

ADDING VALUE TO PACIFIC ISLAND FOODS MEETING REPORT

A Dialogue between the Food Industry and Health Sector on Imported and Processed Food

Sydney, Australia; Wednesday November 5 to Friday November 7, 2008

EXECUTIVE SUMMARY

There is a wide-spread concern that the people of the Pacific Island Countries suffer from very high rates of over-nutrition causing obesity, diabetes, vascular disease, cancer and other chronic diseases. Surprisingly, they simultaneously have an inadequate intake of essential vitamins and minerals. While many adults are obese, children from the same islands manifest marasmus (*i.e.* severe signs of calorie-protein deficiency) because of under-nutrition.

Over-nutrition is leading to some of the highest levels of obesity and diabetes in the world and to high levels of non-communicable diseases – these are the cause of 75% of deaths. Under-nutrition is leading to serious vitamin and mineral deficiency (micro-nutrient deficiency) which reduces the intellectual ability, physical endurance and productivity of the entire population and promotes illness and disability to such an extent that it undermines the ability of Pacific Island Countries to reach the Millennium Development Goals.

Over-nutrition has increased in prevalence over the past 30 years with both urbanisation of the population – leading to a more sedentary life-style – and globalisation of the food supply – leading to a higher intake of high calorie (sugars and fats) and high salt-content, imported, processed foods and drinks. A higher level of lower nutritional value food in the diet has also worsened vitamin and mineral deficiency, especially among both women – before, during and after child-birth – and children, although problems are also found in adult males.

Work sponsored by the Flour Fortification Initiative has shown that achievement of the UN Millennium Development Goals in any population requires significantly reducing (ideally eliminating) micro-nutrient deficiency. High levels of non-communicable diseases will only exacerbate the problems.

The key minerals and vitamins on which to focus are iron, zinc, iodine, fluoride, vitamins A, B1, B2, B3, B9 (folate or folic acid) and B12. Small quantities of each of these are needed on a consistent (ideally daily) basis. While this can be achieved through dietary supplements (*e.g.* daily tablets), such

an approach only succeeds with a minority of the population (data from various countries including the USA and the UK). To reach the whole population, countries increasingly are requiring that the minerals and vitamins are added to staple foods. Examples include iodine added to salt; iron zinc and the B vitamins added to flour (wheat and maize); vitamin A added to cooking oil; fluoride is usually delivered through tooth-paste but sometimes also through the water supply or fortified salt.

Reducing the intake of calories and salt requires the co-operation of food producers as well as engaging the population; increasing exercise requires engaging the population. The eighth UN Millennium Development goal – develop public private partnerships to address the other goals - recognises the need for active co-operation across societal groups; there has been little evidence of this occurring.

The Flour Fortification Initiative is a public, private, civic partnership which is seeking to achieve the addition of minerals (iron and zinc) and vitamins (B1,2,3,9 and 12) to wheat and maize flour as normal milling practice. Experience around the world shows that this is best achieved by mandatory, regulatory means. Close co-operation between government and business partners, supported by civic organisations is needed to achieve this. Accordingly, high emphasis has been placed on working to strengthen the partnerships and make them productive. A key technique has been holding dialogue meetings which provide an opportunity for information sharing by partners and quality discussion time in small, mixed groups; all carefully designed and facilitated. This approach was used successfully for this meeting. A number of countries (including Samoa, Vanuatu, PNG) indicated that they would seriously consider holding such dialogues at a national level.

During the meeting a number of suggested actions were identified for various stakeholders. These have been reported as “Proposals” in the meeting report; there are 24 proposals and they are available in consolidated form at the back of the report. They appear in a more formal manner in the report than they did in the meeting, but setting them out in this manner brings a sharper focus to the report of the meeting.

The proposals have been set out under subject headings. In summary these point to:

- The availability of much of the health data necessary as a basis for action, although it would be useful to have all of this data pulled together in a consolidated report. This will make it clear where there are data gaps that should be filled; in most cases it is anticipated that such data will serve as base-line data to facilitate work to determine the impact of measures taken.
- A need for regional government action to establish regional policy to encourage economies of scale for business and for monitoring. There is also a need to create basic food laws; these should be based on the Codex Alimentarius and other internationally recognised standards.
- A need for countries to act at a national level when required to have basic food laws and to implement policies on food labelling and food fortification .
- Regional and national scale fortification of salt (with iodine and possible fluoride), flour and noodles made from this flour (with iron, zinc, folic acid, niacin and B12) is recommended to be implemented now. Further exploration of regional and national fortification of cooking

oils and fats (with vitamin A) and rice with a wide range of essential vitamins and minerals targeted specifically to the needs of the Pacific Island Countries would be highly beneficial.

- Opportunities to develop local crops into foods that meet modern needs for convenience. Governments should stimulate such developments for nutrition and food security reasons.
- Opportunities to work with and through importers to develop policies for food labelling and nutrition profiling. Such discussions are also needed to enable the importation of lower calorie and lower salt foods and drinks that are being developed in exporting countries. The Pacific Island countries need to be able to take advantage of such developments as soon as they are available.

All of the proposals are directly relevant to reducing non-communicable disease, reducing mineral and vitamin deficiencies and preventing and reducing disability in the population. Many of the basic actions (such as developing food laws, improving the consumer attractiveness of locally grown foods, ensuring good nutritional quality in imported foods) are applicable to both over-nutrition and under-nutrition.

The meeting has clearly demonstrated that progress towards reducing these two barriers to achieving the UN Millennium Development Goals in the Pacific Island Countries requires urgent action. It has further demonstrated that many approaches used in other countries are applicable to the Pacific Island countries. Further there is a clear willingness on the part of at least some businesses and civic groups to work together in partnership with government to determine and implement effective ways forward. The international agencies (WHO, UNICEF, FAO) and the Australian government stand ready to help. Changing food policy, however, to achieve the beneficial outcomes desired requires cooperation across multiple sectors of the government and the private sector. This will require leadership by the highest level of governments and within the context of food security at a time of vulnerability of the markets and global economic crisis.

The meeting recognised that the economic crisis is a significant challenge to both food security and employment. This raises the clear risk that food quality will reduce further with negative implications for health. By implementing the proposals from this meeting, food quality can be improved with no, or little, negative impact on food security. This creates an opportunity to ensure that the current food crisis does not worsen the current health crises related to food in the Pacific Island Countries.

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INTRODUCTION

This multi-stakeholder meeting – with a unique participation and meeting format for the region - was convened to determine ways in which nutrition in the Pacific Islands Countries¹ can be improved to help alleviate the twin problems of micronutrient (vitamin and mineral) deficiency (often referred to as under-nutrition) and chronic, non-communicable disease (cardio-vascular disease, diabetes, cancer *etc.* – over-nutrition). Many of these problems are believed to be long-standing, but modern developments in diet, food supply (including imported and processed food) and life-style (urbanisation) are believed to be increasing the prevalence of the problems with significant economic and social impacts which must be overcome if the nations are to meet the United Nations Millennium Development Goals.

¹ See Appendix 1 for selected demographic data

There were over 80 participants from 18 Pacific Island nations, as well as from Australia, New Zealand, China and the United States and from Government, the food industry and international organisations (see Appendix 1 for full details)

This meeting took the form of a stakeholder dialogue. A dialogue can work well to engage stakeholders who have very different priorities but where collaborative action is necessary to make progress. Numerous conversations held in preparing the meeting, plus experience in other geographies, had clearly pointed to the need for dialogue between the food industry and the health sector. Such meetings have been instrumental in the progress made by the Flour Fortification Initiative over the past five years in increasing the amount of the world's roller mill flour fortified with at least iron and folic acid². It was clear that a dialogue would also help address chronic, non-communicable diseases.

The meeting was structured to enable knowledge exchange and creative dialogue. Over the two and a half days of the meeting there were eight sessions of formal presentations; knowledge was also shared during the dialogue sessions and, informally, outside of the meeting. There were four formal dialogue sessions during which seven tasks of increasing complexity were tackled.

The committee that planned the meeting was made up of members of the Pacific Fortification Partners Group and developed a statement of Purposes, Objectives and Success Criteria for the event. These formed the basis for the development of the meeting agenda, and also were used by the meeting facilitator to guide the audience discussions and deliberations. This statement was available on the event web-site for a number of weeks as participants were registering for the meeting. The agenda, preceded by the Purposes, Objectives and Success Criteria for the meeting, as it was conducted, is set out in Appendix 2.

During the meeting, the facilitator sought to synthesise the information that was being shared, particularly when collecting feed-back from the dialogue tasks in plenary session. This Meeting Report continues that process of synthesis. Almost all of the presentations from the meeting are summarised at the end of the report³. All the PowerPoint slides used in presentations are available on the web site of the Flour Fortification Initiative⁴.

THE HEALTH CHALLENGES

Clear data was presented demonstrating that large proportions of the population of the Pacific Islands suffer simultaneously from the twin problems of chronic health conditions – due to excess calories (from dietary fat and sugar) and sodium (from high salt-containing, processed foods) intake – and under-nutrition – related to vitamin and mineral (micronutrient) deficiencies. In some communities, there is a severe obesity problem among adults while children suffer from marasmus (severe calorie-protein deficiency) To have BOTH of these problems (under-nutrition and over-nutrition) AT THE HIGH PREVALENCE RATES seen in the Pacific Islands is very unusual, possibly unique in the world⁵.

We will consider these problems – micronutrient deficiency; a diet too high in calories (fat and sugar) and salt – separately for clarity and because the diet solutions are different. However, it must be held in mind constantly that many individuals are suffering from both problems and that the regulatory, market and behavioural changes necessary to correct the causative dietary problems are similar. Indeed, the work and associated costs to correct both problems will be less than twice those needed to correct only one.

² Since 2004, the percentage of fortified flour has increased from 18% to 30% and from 33 countries to 55; this represents an increase of 880 million (to 1.85 billion) in the number of people having access to such flour.

³ After the compilation of the proposals from the report and prior to the appendices. The summaries have been prepared by the report's authors; the presenters have had the opportunity to check the summaries.

⁴ <http://www.sph.emory.edu/wheatflour/sydney08/index.html>

⁵ See presentations by Gidlow, Chen, Hilman and Fuavao among others.

It is noted that any comprehensive discussion of food now needs to include consideration of the profound global challenges of food insecurity and climate change. Food insecurity has arisen from increased commodity and fuel prices; it has been compounded by the depth of the global economic crisis even as these prices have fallen. Climate change is intimately intertwined with food production, which is a major contributor to greenhouse gases, while food supplies are extremely vulnerable to climatic events (e.g. droughts). Global warming and sea level change threatens the very existence of some Pacific Island states. Although these concerns were not the main focus of this meeting, policy outcomes and approaches need to make a positive contribution to food security and also make a contribution to reducing negative environmental impacts.

MICRONUTRIENT DEFICIENCIES

In many developed and most developing countries, there are significant levels of micronutrient deficiencies that should be addressed by a combination of strategies. These include improving population access to a variety of nutritious foods; vitamin and mineral fortification of staple and/or targeted foods; and targeted supplementation for high-risk population groups.

Population-wide deficiencies of micronutrients that have especially been targeted for elimination by the international public health authorities, are: Vitamins A, B1, B2, B3, B9 (folate), B12⁶; iodine, iron, zinc and fluoride. Deficiencies of vitamin A, iodine and iron have been documented in the Pacific Island Countries. Although specific studies have not been reported on the folate and zinc status of the populations, especially women of childbearing age and young children, inadequate intakes of these two nutrients are also expected to be prevalent. Babies are born in the Pacific Island Countries with neural tube defects (spina bifida and anencephaly), presumably due to insufficient folic acid intake among women of childbearing age; in most populations with iron deficiency, zinc deficiency is also highly likely given the similar food sources and physiology of the two minerals. Fluoride deficiency is a major risk factor for tooth decay.

Sufficient quantities of these micronutrients are especially vital in the early phase of pregnancy (including prior to conception in the case of folate, at least) and the first two years of life to protect and optimize the physical and cognitive development of the next generation. For example: low intake of folic acid (the form of folate added to flour and used in supplements) among women of childbearing age increases their risk of producing babies born with neural tube defects (NTDs); iodine deficiency in pregnancy can result in sub-optimal development of the brain of the foetus; iron deficiency in the first trimester of pregnancy substantially increases the risk of babies born pre-term and with low birth weight; iron deficiency during the first 2 years of life can result in the irreversible, reduced cognitive development of children; while zinc deficiency during the same stage of life can result in permanent growth stunting and lead to increased gastrointestinal and respiratory infections. Thus, in addition to public health problems, the ultimate consequences of such micronutrient deficiencies are reduced learning capacity and economic development of affected populations (see below).

Regular access to, and consumption of, naturally micronutrient-rich foods would likely provide protection to most populations against deficiencies of vitamins and minerals. However, most populations of the world, especially pre-school children and women of child-bearing age in developing countries, do not have regular access to (or avail themselves of) such foods. Thus, population-based interventions such as commercial or “in-home” fortification of commonly eaten foods and wide-scale distribution of vitamin and mineral supplements are currently accepted public health interventions, alongside the promotion of improved diets.

⁶ Vitamins B1, B2, B3 and B12 were not discussed specifically in the meeting. Vitamins B1, B2 and B3 are often added to flour (e.g. in the USA); doing so in addition to other additives is technically trivial and involves very little extra cost. The addition of B12 is now being recommended (see:

Regular consumption or dental application of fluoride is well known to improve dental health by reducing tooth decay. Given the high prevalence of poor dental health in the Pacific Island Countries, the need for regular fluoride intake was presented as a public health need at the workshop.

A brief review of the medical risks associated with micro-nutrient deficiency and considerations with regard to appropriate staple foods that can be used as vehicles for fortification can be found in Appendix 3.

BURDEN OF OBESITY AND CHRONIC DISEASES

Excess caloric intake (primarily through consumption of high fat and sugar diets) relative to output (due to insufficient physical activity and exercise) leads to obesity. This is a leading risk factor for cardio-vascular disease, hypertension and type II diabetes. Furthermore, obese individuals are more likely to die prematurely.

The prevalence of obese people is growing rapidly throughout the world. In the Pacific Islands obesity is a major epidemic and some countries in the Pacific now have the highest rates of obesity in the world. Thus, this region of the world truly bears a double burden of nutrition; malnutrition due to vitamin and mineral deficiencies, and chronic diseases due to excess caloric intake and obesity. For example, over 50% of young children in the Federated States of Micronesia (FSM) have vitamin A deficiency, while nearly half the adult population is obese; with over 30% suffering from Type II diabetes

According to recent surveys conducted with the WHO STEPS methodology, prevalence rates of obesity are: Nauru, 74.9%; Tokelau, 74.7%; American Samoa, 74.6%; Cook Islands, 61.4%; Samoa, 54.8%; Marshall Islands, 44.8%; Fiji, 29.6%.

In the past, the diets of the populations of the Pacific Islands consisted of sea food and indigenous fruits and vegetables (Karat bananas, taro, breadfruit, *etc.*) which have been found to be highly nutritious. Also, the populations were considerably more active as they were fishermen and farmers. In modern times, especially since the 1960s and 1970s, the dietary patterns and life-styles of the populations have changed substantially. There has been a replacement of the traditional foods with high fat-, sugar-, and salt-containing, imported, products such as mutton flaps, turkey tails, vegetable oils, fried foods and snacks, soft drinks and confectionary products. Some studies suggest that in some islands more than half of dietary calories come from fat, and that imported food products comprise up to 90% of foods eaten.

It is also thought that in some of the Pacific Island Countries such as FSM, the changes to less healthy diets may be in part due to various well-intentioned, but inappropriately delivered, development programs of the U.S. government⁷. An example is the large scale supplementary feeding programs based on USDA surplus commodities, including rice and tinned foods, which provide relatively little nutritional value. Other U.S. government-supported programs such as the Expanded Food and Nutrition Education Program (EFNEP) were implemented without adequate consideration of the local context and promoted U.S.-type foods and food guides, which undermined efforts to promote local foods. Thus, the changes from the traditional dietary intake habits and patterns to a "westernized" diet has essentially resulted in a diet high in fat, simple carbohydrates, and salt, and very low in key vitamins and minerals.

There are some important challenges to be overcome to reverse the rising trends in the prevalence of obesity and its associated chronic diseases. Culturally, large physical size is considered a mark of beauty and social status in many Pacific Island countries. At the community and policy-making level, there is still some resistance to the view that obesity is a health problem, although attitudes are changing slowly around the region, and there is a growing recognition of the risks of high body

⁷ Englberger, L et al. Insights on food and nutrition in the Federated States of Micronesia: a review of the literature. *Public Health Nutr.*, 6:5-17, 2003.

weights. Furthermore, the populations' food beliefs have changed such that local foods are sometimes considered low status, while "Western-style", imported foods and meal patterns are afforded higher status. Also, among some populations, green vegetables, more commonly eaten in the West, are considered food for animals^{8,9}.

Within their current life-styles, average consumers in the Pacific Island Countries want access to foods that are convenient and quick to prepare, without requiring too much cooking fuel, and that are not "low class". For example, in the FSM, the Island Food Community of Pohnpei (IFCP) has worked diligently to inform the public about the nutritional benefits of indigenous foods, but they still face considerable constraints, beyond funding, to continue their efforts. A key constraint is that some of the most nutritious local plant foods are not readily available in the market. Another consideration is that the traditional preparation methods of some of these products require much effort and are not appealing to most of the younger people.

From a caloric expenditure perspective, high rates of violence and crime reduce the opportunities for outdoor physical activity, and the inevitable growth in the use of modern technology sharply reduces physical activity and thus energy expenditure, adding to the increase in sedentary occupations in urban areas of the Pacific region.¹⁰

DATA AS THE BASIS FOR ACTION

A considerable amount of data on micro-nutrient deficiencies and on elevated intake of calories and salt was shared and referenced during the dialogue. It is clear that there are common problems on both counts throughout the Pacific Islands. The variations in data between Islands and between regions within a country do not appear to exceed those found in surveys of larger countries.

While we propose (1) that all available data on micro-nutrient deficiencies and excess calorific and salt intake be consolidated into a single report for the Pacific Island Countries, we also propose (2) that there is sufficient data available to start preparing for and taking action in a number of areas as set out later in the report. We further propose (3) that any further data-gathering deemed necessary as a result of proposal (1) be gathered as base-line data to facilitate work to measure the impact of measures being taken.

THE ROLE OF GOVERNMENTS

The governments of the Pacific Island Countries have an important role to play in many of the actions proposed in the balance of this report. However, there are key areas where they alone have the authority to take action. These are considered in this section.

THE VALUE OF REGIONAL CO-OPERATION

The small population base of the individual Pacific Island Countries poses cost and human resource issues for governments and businesses. Governments have neither the revenue nor the human resources to develop, monitor and enforce legislation; tasks which are challenging even for much larger countries. Businesses have difficulty developing economies of scale in development, purchasing and marketing; problems which are exacerbated in times of economic and political difficulties.

Wherever possible, there is significant value attached to regionally adopted laws, regulations and enforcement mechanisms. These benefit governments as they are developed and deployed; they also benefit business in providing a basis for economies of scale.

⁸ Englberger, L., et al. Factors to consider in Micronesian food-based interventions: a case study of preventing vitamin A deficiency. *Public Health Nutr.*, 7:423-431, 2003.

⁹ Also, locally-grown papaya is increasingly considered as animal food

¹⁰ WPRO obesity report, 2002. (need to include correct citation)

We propose (4) that the Pacific Island Countries consider developing regional policy instruments whenever there is the possibility of significant economies of scale in policy development or execution.

BASIC FOOD LAW

Any government requires a basic food law under which regulations can be developed to cover such matters as safety, contents, labelling, monitoring. An internationally accepted basis for such a law is the Codex Alimentarius which is globally acknowledged, used and updated. Additionally, the World Health Organization and other international panels have published guidance and recommendations related to the fortification of staple and targeted foods.

Recently, Fiji developed a national law mandating that all nationally produced and imported wheat flour be fortified with selected vitamins and minerals, such as folic acid and iron. Given that wheat flour is a commonly eaten staple in the Fijian diet, fortification is accepted as a public health strategy to alleviate deficiencies of iron and folate among women of reproductive age. In addition, Fiji's food law provides an example of directly addressing food composition from an NCD perspective, as it requires all sausage meat to contain less than 40% fat in its proposed regulation.

The nation of Samoa recently banned the importation of turkey tails as a means to easily eliminate one source of fat in the diets of their population. This illustrates how a country can take regulatory action to seek to eliminate unhealthy foods from the diet.

In both cases, it will be important to monitor and enforce the implementation of these national food laws and to track the potential nutritional and health benefits of the interventions so that any appropriate corrective measures are taken as needed.

We propose (5) that the governments of the Pacific Island Countries implement basic food laws based on the Codex Alimentarius and other internationally recognized standards (e.g. WHO/FAO and FFI) and in addition we propose (6) that they look to develop the basic food law on a regional basis following the best practice examples of Fiji and Samoa.

MANDATORY FOOD LABELLING AND NUTRITION PROFILING

This is an essential basis for consumer education (see below). Currently, many imported processed foods are not labelled or the label is not in a language understood by the Pacific Islands people. In other countries it is common practice for importers to be required to ensure that there are adequate and understandable labels on all food products. If this is not done by the exporter, the importer is required to obtain the necessary information from the exporter and then prepare and affix a label in the local language, meeting local requirements. Nutrition profiling which enables the consumer to easily differentiate foods which are high in fat, saturated fat, salt or sugar offer additional benefits as it offers an easily read and understood message for consumers. **We propose (7) that discussions be held at a regional level with importers to determine how a programme of required food labelling and nutrition profiling can be introduced.**

LEGAL MONITORING & ENFORCEMENT

This is essential to ensure there is a level-playing field covering all relevant parts of industry. It is also essential to ensure that the population is protected from unsafe foods and can be confident of receiving the nutrition that is mentioned in the labels and in any advertisements (including copy on food packaging).

Setting up, and managing, an effective legal monitoring and enforcement process is no small task. It may be beyond the financial resources of some of the Pacific Island Countries. However, it is possible that the Food Standards Australia and New Zealand (FSANZ) could be approached for help and guidance – perhaps even to form a twinning arrangement for mentoring and support, including conducting analyses that require sophisticated and expensive equipment or procedures. In countries where enforcement remains weak, incentives for industries to comply with legislations should be

considered. We propose (8) that discussions be held at a regional level with FSANZ on possibilities for co-operation in monitoring and enforcement.

INVOLVING INDUSTRY

FORTIFICATION

Although the cost-increase to the consumer of an industrially-fortified product is minimal, the cost-impact on the food producer could be meaningful. This is because fortification is normally accomplished through different, staple foods (e.g. salt for iodine, flour for B Vitamins, iron, zinc) where profit margins are very slim. This leads to calls from business for *mandatory* fortification to ensure there is a level playing field. Universal fortification (a consequence of mandatory fortification) is also required from a health perspective; it is the way to ensure maximum and equitable coverage of the population.

In the case of the Pacific Island Countries there is an additional and vital consideration; much food is imported. The only way to ensure that there is universal coverage is to mandate fortification of the appropriate staple and that such fortified staples be used in the preparation of processed foods. This will require effective monitoring and enforcement and will probably benefit from labelling requirements as a mechanism to ensure that importers source from manufacturing plants that can meet the requirements.

Given that developing and enacting a basic food law will take considerable time, consideration needs to be given to earlier enactment of instruments to ensure universal fortification of appropriate foods and labelling of such foods. If such legislation can be enacted, consideration needs to be given to the situation in countries that export to the Pacific Island Countries. To the extent that the health needs of the Pacific Island Countries can be met under legislation compatible with the exporting countries' practices, any additional costs can be minimised. Dialogue with importers and local food processors as appropriate for the particular fortification project should enable progress to be made quickly and easily.

We propose (9) that governments, ideally at a regional level, work with importers and local processors to develop instruments to require food fortification as appropriate based on local needs and diet practices.

Foods to Fortify

The fortification of staple foods is now sufficiently common around the world that the Pacific Island Countries can look to implement the practice very quickly. Also, some fortified foods are already imported into the countries, though not always deliberately.

Salt

Over 70% of the world's households use table salt fortified with iodine¹¹. In some cases fortified salt is used in the production of processed foods. At the same time there is a desire to reduce the intake of salt, and countries like the UK are planning to reduce total consumption by a third. Salt, in reduced quantities remains an ideal vehicle for iodine fortification¹². A technical report of a WHO/FAO consultation on Diet, Nutrition and the Prevention of Chronic Diseases recommends the consumption of less than 5 g. of sodium chloride (or 2 g. of sodium) per day as a population nutrient intake goal, and that salt iodisation should continue alongside salt intake reduction strategies. Discussions between public health authorities and importers and food processors should be held to determine whether or not the requirement should apply only to table salt.

Flour

¹¹ Potassium iodate is the usual fortificant. http://www.unicef.org/nutrition/index_iodine.html

¹² The UK and Australia are looking to reduce daily intake from 9 g./day to 6g./day (see above)

The fortification of flour with B vitamins, iron and zinc is becoming normal milling practice. As mentioned above, the Flour Mills of Fiji fortify flour according to their national standards. Recently, an international expert technical meeting convened in Stone Mountain, Georgia, USA, under the auspices of the Flour Fortification Initiative (FFI) issued recommendations for fortification of all low and high extraction flours with iron, zinc, folic acid, vitamin B12 and vitamin A. The recommended level for each nutrient was based on different ranges of per capita consumption of flour (for ease of access, this table is reproduced in Appendix 4. It is recommended that any use of this table be in the context of the full report and, for any implementation purpose, in consultation with experts attached to the Flour Fortification Initiative).

To expedite inter-country trade of wheat flour and also help reduce the cost of imported flour by each Pacific Island country through economy of scale, **we propose (11) that a regional standard for flour fortification be developed based on the Fijian standard, modified according to the guidance of the Stone Mountain meeting (see Table in Appendix 4) if necessary.**

Rice

(To be completed)

Oils and Fats

Given the documented high prevalence of vitamin A deficiency, especially among preschool children, in a number of the Pacific Island countries, special attention should be paid to improving dietary intake of this key nutrient. Because vitamin A is a fat soluble vitamin, and the cost of adding it is low at the consumer level, cooking oil, margarine and dairy products have been successfully fortified with vitamin A in a number of countries in North America and Europe. Such fortification is also recommended by WHO for countries where vitamin A deficiency is common in older children and adults who would consume sufficient quantities of such fortified foods to substantially benefit from their fortification.

We propose (12) that a review be carried out to determine if vitamin A deficiency in infants and toddlers is a public health burden requiring specific interventions in the Pacific Island Countries. Further, we propose (13) that Vitamin A levels in the general population be assessed as the basis for determining what priority should be attached to fortification of selected staples with vitamin A.

Sugar

(To be completed)

Complementary Foods for Infants

It is well recognized that the best food for infants in the first 6 months of life is mother's breast milk; that every effort should be made to promote breastfeeding; and that appropriate education strategies be implemented to enable mothers exclusively to breastfeed their infants for the first 6 months of life. From 6 months of age on, infants require nutrient-dense complementary foods (*i.e.* foods in addition to breast milk) to sustain their nutritional needs and optimize their growth and development. Because of the substantially high requirements of vitamins and minerals among infants, combined with the limited quantities of solid foods they can normally consume in a day, it is generally accepted and recommended that infants consume fortified, complementary foods. In the more developed countries, commercially produced and marketed, complementary foods are fortified with key vitamins and minerals based on national or Codex Alimentarius standards.

Sufficient data and information are not available on the types of complementary foods typically consumed by infants in the Pacific Island countries. However, it is known that imported commercially produced infant foods are available in their markets. It is important that all such foods be fortified mandatorily.

In the last few years, specially formulated, “in-home” fortificants have been developed in the form of pre-packaged, singly-available, daily dose sachets of micronutrient powder that can be added to home-made, complementary foods to enhance the vitamin and mineral intake of infants. Although the efficacy of such “in-home” fortificants has been proven¹³, innovative approaches are needed to make such products accessible by the majority of infants in a country on a sustainable basis.

We propose (14) that exclusive breastfeeding be promoted as the nationally recommended method of feeding infants <6 months old; (15) that it be required that all imported infant complementary foods be fortified according to regional standards; and (16) that appropriate strategies be developed and implemented to enable households that feed home-made, complementary foods to babies to regularly utilize “in-home”, fortificant powders, such as sprinkles.

Other Food Based Approaches

As mentioned above, many of the indigenous fruits and vegetables in the Pacific Island countries (karat bananas, taro, pandanus, *etc.*) are rich in selected, essential vitamins and minerals. Some key limiting factors to their more widespread consumption is the lack of availability of adequately processed forms of the foods so that they are more convenient and acceptable for daily consumption given the current lifestyles and economic realities of the populations in the Region. **We propose (17) that relevant public and private sector specialists be engaged to advise on potential options for processing of indigenous foods to allow for more convenient and appealing consumer preparation options, and, on the basis of this, we propose (18) that consideration be given to encouraging and supporting local entrepreneurs (including the sharing of existing experiences) to establish small scale food processing and distribution plants,.**

Toothpaste

The use of fluoridated toothpaste is probably the easiest way in which to ensure adequate exposure to fluoride. Other possibilities include adding fluoride to water supplies and adding fluoride to a staple food such as salt.

Available data on the incidence of dental caries and the use of fluoridated toothpaste should be assembled as a first step.

REDUCING CALORIE INTAKE

There are significant socio-economic issues and anthropological factors that are playing a role in this issue *e.g.* low incomes (driving the demand for low cost imported convenience foods with very high fat, sugar and/or salt content); urbanisation (driving the demand for convenience foods; reduced calorie expenditure in daily living); international trade); the absence of food laws making monitoring and enforcement of normal (in other countries) food quality and labelling requirements difficult, if not impossible; the unattractiveness of the small markets (driving importers to take what they can get – given the need for low prices, they are often driven to import from lowest-cost producers where concern for nutrition quality is also likely to be lowest).

To develop detailed and comprehensive policies and practices that will be effective, practicable and will not have highly undesirable, unintended consequences is a significant challenge. Many actions will be required; some can be implemented quite quickly, others will take time. **We propose (19) that action be taken as soon as possible on a variety of measures (following) to reduce calorie intake.**

There is mounting international experience and evidence that supports the effectiveness of a variety of actions including (the order has no significance):

¹³ Zlotkin S, et al. J Nutr. 2003, 133(4):1075-80).

- Laws and regulations that limit the caloric, fat (including saturated and trans fat), sugar and sodium content of food and drinks
- Co-operation with food and drink manufacturers (certainly those in Pacific Island Countries) and importers to strongly support product reformulation to reduce calorie, fat (including saturated and trans fat) sugar and sodium content.
- Labelling laws (incorporating a nutrient profiling system)
- Effective legal monitoring and enforcement of food and drink as well as labelling laws and regulations
- The development of consumer attractive foods and drinks based on local raw materials where these can provide healthier options
- A wide-spread, deep and continuing programme of consumer education involving the industry as well as the public sector with the aim of changing dietary culture over time
- A wide-spread programme to increase physical activity levels
- Schools' programmes (and practice) at all age levels to drive long term cultural change in diet and physical activity with the clear aim of reducing obesity (including among older siblings, parents and other relations).

REDUCING SALT INTAKE

Some companies in Australia and New Zealand (as in some other countries) have implemented successful programmes that have substantially reduced the salt content of their products. It is not clear that the Pacific Island Countries are benefiting from such changes. It is clear that many imports come from countries that have not (at least yet) implemented such programmes. This is an area where food labelling, nutrition profiling and an effective monitoring programme would be extremely beneficial as a means to determine where the most effective action should be focused. Such measures would also support consumers in making healthy choices. Labelling (including nutrition profiling) is also an important foundation to any education programmes to catalyse cultural change (see below).

We propose (20) that discussions be held at a regional level with importers and local food processors to rapidly disseminate best practice in reducing salt in processed foods and to determine how data could be gathered that would form the basis for further action on salt reduction in processed foods.

DEVELOPMENT OF LOCAL FOODS

(See the discussion above in the section, "Other Food Based Approaches".

SUPPORT INCREASING KNOWLEDGE, ADVOCACY & EDUCATION

While the basis for achieving dietary change is through government policy actions, this must be complemented by effective and ongoing education and promotional initiatives. Thus, there is a need to consider improving knowledge, advocating with decision-makers and opinion leaders and educating the general public. This will be at the heart of achieving the necessary diet-culture changes discussed below.

This meeting was designed, in large part, to demonstrate that it is possible for different sections of society to work together to develop the changes necessary to achieve dietary change. This multi-sector approach is being demonstrated by the Flour Fortification Initiative around the world at global, regional and national levels. It is an approach recognised by the Millennium Development Goals of the United Nations (Goal 8).

There is a need to build such multi-stakeholder groups in each of the Pacific Island Countries as well as at a regional level. Building such groups is the first step in building knowledge by sharing what stakeholders know (or believe). Such knowledge sharing needs to cover the medical consequences of the dietary problems, the benefits for the health and economy of families and countries, as well as the options that could be explored to deliver the required changes.

In the case of micro-nutrient deficiencies, much is already known from other parts of the world about what works medically and nutritionally and in what situations. Such knowledge when adapted to the circumstances of the Pacific Island Countries can form the basis of advocacy to government, wider industry and civil society opinion-leaders for the appropriate action to deal with the problems. **We propose (21) that multi-stakeholder discussions be used to adapt global knowledge on micro-nutrient deficiencies to the specific situations in the Pacific Island Countries and for the region to prepare detailed plans as the basis for advocating specific local and regional actions to significantly reduce the health problems caused by these deficiencies.**

In the case of reducing the dietary intake of calories and salt, the multi-stakeholder work will also be essential. The evidence from international models of effective action is mounting and the situation in the Pacific Islands is uniquely severe because the causes are so rooted in market and social forces for importing low cost and poor nutritional value foods. There is a need to obtain a detailed understanding of those market and social forces so as to maximise the benefits from actions undertaken and to minimise unintended consequences. This can really only be done through local and regional multi-stakeholder discussions. **We propose (22) that multi-stakeholder discussions be used to understand better the specific challenges and needs of the Pacific Island Countries and the region and to adapt global knowledge so as to develop plans for reducing fat, sugar and salt intakes that can address the magnitude of the current disease burden.**

The meeting recognised the inter-related nature of food policy. Thus the issues of food security, food safety, non-communicable diseases and micro-nutrient deficiencies need to be considered in an integrated manner, especially at the level of public policy. To do so at the upcoming Ministerial food summit would be fully in line with discussions in the meeting. However, the approaches for dealing with micro-nutrient deficiencies differ in many respects from those focused on reducing calorie and salt intakes. Accordingly, at the level of stakeholder dialogue, **we propose (23) that the groups dealing with micro-nutrient deficiencies and reducing fat, sugar and salt intakes work separately.**

For both issues there is a need to engage at an early stage with the general public in the process of moving towards a healthy diet... **We propose (24) that the multi-stakeholder groups on reducing micro-nutrient deficiencies and on reducing fat, sugar and salt intakes should consider how best to engage civic society groups and others (businesses, schools, churches *etc.*)**

CULTURAL CHANGE

Changing societal culture, including culture-driven habits such as diet, is difficult but not impossible. . There are many examples where this has been achieved in public health more generally¹⁴ and there is also a growing body of evidence regarding changing dietary practices¹⁵ (e.g. in clinical settings and through changes in the food environment). Some consumer goods companies have been at the forefront of change, with successful moves to healthier products while maintaining their role in the market¹⁶.

One of the facts that makes dealing with micro-nutrient deficiency easy is that mass fortification of salt, flour, oil, fat and complementary food for infants can be done without the need for consumers to make changes in dietary practices. This is not the case with the use of sprinkles nor with the taking of

¹⁴ Smoking reduction and safe-sex practices in the context of AIDS are two examples.

¹⁵ Ask Boyd for the best reference for effective Food interventions.

¹⁶ Coca Cola, Nestle and Heinz all presented evidence at the meeting of major changes to their products and marketing in response to the issues.

supplements. There are also ways of changing diets to reduce NCDs which don't require changing behaviour, such as removing trans fats from processed foods and lowering the sugar and salt content of products.

In other countries, it is found that consumer negatives to fortification are usually based on one of four grounds (in no specific order):

- That good diet will take care of the problem. This often becomes an argument that nature takes care of itself and more natural food will provide the answer. There is clear evidence that this is not the case and most people will benefit from some fortification.
- That consumers do not want anything added to their food. This argument is often combined with the diet argument above. The medical need for additional micro-nutrients (as above) applies here as well. Further, in the case of flour the micronutrients being added were in the wheat but have been partially removed by milling. However, the bio-availability of the micro-nutrients is low in wheat, as in other potential sources. This low bio-availability is one of the key reasons why fortification is needed to approach an optimal level.
- That consumers should have a choice. This raises the question of the efficacy of consumer education. If consumers really understood and could internalise that their health (and that of their children) was being compromised, it seems inconceivable that they would want to choose poorer health. There is also a social equity argument that needs to be considered: often the poor (and in countries like the Pacific Island Countries that may be a majority of the population) may not have the possibility of choosing more micro-nutrient rich foods.
- That there are clear dangers from fortificants. This is not the case at the levels recommended. Such fears point to the need for effective knowledge sharing with opinion leaders, especially in the medical and nutritional fields.

For reducing fat, sugar and salt intakes, the challenge of culture change is more necessary and more difficult. It needs to occur more quickly than similar campaigns in the past such as smoking reduction if the dire health consequences of obesity and related conditions are to be averted. Over the last decade, Pacific Health Ministers have led their communities with initiatives such as the "Healthy Island" policy¹⁷.

We note, for future, detailed consideration, that in the Pacific Island Countries low micronutrient but high fat-, sugar- and salt-containing foods (*e.g.* turkey tails, some tinned meats) could be considered staple foods. Since they are imported, importation bans would force diet-culture change – provided consumer-acceptable alternatives were available where "consumer-acceptable" includes such factors as taste, satiety, cost.

The meeting identified a number of possibilities for working with societal groups to improve consumer understanding as the basis for diet-culture and exercise-culture change. These include, but are certainly not limited to churches, schools, businesses, business organisation, hospitals, government and government organisations; the media (paid or, ideally, unpaid).

COMMENTS ON PARTNERSHIPS

Multi-stakeholder partnerships are not a guaranteed panacea for problem-solving. There are often very challenging and conflicting interests that need to be reconciled. However, experience is demonstrating that such approaches (common in Nordic countries and, especially, in Holland; growing in some other countries) can be highly effective in areas such as dealing with micro-nutrient deficiencies and, potentially in reducing fat, sugar and salt intakes.

¹⁷ http://www.wpro.who.int/NR/rdonlyres/54E6F418-B287-4561-8F49-886476757F03/0/PIC7_Report.pdf

The work required to build such partnerships and the time taken for the discussions to flourish can be frustrating. Perseverance and sensitive listening and leadership are necessary. However, the pay-off in the speed and effectiveness with which agreed actions can be moved forward is usually seen as a rich reward. In other words, the speed of reaching agreed action and the efficacy of that action is usually considered to be clearly superior to more traditional command and control, top-down approaches.

This is not to say that regulatory or other command and control measures will not be needed. Sometimes (flour fortification in most countries is an example) one group of stakeholders will request such a measure and others will concur with the reasoning. The knowledge gained in the multi-stakeholder discussions can make it easier for the measure to be prepared such that it is fit for purpose.

ABSTRACTS OF SOME KEY PRESENTATIONS^{18,19}

The Hon. Gatoloaifaana Amataga Alesana Gidlow, Minister of Health, Samoa: “Processed Food And Health In Pacific Island Countries Such As Samoa. Why This Is An Important Issue To Be Addressed?”

Meetings of the Ministers of Health of Tonga, Samoa and Vanuatu have highlighted that the Pacific Island Countries recognise the threat of “lifestyle diseases” and that their prevention and control are a major concern. It is further recognised that the problem is linked to the change in diet towards processed foods of little nutritional value. There is a desire to fast-track food fortification measures and to promote messages such as “eat local”.

Over the past 40 years, food imports to Samoa have increased almost five-fold. Rice, pancakes, cakes and chips have increased in the diet with sharp reductions in fish and papaya. Children are eating much more processed food (e.g. bread, doughnuts, ice pops, instant noodles) instead of fresh fruit and vegetables.

Illustrative of the threat from life-style diseases in Samoa are adult female obesity at 66.3%, diabetes at 22.4%; obesity in girls 6-8 years old has risen from 2% to 14.3% over the past 20 years; 44% of pregnant women and 35.5% of children under 5 years old are anaemic.

Dr. Ken Chen, WHO Representative in the South Pacific: “Fortification, NCD, food safety and food security in the Pacific; How are WHO Member States, WHO and partners working together to address this?”

The Pacific Island Countries are facing a double burden of disease and a double burden of nutrition. Over-nutrition is leading to some of the highest levels of obesity and diabetes in the world and to high levels of non-communicable diseases – these are the cause of 75% of deaths; under-nutrition is leading to severe vitamin and mineral deficiency.

Urbanization in the countries and globalization of food supply together are leading to significant lifestyle changes including in diets. Much more imported, processed food is being consumed and everyday exercise is severely reduced.

Globally WHO recommends a prevention-oriented, multi-sectoral approach to improving diet and physical activity at population level. The Vanuatu meeting has called for a Food Summit at the Pacific regional level or at the sub-regional level with representatives from concerned ministries such as Health, Agriculture, Trade and Finance; it has also supported in principle a regional fortification programme. FAO and WHO meeting together have called for food regulations to be addressed in the Food Summit so as to control specific nutrients in foods that relate to non-communicable diseases and vitamin and mineral deficiencies.

At this meeting it is hoped to build on current efforts by countries, WHO and partners. The presence of leaders from health authorities, the food industry, international and regional organizations,

¹⁸ Presentations are available at <http://www.sph.emory.edu/wheatflour/sydney08/agenda.html>

¹⁹ Summaries prepared by report writers

academic institutions and development partners gives us the opportunity to work together creatively and to then take action together.

Ms. Myriam Abel, Director-General , Ministry of Health, Vanuatu: “Processed Food and Health in Pacific island Countries such as Vanuatu: Why this is an important issue to be addressed?” (To be completed)

Mr Alopi Latukefu, Chief of Staff, Office of the Hon Duncan Kerr, MP: “Traditional Values, Hospitality and Food”

It is important to be aware of the cultural settings in which food is used and consumed. Much could be learned from Pacific Island culture where food is not just food, ie it does not just have value as a consumed staple but has inherent social value as a gift outside of its nutritional value. An example could be found from his own family experience where additional food for 1-2 people was always prepared in case someone should drop in at dinner time. Giving food is part of social engagement, social status and of what it means to be a Pacific Islander. Food and hospitality are part of a greater system of the family network and of obligation and reciprocity. Consumption, disease and prophylactic opportunities linked to food are also linked to culture. It can't be assumed that by fortifying a particular food you'll get the most effective outcome. It is important to understand the complexity of food consumption and not oversimplify, e.g that health problems have been caused only because of the introduction of non-traditional foods into the Pacific Islands. To effectively market fortification, the value of food in the Pacific must be understood and how to tap into this powerful social dynamic. As in all marketing strategies, distribution, as well as production, must be taken into account and the social psychology of the consumer base appreciated.

Ms Anupama Rao Singh, Regional Director, UNICEF East Asia and Pacific Regional Office (via Video Message) and Dr. Ingrid Hilman Child Survival Specialist, UNICEF Pacific: “How to make progress towards achieving the Millennium Development Goals by adding nutritional value to processed foods in the Pacific Island Countries”

Country	Vit A deficiency		Iron deficiency/anemia		Iodine def	Zinc def
	Women	Children	Women	Children	All	Children
Cook Islands						
FSM						
Fiji						
Kiribati						
Nauru						
Niue						
Palau						
PNG						
Samoa						
Solomon Islands						
Tonga						
Tuvalu						
Vanuatu						
		Sufficient evidence available				
		Suspected: Additional data needed				
		Data to be reviewed				

Deficits of vitamins and minerals in the diet undermine the likelihood of achieving each of the seven performance-oriented Millenium Development Goals. The eighth goal is focused on the processes to involve society broadly in multi-sector partnerships ; this meeting is an example of how such co-operation can be achieved.

There is much data on vitamin and mineral deficiencies in the Pacific Island countries. Table 1 summarises this. Opportunities exist to fortify widely-eaten processed foods and condiments (flour, rice, salt noodles). Efforts are needed to set regional standards and a legislative framework for food quality and safety to protect the health of consumers adequately and to facilitate international trade. It is also possible to fortify industrially-produced complementary foods for infants and to ensure that emergency foods are fortified.

However, there are challenges associated with having common standards and regulations (including on monitoring) to overcome the smallness of the individuals markets so as to avoid costly complexity for manufacturers; this will require open discussion between the public and private sectors.

Dr Vili A. Fuavao, Sub-Regional Representative for the Pacific, Food and Agriculture Organisation: "Food Security and Agriculture Trends in Pacific Island Countries and the impact on nutrition."

Agriculture in the Pacific Island countries is predominantly small scale, subsistence farming with low technology and productivity. Nevertheless, the sector has shown resilience and local crops are often highly nutritious. Few crops are appropriate for export and costs are high with small production volumes resulting in few economies of scale. Transport costs are often high because the farms are isolated.

The Pacific Island Countries are now net importers of food, often processed. Of the top eight calorie sources, five are 100% imported; of the top eight protein sources, four are over 90% imported.

Hye Kim, Business Analyst, Cargill, Inc: Public-Private-Civic Partnership to address Vitamin & Mineral Deficiency through Flour Fortification. Why Private Industry is engaging with this?

Cargill directs its philanthropic corporate resources to nutrition and health, education, and environmental stewardship. Its key criteria in choosing with which organisations to partner are its distinctive value; that it seeks to solve underlying problems; that it aligns with Cargill's business interests; that it can engage employees and leverage their expertise; that the partnership will be collaborative.

Cargill is supporting programmes and projects that seek long-term solutions to hunger; increase access to health education and basic health care in developing and emerging countries; and improve youth nutrition and wellness.

One such partnership is the Flour Fortification Initiative. This aligns with Cargill's interests as a wheat trader and flour miller; the Initiative is working to solve the real and under-lying problem of mineral and vitamin deficiencies; in addressing nutrition it aligns with one of Cargill's three areas of focus; it engages employees (the Chair of FFI is a Cargill employee) and can leverage their expertise; it provides Cargill with opportunities to collaborate with customers, NGOs and stakeholders.

Mr. Nigel Ewels, country Officer for Pacific Islands, World Bank Group: "Economic, Fuel & Commodity Price Crisis: Impact on Poverty and Food Security in Pacific Island Countries"

The recent upheavals in the global economy and markets highlighted the vulnerability of the Pacific Island Countries to international hikes in commodity prices. The very high current dependence of these countries on imported processed foods is of special concern primarily because of the high cost of transportation. Food and fuel imports account for substantial proportions of the national GDPs; from 28% in the Solomons to 60% in Kiribati.

Although there has been a substantial drop in the price of oil in recent months, the global economic crisis will likely continue to affect the Pacific Island Countries through decreased tourism, remittances, access to capital, and export incomes. Thus, it is essential that national policy makers continue to pursue the strategies they have already started to enable their countries to weather the economic crisis. Among other measures, it is important to improve domestic agriculture and fisheries so as to decrease dependence on expensive imported foods, and to help boost local livelihoods.

Ms Azizan Nisha Khan, National Advisor Dietetics and Nutrition, Ministry of Health, Fiji: “Fiji: Food Fortification and the WTO”

Iron deficiency is a major health problem in Fiji and affects all ethnic, age and gender groups. It is estimated that the Fiji loses about \$78 million annually from its GDP due to the impact of iron deficiency on impaired cognitive development of young children, reduced productivity of adults, and other associated health effects.

Wheat flour is industrially milled in Fiji and is a substantial dietary commodity (approx. 169 g/capita/day). Thus, through a public-private sector effort, with support from international agency partners such as UNICEF and AusAID, mandatory fortification of nationally produced industrial flour has been adopted in Fiji in June 2004. However, the intervention was delayed for about one year due to misunderstandings about WTO regulations; those challenges were overcome with assistance of the Fiji’s foreign affairs and customs agencies.

It is estimated that flour fortification will provide up to 63% of the recommended daily intake of iron, and the low cost strategy can be sustained by passing on the minimal added cost to the consumer. Vitamins B1, B2, and B3, as well as folic acid and zinc are also added to the fortified flour. Surveillance data indicate a steady and substantial decline the prevalence of anemia (21% in 2004 to 8% in 2007) among pregnant women at their first prenatal exam.

Mrs Wila Saweri, Nutritionist, Ministry of Health PNG PNG: “Baseline nutritional survey leading to improved processed food for health”

A national micronutrient survey of PNG was carried out in 2005, and also provided region-specific estimates on the prevalence of anthropometric, biochemical and dietary indicators of the nutritional status of children 6 – 59 months old, non-pregnant women of childbearing age and adult men. Although the burden of malnutrition is high nationwide, there are substantial regional differences as well; Momase region is particularly affected. The survey also showed that both nutritional deficiencies, indicated by high prevalence of stunted growth of children, and deficiencies of iron, iodine and vitamin A among women in children, and high prevalence of obesity among adults due to excess caloric intake, are of public health significance. Finally, the survey showed that substantial proportions of the population, especially in urban areas, consume industrially produced commodities such as flour, rice, and cooking oil.

It was concluded that fortification of wheat flour, rice and cooking oil are feasible and should be pursued. However, given that 85% of the population live in rural village and grow their own food, other population-based preventive interventions must also be implemented, while continuing to promote the consumption of local foods.

Dr. Malakai Ake, Ministry of Health, Tonga: “Tonga’s experience with a National Food and Nutrition Committee”

The National Food and Nutrition Committee (NFNC) was established in Tonga in 1982 to try and address the increasing trend in nutrition-related chronic diseases in the country. The Ministries of Health, Agriculture, Fisheries, Finance, Education, as well as the Council of Churches and a number of NGOs were represented on the NFNC, with the terms of reference to provide recommendations on strategies to increase local food production and to advise the national Cabinet on food and nutrition and related disease burden. However, the organization was disbanded after a few years due to power struggles. In 1994, the NFNC was re-established with the intent that decision makers of various key agencies should serve as members; but only technical staff were engaged and policy

level decisions were not in their portfolio of work. The one policy proposal to reduce imports of mutton flaps as a measure to help reduce excess fat intakes was not successful.

The NFNC of Tonga has been non-functional again since 2007. Although a respected entity is essential to advise policy makers on nutrition policy matters, it could only be successful if the Committee is housed within an independent body but Chaired at Ministerial level.

Ms. Myriam Abel, Director-General Health, Ministry of Health, Vanuatu: “Vanuatu: Discovery of iodine deficiency and steps to improve health through national regulations regarding processed food”

The National Health Information System indicated an increasing prevalence of goitre among school children in Vanuatu. Thus, with the technical assistance and support of the University of Sydney, the Ministry of Health of Vanuatu conducted a survey of school age children (8-10 years old) who were randomly selected from four areas in Tanna. Urine samples were collected to measure iodine and thiocyanate levels, and dietary data were collected to assess dietary iodine consumption and thiocyanate containing foods (or goitre gens).

The results verified that the school children were indeed iodine deficient, with median urinary iodine (UI) of 49µg/L, and enlarged thyroids based on ultrasound readings. Furthermore, <50% of the household salt samples contained any iodine.

Given that universal salt iodization (USI) is globally accepted strategy to prevent and control iodine deficiency, and that 90% of salt in Tanna is imported (and produced by industrial plants), only iodized salt should be imported in Tanna. Furthermore, it is important to also ensure adequate iodine nutrition in the remaining islands of Vanuatu.

Mr. Ibrahim Parvanta, CARE USA: “Improving nutritional health of young children: need for fortified complementary foods”

It is well understood that the future development of any society depends on the optimum physical and mental development of children; the next generation. It should also be recognized that the neural circuits of the brain develop in a “bottom-up” sequence, and the capacity for improvement in the structure of the brain decreases with age. Thus, nutritional health and adequate vitamin and mineral intakes of young children are essential in the laying of optimal neural connections.

The World Health Organization (WHO) recommends, “exclusive breastfeeding during the first six months, followed with introduction of complementary foods and continued breastfeeding through 24 months.” Because young infants can only consume small volumes of complementary foods, and additionally because low nutrient density cereal based foods are fed to infants in most societies, fortification of complementary foods is essential ensure adequate micronutrient intakes among infants and toddlers.

Although the vast majority of infants in developed countries are fed fortified complementary foods, such foods are not commonly accessible to infants in developing countries due to number of reasons, including lack of understanding of the issue among policy makers and some baby food industry; perceived threat to exclusive breastfeeding; hesitation about the role of multi-national companies; and relatively high cost of commercially produced fortified complementary foods.

To help improve the nutritional health of infants and toddlers, it is important to recognize the importance of fortification of complementary foods, and mobilize public-private-civic sector partnerships to implement evidence-based and sustainable strategies.

Dirk Schulz, Food and Nutrition Officer FAO, Sub-regional Office for the Pacific: "Setting guidelines for safe, quality and healthy foods through the work of CODEX Alimentarius"

The Codex Alimentarius is a collection of internationally adopted and accepted food standards and guidelines which provide guidance on safe levels of more than 1000 food additives and potential contaminants. The Codex Commission is an international body delegated by representatives of >170 countries to develop food standards and guidelines. Codex standards are often used by countries in the process of developing their own national food related policies or legislation, and international and bilateral agreements such as WTO recognize Codex based food standards; this helps facilitate international trade.

The Codex provides general principles for the "addition of nutrients to foods", including vitamins and minerals, and advises on the compounds to use in fortification of foods for children. It also offers standards for food labelling, including health claims.

The Codex Alimentarius specifies that essential nutrients should be added to foods such as not to provide excessive or insignificant amounts considering the contribution of other foods in the general diet. Furthermore, the fortificants compounds should be stable under ordinary packaging, storage, distribution and usage, and the nutrient should be bio-available. Finally and importantly, food fortification should be monitored by regulatory agencies to ensure that the levels of nutrients added are within the specified standards.

PROPOSALS CONSOLIDATED

PROPOSAL		PAGE
1	All available data on micro-nutrient deficiencies and excess calorific and salt intake be consolidated into a single report for the Pacific Island Countries.	
2	That there is sufficient data available to start preparing for and taking action in a number of areas	
3	That any further data-gathering deemed necessary as a result of recommendation (1) be gathered as base-line data to facilitate work to measure the impact of measures being taken.	
4	That the Pacific Island Countries consider developing regional policy instruments whenever there is the possibility of significant economies of scale in policy development or execution.	
5	That the governments of the Pacific Island Countries implement basic food laws based on the Codex Alimentarius and other internationally recognized standards (e.g. WHO/FAO and FFI).	
6	That the governments of the Pacific Island Countries look to develop the basic food law on a regional basis following the best practice examples of Fiji and Samoa.	
7	That discussions be held at a regional level with importers to determine how a programme of required food labelling and nutrition profiling can be introduced.	
8	That discussions be held at a regional level with FSANZ on possibilities for co-operation in monitoring and enforcement.	
9	That governments, ideally at a regional level, work with importers and local processors to develop instruments to require food fortification as appropriate based on local needs and diet practices.	
10	That the Pacific Island Countries consider implementing salt iodisation in the near future alongside salt intake reduction strategies.	
11	That a regional standard for flour fortification be developed based on the Fijian standard, modified according to the guidance of the Stone Mountain meeting (the Table in Appendix 4) if necessary.	
12	That a review be carried out to determine if vitamin A deficiency in infants and toddlers is a public health burden requiring specific interventions in the Pacific Island Countries.	
13	That Vitamin A levels in the general population be assessed as the basis for determining what priority should be attached to fortification of selected	

PROPOSAL		PAGE
	staples with vitamin A.	
14	That exclusive breastfeeding be promoted as the nationally recommended method of feeding infants <6 months old.	
15	That it be required that all imported infant complementary foods be fortified according to regional standards.	
16	That appropriate strategies be developed and implemented to enable households that feed home-made, complementary foods to babies to regularly utilize “in-home”, fortificant powders, such as sprinkles.	
17	That relevant public and private sector specialists be engaged to advise on potential options for processing indigenous foods to allow for more convenient and appealing consumer preparation options.	
18	That consideration be given to encouraging and supporting local entrepreneurs (including the sharing of existing experiences) to establish small-scale food processing and distribution plants.	
19	That action be taken, as soon as possible, on a variety of measures (see page x) to reduce calorie intake	
20	That discussions be held at a regional level with importers and local food processors to rapidly disseminate best practice in reducing salt in processed foods and to determine how data could be gathered that would form the basis for further action on salt reduction in processed foods.	
21	That multi-stakeholder discussions be used to adapt global knowledge on micro-nutrient deficiencies to the specific situations in the Pacific Island Countries and for the region to prepare detailed plans as the basis for advocating specific local and regional actions to significantly reduce the health problems caused by these deficiencies.	
22	That multi-stakeholder discussions be used to understand better the specific challenges and needs of the Pacific Island Countries and the region and to adapt global knowledge so as to develop plans for reducing fat, sugar and salt intakes that can address the magnitude of the current disease burden.	
23	That the groups dealing with the two subjects of micro-nutrient deficiencies and reducing fat, sugar and salt intakes work separately.	
24	That the multi-stakeholder groups on reducing micro-nutrient deficiencies and on reducing fat, sugar and salt intakes should consider how best to engage civic society groups and others (businesses, schools, churches <i>etc.</i>) to deliver the necessary cultural changes in diet.	

PROPOSALS GROUPED INTO SUBJECT AREAS²⁰

DATA

1	All available data on micro-nutrient deficiencies and excess calorific and salt intake be consolidated into a single report for the Pacific Island Countries.	
2	That there is sufficient data available to start preparing for and taking action in a number of areas	
3	That any further data-gathering deemed necessary as a result of recommendation (1) be gathered as base-line data to facilitate work to measure the impact of measures being taken.	
12	That a review be carried out to determine if vitamin A deficiency in infants and toddlers is a public health burden requiring specific interventions in the Pacific Island Countries.	
13	That Vitamin A levels in the general population be assessed as the basis for determining what priority should be attached to fortification of selected staples with vitamin A.	

REGIONAL ACTION FOR GOVERNMENTS

4	That the Pacific Island Countries consider developing regional policy instruments whenever there is the possibility of significant economies of scale in policy development or execution.	
6	That the governments of the Pacific Island Countries look to develop the basic food law on a regional basis following the best practice examples of Fiji and Samoa.	
7	That discussions be held at a regional level with importers to determine how a programme of required food labelling and nutrition profiling can be introduced.	
8	That discussions be held at a regional level with FSANZ on possibilities for co-operation in monitoring and enforcement.	
9	That governments, ideally at a regional level, work with importers and local processors to develop instruments to require food fortification as appropriate based on local needs and diet practices.	
11	That a regional standard for flour fortification be developed based on the Fijian standard, modified according to the guidance of the Stone Mountain	

²⁰ A proposal can occur under more than one heading

	meeting (the Table in Appendix 4) if necessary.	
15	That it be required that all imported infant complementary foods be fortified according to regional standards.	

NATIONAL ACTION FOR GOVERNMENTS

5	That the governments of the Pacific Island Countries implement basic food laws based on the Codex Alimentarius and other internationally recognized standards (e.g. WHO/FAO and FFI).	
6	That the governments of the Pacific Island Countries look to develop the basic food law on a regional basis following the best practice examples of Fiji and Samoa.	
10	That the Pacific Island Countries consider implementing salt iodisation in the near future alongside salt intake reduction strategies.	
14	That exclusive breastfeeding be promoted as the nationally recommended method of feeding infants <6 months old.	

MULTI-STAKEHOLDER ACTIVITIES

20	That discussions be held at a regional level with importers and local food processors to rapidly disseminate best practice in reducing salt in processed foods and to determine how data could be gathered that would form the basis for further action on salt reduction in processed foods.	
21	That multi-stakeholder discussions be used to adapt global knowledge on micro-nutrient deficiencies to the specific situations in the Pacific Island Countries and for the region to prepare detailed plans as the basis for advocating specific local and regional actions to significantly reduce the health problems caused by these deficiencies.	
22	That multi-stakeholder discussions be used to understand better the specific challenges and needs of the Pacific Island Countries and the region and to adapt global knowledge so as to develop plans for reducing fat, sugar and salt intakes that can address the magnitude of the current disease burden.	
23	That the groups dealing with the two subjects of micro-nutrient deficiencies and reducing fat, sugar and salt intakes work separately.	
24	That the multi-stakeholder groups on reducing micro-nutrient deficiencies and on reducing fat, sugar and salt intakes should consider how best to engage civic society groups and others (businesses, schools, churches <i>etc.</i>) to deliver the necessary cultural changes in diet.	

LOCAL FOOD PRODUCTION

9	That governments, ideally at a regional level, work with importers and local processors to develop instruments to require food fortification as appropriate based on local needs and diet practices.	
16	That appropriate strategies be developed and implemented to enable households that feed home-made, complementary foods to babies to regularly utilize "in-home", fortificant powders, such as sprinkles.	
17	That relevant public and private sector specialists be engaged to advise on potential options for processing indigenous foods to allow for more convenient and appealing consumer preparation options.	
18	That consideration be given to encouraging and supporting local entrepreneurs (including the sharing of existing experiences) to establish small-scale food processing and distribution plants.	
20	That discussions be held at a regional level with importers and local food processors to rapidly disseminate best practice in reducing salt in processed foods and to determine how data could be gathered that would form the basis for further action on salt reduction in processed foods.	

FOOD IMPORTS

7	That discussions be held at a regional level with importers to determine how a programme of required food labelling and nutrition profiling can be introduced.	
9	That governments, ideally at a regional level, work with importers and local processors to develop instruments to require food fortification as appropriate based on local needs and diet practices.	
15	That it be required that all imported infant complementary foods be fortified according to regional standards.	
20	That discussions be held at a regional level with importers and local food processors to rapidly disseminate best practice in reducing salt in processed foods and to determine how data could be gathered that would form the basis for further action on salt reduction in processed foods.	

ACTIONS DIRECTED TOWARDS INFANTS AND CHILDREN

12	That a review be carried out to determine if vitamin A deficiency in infants and toddlers is a public health burden requiring specific interventions in the	
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	Pacific Island Countries.	
13	That Vitamin A levels in the general population be assessed as the basis for determining what priority should be attached to fortification of selected staples with vitamin A.	
14	That exclusive breastfeeding be promoted as the nationally recommended method of feeding infants <6 months old.	
15	That it be required that all imported infant complementary foods be fortified according to regional standards.	
16	That appropriate strategies be developed and implemented to enable households that feed home-made, complementary foods to babies to regularly utilize "in-home", fortificant powders, such as sprinkles.	

ACTIONS ON NON-COMMUNICABLE DISEASE

1	All available data on micro-nutrient deficiencies and excess calorific and salt intake be consolidated into a single report for the Pacific Island Countries.	
2	That there is sufficient data available to start preparing for and taking action in a number of areas	
3	That any further data-gathering deemed necessary as a result of recommendation (1) be gathered as base-line data to facilitate work to measure the impact of measures being taken.	
4	That the Pacific Island Countries consider developing regional policy instruments whenever there is the possibility of significant economies of scale in policy development or execution.	
5	That the governments of the Pacific Island Countries implement basic food laws based on the Codex Alimentarius and other internationally recognized standards (e.g. WHO/FAO and FFI).	
6	That the governments of the Pacific Island Countries look to develop the basic food law on a regional basis following the best practice examples of Fiji and Samoa.	
7	That discussions be held at a regional level with importers to determine how a programme of required food labelling and nutrition profiling can be introduced.	
9	That governments, ideally at a regional level, work with importers and local processors to develop instruments to require food fortification as appropriate based on local needs and diet practices.	
17	That relevant public and private sector specialists be engaged to advise on potential options for processing indigenous foods to allow for more	

	convenient and appealing consumer preparation options.	
18	That consideration be given to encouraging and supporting local entrepreneurs (including the sharing of existing experiences) to establish small-scale food processing and distribution plants.	
19	That action be taken, as soon as possible, on a variety of measures (see page x) to reduce calorie intake	
20	That discussions be held at a regional level with importers and local food processors to rapidly disseminate best practice in reducing salt in processed foods and to determine how data could be gathered that would form the basis for further action on salt reduction in processed foods.	
22	That multi-stakeholder discussions be used to understand better the specific challenges and needs of the Pacific Island Countries and the region and to adapt global knowledge so as to develop plans for reducing fat, sugar and salt intakes that can address the magnitude of the current disease burden.	
23	That the groups dealing with the two subjects of micro-nutrient deficiencies and reducing fat, sugar and salt intakes work separately.	
24	That the multi-stakeholder groups on reducing micro-nutrient deficiencies and on reducing fat, sugar and salt intakes should consider how best to engage civic society groups and others (businesses, schools, churches <i>etc.</i>) to deliver the necessary cultural changes in diet.	

ACTIONS ON MINERAL & VITAMIN DEFICIENCIES

1	All available data on micro-nutrient deficiencies and excess calorific and salt intake be consolidated into a single report for the Pacific Island Countries.	
2	That there is sufficient data available to start preparing for and taking action in a number of areas	
3	That any further data-gathering deemed necessary as a result of recommendation (1) be gathered as base-line data to facilitate work to measure the impact of measures being taken.	
4	That the Pacific Island Countries consider developing regional policy instruments whenever there is the possibility of significant economies of scale in policy development or execution.	
5	That the governments of the Pacific Island Countries implement basic food laws based on the Codex Alimentarius and other internationally recognized standards (e.g. WHO/FAO and FFI).	
6	That the governments of the Pacific Island Countries look to develop the basic food law on a regional basis following the best practice examples of Fiji and Samoa.	

7	That discussions be held at a regional level with importers to determine how a programme of required food labelling and nutrition profiling can be introduced.	
9	That governments, ideally at a regional level, work with importers and local processors to develop instruments to require food fortification as appropriate based on local needs and diet practices.	
10	That the Pacific Island Countries consider implementing salt iodisation in the near future alongside salt intake reduction strategies.	
11	That a regional standard for flour fortification be developed based on the Fijian standard, modified according to the guidance of the Stone Mountain meeting (the Table in Appendix 4) if necessary.	
12	That a review be carried out to determine if vitamin A deficiency in infants and toddlers is a public health burden requiring specific interventions in the Pacific Island Countries.	
13	That Vitamin A levels in the general population be assessed as the basis for determining what priority should be attached to fortification of selected staples with vitamin A.	
15	That it be required that all imported infant complementary foods be fortified according to regional standards.	
16	That appropriate strategies be developed and implemented to enable households that feed home-made, complementary foods to babies to regularly utilize "in-home", fortificant powders, such as sprinkles.	
21	That multi-stakeholder discussions be used to adapt global knowledge on micro-nutrient deficiencies to the specific situations in the Pacific Island Countries and for the region to prepare detailed plans as the basis for advocating specific local and regional actions to significantly reduce the health problems caused by these deficiencies.	
23	That the groups dealing with the two subjects of micro-nutrient deficiencies and reducing fat, sugar and salt intakes work separately.	
24	That the multi-stakeholder groups on reducing micro-nutrient deficiencies and on reducing fat, sugar and salt intakes should consider how best to engage civic society groups and others (businesses, schools, churches <i>etc.</i>) to deliver the necessary cultural changes in diet.	

OTHER

8	That discussions be held at a regional level with FSANZ on possibilities for co-operation in monitoring and enforcement.	
23	That the groups dealing with the two subjects of micro-nutrient deficiencies	

	and reducing fat, sugar and salt intakes work separately.	
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ADDING VALUE TO PACIFIC ISLAND FOODS: MEETING REPORT

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MEETING PURPOSES, OBJECTIVES, SUCCESS CRITERIA AND AGENDA (As Conducted)

Purposes

1. To determine how the public and private sectors can work together to improve the health benefits of imported and processed food.
2. To provide written input to the Pacific Islands Food & Health summit meeting scheduled for 2009 on practical steps that can be taken to improve the health benefits of imported and processed food.

Objectives

1. To scope key health problems that can be addressed through improved nutrition
2. To set out what the food industry, health sectors and regulators can do together to support improved nutrition (including where in the chain action is most appropriate and what regulatory action is needed)
3. To determine what partnership alliances are needed to deliver improved nutrition and how these can be created and sustained.

Success Criteria

1. Agreement on partnership alliances that are needed and how these can be supported
2. Sufficient input on health problems and proposed action by the food industry supported by other partners, that a report to the Food & Health Summit Meeting can be prepared following the meeting (a draft will be circulated to all participants for comment).

Day 1 - Wednesday 5th November 2008

Session 1: Welcome & Context

A/Prof Abd Malak, Executive
Director Workforce and
Organisational Development,
SWAHS

Chair's Welcome

Mr Greg Sims, Elder Darruk
People:

Welcome to Country

Prof. Steven Boyages, Chair GHI

Welcome & why you were invited

& Chief Executive, SWAHS

Mr Peter Hindle

[Facilitator's Overview: What we can expect from the dialogue and how it will work?](#)

Session 2: Setting the Table

A/Prof Abd Malak, Executive Director Workforce and Organisational Development, SWAHS and Mr Peter Hindle

Session Chair

Hon. Bob McMullan, Parliamentary Secretary AusAID, Australian Government (via video message)

The Australian Government Overseas Development Assistance Program and Adding Value to Pacific Island Foods. What is the Challenge to the meeting?

The Hon Gatoloifaana Gidlow, Minister of Health, Samoa

[Processed Food and Health in Pacific island Countries such as Samoa: Why this is an important issue to be addressed?](#)

Dr. Ken Chen
WHO Representative in the South Pacific

[The benefit to health and prevention of disability in addressing fortification, on communicable diseases, food safety and food security in the Pacific. How are WHO Member States, WHO and partners working together to address this?](#)

Ms Myriam Abel, Director-General Health, Ministry of Health, Vanuatu

[Processed Food and Health in Pacific island Countries such as Vanuatu: Why this is an important issue to be addressed?](#)

Hye Kim, Business Analyst, Cargill, Inc.

[Public-Private-Civic Partnership to address Vitamin & Mineral Deficiency through Flour Fortification. Why Private Industry is engaging with this?](#)

Ms Anupama Rao Singh, Regional Director, UNICEF East Asia and Pacific Regional Office (via Video Message)

[How to make progress towards achieving the Millennium Development Goals by adding nutritional value to processed foods in the Pacific Island Countries?](#)

Dr. Ingrid Hilman
Child Survival Specialist UNICEF Pacific

Dr Vili A. Fuavao, Sub-Regional Representative for the Pacific, FAO

[Food Security, Agriculture trends in Pacific Island Countries and the impact on nutrition](#)

Ministry of Health PNG [for health](#)

Dr Ake, Ministry of Health, Tonga [Tonga: Specific focus of presentation to be decided](#)

Ms Myriam Abel, Director-General Health, Ministry of Health, Vanuatu [Vanuatu: Discovery of iodine deficiency and steps to improve health through national regulations regarding processed food](#)

Chair & Mr Peter Hindle & Dr Temo K Waqanivalu Plenary Discussion

Session 5: Dialogue – Requirements /Opportunities for the governments, agencies & food industry help improve consumer’s health (Tables of 7-10 people with deliberately mixed sectors & geography in the plenary room)

Mr Peter Hindle & Dr Temo K Waqanivalu [Set task 1 and get started](#)

Working Groups Define three health issues where the food industry could/should help

Mr Peter Hindle & Dr Temo K Waqanivalu & Working Groups Report Back

Peter Hindle Summarize & set task 2

Working Groups Choose 1 issue and define:

- up to 3 actions the governments & food industry could/should take
- up to 3 challenges the governments and food industry is likely to face or areas where it will need help

Mr Peter Hindle & Dr Temo K Waqanivalu & Working Groups Report back – with questions, clarification from plenary

Mr Peter Hindle & Dr Temo K Waqanivalu Summary of outcome

Day 2 – Thursday 6th November

Session 6: Panel - Opportunities to Improve Health with Fortified Food

ADDING VALUE TO PACIFIC ISLAND FOODS: MEETING REPORT

Mr Peter Hindle & Dr Temo K Waqanivalu What we learned yesterday & setting the stage for session

Prof. Glen Maberly, Director GHI, Sydney West Area Health Service, GHI [Global Experience: How can food fortification make people healthier, smarter, and stronger?](#)

Dr Luca Tommaso Cavalli-Sforza, Regional Adviser in Nutrition and Food Safety, WHO Regional Office for the Western Pacific [Opportunities to address vitamin and mineral deficiency through food in the Pacific Island Countries](#)

Ms. Karen Codling, Executive Director, East Asia Leaders Group, FFI [Progress with wheat flour fortification in East Asia region](#)

Mr. Ibrahim Parvanta, CARE [Improving health of young children by fortified complementary foods](#)

Chair & Mr Peter Hindle & Dr Temo K Waqanivalu Plenary Discussion

Session 7: Panel - Innovations in Food Fortification

Mr Peter Hindle & Dr Temo K Waqanivalu Setting the stage for session

Chair: Dr. Alopi Latukefu Adviser Office of the Hon Duncan Kerr Introduction: Traditional values, hospitality and food

David Townsend, General Manager, NutiRice, Ltd, China, Buhler/DSM [Rice Fortification](#)

Cris Robb, Product Manager, Akzo Nobel Pty Ltd [What are the benefits of food fortification with EDTA iron?](#)

Hye Kim, Business Analyst, Cargill, Inc. [Vitamin A fortification of Cooking oil](#)

Chair & Mr Peter Hindle & Dr Temo K Waqanivalu Plenary Discussion

Session 8: Dialogue - Defining Requirements to move forward with food fortification & preparing

outcome statement

Peter Hindle Set Task 2 & get started

Working Groups Define up to 5 essential requirements for moving forward with food fortification (either deal with one specific health opportunity or one specific food chain or general requirements)

Mr Peter Hindle & Dr Temo K Waqanivalu & Working Groups Report back with questions and clarification

Session 9: Panel - Opportunities to Reduce Chronic Disease with Healthy Quality Food

Mr Peter Hindle & Dr Temo K Waqanivalu Setting the stage for session

Prof Stephen Leeder, Director, Australian Health Policy Institute, Sydney University [Global obesity epidemic and the impact on health](#)

Dr Boyd Swinburn Deakin University [Obesity and NCD's in the Pacific Region](#)

Dr. Don Matheson, WHO Senior Advisor, WHO [What are the opportunities to reduce non-communicable diseases risk factors from processed and imported food in the Pacific?](#)

Chair & Mr Peter Hindle & Dr Temo K Waqanivalu Plenary Discussion

Session 10: Panel - Examples of Health Innovations to Food Processing

Mr Peter Hindle & Dr Temo K Waqanivalu Setting the stage for session

Pacific Island Chair

Joanne Price, Coca Cola Australia [TBaA](#)

Julie Dick, Heinz -Watties, New Zealand [Providing quality processed foods for health](#)

Ms Lynne Teichman
 Technical Systems Manager
 Hans Continental Smallgoods

[Sodium and fat reduction in processed meats - Technical limitations and impact on cost of manufacture](#)

Chair & Mr Peter Hindle & Dr Temo
 K Waqanivalu

Plenary Discussion

Session 11: Dialogue - Defining Requirements to move forward with reducing chronic disease & preparing outcome statement

Peter Hindle

Set Task 3 & get started

Working Groups

Define up to 5 essential requirements for moving forward (either deal with one specific health opportunity or one specific food chain or general requirements)

Mr Peter Hindle & Dr Temo K
 Waqanivalu & Working Groups

Report back with questions and clarification

Peter Hindle

Summarise & set Tasks 4 & 5

Working Groups

Overnight; by 1:30 PM Friday

Task 5: Define any key omissions in work so far

Task 6: Define 4 things that MUST be included in the paper for the 2009 Pacific Food Summit

Day 3 – Friday 7th November

Session 12: Panel - Food standards and trade in the Pacific

Mr Peter Hindle & Dr Temo K
 Waqanivalu

Setting the stage for session

Chair: Ms Iulia Petelo, Samoa,
 Ministry of Commerce

Mr Tony Hazzard, Regional Adviser
 in Food Safety, WPRO

[Report from The first Pacific Food Safety and Quality Legislation Expert Group, 3-4 November 2008 and next steps](#)

Dirk Schulz, Food and Nutrition

[Setting guidelines for safe, quality and healthy foods through the](#)

Officer FAO, Sub-regional Office for the Pacific [work of CODEX Alimentarius](#)

Janis Baines FSANZ (Australia) [Approach to developing food standards for health](#)

Mr Waisele Delai, Chief Health Inspector Ministry of Fiji [Opportunities & challenges for improving the food supply in Samoa using food standards](#)

Chair & Mr Peter Hindle & Dr Temo K Waqanivalu Plenary Discussion

Session 13: Dialogue - Moving Forward Together

Peter Hindle Objectives for final session

Working Groups Finalize Overnight Task 5 & 6

Mr Peter Hindle & Dr Temo K Waqanivalu & Working Groups Report back on Overnight Task 5 & 6

Mr Peter Hindle & Dr Temo K Waqanivalu Summary of conclusions to date and Set Task 7 (Hopefully there is a wide-spread recognition of the need to work together)

Working Groups What organisational structure(s) are needed for everyone to work together effectively

Mr Peter Hindle & Dr Temo K Waqanivalu & Working Groups Report back & conclusions

WHO Representative Summary and Next Steps

Prof. Steven Boyages, Chair GHI & Chief Executive, SWAHS Next Steps and Meeting Conclusion

Burden of Vitamin and Mineral Deficiencies

WHO Reports²¹ have identified iodine, iron, vitamin A and zinc deficiencies among the world's most serious health risk factors. Such deficiencies contribute to a cycle of poor health and depressed productivity, trapping families in poverty and eroding economic security in countries around the world. Adequate intakes of these essential nutrients protect populations from a range of disabilities and diseases, help children grow and learn, and improve productivity among adults.

Iodine Deficiency

Iodine deficiency is the leading cause of preventable mental retardation. This is in addition to enlargement of the thyroid gland (referred to as a goitre) which is the commonly known outcome of such deficiency. Cretinism is the most severe form of iodine deficiency, where the affected person is retarded both mentally and physically. Nearly all populations around the world are at risk of deficiency due to the natural depletion of water-soluble iodine-based salts in soils, leading to inadequate amounts of this essential nutrient in typical food supplies. Even people living in coastal communities with a fish-rich diet are not protected from iodine deficiency, because fish are not necessarily rich in iodine.

The recognized primary, sustainable solution to the prevention of iodine deficiency is nationally mandated fortification of all salt for human consumption (*i.e.* table salt as well as salt in commercially prepared foods).

Iron Deficiency

Iron deficiency is the most common nutrient deficiency in the world [4]. It is responsible for more than 20,000 deaths and 2 million disability adjusted life years (DALYs) in children less than 5 years old [5]. In addition, iron deficiency anemia in pregnancy increases the risk of maternal mortality; approximately 115,000 deaths per year from maternal causes and 3.4 million DALYs, are associated with this risk factor [5]. According to a WHO review of nationally representative surveys, 42% of pregnant women and 47% of preschool children around the world have anemia [5]. These analyses assume that 60% of anemia was due to iron deficiency in non-malaria areas while 50% was in malaria areas. Although iron deficiency may affect different population groups, its greatest negative consequence is on the health and physical and intellectual well-being of preschool children and women of childbearing age.

The majority of countries have programs to distribute iron or multi-vitamin plus iron supplements among pregnant women. However, population coverage of these programs have been very poor due to poor logistics as well lack inadequate compliance of women with the supplementation regimens. To help improve iron status of women of childbearing age in a more effective and sustainable manner, the WHO/FAO and the Flour Fortification Initiative (FFI) recommend fortification of industrially produced wheat flour with iron for populations that consume sufficient quantities of such flour products on a regular basis.

To improve the dietary iron intakes of infants and toddlers after 6 months of age, a documented effective strategy is fortification of industrially produced infant complementary foods with iron (e.g. this has been shown in the United States and Chile). Because industrially produced complementary

²¹ "Vitamin and Mineral Requirements in Human Nutrition; 2nd Edition", WHO, 2004; "Guidelines on Food Fortification", Eds. L. Allen, B. De Benoist, O. Dary, R. Hurrell, WHO, 2006. These and other references available from <http://www.who.int/nutrition/publications/micronutrients/en/index.html>

foods are not traditionally used or commercially accessible to all populations, a new product, Sprinkles, has been shown to be efficacious as an “in-home” fortificant. Sprinkles comes as a powder form of micronutrients (different vitamins and minerals could be included) which is “sprinkled” on the infant’s home prepared food prior to feeding it to the child. A number of population based interventions are now underway in different parts of the world to assess the long-term sustainability and needed coverage of such “in-home” fortificants because caregivers have to adopt the behavior of using the products themselves.

Zinc Deficiency

Zinc deficiency leads to about 4% of deaths and 16 million DALYs among children less than 5 years old in lower-income countries [5], and is usually found in populations that are also iron deficient. Zinc deficiency in young children increases the rates of diarrhea and acute lower respiratory infections and leads to reduced height and physical development [6, 7]. Adequate zinc intake is also essential among women for normal pregnancy outcomes [8].

Zinc deficiency has more recently been recognized by the international public health authorities as a significant health burden, especially among young children. Most interventions have focused on zinc supplementation as a therapeutic approach to diarrheal disease control. However, there is now more emphasis on prevention of zinc deficiency, and similar to iron above, industrial fortification of grain flours as well as inclusion of zinc in “in-home” fortificants are now recommended (need to find references).

Vitamin A Deficiency

Vitamin A deficiency is a substantial public health problem in developing nations, affects more than 130 million preschool children, is the leading preventable cause of childhood blindness [11], and a major underlying cause of child mortality [12]. Also, adequate vitamin A consumption is essential for immune response to infections; vitamin A supplementation in early childhood has been shown to reduce fatality from measles, diarrhea or dysentery, malaria and other febrile illnesses [13]. It is also estimated that 20 million pregnant and lactating women suffer from vitamin A deficiency [14], and thus, are at higher risks of night blindness, anemia, morbidity and mortality.

The most common intervention to prevent vitamin A deficiency among young children in developing countries has been the provision of high dose vitamin A supplements to preschool children through national immunization campaigns. In some countries, high dose vitamin A supplements are also given to post-partum women. However, the coverage of these programs is not always adequate. Fortification of industrially produced cooking oils and margarines is now recognized as a low-cost, effective and sustainable strategy to prevent vitamin A deficiency, and a number of developing countries now mandate such fortification.

Vitamin B1 (Thiamine) Deficiency

Thiamine is known as vitamin B1 because it was the first B vitamin discovered. It is a cofactor for a number of enzymes needed by the body to metabolize carbohydrates; it is also involved in the health of the neural system. As with other water-soluble vitamins, vitamin B1 is easily destroyed during cooking in water and by heat. Furthermore, the milling of cereal grains removes most of the B vitamins found in the outer germ of grains; thus, the more highly processed the cereal flour, the less its vitamin B1 (and B2 and B3) content. Enrichment of flour with B vitamins to restore what is lost due to milling has essentially eliminated B vitamin deficiencies in many industrialized countries²². Such enrichment (or fortification) has virtually eliminated vitamin B1 deficiency in those countries.

²² WHO/FAO guidelines on food fortification

Though severe vitamin B1 deficiency resulting in clinical symptoms of beriberi is not very common, outbreaks of beriberi have been reported among some refugee or displaced populations with very restricted diets comprised of low extraction flours and/or polished rice. However, it is thought that subclinical vitamin B1 deficiency may be a significant public health problem in developing countries where diets are low in animal source foods, and fruits and vegetables. The risk of such deficiency is high in some Asian populations, where polished rice is the staple food²². Also, Wernicke-Korsakoff syndrome is the result of vitamin B1 deficiency, and includes damage to the central and peripheral nervous systems as well as memory impairment, caused by alcohol abuse. Interestingly, in Australia, wheat flour is enriched with vitamin B1 to prevent such damage among alcoholics²³.

Vitamin B2 (Riboflavin) Deficiency

As with vitamin B1, vitamin B2 is essential for the metabolism of carbohydrates and amino acids for energy production. Deficiency of this vitamin rarely occurs in isolation; rather because B vitamins are obtained through the same dietary sources, deficiency of one B vitamin usually means intakes of other B-complex vitamins are also inadequate²⁴.

Early stages of riboflavin deficiency could include weakness, fatigue, mouth pain, and itching, while clinical symptoms of severe deficiency are characterized by dermatitis, cheilosis, angular stomatitis, and brain dysfunction. Furthermore, riboflavin deficiency affects utilization of iron for formation of hemoglobin. Thus, some proportion of anemia in a population may be due to insufficient intake of riboflavin.

Meat and dairy products are the best dietary sources of riboflavin, and leafy green vegetables also contribute to intake of the vitamin. Populations with low intake of animal source foods are at highest risk of riboflavin deficiency; while chronic alcoholism is also a risk factor²².

Vitamin B3 (Niacin or Nicotinic Acid) Deficiency

Vitamin B3 derivatives (nicotinamide adenine dinucleotide or NAD, and nicotinamide adenine dinucleotide phosphate or NADP), are essential coenzymes in cell metabolism²⁵. The main dietary sources of niacin are baker's yeast, animal and dairy products, cereals, legumes and leafy green vegetables. Populations whose diets are heavily comprised of refined grains, such as polished rice, are at increased risk of niacin deficiency. Niacin is unique among vitamins in that the human body can produce it from tryptophan, an amino acid; 60 mg tryptophan produces 1 mg of niacin²². Severe deficiency of niacin, or pellagra, occurs when the diet is low both in the vitamin and tryptophan.

Pellagra, known for its symptoms of dermatitis, diarrhea, and dementia (also called the "three D's") was common in the United States in the early 20th century. The enrichment of flour with niacin was implemented during World War II and led to the elimination of niacin deficiency in the United States²⁶. Although pellagra is not commonly reported around the world, outbreaks have occurred in refugee populations with very limited dietary variety and lack of access to fortified products.

²³ Communication, Prof. G. Maberley

²⁴ <http://www.merck.com/mmhe/sec12/ch154/ch154d.html> accessed March 6, 2009.

²⁵ <http://www.merck.com/mmpe/sec01/ch004/ch004d.html> accessed March 6, 2009

²⁶ CDC, MMWR. Ten Great Public Health Achievements -- United States, 1900-1999. 48:241-243, 1999

Vitamin B9 (Folate²⁷) Deficiency

Sufficient folate intake by women before pregnancy and in the first weeks of gestation decreases the risk of neural tube defects (NTD, the world's leading, preventable, birth defect). There is also growing epidemiological evidence that higher folate levels in adults reduce the risk of stroke mortality.

Many countries recommend that women receive folic acid supplements prior to and in the initial stage of pregnancy. However, because pregnancies are often unplanned and most women seek medical care only when pregnancy has started (and often only in the second or third trimester of pregnancy), the impact of folic acid supplementation has not been effective at the population level. In contrast, fortification of industrially produced wheat and corn flours with folic acid has been clearly documented to substantially reduce NTDs in populations that regularly consume sufficient flour products. Therefore, the international recommendation is that all industrially produced flour should be fortified with folic acid.

Vitamin B12 Deficiency

There is mounting evidence of vitamin B12 depletion and deficiency affecting many population groups that consume low amounts of animal source foods, which are the only natural source of the vitamin. Even in industrialized countries, there is a high prevalence of vitamin B12 deficiency among the elderly. Vitamin B12 deficiency has been linked to poor pregnancy outcomes and an increased risk of NTDs, delayed child development, abnormal cognitive function, depression, anaemia, and elevated plasma homocysteine concentrations.

A recent international consensus conference recommended national mandatory fortification of industrially-produced wheat and corn flours to protect high risk populations from the consequences of vitamin B12 deficiency.

²⁷ Folate (vitamin B9) occurs naturally in foods; folic acid is the synthetic form of the vitamin used in supplements and as a fortificant. 0.6 µg. Folic acid delivers the equivalent of 1 µg. folate. We should use "folate" when referring to the vitamin deficiency and "folic acid" when referring to what is contained in supplements and fortified foods.

Provisional recommendations for levels of nutrients to add to fortified flour based on type of flour and fortificant, as well as per capita wheat flour intake.

Nutrient	Type of flour (extraction)	Fortificant	Level of nutrient to be added (ppm)			
			By daily per capita wheat flour intake			
			<75 ¹ g/day	75-149 g/day	150-300 g/day	>300 ² g/day
Iron	Low	NaFeEDTA				15
		Sulfate/Fumarate ³	40	40	20	20
		Electrolytic powder	60	60	30	40
			NR ⁴	NR ⁴	60	
	High	NaFeEDTA	40	40	20	15
Zinc ⁵	Low	Zinc Oxide	95	55	40	30
	High	Zinc Oxide	100	100	80	70
Folic Acid	Low or High	Folic Acid	5.0	2.6	1.3	1.0
Vitamin B12	Low or High	Cyancobalamin	0.04	0.02	0.01	0.008
Vitamin A	Low or High	Vitamin palmitate A	5.9	3.0	1.5	1.0

¹Per capita intake of <75 g/day does not allow for addition of sufficient level of fortificant to cover micronutrients for women of childbearing age. Fortification of additional food vehicles should also be considered.

²Few countries have per capita consumption of >300 g/day

³Ferrous fumarate is the preferred compound for maize flour after nixtamalization.

⁴NR = Not Recommended because the very high levels of electrolytic iron needed would negatively affect sensory properties of fortified flour.

⁵ These are the recommended amounts of zinc fortification assuming 5 mg zinc intake and no additional phytate intake from other dietary sources.