to weigh the short- and long-term social and economic costs and benefits of a policy. Additionally, the Strategic HIA includes steps that encourage the use of available public health information to inform recommendations.

The approach of Strategic HIA is one of assurance and advocacy. It aims to mobilize representatives from multiple sectors by involving them in policy development. A result of
Strategic HIA is a set of recommendations to help develop a policy that considers the health impacts on the population. Therefore, the major output of Strategic HIA, the recommendations report, is a powerful advocacy tool for policy development.

The Strategic HIA approach is closely aligned with the public health essential service of mobilizing partnerships to identify and solve health problems. Leaders are required to act as “organizational politicians and “social architects,” representing, mediating, negotiating, and forging alliances as they go about making decisions.” A key strategy of Strategic HIA is to involve a variety of stakeholders, such as leaders from various public and private sectors, in the policy development process. A Strategic HIA coordinating team must be able to form partnerships to engage appropriate stakeholders whose roles in the community are varied. Use of a shared vision and mission reduced the chance of any conflicting participant agendas that would limit the process. This enhancement encouraged participants to focus on working collaboratively to produce a shared and agreed upon set of recommendations.

2. **Personal Leadership Growth**

My interest in global public health has inspired me to define my leadership growth from my thesis experience along the World Health Organization (WHO) *Global Competency Model*. The WHO global competencies include:

- moving forward in a changing environment,
- respecting and promoting individual and cultural differences,
- communicating in a credible and effective way,
- knowing and managing yourself,
- producing results,
- fostering integration and teamwork, and
• setting a (professional) example.

In this section, I will discuss the ways in which each of these competencies were met through this thesis study and provide details about leadership lessons learned and personal growth.

Moving Forward in a Changing Environment. Public health leaders must not only adapt to changing environments and needs, but also learn to anticipate those needs in such evolving conditions in order to keep moving toward health improvement. In response to cross-sectoral challenges ranging from the effects of climate change to the burgeoning rates of noncommunicable diseases, the WHO convened an international meeting on “Health in All Policies” in 2010. The premise of this meeting was the belief that “government objectives are best achieved when all sectors include health and well-being as a key component of policy development…because the causes of health and well-being lie outside the health sector and are socially and economically formed.”667 The meeting and subsequent WHO Adelaide Statement on Health in All Policies (2010), inspired a revival and growth in advocacy for pursuing a “health in all policies” approach to policy making.65 In recognition of the importance of this approach, I sought an opportunity to foster my professional development to learn about methodologies, which ensure that health is considered in policy development. Health Impact Assessment was an existing approach used to achieve consideration of health in all policies. Developing Strategic HIA, an enhanced version of HIA, demonstrates how I adapted existing approaches to meet the needs of a changing environment.

Respecting and Promoting Individual & Cultural Differences. Cronin and colleagues aptly noted that “leadership is shaped and constrained by context and culture.”66 Facilitating Strategic HIA requires the ability to demonstrate respect and comprehension of individual and
cultural differences. Diplomacy is a vital leadership skill required for cross-sectoral work in a unique cultural environment. Strategic HIA facilitators, coordinators, and participants require diplomacy skills since the success of Strategic HIA depends heavily upon participants being able to work cooperatively in sharing the perspectives and opinions.

In turn, this requires an understanding of cultural expectations and how a leader should behave. Since I had extensive volunteer experience in the setting where this study took place, I had a strong awareness of the cultural context and was able to facilitate Strategic HIA. Humility is a virtue in the Tongan culture, and while arrogance is discouraged, confidence is revered. Understanding the native perceptions and the dynamics of what actions differentiate between the two traits was crucial to building positive relationships. The study reinforced the importance of listening and gauging when to ask questions. In this case, I learned that the ideal way to pursue knowledge procurement is to be transparent about my motives for asking questions and how the information would be used. I learned the best time to ask questions during a meeting was when the floor was open for questions). Otherwise, a question may be perceived as trying to ‘test’ or ‘challenge’ the presenter and a comment may be perceived as an attempt to ‘show off’. Also, questions were often answered during the presentation itself, so it was best to wait until the presentation concluded.

For this case study, it was imperative for the facilitator (me) to understand that a cultural shift occurred regarding the beliefs about internal (i.e., local) versus external expertise. In prior decades, there was a socio-cultural acceptance in Tonga that external consultants had knowledge and skills that internal consultants did not have. However, now, there is an understanding and socio-cultural belief that internal experts are equally as knowledgeable about various subject matters. In addition, internal experts understand subject matter within its socio-cultural,
economic, political, and physical environmental contexts. Therefore, as an external consultant with some cultural exposure, it was important to balance the fine line between acknowledging the need learn from local experts and being keen to share my own knowledge and skills to share.

*Communicating in a Credible and Effective Way.* Communication skills were very important for the preparation and implementation of the Strategic HIA. Specifically relevant were conveying the importance of the study (specifically the Strategic HIA approach) and the ability to garner buy-in from participants on the importance of assessing and understanding health impacts of policies. In this case study, my role was to gain buy-in from multi-sectoral, systems-level representatives as well as to train counterparts to coordinate and facilitate Strategic HIA. To accomplish this, I had to identify opportunities to highlight and effectively communicate the ways in which the Strategic HIA would enhance their cross-sectoral work and their ability to weigh both short- and long-term impacts of a policy. Through the SFSI, policy-making participants shared their opinions about the food environment. In turn, I identified aspects of their concerns and interests regarding food policy development and highlighted how the Strategic HIA approach would possibly address them. For example, one participant noted that small business owners selling food products are often in challenging situations in which health food choices are the more costly choice for consumers. This often meant that she was not able to sell the healthier food choice for profit. I informed her that reviewing the Food Bill using a Strategic HIA could allow for food business owners to discuss such concerns with a variety of Ministry representatives and work collaboratively with them to consider the potential impacts of the Food Bill on retailers, and subsequently consumers as well.

*Knowing and Managing Yourself.* Often, a leader must navigate under pressure from various origins and manage under unclear circumstances. Therefore, self-management and self
reflection are imperative skills required for any public health leader. Public health leaders need to be aware of personal strengths and areas for self-improvement. When a leader knows his or her strengths, he or she is able to identify opportunities to apply those strengths. When a leader identifies areas for self-improvement, he is able to seek opportunities to grow and improve.

I recognized my limited personal experience with facilitation. To abate any potential negative effects, I solicited and received anecdotal feedback from TongaHealth colleagues on my facilitation skills during the Strategic HIA planning process. I used this feedback to refine my approach for the Strategic HIA Workshop by modifying the presentation slides and workshop materials (e.g., for socio-cultural appropriateness), developing probes to guide group work, and being prepared for mediation of potential conflicts among participants.

Another self-management lesson I learned was the need to consider my personal capacity when planning a study. During the proposal planning process, I included both the implementation of the Strategic HIA case study (including the SFSI) as well as the Household Food Security Survey (HFSS). I intended to have the HFSS results collected, analyzed and available to inform the potential linkages identified between policy components and health outcomes during the Strategic HIA appraisal step. However, due to timing and opportunity, the Strategic HIA Workshop was conducted before the HFSS was fully implemented. Data collection from a sample of 100 household representatives was an immense task, but it was even more demanding to conduct the HFSS in addition to the Strategic HIA case study within the short time span and with the limited resources dedicated to this study. Therefore, the results of the HFSS were not taken into consideration for the Strategic HIA. However, to ensure that the data collected was used to possibly contribute to future policy development work, I compared the perceptions of food security at the household level (collected through the HFSS) to the
perceptions of food security at the systems level (collected through the SFSI) and prepared a publishable manuscript (See Manuscript 2).

Producing Results. In order to produce beneficial results, a leader must work closely with stakeholders to set clear and concrete goals, determine how results will be measured, and ensure that results are shared. One limitation of the HIA is the lack of implement of all these steps. Besides a monitoring plan, the most commonly neglected step of previous HIA is the reporting which disseminates of the agreed upon recommendations. Therefore, in this case study, I developed an action-oriented approach to implementing the case study that included steps to enhance the ability to produce concrete results from Strategic HIA; specifically, a set of recommendations for improving the policy. The coordinating team’s lack of familiarity with conducting a literature search was a barrier to producing results. As I recognized literature search training as a necessary activity and held such a training with TongaHealth staff to enhance production of the intended output.

As a leader, it is important to not only produce results, but to identify opportunities to share experiences, especially lessons learned, with other practitioners. Thus, it was important to train a set of counterparts who would have the human, logistical, and fiscal resource capacity to implement a Strategic HIA. The Tonga Health Promotion Foundation (TongaHealth) was identified as an organization with leadership that is respected by the Ministry and other stakeholder counterparts. Additionally, TongaHealth had the capacity and ability to coordinate and carry out Strategic HIA.

I chose to present the results of my thesis research and practice experience in the form of two manuscripts. My rationale for selecting this format was that publishing these manuscripts would potentially contribute to future applications of a Strategic HIA or a HIA, particularly in
Pacific Island countries and territories (PICTs) as well as to the literature on the status of food security at the household level in PICTs. Sharing lessons learned not only disseminates information, but it has the potential to disseminate an approach. In this case, the Strategic HIA approach applied strategies based on the recognition that health is related to, and should be considered in all policies.

*Fostering Integration and Teamwork.* The Strategic HIA Workshop was conducted in a workshop format because the adult learning theory supports that adult learners are more likely to master a skill if they have the opportunity to apply the skill as part of the learning process. The workshop format was also selected as part of the Strategic HIA delivery method was because it allowed for collective and active participation. Open discussions among participants allowed them to share and understand each others’ perspectives. Often, participants built feedback based on comments made by others. As a result, the products of Strategic HIA (Logic Framework and Strategic HIA recommendations) were developed with input from a variety of sectors.

The workshop format required the application of group management skills to foster teamwork. These skills include leadership aspects such as ensuring that all participants worked toward achieving a shared agenda and creating an environment in which all were able to express their opinions through establishment of a common vision and mission for the Strategic HIA that was used to guide the process. These steps helped to establish a safe environment for sharing opinions.

While facilitating the Strategic HIA workshop, I clearly communicated to all participants that they were invited to participate because they were each able to provide a unique perspective on food security issues and potential solutions. I emphasized that the Strategic HIA of the Food Bill as an exercise in ensuring the development of legislation that considers health impacts; any
negative health impacts or gaps identified through Strategic HIA were not viewed as weaknesses but rather as opportunities to improve the Bill. As such, I requested that the opinions expressed be respected and that questions be asked and perceived as honest inquiry to improve the Bill, and not as personal attacks. These actions contributed to establishment of a safe environment in which all participants were acknowledged as important and respected. As noted in the results section, manuscript I, “A Strategic Health Impact Assessment Approach to Food-Related Policy Development: A Case Study in Tonga,” 94.1% of participants rated their comfort for expressing their views, opinions, and ideas during the workshop as “very” or “extremely” comfortable.

In many cases, policies are developed in a paternalistic manner by a select group of individuals. Strategic HIA attempts to promote a collectivist approach to policy development that fosters teamwork by involving a range of stakeholders. I had to make sure that this policy development approach was feasible, acceptable, and applicable to those stakeholders because only then would it increase the perception of Strategic HIA’s value and decrease the likelihood of the Strategic HIA being a one-off event. This approach would also increase the likelihood of policy and decision makers taking the Strategic HIA outcomes (e.g., the recommendations) into consideration.

Setting a Professional Example. The WHO places importance on setting a professional example. Global definitions of acting in an ethical or professional manner may differ from country to country. However, this case study applied universally acceptable methods such as: delivering surveys in a de-identified manner to respect and promote ethical boundaries; ensuring a safe environment for sharing opinions during the Systems Food Security Interviews and the Strategic HIA Workshop; and promoting and supporting transparency (e.g. protocols) throughout
the study. Transparency, that the information gathered would not be attributed to that person, helped to establish a safe environment for those involved in the discussion.

As part of this case study, the SFSI was conducted to develop an understanding about senior-level policy-makers’ roles, their opinions about the food environment, and about any policies that they recommend for undergoing the Strategic HIA. Through these face-to-face interviews, the interviewer gathered information about participant interests and motivations, such as what forces impact policy making actions and decisions (e.g., mandate, personal values, stakeholder/constituent input). An open discussion format for interviewing has been noted by management researchers as a preferred method by participants for obtaining information. In this case study, through interview discussions, information from participants revealed underlying dynamics within the interviewee’s ministry and with other ministries. Such information made the Strategic HIA facilitator and coordinators aware of agenda conflicts, resource limitations, and perceptions of responsibilities. Often, relationship dynamics among Ministry representatives are complicated and not well-defined. Therefore, gathering such information from an interview required diplomacy such as acting in a transparent and unbiased manner to gather information to understand group characteristic, needs, and resources.

A practitioner should promote the least bias methodology for conducting any intervention or programme. I originally planned to conduct a summative content analysis of the qualitative data because I was interested primarily in themes related to food insecurity. A summative content (i.e., data) analysis establishes a set of pre-selected codes derived from the investigator’s topic area of interest (in this case, food security). However, I wanted to ensure that the analyses and subsequent interpretations were comprehensive and as accurate to the participants’ responses as possible. The literature suggests that a conventional analysis approach
is less restrictive and less self-limiting than the summative content approach because codes are derived from the data. Therefore, I decided to modify my qualitative data analysis plan from a summative content analysis approach to a conventional content analysis approach, which I anticipated would reduce the chance of overlooking any data (e.g., codes) because they did not fit pre-selected food security themes. For example, one of the final themes identified, “coordination and cooperation among policy makers,” is not directly a theme of food security and may have been overlooked if a summative content analysis was used.

I learned several leadership lessons through this thesis experience. The major lessons included identification of areas for self-improvement, such as enhancing communication skills, cross-cultural cooperation and effective program planning. For example, through this experience, I learned that when it comes to interacting with a diverse set of individuals in a dynamic environment, it is important to try and gather preliminary information to form as thorough a preliminary understanding of the situation as possible before proposing an idea or stating an opinion. The specific lessons on how to communicate and interact with counterparts, whether systems- or community-based, were pivotal. These lessons included ensuring clear and transparent conversation and promoting safe environments which encourage respect for open and honest discussion.

Another important lesson for me was the necessity of effective cross-cultural cooperation. In this particular study, I had to develop an understanding of the cultural appropriateness in my approach to engaging stakeholders. Specifically, local contextual understanding was preferred in this case study’s setting; outsiders trying to identify issues and propose solutions without established cooperation would likely meet resistance. Therefore, taking the time to understand
stakeholder needs, working collaboratively to develop and implement an approach to address issues and becoming a part of the team is imperative to successful cooperation.

Finally, I learned very ambitious projects that may not always be feasible within the timeframe and given the resources dedicated. So, in my future work, it will be helpful to carefully consider the feasibility and timeline in the design stage of the project given the existing capacity (e.g., human resource, financial). The ability to anticipate project feasibility at the design stage comes with experience. Including seasoned investigators who have project- and setting-related experience in the project/programme development stage will mitigate over-ambition and enhance future projections.

In conclusion, through this thesis study, I learned several lessons about how to design, implement and assess a complex public health practice study. Additionally, I have engendered my communication, diplomacy, and facilitation skills. This experience has enabled me to demonstrate my achievement of the key competencies for global public health leadership.65
## APPENDIX A

### UNITED STATES-BASED HEALTH IMPACT ASSESSMENTS

<table>
<thead>
<tr>
<th>State</th>
<th>Topic Sector</th>
<th>Level of Decision-Making</th>
<th>Brief Description of the HIA Policy, Plan, or Program</th>
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<tr>
<td>CA</td>
<td>Labor and Employment</td>
<td>State</td>
<td>Proposed employment-related legislation</td>
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<td>CA</td>
<td>Built Environment</td>
<td>Local</td>
<td>Comprehensive plan for a neighborhood</td>
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<td>CA</td>
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<td>Local</td>
<td>Community plans of three neighborhoods</td>
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<td>CA</td>
<td>Labor and Employment</td>
<td>State</td>
<td>California Assembly Bill 2716: Healthy Families, Healthy Workplaces Act of 2008</td>
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<td>CA</td>
<td>Education</td>
<td>State</td>
<td>Compared four different models of after-school programs</td>
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<td>Built Environment</td>
<td>Local</td>
<td>Three potential future school locations for Bernal Heights Preschool</td>
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<td>CA</td>
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<td>Local</td>
<td>Repurposing of the former Concord Naval Weapons Station site</td>
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<td>Local</td>
<td>A proposed 11.6-acre development in South L.A.</td>
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<td>County</td>
<td>Plan for pedestrian and biking trails under the elevated public transit tracks</td>
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<tr>
<td>CA</td>
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<td>Local</td>
<td>Executive Park Sub-Area Plan</td>
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<td>CA</td>
<td>Housing</td>
<td>Local</td>
<td>Flooring for public housing</td>
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<td>Housing</td>
<td>Local</td>
<td>Rebuilding plan of two housing projects in San Francisco</td>
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<td>County</td>
<td>Update of the General Plan in a rural community</td>
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<tr>
<td>CA</td>
<td>Health</td>
<td>State</td>
<td>Proposed legislative initiative aimed at providing protection against liability for facilities and services promoting physical activity</td>
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### APPENDIX A (continued)

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<td>City of Los Angeles’ Living Wage Ordinance: require city contractors and property leaseholders to pay their employees a “living wage”</td>
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<td>City of Los Angeles’ Living Wage Ordinance: giving the employer the ability to choose whether to provide health insurance or additional income</td>
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<td>Proposed development project located near a transit station</td>
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<td>Agriculture and Food</td>
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<td>A law requiring chain restaurants to provide nutritional information</td>
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<td>General Plan Update in the county of Merced</td>
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<td>Healthy Families Act concerning paid sick time laws (single HIA conducted in</td>
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<td>TN</td>
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<td>Planning and design of a transit-oriented development</td>
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## APPENDIX A (continued)

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<td>Proposed state legislation designed to reduce car use</td>
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<td>Transportation</td>
<td>County</td>
<td>The State Route 520 replacement bridge project</td>
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<td>Climate Change</td>
<td>Local</td>
<td>Seven transportation recommendations made in Eugene Climate and Energy Action Plan</td>
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<td>NJ</td>
<td>Agriculture and Food</td>
<td>Local</td>
<td>Considered three alternative scenarios for proposed changes to a farmer’s market in Trenton</td>
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<td>OR</td>
<td>Built Environment</td>
<td>County</td>
<td>Policies proposed within a community plan update for Tumato, OR.</td>
</tr>
<tr>
<td>MN</td>
<td>Transportation</td>
<td>Local</td>
<td>Planned Xcel Energy Corridor Trail</td>
</tr>
<tr>
<td>MT</td>
<td>Built Environment</td>
<td>County</td>
<td>The 2008 Growth Policy for the City of Billings, MT.</td>
</tr>
</tbody>
</table>

Note: State abbreviations in column one are according to the United States Postal Service state abbreviations (www.usps.com/send/official-abbreviations.htm)
# APPENDIX B

## INTERNATIONALLY-BASED HEALTH IMPACT ASSESSMENTS

<table>
<thead>
<tr>
<th>Country</th>
<th>Year(s)</th>
<th>Topic Sector(s)</th>
<th>Level of Decision-Making</th>
<th>Outcome(s) (including challenges and successes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada</td>
<td>2002</td>
<td>Trade</td>
<td>National/ International</td>
<td>Health Canada institutionalized HIA in Quebec to integrate health issues into policy development.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>This HIA is limited to impacts on health services rather than a range of health determinants; there is a lack of integration of health impacts in the practice of EIA.</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1997</td>
<td>Medical Care</td>
<td>National</td>
<td>Majority of HIAs conducted were limited to a screening phase; the four policies listed are those which underwent complete HIA.</td>
</tr>
<tr>
<td></td>
<td>1998</td>
<td>Tobacco</td>
<td>National</td>
<td>No specific details in this review</td>
</tr>
<tr>
<td></td>
<td>1998</td>
<td>Specific Health Problems</td>
<td>National</td>
<td>HIA was actively considered by the Lower House</td>
</tr>
<tr>
<td></td>
<td>2002</td>
<td>Housing</td>
<td>National</td>
<td>No specific details in this review</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energy</td>
<td>National/ Regional</td>
<td>No specific details in this review</td>
</tr>
<tr>
<td>Wales</td>
<td>1999</td>
<td>Employment</td>
<td>National/ Regional</td>
<td>National Skills and Employment Action Plan HIA found that there was increased multi-sectoral cooperation and use of evidence in decision-making.</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>Housing</td>
<td>National/ Regional</td>
<td>Housing Regeneration Strategy HIA included stakeholder interviews and literature review to test the potential of HIA.</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>Energy</td>
<td>Regional</td>
<td>New Home Energy Efficiency Scheme successfully revealed unexpected health impacts.</td>
</tr>
<tr>
<td>Sweden</td>
<td>1998</td>
<td>Health</td>
<td>Local</td>
<td>The Federation of Swedish County Councils developed HIA tools.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>The Local Welfare Management System, which compiles the 'welfare accounts' within municipalities, applied the HIA tools.</td>
</tr>
</tbody>
</table>
## APPENDIX B (continued)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Sector</th>
<th>Level</th>
<th>Details</th>
</tr>
</thead>
</table>
| Australia | 1994 | Transportation | Regional | - HIA was carried out as a part of EIA and known as the HIA Guidelines (HIAG).  
- HIA was applied on highway development in Melbourne.  
- The HIA began with scoping of specific health impacts. |
| England | 2000 | Environment | Local | - HIAs were conducted on the Greater London Authority (GLA) Act strategies which included:  
  - Transport Strategy, which emphasized a single health concern  
  - Waste Management Strategy, which as a focused strategy, was conducive to organized assessment by management type  
  - Overall, a major benefit of HIA incorporation includes GLA officers are more aware of “health and its determinants.” |
| Germany | 1992-96 | Environment | Local | - The North-Rhine-Westphalia Project included the expansion of a waste disposal facility and planning for a major by-pass road.  
- The HIA was retrospective in nature and the authors noted that HIA helped to address the gap in the “coverage of human health aspects” of EIA. |
| Germany | 2002 | Land Use | International (reach) | - A comprehensive HIA of the Schiphol Airport construction.  
- The authors note challenges with time and other resource consumption as well as a lack of availability of evidence.  
- As a result of this HIA, the International Committee of the Dutch Health Council expressed that HIA should be institutionalized. |
APPENDIX B (continued)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year(s)</th>
<th>Sector</th>
<th>Level</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>2001</td>
<td>Land Use</td>
<td>National (reach)</td>
<td>Regional/Local HIA • An HIA of the Finningley Airport plan was mainly based on literature review and stakeholder interviews. • The HIA was limited to examining the health impacts on a particular population (those living in the Doncaster area). • The results of this HIA were taken into consideration.</td>
</tr>
<tr>
<td>England</td>
<td>2000</td>
<td>Housing</td>
<td>Local</td>
<td>• A prospective HIA was conducted during the planning phase of the regeneration of the Ferrier Estate housing development. • The HIA methods included structured interviews with community stakeholders which enabled tailoring of the plans to the population. • According to the authors, due to time and resource demands, securing participation was a challenge.</td>
</tr>
<tr>
<td>Canada</td>
<td>1996-2004</td>
<td>General</td>
<td>National</td>
<td>• The HIA Task Force in Canada provided a description of integration of HIA into EIA. • A specific policy was not described.</td>
</tr>
<tr>
<td>New Zealand</td>
<td>1996-97</td>
<td>Agriculture</td>
<td>National</td>
<td>• An HIA a Pesticide Spraying Programme was conducted as a stand-alone project rather than an integrated approach. • This HIA included a multidisciplinary range of stakeholders using secondary data. • No formal evaluation of the HIA was implemented or reported.</td>
</tr>
</tbody>
</table>
### APPENDIX B (continued)

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Sector</th>
<th>Scope</th>
<th>Details</th>
</tr>
</thead>
</table>
| England    | 2003 | Health Education | National    | • An HIA of the Medical Student Training Expansion Policy consisted of a literature review and interviews with health care professionals.  
• An HIA framework was established. |
| Malaysia   | No Date | Environment  | Regional    | • Applied aspects of HIA as part of an EIA of dams.  
• HIA is alluded to as an approach that might address the problems which are a result of disconnected stakeholders from multiple disciplines. |
| Egypt      | No Date | Agriculture  | National    | • A retrospective HIA of cotton pesticide use was conducted. |
| Syria      | 1990s | Environment  | Regional    | • A concurrent rapid HIA of the development of a sewage treatment and waste water reuse system was conducted.  
• It is noted that no stakeholder input was collected. |
| Canada     | No Date | Agriculture  | Regional    | • HIAs of agricultural practice of hog farming and pesticide use on apples were conducted.  
• These HIAs were heavily quantitative and mainly focused on the outcomes related to environmental pollution. |
| United Kingdom | 2001 | Environment  | Regional/Local | • A rapid HIA of the effects of a mass-slaughter policy aimed at preventing foot and mouth disease in Devon. - Both quantitative and qualitative data were collected including data from key informant interviews.  
• This HIA originally sought to identify the economic impact of the policy; HIA was able to additionally identify health impacts. |
APPENDIX B (continued)

<table>
<thead>
<tr>
<th>Country</th>
<th>Date</th>
<th>Sector</th>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>England</td>
<td>No Date</td>
<td>Health</td>
<td>National</td>
<td>• A retrospective HIA of the English Alcohol Strategy.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• A key lesson noted by the author is that HIA must be viewed as “useful by policy makers” in order to have an impact on the decision-making process.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Focused on incorporating HIA into policy making identified facilitating factors; Such factors included having:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Willing partners</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• A local champion</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Incorporating HIA into other impact assessment frameworks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Tools</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Training</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Notably, people often thought they were doing HIA, but in fact they were doing health needs assessment or evaluation</td>
</tr>
</tbody>
</table>

Scotland 2001 General National

• Incorporating HIA into other impact assessment frameworks
• Tools
• Training
• Notably, people often thought they were doing HIA, but in fact they were doing health needs assessment or evaluation
APPENDIX C

Institutional Review Board Claim of Exemption Approval

UNIVERSITY OF ILLINOIS
AT CHICAGO

Office for the Protection of Research Subjects (OPRS)
Office of the Vice Chancellor for Research (MC 072)
203 Administrative Office Building
1727 West Polk Street
Chicago, Illinois 60612-7227

Exemption Determination
Amendment to Research Protocol – Exempt Review
UIC Amendment # 2

April 11, 2011

Ada Moadsiri, MPH
Public Health
1747 W. Roosevelt
USE THIS ADDRESS PLZ., M/C 275
Chicago, IL 60612
Phone: (312) 355-2497

RE: Protocol # 2010-0297
“Community and Systems Food Security Survey in Tonga”

Dear Ada Moadsiri:

The OPRS staff/members of Institutional Review Board (IRB) #2 have reviewed this amendment to your research, and have determined that your research protocol continues to meet the criteria for exemption as defined in the U. S. Department of Health and Human Services Regulations for the Protection of Human Subjects [(45 CFR 46.101(b)].

The specific exemption category under 45 CFR 46.101(b) continues to be:
(2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: (i) information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

You may now implement the amendment in your research.

Please note the following information about your approved amendment:

Exemption Period: April 11, 2011 – April 11, 2014
Amendment Approval Date: April 11, 2011
Amendment: Summary: UIC Amendment #2 dated March 18, 2011 and submitted to OPRS on March 21, 2011 is an investigator-initiated amendment: Addition of the “Systems Food Security Survey” to the research protocol and to be conducted only on new subjects. The new subjects will be Tongan

Phone: 312-996-1711 http://www.uic.edu/depts/ovcr/oprsl/ FAX: 312-413-2929
public officials who will be interviewed about their official responsibilities and work. This survey will be implemented in the English language; therefore, unlike the previously approved Community Food Security Questionnaire, a Tongan translation will not be necessary.

**Current Approved Key Research Personnel Training Periods:**

You are reminded that investigators whose research involving human subjects is determined to be exempt from the federal regulations for the protection of human subjects still have responsibilities for the ethical conduct of the research under state law and UIC policy. Please be aware of the following UIC policies and responsibilities for investigators:

1. **Amendments** You are responsible for reporting any amendments to your research protocol that may affect the determination of the exemption and may result in your research no longer being eligible for the exemption that has been granted.

2. **Record Keeping** You are responsible for maintaining a copy all research related records in a secure location in the event future verification is necessary, at a minimum these documents include: the research protocol, the claim of exemption application, all questionnaires, survey instruments, interview questions and/or data collection instruments associated with this research protocol, recruiting or advertising materials, any consent forms or information sheets given to subjects, or any other pertinent documents.

3. **Final Report** When you have completed work on your research protocol, you should submit a final report to the Office for Protection of Research Subjects (OPRS).

4. **Information for Human Subjects** UIC Policy requires investigators to provide information about the research protocol to subjects and to obtain their permission prior to their participating in the research. The information about the research protocol should be presented to subjects in writing or orally from a written script. **When appropriate,** the following information must be provided to all research subjects participating in exempt studies:
   a. The researchers affiliation; UIC, JB VAMC or other institutions,
   b. The purpose of the research,
   c. The extent of the subject’s involvement and an explanation of the procedures to be followed,
   d. Whether the information being collected will be used for any purposes other than the proposed research,
   e. A description of the procedures to protect the privacy of subjects and the confidentiality of the research information and data,
   f. Description of any reasonable foreseeable risks,
   g. Description of anticipated benefit,
   h. A statement that participation is voluntary and subjects can refuse to participate or can stop at any time,
APPENDIX C (continued)

2010-0297, am2

Page 3 of 3

April 11, 2011

i. A statement that the researcher is available to answer any questions that the subject may have and which includes the name and phone number of the investigator(s).
j. A statement that the UIC IRB/OPRS or JB VAMC Patient Advocate Office is available if there are questions about subject’s rights, which includes the appropriate phone numbers.

Please be sure to:

➢ Use your research protocol number (2010-0297) on any documents or correspondence with the IRB concerning your research protocol.

We wish you the best as you conduct your research. If you have any questions or need further help, please contact me at (312) 355-2908 or the OPRS office at (312) 996-1711. Please send any correspondence about this protocol to OPRS at 203 AOB, M/C 672.

Sincerely,

Charles W. Hoehne, B.S., C.I.P.
Assistant Director, IRB # 2
Office for the Protection of Research Subjects

cc: Paul Brandt-Rauf, Public Health, M/C 923
Laurie Ruggiero, Public Health, M/C 275
APPENDIX D

Household Food Security Survey Tool

SPN: _____

Household Food Security Survey
Face-to-face interview

Hello, my name is Ada Moadsiri and I am a student from the University of Illinois at Chicago in the United States of America. I would like to speak to a resident of this household who is between 18-65 years of age, is female, has lived in this household for at least one year, and is knowledgeable about household food consumption and purchasing.

[To the individual meeting inclusion criteria:] I am interviewing community members like you to ask questions about the foods your household eats, how those foods are prepared and your household’s food purchasing behaviors. The information you provide will help me understand the status of community-level food security in Tonga for individual households such as yours. This questionnaire will take between 30 minutes and 1 hour to complete. The information you provide will be completely confidential and your answers cannot be linked to you. Your participation is completely voluntary and whether or not you choose to participate will not affect you or your relationship with me or the University of Illinois at Chicago in any way.

[If verbally consents, begin:]

Date: ___ ___/___ ___/___ ___ (day/month/year)

Location: _______________/ _______________ (Name of Town/Name of Island)

Time start: ___ : ___ (ex. 2:45PM = 14:45)
APPENDIX D (continued)

Utilization

➔ Ask the respondent if she ate each meal. Ask the respondent what she ate for each meal. After the respondent lists all the foods for each meal, ask the respondent for details (such as if the food was eaten with anything else) and to describe the portion size. Then, ask respondent how food was prepared. If the respondent answers “other”, please ask for specification.

1. **Yesterday**, did you eat a morning meal?

   Yes .................................................. 1 (Go to Q. 2)
   No .................................................. 2 (Go to Q. 3, p. 3)

2. i. Please tell me everything you ate for morning meal. [Write name of food on 1st line.]
   ii. Please tell me how much of each food you ate. [Use food portion cards*. Write portion on 2nd line.]

   iii. Please tell me how was each food was prepared.

   Was it baked, boiled, cooked in an ’umu, raw, fried, or prepared some other way?

<table>
<thead>
<tr>
<th>Baked</th>
<th>Boiled</th>
<th>’Umu</th>
<th>Raw</th>
<th>Fried</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   a. i. ____________________________........ 1 2 3 4 5 6 ____________
   ii. ____________________________

   b. i. ____________________________........ 1 2 3 4 5 6 ____________
   ii. ____________________________

   c. i. ____________________________........ 1 2 3 4 5 6 ____________
   ii. ____________________________

➔ Probe:

“How did you define the term “morning meal”?

“Was it the sequence of the meal in your day or the time of day in which you had the meal?”
APPENDIX D (continued)

3. **Yesterday** did you eat a mid-day meal?

   Yes ........................................ 1 (Go to Q. 4)
   No ........................................ 2 (Go to Q. 5, p. 4)

4. i. Please tell me everything you ate for mid-day meal. [Write name of food on 1st line.]
   
   ii. Please tell me how much of each food you ate. [Use food portion cards*. Write portion on 2nd line.]

   iii. Please tell me how was each food was prepared.
   
   Was it baked, boiled, cooked in an 'umu, raw, fried, or prepared some other way?

<table>
<thead>
<tr>
<th>Baked</th>
<th>Boiled</th>
<th>'Umu</th>
<th>Raw</th>
<th>Fried</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

   a. i. ____________________________ ....... 1 2 3 4 5 6 ____________
   
   ii. ____________________________

   b. i. ____________________________ ....... 1 2 3 4 5 6 ____________
   
   ii. ____________________________

   c. i. ____________________________ ....... 1 2 3 4 5 6 ____________
   
   ii. ____________________________

   → Probe:
   
   “How did you define the term ‘afternoon or midday meal’?”

   “Was it the sequence of the meal in your day or the time of day in which you had the meal?”
APPENDIX D (continued)

5. **Yesterday**, did you eat a **snack**?

   Yes ........................................... 1 (Go to Q. 6)
   No ......................................... 2 (Go to Q. 7, p. 5)

6. i. Please tell me everything you ate for **snack**. **[Write name of food on 1st line.]**

   ii. Please tell me how much of each food you ate. **[Use food portion cards*. Write portion on 2nd line.]**

   iii. Please tell me how was each food was prepared.

      Was it **baked**, **boiled**, **cooked in an ‘umu**, **raw**, **fried**, or **prepared some other way**?


<table>
<thead>
<tr>
<th>Baked</th>
<th>Boiled</th>
<th>’Umu</th>
<th>Raw</th>
<th>Fried</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>a. i.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. i.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. i.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ii.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

→ **Probe:**

“**What did you think about for the term “snack”?** ____________________________

“**What time did you eat the “snack”?** ____________________________
APPENDIX D (continued)

7. Yesterday, did you eat an evening meal?
   
   Yes ........................................ 1 (Go to Q. 8)
   No ......................................... 2 (Go to Q. 9, p. 6)

8. i. Please tell me everything you ate for evening meal. [Write name of food on 1st line.]
   ii. Please tell me how much of each food you ate. [Use food portion cards*. Write portion on 2nd line.]

   iii. Please tell me how was each food was prepared.

   Was it baked, boiled, cooked in an 'umu, raw, fried, or prepared some other way?

   Baked  Boiled  'Umu  Raw  Fried  Other

   a. i. ........................................ 1  2  3  4  5  6 ____________
       ii. ________________________________

   b. i. ........................................ 1  2  3  4  5  6 ____________
       ii. ________________________________

   c. i. ........................................ 1  2  3  4  5  6 ____________
       ii. ________________________________

→ Probe:

“How did you define the term “evening meal”? ________________________________

“Was it the sequence of the meal in your day or the time of day in which you had the meal?"
9. I’m going to read a list of foods. For each one, please tell me, how you would rate on a scale of 1 to 5, 1 being not healthy and 5 being very healthy. → Use show card of scale

<table>
<thead>
<tr>
<th></th>
<th>Not healthy</th>
<th>Very Healthy</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Milk</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>b. Juice</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>c. Soda pop</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>d. Eggs</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>e. Tin Fish</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>f. Butter</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>g. Canned corn beef</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>h. Root crop</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>i. Coconut</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>j. Crackers</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>k. Greens (Spinach)</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>l. Turkey Tails</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>m. Banana or Plantain</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>n. Chicken quarters</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>o. Capsicum</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>p. Mutton Flaps</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>q. Fresh Fish</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>r. Carrots</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>s. Doughnuts</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>t. Bread</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>u. Sausage or Hot dog</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>v. Instant Noodles</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>w. Tomatoes</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>x. Roasted Pork</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>y. 'American' Apples</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>z. Lard</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>
10. Thinking about the foods your household purchases, on a scale from 1 to 4 where 1 being not important and 4 being important, how important do you think the following factors on the decision to purchase these foods?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not important</th>
<th>Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Convenience (e.g. Preparation time)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>b. Cost</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>c. Preference (i.e. Taste)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>d. Distance (i.e. How far away to get food)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>e. Nutritional value</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>f. Other (Specify)</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

11. Thinking about the foods your household consumes, on a scale from 1 to 4 where 1 being not important and 4 being important, how important do you think the following factors on the decision to consume these foods?

<table>
<thead>
<tr>
<th>Factor</th>
<th>Not important</th>
<th>Important</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Convenience (e.g. Preparation time)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>b. Cost</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>c. Preference (i.e. Taste)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>d. Distance (i.e. How far away to get food)</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>e. Nutritional value</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>f. Other (Specify)</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>
APPENDIX D (continued)

12. I am going to read another list of food items. Thinking about this past week, please tell me if your household ate any of these items. If yes, thinking about this past week, including snacks, for about how many meals did your household eat these foods. → Use show card of response choices

<table>
<thead>
<tr>
<th></th>
<th>a. Yes</th>
<th>No</th>
<th>1 to 3</th>
<th>4 to 7</th>
<th>8 to 14</th>
<th>15 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bakery bread</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>b. Pies, cake</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>c. Cookies</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>d. Cabin crackers</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>e. Instant noodles</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>f. Take-away plates</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>g. Uncooked canned meat</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>h. Uncooked tin fish</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>i. Uncooked hotdogs</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

b. If yes, then for how many meals?
13. Again, I am going to read a list of foods. Thinking about an average week, please tell me if your household spends any money, including purchases made on I.O.U., on any of the following foods. If yes, please tell me about how much money is spent: was it less than $5, $5 to $9.99, $10 to $19.99, or $20 or more? → Use show card of response choices.

|-----------------|-----------------|-------------|---------------|-------------------|---------------------|---------------|---------------|------------|--------|-------------|-----------|-----------------------|---------|--------|----------|----------|--------|
Access & Availability

14. I am going to read another list of foods. Please tell me if your household grows, catches, farms, or raises any of the following food items.

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Fish</td>
<td>1</td>
</tr>
<tr>
<td>b. Meats (including beef, pork, chicken)</td>
<td>1</td>
</tr>
<tr>
<td>c. Vegetables</td>
<td>1</td>
</tr>
<tr>
<td>d. Fruit</td>
<td>1</td>
</tr>
<tr>
<td>e. Root crop</td>
<td>1</td>
</tr>
<tr>
<td>f. Eggs</td>
<td>1</td>
</tr>
<tr>
<td>g. Other (please specify)</td>
<td>1</td>
</tr>
</tbody>
</table>

→ Probe:
What did you consider meat?

What did you consider a vegetable?

What did you consider a fruit?

15. Thinking about an average month, does your household make any food purchases on I.O.U.?  
   Yes ........... 1 (Go to Q. 16, p. 11)  
   No ........... 2 (Go to Q. 17, p. 11)
APPENDIX D (continued)

16. In an average month, how much credit on an I.O.U. does your household use to purchase food?

- Use show card of scale.
  
  Less than $9.99 .........................1
  $10 to $19.99 ..........................2
  $20 to $29.99 ..........................3
  $30 to $49.99 ..........................4
  $50 to $99.99 ..........................5
  $100 to $299.99 .......................6
  $300 or more ........................7

Food availability is defined as having enough nutritious food that is consistently available for purchase or use.

17. How would you describe the availability of nutritious foods to a household like yours in Tonga?

   Very good..............................1
   Good.....................................2
   Limited ...............................3
   Very limited .........................4
18. Thinking about the **last year**, how many times was your household affected by not having nutritious food available for purchase or use? *Use show card of response choices*

   None ........................................ 1  
   1 to 2 times per month.................... 2  
   3 to 4 times per month..................... 3  
   5 to 8 times per month.................... 4  
   More than 8 times per month............. 5  

*Probe:*

“How did you estimate this number?”

“Did you think of any specific times? Do you have an example or story?”

---

**Food access** is defined as having enough resources (such as money or transportation) to obtain foods for a nutritious diet.

19. How would you describe the **access** to nutritious foods for a household like yours in Tonga?

   Very good .................................... 1  
   Good .......................................... 2  
   Limited ....................................... 3  
   Very limited .................................. 4  

---
APPENDIX D (continued)

20. Thinking about the last year, how many times was your household affected by not having access to nutritious foods? ➔ Use show card of response choices

None ........................................... 1
1 to 2 times per month........................ 2
3 to 4 times per month......................... 3
5 to 8 times per month......................... 4
More than 8 times per month.............. 5

➢ Probe:

“How did you estimate this number?”

“Did you think of any specific times? Do you have an example or story?”

21. Thinking about the past year, how often were the following issues problems for your household being able to obtain nutritious food? ➔ Use show card of response choices

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Almost Always</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Lack of transportation</td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>b. High price/cost</td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>c. Far distance</td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>d. Item not available for</td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>purchase or use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

➢ Ask respondent if there are any other barriers.

<table>
<thead>
<tr>
<th></th>
<th>Never</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Almost Always</th>
<th>Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>e. Other</td>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

➢ Probe:

“Did you think of any specific times? Do you have an example or story?”
APPENDIX D (continued)

Household Demographics

22. Are you the primary purchaser of the food your household eats?
   Yes ........................................ 1 (Go to Q. 24)
   No ........................................ 2 (Go to Q. 23)

23. Who is the primary purchaser of the food for your household eats?
   [Do not read unless prompted.]
   Mother ........................................ 1
   Father ........................................ 2
   Sibling ....................................... 3
   Grandparent ................................ 4
   Daughter .................................... 5
   Son ........................................... 6
   Spouse ...................................... 7
   Self ......................................... 8
   Other ....................................... 9

24. I am going to read a list of locations where food can be purchased. Please tell me, in an average week, if you or someone in your household usually purchase(s) food from these locations. If yes, please tell me the name of the locations.

<table>
<thead>
<tr>
<th>Location</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shop</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Market</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bakery</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Butcher shop</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Restaurant or Take-away</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

b. If yes, write name on line.
APPENDIX D (continued)

25. Are you the primary preparer of the food/meals your household eats?

Yes ........................................1 (Go to Q. 27)
No ...........................................2 (Go to Q. 26)

26. Who is the primary preparer of the food your household eats?

[Do not read unless prompted.]

Mother ............................................. 1
Father .................................................. 2
Sibling .................................................. 3
Grandparent .......................................... 4
Daughter ............................................. 5
Son ....................................................... 6
Spouse .................................................. 7
Self ...................................................... 8
Other ................................................... 9

27. Counting each person in your household only once, including you, in the past 7 days, how many people were living or staying in your home as their primary residence?

______ (number of people)

→ Probe:

“Have any of the people you counted lived everyday in the household?” __________________________

“If not, where do they live?” __________________________

“If yes, how many meals per day does that person eat in your household?” __________________________
28. Thinking about the people you just counted, including yourself, is anyone living in this house employed for wages? If yes, please tell me how many people are employed for wages.
   → If yes, write the number of people on the line provided.
   Yes ...........................................1   ___ ___ (number of people)
   No ............................................2

   → Probe:
   “What type of work did you include in answering this question?”

29. a. Does your household use a refrigerator?
   Yes .........................1 (Go to Q. 29b)
   No.............................2 (Go to Q. 30)

   b. If yes, ask: Is the refrigerator...
      Owned by your household ............1
      Located at a local store.............2

30. Since _(this month)_] of last year, including remittances, what was the total income for you and all people living in your household? → Use show card of response choices.
   $0 ...........................................1
   $1 to $50 ...............................2
   $51 to $100 ..............................3
   $101 to $150 ...........................4
   $151 to $200 ............................5
   $201 to $250 ...........................6
   $251 to $300 ............................7
   More than $300 ........................8

   Do not read → Don’t know/Prefer not to answer ....9
APPENDIX D (continued)

SPN: ______

That was my last question for this survey. Thank you very much for your time and participation!

Time end: ___ ___ : ___ ___ (ex. 5:15PM = 17:15PM)

Environment Description or Issues Notes: (Were there any distractions present during the interview? Were there any interruptions during the interview? Was there any confusion regarding any of the questions? Did the respondent note any issues regarding any part of the questionnaire? If so, please note below.)

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Appendix E

Systems Food Security Interview Tool

Systems Food Security Interview (SFSI)

Face-to-face interview

Hello, my name is Ada Moadsiri and I am a student from the University of Illinois at Chicago in the United States of America. I would like to speak to a senior-level representative of this Ministry about food security issues and about the Ministry’s work.

[To the individual meeting inclusion criteria:] I am interviewing senior-level representative like you to ask questions about: 1) its work, 2) policies under development in which the Ministry is involved, 3) the food environment in Tonga, and 4) food security in Tonga.

The information you provide will help me understand the status of policy related to food security as well as the perception of food security in Tonga from a systems perspective. This questionnaire will take about 1 hour to complete. In addition to the survey, if you are interested, I would like to introduce and discuss the concept of Health Impact Assessment, which is an approach by which the health impacts of policies from any variety of sectors are evaluated using various forms of data and a participatory approach; furthermore, I may invite you to participate in a HIA workshop to be held in the near future.

The information you provide will be completely confidential and your answers cannot be linked to you nor shared with your employer. However, if you participate in the workshop, others will know that you are a participant. The data will be reported anonymously. Please know that your participation is completely voluntary and whether or not you choose to participate will not affect you or your relationship with me or the University of Illinois at Chicago in any way.

[If verbally consents, begin:]  
Date: ___ ___/___ ___/___ ___ ___ ___ (day/month/year)  
Ministry: _________________________________
APPENDIX E (continued)

1. What is your role in this Ministry?
2. What is the mission or role of this Ministry?
3. What resources does your Ministry have?
4. Are you a part of any national or interdisciplinary sub-committee?
   a. If so, which?
5. In thinking about the work that you do, do you interact with any other Ministry officials in any capacity?
   a. If so, how?
6. How would you describe the food environment of Tonga?
7. What does food security mean to you?
8. What are the roles of each Ministry on the topic of food security?
9. What should be the roles of each Ministry on the topic of food security?
10. Are there any food-related policies that are currently under development in your Ministry?
    a. If so, please describe them and where it is in the development process.
    b. What are the aims and expected outcomes of those policies?
11. Are there any food-related policies that should be considered or developed? If so, what kind?
12. From your perspective, what, if anything, is your ministry trying to accomplish in regards to food and what resources does it have?
13. What policies have been proposed by this Ministry?
14. What do you see as the main challenges of the food environment of Tonga?
APPENDIX F

National Health Impact Assessment Workshop Materials

The 1st National Health Impact Assessment of the Tonga Food Bill

Workshop Materials

November 15, 2011
National Health Impact Assessment Workshop

15 November 2011
9:30AM-5:00PM

Aims & Objectives

Aim:
To collaboratively assess the health impacts of the Food Bill before it is reviewed by Parliament in 2012.

Objectives:
• To describe the Health Impact Assessment (HIA) approach
• To apply Strategic HIA to the Food Bill
• To identify health impacts and/or gaps within the Food Bill
• To develop a set of recommendations based on the HIA
APPENDIX F (continued)

**Why Assess the Food Bill?**

- Tonga NCD Summit
  - Policies need to be “realistic and implementable”; “implemented and regulated”
  - “Increase availability and access to healthy local foods through policy”
  - “Recognize the importance of prices on purchasing and consumption; decrease prices of healthy foods; increase taxes on unhealthy foods to make them unattractive”
  - “Needs to endorse the Food Act now; the wait has been too long”

- Food Secure Pacific Food Summit
  - Leadership & cooperation
  - Regulatory frameworks, enforcement, and compliance, and public-private sector collaboration.

- Tonga Food Summit
  - “Clarify responsibility & roles” to the public
  - “Create awareness regarding a new act or legislation in order for people to know which Ministry is responsible”

---

**What is Health Impact Assessment?**

“…a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.”

APPENDIX F (continued)

Why do Health Impact Assessment?

- Current policy development often considers economic and developmental impacts; however, there may be long-term negative health impacts such as NCD risk factors. HIA will allow us to identify the potential impacts both short- and long-term.

- A multi-sectoral approach is recommended for healthy policy development. HIA takes a multi-sectoral approach.

- A systems (whole-of-government and community) perspective will likely reduce disparities among organizations or groups. HIA encourages collaboration to make sure that a variety of groups are represented.

Where has Health Impact Assessment been applied?

- Slovenia assessed the health impact of agricultural, food, nutrition policies under consideration by law makers

- EU assessed the Common Agricultural Policy (CAP) - e.g., subsidies to dairy industry

- New Zealand assessed the draft Wairarapa Alcohol Strategy

- U.S. assessed the 2002 Farm Bill

- Thailand’s National Health Act 2007
  - Included that every citizen has the right to request an HIA of any policy under consideration
Mission & Vision

From the WHO 1st Ministers of Health Meeting in 1995 and revitalized at the 2011 meeting:

Mission:

*Building healthy communities and populations through health protection & health promotion activities*

A Guiding Vision:

*(For Tonga to be) a healthy island which reflects a comprehensive and integrated approach to well-being*

Where does policy fit?

---

Everywhere!
APPENDIX F (continued)

Steps of HIA

- Screening
- Scoping
- Appraisal
- Recommendations & Reporting
- Monitoring & Evaluation

Step 1: Screening

- Performed pre-workshop based on discussions from previous national meetings
- Identify policies for which HIA would be useful based on various factors including:
  - Timeliness
  - Relevancy
  - Stakeholder support
  - Evidence supporting
  - Capacity supporting
- Outcome of Screening:
  - An appropriate policy is selected to continue through the HIA process
Internal & External Environments

- Complying with international agreements
- Resource requirements (e.g. for Regulating Legislation)
- Finding the evidence for weighing short-term and long-term costs and benefits

Before we begin...

- What was (or is) the intended purpose of the Food Bill?
- As it exists today, does the Food Bill do what it intends to do?

- Point for discussion:
  Food Bill/Act could act as a foundation for future policies
Step 2: Scoping

• In this step we will:
  – Outline the expected impacts of the policy or program;
  – Identify any gaps within the policy;
  – Identify the methodological approach to carrying out the appraisal & delegate responsibility; and
  – Identify anticipated challenges.

• Outcome of Scoping:
  – A detailed road map for appraisal to follow that is informed by evidence
  – A logic framework is started

Determinants of Health

• A determinant of health is any condition which determines health outcomes.

• Determinants of Health can be biological, behavioral, socio-economic, socio-cultural, or environmental.

• The goal is to identify determinants of health that may be affected by the policy being examined.
Addressing Gaps

• A gap exists when any component of the policy is unclear as to:
  – who is responsible for any aspect of the task (e.g., implementation, regulation, concerns from the community, etc.);
  – how the task is to be resourced;
  – why the component exists;
  – if any part of the component is missing.

Logic Framework

• A tool used to guide the process of making connections between:

  Policy → Proximate → Intermediate → Health-related Effects → Outcomes → Outcomes

• Logic frameworks help to illustrate causal pathways and likely positive and negative health effects for the proposed policy by:
  1) organizing existing knowledge;
  2) guiding analyses; and
  3) communicating information.
Logic Framework Example

Step 3: Appraisal
(a.k.a. Assessment)

- In this step we will:
  - Appraise/Assess the identified policy components and the magnitude of their effect on health determinants
  - Determine and discuss what data are needed and what are available to appraise the logic framework
  - Discuss the gaps in the policy

- Outcome of Appraisal:
  - A completed logic framework
  - A completed appraisal summary tool
Step 4: Recommendations & Reporting

• What to include in the report:
  – Information about potential health impacts
  – Recommendations for minimizing harm and maximizing benefits of policy impacts
  – Propose solutions to fill in the policy gaps
  – Evidence supporting claims/recommendations

Step 5: Monitoring & Evaluation Plan

• What to include in a Monitoring Plan:
  – A method to track recommendations (Were they implemented?)
  – Methods for monitoring the health determinants and outcomes as predicted by the HIA process
Next Steps & Timeline

- Commitment from participants
- Fill in the evidence gaps & address the general gaps
- Development of the HIA report
- Anticipated review by Parliament
- Evaluations

---

Groups

- Yellow 3.2 Labeling of Food
  4.0 Food Standards
- Orange 2.2 Import & Export of Food
  2.3 Emergency Powers & Recall Procedures
- Pink 2.1 Licensing of food Businesses
  2.4 Administrative Sanctions & Appeals
  3.1 Food Hygiene Practices
APPENDIX F (continued)

Introduction to Health Impact Assessment

What is Health Impact Assessment?

HIA is "...a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population."


Why do Health Impact Assessment?

Current food-related policy development often considers economic and developmental impacts; however, such policy decisions may have long-term health impacts that outweigh anticipated immediate benefits. Therefore, a policy assessment approach which examines the potential effects of the policy on health is needed.


What are the parts of Health Impact Assessment?

1. Screening (Pre-workshop)
   - Determine the suitability of the policy for the HIA process.
   - Seek to determine efficient & effective use of resources for undertaking HIA.

2. Scoping
   - Requires the participation of multi-sectoral stakeholders to be thorough
   - Determine how the Appraisal and Recommendations development will proceed
APPENDIX F (continued)

- Identify the arrangement of responsibility for the steps of HIA
- Set the parameters for monitoring and evaluation
- Identify potential positive and negative outcomes of the policy (Begin to develop a Logic Framework)

3. Appraisal (Assessment)
- Adds the evidence to support the linkages in the Logic Framework
- Characterizes the nature and magnitude of the potential benefits and hazards of the policy (Assess the Logic Framework)
- Identifies any unsupported evidence which needs to be further explored

4. Recommendations & Reporting
- Determine if the benefit or risk is definite, probable, or speculative
- Determine whether the evidence available is calculated (or calculable), estimated (or estimateable), or speculative (i.e., based on other countries’ experiences).
- Identify changes that could be made to maximize potential benefits and minimize the potential hazards related to the policy
- Based on the values of the group carrying-out the HIA

5. Monitoring & Evaluation
- Process Evaluation is for evaluating the HIA process (i.e., its effectiveness)
- Outcome Evaluation is for evaluating whether the recommendations of HIA were implemented as proposed

## APPENDIX F (continued)

### Screening Tool

<table>
<thead>
<tr>
<th>To your knowledge…</th>
<th>Yes (Should conduct an HIA)</th>
<th>No (Should not conduct an HIA)</th>
<th>Estimated level of certainty of your response to the questions (high, medium, low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is there potential for positive health impacts as a result of the proposed policy change(s)? <em>(Will the policy affect the determinants of health such as socioeconomic or environmental factors or lifestyle?)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there potential for negative health impacts as a result of the proposed policy change(s)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are the potential negative health impacts likely to affect a large number of people? <em>(Include consideration of future and intergenerational impacts.)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are the potential negative health impacts likely to be disproportionately greater for disadvantaged or vulnerable groups in the population? <em>(Think about which groups in the population could be affected.)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there existing evidence (e.g., indicators, studies, previous policies) to support the policy change(s)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are there public or community concerns about potential health impacts of this policy change(s)?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there uncertainty about what the potential health impacts might be?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there support from the policymakers involved, or political support within the organization to carry out an HIA?</td>
<td></td>
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</tr>
</tbody>
</table>

APPENDIX F (continued)

A Guide to Identifying and Defining Health Determinants∗

<table>
<thead>
<tr>
<th>Categories</th>
<th>Examples of Health Determinants within each Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population-based services</td>
<td>Access to and quality services available such as:</td>
</tr>
<tr>
<td></td>
<td>• Health care</td>
</tr>
<tr>
<td></td>
<td>• Public transportation</td>
</tr>
<tr>
<td></td>
<td>• Social Services</td>
</tr>
<tr>
<td>Environmental Factors</td>
<td>• Working conditions</td>
</tr>
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<td></td>
<td>• Housing conditions</td>
</tr>
<tr>
<td></td>
<td>• Communications</td>
</tr>
<tr>
<td></td>
<td>• Water quality</td>
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<td></td>
<td>• Soil quality</td>
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<td>• Air quality</td>
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<tr>
<td></td>
<td>• Food (availability)</td>
</tr>
<tr>
<td></td>
<td>• Climate/ Biodiversity</td>
</tr>
<tr>
<td></td>
<td>• Land use</td>
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<tr>
<td></td>
<td>• Energy</td>
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<td></td>
<td>• Waste Disposal</td>
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<tr>
<td>Socio-cultural Factors</td>
<td>• Social Support</td>
</tr>
<tr>
<td></td>
<td>• Participation in community &amp; public affairs</td>
</tr>
<tr>
<td></td>
<td>• Family connection</td>
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<td></td>
<td>• Cultural participation, cultural values &amp; practices</td>
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<td></td>
<td>• Discrimination</td>
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<tr>
<td></td>
<td>• Perception of Safety</td>
</tr>
<tr>
<td>Socio-economic Factors</td>
<td>• Education level</td>
</tr>
<tr>
<td></td>
<td>• Opportunities for skill &amp; knowledge development</td>
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<td></td>
<td>• Employment</td>
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<td></td>
<td>• Income level</td>
</tr>
<tr>
<td></td>
<td>• Affordable, good-quality housing</td>
</tr>
<tr>
<td></td>
<td>• Food (access)</td>
</tr>
<tr>
<td>Individual (Behavioral) Factors</td>
<td>• Diet (food utilization)</td>
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<td></td>
<td>• Physical Activity</td>
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<td></td>
<td>• Smoking</td>
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<td></td>
<td>• Alcohol Intake</td>
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<tr>
<td></td>
<td>• Stress</td>
</tr>
<tr>
<td></td>
<td>• Self Esteem and Confidence</td>
</tr>
<tr>
<td>Biological Factors</td>
<td>• Age</td>
</tr>
<tr>
<td></td>
<td>• Gender or Sex</td>
</tr>
<tr>
<td></td>
<td>• Genetics</td>
</tr>
</tbody>
</table>

∗The goal is to identify determinants of health that may be affected by the policy being examined, not to identify health outcomes.

APPENDIX F (continued)

Scoping Tool

**Large Group**

1. Reflect on the Vision, Mission, Values, and general HIA Objectives.
2. Determine the aims and objectives of this Health Impact Assessment.
3. Scoping aims to identify pathways and determinants of health to be considered.

**Small Groups**

*Please discuss the following questions and prepare to present to the large group.*

1. Who are the stakeholders involved with this policy? (i.e., who is related to the implementation the policy?)
2. What are the existing mandates or other regulations related to the policy that must be taken into account?
3. Who will be affected by the policy? How will they be affected?
4. What health determinants are affected by the policy?
APPENDIX F (continued)

5. What are the general intended outcomes of the policy?

6. What are the possible health outcomes of the policy?

7. What are the causal linkages that need to be re-evaluated, refined, or require more evidence-based support? (What resources can provide evidence?)

8. What further information is needed to appraise the policy?
APPENDIX F (continued)

Logic Framework

- Logic frameworks help to illustrate causal pathways and likely positive and negative health effects for the proposed policy by:
  1) organizing existing knowledge, 2) guiding analyses, and 3) communicating information.

- Here, in the Scoping step, we will first determine the relationship among policy components and effects. Next, in the Appraisal step, we will add magnitude to the relationships identified during Scoping.

<table>
<thead>
<tr>
<th>Policy</th>
<th>Proximate Effects (i.e., more immediate effects &amp; resource needs)</th>
<th>Intermediate Outcomes on Determinants of Health (&amp; long term resource needs)</th>
<th>Health-related Outcomes (includes risk factors for health outcomes as well)</th>
</tr>
</thead>
</table>
| Example: License (& health exam) requirement for all shops selling cooked foods (e.g., pies, keke, cakes, burgers) | Example:  
- Change* in license requests  
- Change* in stores selling cooked foods  
- Change* in stores selling cooked foods  
- Possible change* in # of, or responsibility of current trained inspectors | Example:  
- Change* in the availability of cooked foods for purchase  
- Change* in people’s food utilization (eating patterns) - possibly children?  
- Cost of additional trained inspectors  
- Possible change* in government income from licenses and fines | Example:  
- Change* in dietary purchasing  
- Change* in dietary consumption |

*The direction, extent/magnitude of the change will be determined in Step 3: Appraisal.

Health Outcomes can be categorized into:
1) communicable diseases, 2) non-communicable diseases, 3) injury, and 4) psycho-social distresses.

## APPENDIX F (continued)

### Appraisal Tool – Part 1

<table>
<thead>
<tr>
<th>Health determinants specific to the policy</th>
<th>Description of impact on each determinant of health</th>
<th>Identify any evidence quantitative or qualitative indicators</th>
<th>Differential impacts on particular groups/populations? (Which groups and how?)</th>
<th>External influences that may interact with the policy</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

## APPENDIX F (continued)

### Appraisal Tool – Part 2

<table>
<thead>
<tr>
<th>Potential Impact on Determinant of the Policy</th>
<th>General impact of the Policy on determinants of health (positive, neutral, negative)</th>
<th>Likelihood of the impact occurring (low, medium, high)</th>
<th>Severity or significance of potential impact (small/low, medium, large/high)</th>
<th>Scope of potential impact (Does it affect a small or large number of people?)</th>
<th>Measurability of potential impact (qualitative, calculable, estimable)</th>
<th>Possible Actions to enhance positive and reduce negative impacts</th>
</tr>
</thead>
<tbody>
<tr>
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</table>

APPENDIX F (continued)

Recommendations & Reporting

When developing recommendations through HIA, the goal is to be able to:

1) Provide a unified plan to enhance positive impacts, reduce potentially negative impacts, and fill in the gaps; and

2) Provide the evidence to support identified impacts and gaps.

The HIA report should be distributed to all workshop participants, relevant stakeholders, and decision-makers.

The report should include:

1) A list of who was involved in the HIA;

2) A list of those who endorse the HIA recommendations;

3) A description of the steps taken during the HIA;

4) An outline of the impacts and gaps of the policy with cited evidence;

5) A detailed recommendation of how to reduce the potential negative impacts and enhance the potentially positive impacts.
Monitoring & Evaluation

The monitoring step is intended to help those who conduct the HIA to:

1) Make sure all steps of HIA were carried out (short term);

2) Track and determine if in the recommendations that were reported were implemented or not (medium term);

3) Track impacts of the policy on health (long term).

The evaluation step includes many levels including:

1) **Process Evaluation**—evaluating the steps of HIA that were carried out. What went well? What needs improvement?

2) **Outcome Evaluation**—evaluating whether the recommendations established through the HIA were implemented.

**Impact Evaluation**—evaluating whether there was an impact on the health outcomes.
APPENDIX G

Strategic Health Impact Assessment Process Evaluation

National Health Impact Assessment Process Evaluation

*Please mark as NC = Not completed; or C = Completed*

1. Screening Tool completed _____
   a. Policy Selected _____
   Please note any observations and opinions about this step you would like to share:

   ________________________________________________________________

   ________________________________________________________________

2. Involved Stakeholders ______
   a. Identify stakeholders
      Number: ______
   b. Contact and get input from stakeholders
      Number: ______
   Please note any observations and opinions about this step you would like to share:

   ________________________________________________________________

   ________________________________________________________________

3. Established vision, mission, values, and goals of policy “owning” agency. ______
   a. What was the vision?

   ________________________________________________________________

   b. What was the mission?

   ________________________________________________________________

   c. What was/were the values?

   ________________________________________________________________

   d. What was/were the goals?

   ________________________________________________________________
APPENDIX G (continued)

4. Identified internal environmental context of policy (e.g., resource capacity) ______

Please note any observations and opinions about this step you would like to share:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

5. Identified external environmental context of policy (e.g., political mandates) ______

Please note any observations and opinions about this step you would like to share:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

6. Scoping Tool completed ______
   a. Developed Logic Framework _____
   b. Developed Appraisal Plan _____

Please note any observations and opinions about this step you would like to share:

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

7. Health Impact Assessment Objectives established _____
   a. What was/were the objective(s) of this Health Impact Assessment?

________________________________________________________________________
Was it achieved? ________ (Yes or No)
________________________________________________________________________
Was it achieved? ________ (Yes or No)
________________________________________________________________________
Was it achieved? ________ (Yes or No)
APPENDIX G (continued)

8. Impact Assessment (Appraisal Tool) completed _____
   Please note any observations and opinions about this step you would like to share:
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

The following questions were not originally a part of this survey, but rather information on these two steps was collected anecdotally. The questions below were included here post case study.

9. Report of recommendations developed _____
   a. Shared policy with other policy makers/community _____
   Please note any observations and opinions about this step you would like to share:
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________
   ________________________________________________________________

10. A monitoring plan was developed _____
    a. Shared the monitoring plan with other policy-makers/community ______
    Please note any observations and opinions about this step you would like to share:
    ________________________________________________________________
    ________________________________________________________________
    ________________________________________________________________
    ________________________________________________________________
APPENDIX H

Strategic Health Impact Assessment Workshop Evaluation Survey

**National Health Impact Assessment Workshop Evaluation Survey**

*Please circle one response choice for each question unless instructed otherwise.*

1. How would you rate the overall quality of the National Health Impact Assessment Workshop?

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

2. How would you rate the quality of the facilitator of the workshop?

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
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</tbody>
</table>

3. Did you have any expectations for the workshop?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
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<tbody>
<tr>
<td>1</td>
<td>2</td>
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</table>

3a. If yes, what were they?

____________________________________________________________________________

4. How well did the workshop meet your expectations?

<table>
<thead>
<tr>
<th>Very well</th>
<th>Somewhat Well</th>
<th>Slightly well</th>
<th>Not at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
APPENDIX H (continued)

5. How would you rate the extent to which the steps of the workshop were appropriate for the identification of health impacts of the selected policy?

<table>
<thead>
<tr>
<th></th>
<th>Very appropriate</th>
<th>Somewhat appropriate</th>
<th>Slightly appropriate</th>
<th>Not at all appropriate</th>
</tr>
</thead>
<tbody>
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<td>3</td>
<td>2</td>
<td>1</td>
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</table>

Comments:
__________________________________________________________________________
__________________________________________________________________________

6. Based on what you learned/did in this workshop, how confident do you feel you understand Strategic Health Impact Assessment?

<table>
<thead>
<tr>
<th></th>
<th>Very confident</th>
<th>Somewhat Confident</th>
<th>A little confident</th>
<th>Not at all Confident</th>
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<tr>
<td></td>
<td>4</td>
<td>3</td>
<td>2</td>
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</table>

7. Based on what you learned/did in this workshop, how confident do you feel that you will be able to carry out Strategic Health Impact Assessment?

<table>
<thead>
<tr>
<th></th>
<th>Very confident</th>
<th>Somewhat Confident</th>
<th>A little confident</th>
<th>Not at all Confident</th>
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</tbody>
</table>

8. How useful was this workshop in providing information relevant to your policy-related work?

<table>
<thead>
<tr>
<th></th>
<th>Extremely useful</th>
<th>Useful</th>
<th>Somewhat Useful</th>
<th>Not at all useful</th>
</tr>
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<tr>
<td></td>
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Comments:
__________________________________________________________________________
__________________________________________________________________________
APPENDIX H (continued)

9. How representative of the various policy-making sectors were the participants of the workshop?

<table>
<thead>
<tr>
<th>Extremely Representative</th>
<th>Very Representative</th>
<th>Somewhat Representative</th>
<th>Not at all Representative</th>
</tr>
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<tr>
<td>4</td>
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</table>

10. How would you rate the overall extent of participant engagement in the steps of the workshop?

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
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Comments:
__________________________________________________________________________
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11. How would you rate the helpfulness of tools used in the workshop?

<table>
<thead>
<tr>
<th>Extremely Helpful</th>
<th>Very Helpful</th>
<th>Somewhat Helpful</th>
<th>Not at all Helpful</th>
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<tr>
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</table>

Comments:
__________________________________________________________________________
__________________________________________________________________________

12. How comfortable did you feel expressing your views, opinions, and ideas during the workshop?

<table>
<thead>
<tr>
<th>Extremely Comfortable</th>
<th>Very Comfortable</th>
<th>Somewhat Comfortable</th>
<th>Not at all Comfortable</th>
</tr>
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<tbody>
<tr>
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</table>

Comments:
__________________________________________________________________________
__________________________________________________________________________
APPENDIX H (continued)

13. How would you rate the overall availability of evidence for the workshop?

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
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<th>Fair</th>
<th>Poor</th>
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</table>

Comments:
__________________________________________________________

14. How would you rate the overall strength of the evidence identified in the appraisal step?

<table>
<thead>
<tr>
<th></th>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor</th>
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</tbody>
</table>

Comments:
__________________________________________________________

15. Do you plan to apply what you learned/did in this workshop to your future work?
   ___ Yes   ___ No

15a. If yes, what parts will you apply to your future work and how?
   a) ___________________________________________________________
   b) ___________________________________________________________
   c) ___________________________________________________________

16. Please list the 3 MOST useful things you learned during the workshop.
   a) ___________________________________________________________
   b) ___________________________________________________________
   c) ___________________________________________________________

17. Please list the 3 LEAST useful things about the workshop.
   a) ___________________________________________________________
   b) ___________________________________________________________
   c) ___________________________________________________________
APPENDIX H (continued)

18. Please list any information you felt was missing from the workshop.

____________________________________________________________________

____________________________________________________________________

19. Please use this space to provide any additional comments or suggestions:

____________________________________________________________________

____________________________________________________________________

Thank you very much for completing this evaluation!
APPENDIX I

Strategic Health Impact Assessment Facilitator Evaluation

1. Describe the HIA planning process including details about: forming the planning group; time spent; actions taken; resources and stakeholder identification process.

2. How was the HIA undertaken - including details of time, place, geographic area/population group affected by the proposal, what the proposal sought to achieve, and the methods used (i.e., steps of HIA taken)?

3. What resources (financial, human, time) were used, and what was the associated opportunity cost?

4. What evidence was used, and how did it inform the development of recommendations?

5. How were recommendations formulated and prioritized (what factors influenced this decision-making process)?

6. How and when were the recommendations delivered to the relevant decision makers?
APPENDIX J

National Health Impact Assessment Workshop Report

The 1st National Health Impact Assessment Workshop Report

Tonga Food Bill

Date and Time: 15 November 2011, 9:30am-4:30pm

Venue: Dr. Moulton Hall, Vahakolo Road

Participants:

Guests:

Staff:

Prepared by: Tonga Health Promotion Foundation
APPENDIX J (continued)

Glossary

FAO – Food and Agriculture Organization
HESC – Healthy Eating Subcommittee
HIA – Health Impact Assessment
MAFF – Ministry of Agriculture, Food, Fisheries & Forestry
MEWAC – Ministry of Education, Women’s Affairs, and Culture
MLCI – Ministry of Labour, Commerce & Industries
MOH – Ministry of Health
MOTEYS – Ministry of Training, Employment, Youth & Sports
NCD – Non-Communicable Disease
NGO – Non-Governmental Organization
TongaHealth – Tonga Health Promotion Foundation
WHO – World Health Organization


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Executive Summary of the 1st National HIA Workshop

Tonga Health’s mission is to prevent and reduce harm from NCDs through activities such as advocacy for healthy public policy. Tonga Health proposed conducting Health Impact Assessment as a part of policy development to determine if the approach is feasible and acceptable to policy makers in Tonga. Tonga Health planned the 1st National Health Impact Assessment Workshop to introduce and implement HIA to various policy makers.

The Food Bill was selected as the policy to undergo the HIA process. The Food Bill was an appropriate piece of legislation to which HIA could be applied because: 1) There is increased concern regarding the growing rates of diet-related NCDs in Tonga; 2) The Food Bill is expected to pass through Parliament in early 2012; therefore, recommendations made now can help to ensure that the best possible bill is passed; 3) It involves multi-sectoral governmental and non-governmental organizations. The aim of the National HIA Workshop was to collaboratively assess the health impacts of the Food Bill before it is reviewed by all of Parliament in 2012. Since this is the first HIA Workshop conducted in Tonga, the first objective was to describe the HIA approach. The subsequent objectives included: applying HIA to the Food Bill, identifying the health impacts and/or gaps within the Food Bill, developing a set of recommendations based on the HIA, and evaluating the Workshop.

The Workshop participants identified 4 major pathways through which the Food Bill can impact health: 1) Dietary Consumption, 2) Economic, 3) Food Safety, and 4) Socio-Political pathways. Major findings and recommendations which resulted from discussions included the need for: 1) Identification and coordination of roles and responsibilities; 2) Resource identification (e.g., sample testing, regulation enforcement); and 3) Addressing incomplete standards.

The major next steps derived from the Workshop included development of a transitional plan to prepare for the implementation of the Food Bill into an Act, which included: 1) establishment of Food Standards (consulting the Consumer Protection Act); 2) selection of a National Food Authority; 3) Food Bill licensing clarifications – possibly including inspection of food transport systems; e-tracking; written & educational follow-up for violations; and 4) research of ways in which the establishment of a Food Laboratory or a regional partnership for Tonga can be accomplished.

Prepared by: Tonga Health Promotion Foundation
APPENDIX J (continued)

About Health Impact Assessment

What is Health Impact Assessment?
HIA is “…a combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population.” (WHO, 1999)

Why do Health Impact Assessment?
Current food-related policy development often considers economic and developmental impacts; however, such policy decisions may have long-term health impacts that outweigh anticipated immediate benefits. Therefore, a policy assessment approach which examines the potential effects of the policy on health is needed. (GHC, 2002; Lock, 2003)

When is Health Impact Assessment Conducted?
Health Impact Assessment (HIA) may be conducted before or after a policy is implemented. HIA conducted prior to implementation of a policy is called prospective HIA because identification of potential health impacts and subsequent recommendations are made before a policy is implemented. Prospective HIA has great value since changes can be made before any implementation has occurred. (Harris, 2007)

How does Strategic Health Impact Assessment enhance Health Impact Assessment?
Strategic Health Impact Assessment (SHIA) is an enhanced approach to HIA, which aims to mitigate the commonly identified challenges of traditional HIA. SHIA incorporates aspects of strategic planning into the traditional HIA approach. Establishing a policy development approach with consideration to policy context, capacity, and vision, such as SHIA, can enhance stakeholders’ experiences as well as increases the likelihood of having sustainable policy development. (Elliot, 2004)
APPENDIX J (continued)

Why Assess a Food-Related Policy in Tonga?

Beginning in the 20th century, the Kingdom of Tonga experienced a pronounced shift in leading causes of death; deaths attributable to non-communicable diseases (NCDs), were less than 6% in 1950 and increased to nearly 30% in 2006. (DST, 2006). Various social, economic, environmental, and political factors have contributed to this shift by having an impact on the country’s food landscape. (Signal, 2000). Many organizations, such as the United Nation’s World Health Organization (WHO) and Food and Agriculture Organization (FAO), have identified a changing food environment as a contributor to the rise in diet-related NCDs such as diabetes and heart disease. (Snowdon, 2010). In particular, the increased availability of and access to foods high in saturated fat, sugar, and sodium contribute to an unhealthy diet, which is a risk factor for NCDs. (Lichtenstein, 2006). The burgeoning rate of NCD-related risk factors inspired the policy-centered, food-related focus of this proposal. “Improving dietary habits is a societal problem. It requires a population-based, multi-sectoral and culturally relevant approach;” (Hughes, 2005) as such, the HIA is a potentially appropriate approach for addressing food-related factors that impact aspects of health such as policies which affect dietary habits and the food landscape. (Lock, 2004).

Why Assess the Food Bill?

In 2011, there have been several food-related summits. The Food Bill was mentioned as a priority for protecting the health of the people of Tonga.

During the Tonga NCD Summit some comments and discussion centered on the following:

- Policies need to be “realistic and implementable”; “implemented and regulated”
- “Increase availability and access to healthy local foods through policy”
- “Recognize the importance of prices on purchasing and consumption; decrease prices of healthy foods”; “increase taxes on unhealthy foods to make them unattractive”
- “Needs to endorse the Food Bill now; the wait has been too long”
APPENDIX J (continued)

During the **Food Secure Pacific Food Summit**, which was a Pacific Island regional Summit attended by representatives from MAFF, MOH, and MLCI, some aspects of an endorsed framework included:

- Promotion of Leadership & cooperation
- Regulatory frameworks, enforcement, and compliance, and public-private sector collaboration.

During the **Tonga Food Summit**, some comments and discussion centered on the following:

- “Clarify responsibility & roles” to the public
- “Create awareness regarding a new act or legislation in order for people to know which Ministry is responsible”

**Participants**

Participants were invited from ministries including: MAFF, MOH, MLCI, MEWAC, MOTEYS, Ministry of Finance & Planning, Ministry of Transport, and the Department of Statistics. NGOs such as the public servants association, the consumer protection federation, the Women’s and Children’s Centre, the Friendly Islands Teacher’s Association, and Tonga Health Systems Support Programme, were also invited. Members of Parliament and local business representatives were invited as well. There were a total of 22 different organizations invited and 16 were represented at the Workshop. There were a total of 44 individual representatives invited to participate in or attend the workshop as guests. There were 17 participants, 7 guests, and 5 staff members (one of whom was also a participant) present at the workshop.

**Aims and Objectives of the Workshop**

**Aim:**

To collaboratively assess the health impacts of the Food Bill before it is reviewed by all of Parliament in 2012.

**Objectives:**

1. To describe the Health Impact Assessment (HIA) approach
2. To apply HIA to the Food Bill
3. To identify health impacts and/or gaps within the Food Bill
4. To develop a set of recommendations based on the HIA
5. To evaluate the National HIA Workshop
APPENDIX J (continued)

Objective of the Food Bill

The objective of the Food Bill is “to regulate the manufacture, sale, import and export of food, to guarantee food safety and fitness for human consumption, to promote fair trade practices in food and for related matters.”

-From the Memorandum to the Draft Food Act, 2006, Preliminary section.

The participants were asked to consider:

1) What the intended purpose of the Food Bill?
2) As, it exists today, does the Food Bill do what it is intended to do?
3) The Food Bill can act as a foundation for future food-related policies.

Vision & Mission to Guide this HIA

At the WHO 1st Ministers of Health Meeting in 1995 and revitalized at the 2011 meeting, a Vision and Mission for the Healthy Islands Initiative was created. Based on the Initiative, the Vision and Mission for this HIA were as follows:

Vision:

(For Tonga to be) a healthy island which reflects a comprehensive and integrated approach to well-being

Mission:

Building healthy communities and populations through health protection & health promotion activities
APPENDIX J (continued)

Steps of Health Impact Assessment

Step 1: Screening - Deciding if HIA should be conducted?

What is screening?

- Screening is the step in which participants decide if an HIA would be useful based on various factors including:
  - Timeliness
  - Relevancy
  - Stakeholder support
  - Evidence supporting
  - Capacity supporting

How was the screening step carried out for this HIA?

- This step was performed pre-workshop based on discussions from previous national meetings/summits.
- Individual representatives from various Ministries and NGOs were given a questionnaire in which they were asked to identify any food-related policies currently under development or consideration by policy-makers.
- TongaHealth staff used the Screening Tool (page 3 of the “Materials HIA” document file) to decide which policy to undergo the HIA process.

Step 2: Scoping - Deciding what should be appraised and how

What is scoping?

- Scoping is the step in which participants:
  - Identify the methodological approach to carrying out the appraisal (assessment);
  - Identify resources needed to conduct the impact analysis;
  - Identify who will conduct the analysis;
  - Identify anticipated challenges with conducting the HIA appraisal, recommendations, and evaluation steps; and
  - Preliminarily identify the potential impacts of and gaps within the policy.

How was the scoping step carried out for this HIA?

- Potential health impacts and gaps were identified by participants working in small groups.
- Findings were presented to the larger participant group for comment.
APPENDIX J (continued)

Step 3: Appraisal (i.e., Assessment) - Identify potential health impacts & consider available evidence

What is appraisal?
- Appraisal is the step in which participants appraise the identified policy components determining the direction and magnitude of their effect on health determinants using available evidence.
- Participants identify any potential impacts that may still require further evidence to support.

How was the appraisal step carried out for this HIA?
- Major impacts and gaps were identified and discussed during the HIA workshop and the directions of the health impacts were discussed.
- TongaHealth staff incorporated the potential impacts identified during the workshop into a Logic Framework.
- TongaHealth staff continued the bulk of the appraisal process through literature searches for evidence to support or contradict identified potential impacts and added directionality and magnitude to the Logic Framework.

Step 4: Recommendations & Reporting – Establish recommendations based on appraisal with the intent to reduce harm from and increase benefits of the proposed policy

What are Recommendations & Reporting?
- Recommendations & Reporting are the steps in which participants develop recommendations to reduce harm from and increase benefits of the policy component and report those recommendations to stakeholders.
- A report is developed to communicate HIA outcomes and recommendations to participants, stakeholders and policy makers, which includes:
  - Information about potential health impacts
  - Recommendations for minimizing harm and maximizing benefits of policy impacts
  - Propose solutions to fill in the policy gaps
  - Evidence supporting claims/ recommendations

How were the Recommendations & Reporting steps carried out for this HIA?
- TongaHealth staff drafted this HIA Workshop Summary Report which includes:
APPENDIX J (continued)

- Recommendations established by participants during the HIA Workshop;
- Report of attendees, discussions, and outcomes of small group presentations;
- Follow-up appraisal conducted by Tonga-Health staff

**Step 5: Monitoring & Evaluation — Develop a plan to evaluate the HIA process and monitor the extent to which the recommendations are carried out**

**What are Monitoring & Evaluation?**
- Monitoring is the step in which participants draft a plan on how to monitor or track the progress of the HIA recommendations. (e.g., were the recommendations implemented?)
- Evaluation is the step in which participants evaluate the HIA process as well as the outcomes (if any) of the HIA process.

**How were the Monitoring & Evaluation steps carried out for this HIA?**
- Participants completed Workshop evaluation forms which measured the HIA process
- TongaHealth has agreed to follow-up with:
  - Monitoring the progress of recommendations; and
  - Analyzing and reporting on the evaluation of the HIA process
APPENDIX J (continued)

Group Notes, Scoping, Logic Framework & Appraisal

I. Licensing & Food Hygiene Group

Participants: Dr. Reynold ‘Ofanoa (MOH), Mr. Niu Fakakovikaetau (MOH), Mr. Anthony Cocker (MLCI), Mrs. Fusi Kaho (MOH), Mrs. ‘Ana Kavaefaiafi (NGO), Mrs. Vaimoana Mafi (MAFFF); Guests: Mr. Wayne Antkowiak (WHO) Rotating Staff: Mrs. Sioe Holo'api'api Papani

Notes

2.1 Licensing of Food Businesses

- MLCI is responsible

Issues/Problems:

1) Compliance by small food business
   a. Enforcement → MOH, MLCI

2) Health Certificates for Mobile Food Outlets

3) Regularity; quarterly inspection by health inspectors
   a. Limitation: Human Resources

4) License application Form Format
   a. Type of food (e.g. raw or cooked); specific type of food (e.g., type of bread)
   b. Name and type of facility cooking and selling the food
   c. Ingredients (e.g. salt, etc.) → NCD impact [Health Impact]

2.4 Administrative Sanctions & Appeals

Issues/Problems:

1) Spot fines: Need to clarify criteria

2) Need to have awareness pre-implementation

3.1 Food Hygiene

Issues/Problems:

1) Testing facility (e.g. for microbiological and chemical analysis)

2) Time Limitation and Resources for implementation

Appraisal Notes

2.1 All food outlets, including mobile food businesses, must be licensed and have a health certificate.
APPENDIX J (continued)

Proximal Impacts:

1) Potential increase in resource needs (Human & Fiscal Resources);
   Direction: increased resource needs to inspect more businesses than before since licensing did not include mobile businesses prior to this bill.

2) Potential economic impact on businesses which may impact prices for consumers;
   Direction: Cost of licensing businesses will likely have a trickle-down effect on consumers. (NAS, 2004).

3) Potential change in foods available at food outlets due to licensing requirements.
   Direction: Some businesses may not sell certain foods which need extra licensing while others will simply charge more for them to offset the cost of the license. (Tester, 2010).

Pathways:
The major pathways by which the Food Bill will likely impact health status include:

1) Dietary Consumption
2) Food Safety
3) Economic

Immediate Outcome:

1) Change in purchasing and consumption behavior (Song, 2009)
2) Price change at consumer-end (NAS, 2004)
3) Change in government income and expenditure (from issuing licenses and from needed resources for inspection)

Gaps:

1) Unclear as to regularity of inspections and by whom
2) Need to clarify that food business should include mobile food business

Recommendations

1) Review the fees by size of business, as to not deter small business with high licensing costs; develop a sliding scale based on income of establishment
2) Develop minimum “healthy food” standards so government can consider lower fee for businesses selling a minimum amount of foods meeting at least the minimum healthy food standards
3) Establish a role & responsibility grid to be communicated to all related Ministries

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APPENDIX J (continued)

2.4 Administrative Sanctions

Proximal Impacts:
1. Potential change in government revenue from enforcement
   
   Direction: Increased revenue from fines; decreased revenue to increase the number of enforcement officers

2. Potential change in the hygiene behavior of food businesses
   
   Direction: Improved hygiene behavior for those inspected and fined (Cain, 2010)

Pathways:
The major pathways by which the Food Bill will likely impact health status include:
   1) Food Safety
   2) Economic

Immediate Outcome:
1. Change in government income and expenditure
2. Change in exposure to food-borne illness (Newbold, 2008)

Gaps:
1. Standards for defining what constitutes a “minor infraction”.
2. Need for food and drink testing facilities.
3. Clarify resources & responsibilities related to administrative sanctions.

Recommendations
1) Options for inspections quarterly or bi-annually; unscheduled ‘surprise’ inspections
2) Provide fiscal & human resources for this frequency of inspection
3) Strengthen food and drink testing capabilities/provide options
4) Provide education as part of penalty along with informing notice

3.1 Hygienic Practices

Proximal Outcomes:
1. Potential change in the hygiene behavior of food business
   
   Direction: If enforced, improved hygiene behavior on the part of food business sites (Cain, 2010)
APPENDIX J (continued)

Pathways:
The major pathways by which the Food Bill will likely impact health status include:
   1) Food Safety

Immediate Outcome:
   1. Change in exposure to food-borne illness
      Direction: Likely to have a decrease in exposure to food-borne illnesses (Newbold, 2008)

Gaps:
   1. Identify source of resources needed to ensure hygienic practices are adhered to and maintained.

Recommendations
   1. Clarify roles and responsibilities of education, inspection, and enforcement staff.
   2. Ensure that licensing and certification include all aspects of inspection (e.g., handling behavior, physical setting, etc.) for adherence to hygienic inspection.

II. Imports & Exports Group
Participants: Dr. Vilimi Manu (MAFF), Mrs. Moana Taukolto (MCLI), Ms. Jessica Fry (Business Owner); Mrs. Kalesita Futa (NGO); Mr. Barry Taukolto (NGO) Rotating Staff: Mo. Ada Moaosi

Notes
Issues:
   • Immediate cost to businesses will filter down to consumers (e.g., extra taxes to businesses are passed on to consumers)
   • Requires “authorized officers” which has high resource costs
   • Loop hole with recycling/rejected foods - no identification of responsible parties
   • Need to clarify relabeled food language, standards, disclosures (e.g. radiation)
   • Associated resource demands with the certification of exports
   • Do fines/fees meet/exceed standard of living?
   • Clarification of terminology such as “cultivation” and “harvesting”
   • Lack of consultation after violation

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APPENDIX J (continued)

2.2 Requirements for food imports and exports

Proximal Impacts:
1. Potential economic impact and burden on businesses
   Direction: Increased burden which may lead to increase in consumer price (Radcliffe, 2011)
2. Potential change in quality of imported & exported foods
   Direction: Small chance of improved import quality; high chance of improved quality of exports (Kingston, n.d.; Schmit; 2007)

Pathways:
The major pathways by which the Food Bill will likely impact health status include:
   1) Dietary Consumption
   2) Food Safety

Immediate Outcome:
1. Change in price at consumer end (Radcliffe, 2011)
2. Change in purchasing and consumption behavior (Song, 2009)
3. Change in exposure to food-borne illness (Cain, 2010)

Gaps:
1. Systems & Facilities: no food safety laboratory; need provision for
2. Lack of intergovernmental co-operation and inclusion of variety of stakeholders
3. For emergency orders, there is no provision for consulting with owners who violate the regulation
4. Need clause to specify the high risk food list and make provision to make suppliers & importer aware
5. Suppliers & consumers to be informed of relabeling of foods imported
6. Need a regulatory enforcement unit

Recommendations
1. Develop a provision which provides education as part of penalty along with informing notice letter when a violation occurs
2. Publicize the high risk food list
3. Clearly identify responsible parties for each task
4. Make plans for food testing (Identify potential options)
APPENDIX J (continued)

5. Develop a communications strategy for informing consumer of reconditioned/relabeled foods
6. Establish a policy enforcement unit

2.3 Emergency Powers & Recall Procedures

Proximal Impacts:
1. Potential change in foods available at food outlets
   Direction: Uncertain; may cause decreased availability of food if imports are turned away
2. Potential change in quality of imported & exported foods
   Direction: Uncertain; if inspected in a timely manner there may be an effect on what foods are let into and out of Tonga, which in turn potentially increase the quality of foods imported & exported
3. Potential increase of resource needs (human & fiscal) to implement and enforce procedures and mandates
   Direction: Increase need for resources to educate suppliers and consumers about requirements

Pathways:
The major pathways by which the Food Bill will likely impact health status include:
   1) Dietary Consumption
   2) Food Safety

Immediate Outcome:
1. Change in price at consumer end (Radcliffe, 2011)
2. Change in purchasing and consumption behavior (Song, 2009)
3. Change in exposure to food-borne illness (Cain, 2010)

Gaps:
1. See Gaps listed under 2.2

Recommendations
1. See Recommendations listed under 2.2
APPENDIX J (continued)

Logic Framework


Policy Components

2.1 Licensing all food businesses (including mobile food businesses)

2.2 Requirements for Food Import & Export
   *Inspection & Sampling
   *Certification

2.3 Emergency Powers & Recall Procedures

2.4 Administrative Sanctions
   *Improvement Notices
   *Spot fines for ‘minor infractions’

3.1 Hygienic Practices (M&E)
   Food preparation, consumption, & transportation sites

Proximal Impacts

1. Potential increase of resource needs (human & fiscal) to implement & enforce +

2. Potential economic impact and burden on businesses +

3. Potential change in government revenue ~

4. Potential change in foods available at food outlets ~

5. Potential change in quality of imported & exported foods ~

6. Potential change in the hygiene behavior of food businesses +

Intermediate Outcomes

- Change in food access
- Change in price at consumer level (likely increased prices)
- Change in purchasing & behavior
- Change in consumption behavior
- Change in government income & expenditure
- Change in exposure to food-borne illness (Decreased exposure)

Health Outcomes

Physical Health Outcomes:
- Non-Communicable Diseases
- Communicable Diseases

KEY

~ inconclusive (based on available literature)  + positive correlation  - negative correlation

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APPENDIX J (continued)

III. Food Labeling Group

Participants: Mrs. Lola Kolomatangi (NGO), Mrs. Temaima Havoa (TH), Mrs. Moleti ‘Amanaki (NGO), Mrs. ‘Ofa Simil (Business Owner); Dr. Malakai ‘Ake (MOH); Mrs. Losaline Ma’tasi (MAFFF) Guests: MP ‘Aisake Eke (Parliament); Rotating Staff: Ms. Ada Moadari

Notes

Background
a. Current situation: Reviewed by Cabinet; will send to Parliament
b. Review of Policy development process: (Chaotic); Effectiveness (Legislation with no enforcement is like a guard dog with no teeth) examples: Tobacco Act, Consumer Protection Act

Appraisal Notes

3.2 Labeling of Foods with Safety Information
- Require that all foods to be labeled with safety information such as handling, storage, expiration, radiation, ingredients, etc.

Proximal Impacts:
1. Potential change in consumer knowledge
   Direction: Likely improved if label is comprehensible to consumers
2. Potential change in demand on manufacturers (including local) for labeling
   Direction: Likely increased demand on manufacturers (fiscal and human resources)
3. Potentially, food standards & policies can be developed further in regards to nutrition contents
   Direction: Likely improved ability to develop food-related wellness

Pathways:
The major pathways by which the Food Bill will likely impact health status include:
1) Food Safety
2) Dietary Consumption
3) Economic
4) Socio-political

Immediate Outcome:
1. Change in food handling behavior (Cain, 2010)
2. Change in price at consumer-end (Radcliffe, 2011)
APPENDIX J (continued)

3. Change in purchasing behavior (Signal, 2007; NAS, 2004)

Gaps:
1. Lack of coordination among MAFF, MOLI (Customs & Trade), Health, NGOs for implementation & enforcement
2. Lack of enforcement; carry out penalties and possibly increase penalties (for repeat offenders)
3. Uncertain viability of labels if left to the manufacturer
4. Budgetary issues

Recommendations
1. Require all foods to be labeled with safety information such as handling, storage, expiration, radiation, ingredients, etc.

4.0 Following Codex Alimentarius
- Require that all foods be labeled according to the Codex Alimentarius

Proximal Outcome:
1. Potential change in consumer knowledge
   Direction: Likely improved if label is comprehensible to consumers
2. Potential change in demand on manufacturers (including local) for labeling
   Direction: Likely increased demand on manufacturers (fiscal and human resources)
3. Potentially, food standards & policies can be developed further in regards to nutrition contents
   Direction: Likely improved ability to develop food-related wellness

Pathways:
The major pathways by which the Food Bill will likely impact health status include:
1) Food Safety
2) Dietary Consumption
3) Economic
4) Socio-political

Immediate Outcomes:
1. Change in food handling behavior (Cain, 2010)
2. Change in price at consumer-end (Radcliffe, 2011)
3. Change in purchasing behavior (Signal, 2007; NAS, 2004)

Gaps:

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APPENDIX J (continued)

1) Codex only requires nutrition-related labeling when health claims are made.
2) Lack of coordination among MAFF, MCLI (Customs & Trade), Health, NGOs for implementation & enforcement
3) Lack of enforcement: carry out penalties and possibly increase penalties (for repeat offenders)
4) Uncertain viability of labels if left to the manufacturer
5) Availability of nutritious foods is not assured; will need to develop policy specifically to address this issue.
6) Need skilled workers
7) Need Laboratory
8) Budgetary issues
9) Prioritize

Recommendations

a. Require all foods to be labeled according to Codex Alimentarius (Which includes: energy, protein, and carbohydrate) and with nutrition contents (including: amounts of sugar, saturated fat, sodium) even when no health claim is made; doing this will likely enable future policy to be based on nutrition contents (e.g. taxing drinks with more than “x” grams of sugar per 100mL).

b. Identify ways to develop skilled workers

c. Develop a standard label

d. Establish a budget for addressing gaps which include:
   a. Establishing standards
   b. Establishing a laboratory or identifying realistic alternative options
   c. Set high minimum standards

e. Ascertain the content of foods
   a. Establish & meet local standards
      i. Labeling requirements

f. Provide assistance to businesses to set up compliance
APPENDIX J (continued)

Logic Framework

Food Labeling & Food Standards

**Policy Component**

3.2 Labeling of Food
* Pre-packaged
* Contents of Labels
* Language of Labels

4.0 Food Standards to follow Codex Alimentarius

**Proximal Impacts**

1. Potential change in consumer knowledge ~
2. Potential changes in food availability (manufacturing) +
3. Potential change in demand on manufacturers (including local) for labeling
4. Potentially, food standards & policies can be developed further in regards to nutrition contents

**Intermediate Outcomes**

Change in food handling behavior +
Change in exposure to food-borne germs
Change in price at consumer end ~
Change in purchasing behavior + (except when cost is an outweighing concern)

**Health Outcomes**

Physical Health Outcomes: Communicable Diseases
Physical Health Outcomes: Non-Communicable Diseases

**KEY**

~ inconclusive (based on available literature)
+ positive correlation
- negative correlation

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APPENDIX J (continued)

Major Next Steps

1. The next steps included:
   a. Establishing of Food Standards (consulting the Consumer Protection Act);
   b. Identifying a National Food Authority with regulators as their full-time positions;
   c. Including inspection of food transport systems;
   d. Having written and educational follow-up for violations;
   e. Research ways in which the establishment of a Food Laboratory or a regional partnership for Tonga can be accomplished.
      i. As of the day of the workshop, the closest laboratory with food and drink testing capabilities accessible to Tonga is located at the University of the South Pacific in Fiji, but further investigation was/is needed to explore options.

Evaluation Results

Participants reported the “overall availability of evidence for the Workshop” as being the most challenging step in consideration to their work role and capacity. Participants reported the “expression of views, opinions, and ideas” as the most acceptable step in the SHIA approach. The evaluation asked participants if the SHIA approaches as they experience through the Workshop were relevant and applicable to their work. Over 94% of participants rated the Workshop as either “very” or “extremely” applicable to his or her work. In order to measure readiness, the evaluation also asked participants to rate their confidence in their ability to undertake the steps of SHIA in the future. While over 82% of participants felt at least “somewhat confident” in their ability to implement SHIA in the future, only 23.5% reported feeling “very confident”.

Discussion

Since participants noted that the Food Bill could be considered a foundational piece of legislation based on which future food-related policies could be developed, the larger group suggested that the development of Food Standards was the most feasible and appropriate next step. Establishing Food Standards was within the capacity of those assessing the Food Bill.

Update as of December 16, 2011

A letter from the Chairman of the National NCD Committee, the Director of Health, Dr. Siale ʻAkaʻuʻola, and the Chair of the Healthy Eating Subcommittee, Deputy Director of MAFF, Mrs. Losaline Maʻasi, was sent requesting the permission of the Minister of MAFF for the HESC to draft Food Standards. On February 3, 2012, Deputy Director of MAFF, Mrs. Losaline Maʻasi reported that Lord Vaea approved the request for HESC to draft the National Food Standards.
APPENDIX J (continued)

References


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APPENDIX K

Fact Sheet Summary of Strategic Health Impact Assessment Findings & Recommendations

Summary of the Health Impact Assessment of

The Food Bill of Tonga

Tonga Health Promotion Foundation (TongaHealth)
www.tongahealth.org.to
January 2012

Food security
Food security is defined by the Food and Agriculture Organization (FAO) as “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.” The major dimensions of food security include “availability (sufficient affordable quantities, appropriate quality), access (adequate resources for acquiring appropriate foods for a nutritious diet), stability (no risk of losing access to food as a consequence of events such as economic or climatic crisis), and utilization” (consumption patterns).1

Summary of Health Impacts
The HIA of the Food Bill identified 4 major pathways by which the policy components impact health of residents of Tonga which include dietary consumption, food safety, economic and socio-political pathways. Secondary data, found through literature searches and review, were used to appraise the potential health impacts.

It was noted that policy components that included participating in and adhering to inspection such as import & export and hygiene practices, will likely have a positive impact on health through changes in food business hygiene behaviors and quality of food imports and exports.4,6 (Increasing licensing and inspection requirements will likely have both positive and negative impacts on government budget by increasing revenue, while also increasing expenditure on human resources to enforce policies.) The literature on licensing requirements indicated that due to a trickle-down effect, cost burden may shift from the business to the consumer thereby increasing prices at the consumer end; this may in turn impact purchasing behavior.7 Establishing food standards and labeling requirements will potentially increase consumer knowledge and enhance the ability to develop population food-related wellness; thereby potentially improving food handling behaviors, and food purchasing selections.5,7,9 Food standards and labeling requirements may result in a demand on food producers (including local), which may cause an increase in the price of the product; however, this cost is considered low or negligible.9

All of these proximal impacts and intermediate outcomes will likely impact health outcomes of the population; however, further research and in-depth appraisal of the literature is needed to identify the specific ways in which they are linked.

Food Bill Tonga
The Food Bill is a proposal of the Ministry of Agriculture, Food, Forestry, and Fisheries of Tonga originally drafted in 2006. For various reasons, not directly related to the Bill, it was consistently tabled to successive parliamentary sessions. However, it is expected to go through parliamentary review in 2012-2013. The objective of the Food Bill is “to regulate the manufacture, sale, import and export of food, to guarantee food safety and fitness for human consumption, to promote fair trade practices in food and for related matters.”10

-From the Memorandum to the Draft Food Act, 2006, Preliminary section.
APPENDIX K (continued)

Background

Beginning in the 20th century, the Kingdom of Tonga experienced a pronounced shift in leading causes of death: deaths attributable to non-communicable diseases, were less than 6% in 1950 and increased to nearly 30% in 2006.1 For smaller island nations, such as Tonga, increased globalization has led to challenges of the food environment such as increased availability of foods high in saturated fat, sugar, and sodium, thereby contributing to unhealthy diets.2 Therefore, assessing the potential health impacts of the Food Bill and sharing the results with policy makers may help contribute toward ensuring a safe food environment with healthy foods that are available and accessible to all residents of Tonga.

Health Impacts Examined by Pathway

This health impact assessment (HIA) focused on identification of the major policy components likely to impact health. This HIA intends to help policy makers understand the potential health impacts of the Food Bill. This policy assessment approach highlighted the linkages between the policy components, intermediate pathways, and the health outcomes.

The major pathways through which the Food Bill impacts health were:

1) Dietary Consumption; 2) Food Safety; 3) Economic; and 4) Socio-political.

The appraisal step for this HIA consisted mainly of identifying secondary sources of evidence such as peer-reviewed research publications to define the linkages between intermediate pathways and health outcomes.

Logic Frameworks

![Logic Framework Diagram]

Figure 1. Licensing, Administrative Sanctions & Appeals, Food Hygiene Practices, Import/Export, and Emergency Powers & Recall Procedures Logic Framework
APPENDIX K (continued)

Figure 2. Labeling of Food and Food Standards Logic Framework

Major Findings & Recommendations

A total of 15 ministries, departments, or organizations were represented by 17 participants for this HIA. Major findings which resulted from discussions included the need for identification and coordination of roles and responsibilities related to food resource identification (e.g., sample testing, regulation enforcement); and addressing incomplete standards.

Specific recommendations included:

1. Require all foods to be labeled according to Codex Alimentarius (including nutrition information even when no health claim is made.)
2. Develop a standard label
3. Identify ways to develop skilled workers
4. Establish a budget for addressing gaps which include: establishing standards, establishing a laboratory or identifying realistic alternative options, setting high minimum standards, ascertaining the content of foods, establishing & meet local standards, labeling requirements, and providing assistance to businesses to set up compliance.

References

VII. Cited Literature


50. SPC/WHO. Honiara Outcome: Ninth Meeting of the Ministers of Health for the Pacific Island Countries, June 2011.


VITA

Ada Moadsiri

Education

DrPH, University of Illinois at Chicago, 2013
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M.P.H., Community Health Sciences, University of Illinois at Chicago, 2006
Concentration: Behavioral Sciences and Health Promotion
Capstone: Identification of Factors Contributing to the Sustainability of Community-based Lifestyle Intervention Programs

B.S., University of Illinois at Chicago, 2004
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Experience

World Health Organization, Short Term Consultant (STC), January 2013-Present
Division of Pacific Technical Support (DPS), Suva, Fiji, South Pacific
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University of Illinois at Chicago, School of Public Health, Dept. Health Policy and Administration
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University of Illinois at Chicago, Institute for Health Policy and Research
Concentration: Chronic Disease Prevention and Management in Underserved Minority Populations

World Health Organization, Agreement for Performance of Work (APW), June-October 2012
Division of Pacific Technical Support (DPS), Suva, Fiji, South Pacific
Concentrations: Management Support (meeting preparation, document development); Noncommunicable Diseases (Tobacco-Free Environments, Health Promoting Schools)

U.S. Fulbright Scholar, 2011-2012
Tonga Health Promotion Foundation, Tonga, South Pacific

Graduate Assistant, 2010-2011
University of Illinois at Chicago, MidAmerica Center for Public Health Practice
Concentration: Strategic Planning (Prevention Services Unit, Cook County Dept. of Public Health)

Public Health and Community Educator, 2006-2008
U.S. Peace Corps, Kingdom of Tonga, South Pacific
Concentrations: Healthy Eating and Physical Activity Promotion, Maternal & Child Health, Family Planning, Nutrition Education, First Aid and Hygiene Education
Graduate Research Assistant, 2005-2006
University of Illinois at Chicago, Institute for Health Policy and Research
Concentration: Diabetes Prevention and Control in Minority Populations

Undergraduate Research Assistant, 2002-2005
University of Illinois at Chicago, Department of Surgery
Concentration: Mesenchymal Stem Cell role in tissue repair and re-generation

Volunteer Service

• Global Health Student Interest Group, University of Illinois at Chicago, School of Public Health, 2004-2006 (as Global Health Forum); 2009-present
• Minority Students Association in Public Health, University of Illinois at Chicago, School of Public Health, 2009-present
• Asian Human Services, Community Health Division, Chicago, IL. 2005-2006, 2009-2011
• Project ESTEEM (Enrichment of Science through Exposure to Experimental Models), University of Illinois at Chicago, Honors College, volunteer (2001-2003) and coordinator, 2003-2004
• Habitat for Humanity, University of Illinois at Chicago, build volunteer, 2000-2002.

Presentations

• Tenth Asia Pacific Conference on tobacco or Health (APACT2013), presentation: Challenges to tobacco taxation implementation in the Pacific, August 2013.
• American Public Health Association 39th Annual Conference, oral presentation: Diabetes Island: A virtual world to support an underserved population with diabetes, November 2011. (co-author)
• American Public Health Association 38th Annual Conference, oral presentation: Barriers to Breast and Cervical Cancer Screening among Underserved Asian American Women, November 2010.
• Society of University Surgeons, First Academic Surgical Congress, oral presentation: Mesenchymal stem cells enhance xenochimerism in NK-depleted hosts, February 2006

Publications


Awards, Honors, Professional Memberships

- American Public Health Association, student member, 2009.
- Delta Omega Honorary Society, Lambda Chapter, University of Illinois at Chicago, 2006.
- University of Illinois Alumni Association Student Leadership Award, 2004
- Phi Kappa Phi Grant for Scholarly Research Award, 2003, 2004
- Phi Eta Sigma National Honor Society, 2001

Skills and Qualifications

- Foreign Languages: Thai (spoken-advanced), Tongan (spoken and written-advanced)
- Microsoft Office (Word, Excel, Power Point, Publisher, Front Page)
- SPSS

Certifications