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Universal Salt Iodization (USI)

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Global progress and public health success stories to address
IDD through USI, key programme components, lessons learned
at country level, and the way forward to reach USI globally



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Secretary's Round-up

This edition of the SCN News is about one of the greatest success stories in international nutrition, that of Universal Salt Iodization. Although much still remains to be done, remarkable advances have been achieved in the fight against Iodine Deficiency Disorders (IDD) in the last two decades. The series was organized thanks to a special collaboration by the Micronutrient Initiative, with Venkatesh Mannar agreeing to become the guest editor for this edition. We hope that you enjoy the articles, and our thanks are due to all those that have collaborated in this including Venkatesh, the writers themselves, and the peer review team.

The last semester of 2007 has seen increased attention to the structure and function of the international nutrition system. The report of the Independent External Review of the Food and Agriculture Organization (FAO) has recommended considerable changes to the nutrition capacity of the organization. How FAO will respond to these recommendations remains to be determined. At the request of the SCN Chair, the SCN Steering Committee has agreed that a review of the international nutrition coordination mechanisms among UN agencies in particular be carried out. The review will give special consideration to how best to structure the relationships between the SCN and the emerging activities being promoted through the Ending Child Hunger and Undernutrition Initiative (ECHUI). The review recommendations will be discussed at the 35th Session of the SCN to be held in Hanoi in the first week of March.

The 35th Session of the SCN will look at accelerating the reduction of maternal and child undernutrition, and the latest draft agenda and details for registration are available at the SCN website. The Session will be looking at the programmatic implications of the findings from the upcoming Lancet Nutrition Series, which has five papers that will be published during five weeks, starting the 17th January. The first two papers review the prevalence and the short and long term consequences of maternal and child undernutrition on individuals and societies. The third paper explores the potential impact of evidence based interventions on reducing incidence of maternal and child undernutrition. The final two papers assess national and international efforts to improve nutrition and suggest ways to improve program effectiveness. All five papers will be available on the internet in early January, and links will be posted on the SCN website.

Many staff changes have occurred among the various SCN constituents during this last semester. At FAO Ezzeddine Boutrif was appointed as Director of the Nutrition and Consumer Protection Division and at WHO Jorgen Schlundt has taken over as acting Director in charge of Nutrition in Health and Development. Denise Coitinho, previously the Director of Nutrition in Health and Development at WHO, has become the coordinator of an interagency action team, based at WFP in Rome, that will give fresh impetus to the ending child hunger activities. Ian Darnton-Hill, from UNICEF NYHQ, will also be going to Rome to work with the interagency team on a regular basis. At the World Bank, Julian Schweitzer has been appointed as Director of the Health Nutrition and Population Department. A warm welcome is extended to all of the above, and we wish them every success in their work, and look forward to the continued collaboration of their agencies with the SCN.

Roger Shrimpton

* FAO (2007) *FAO: The Challenge of Renewal: An independent external evaluation of the Food and Agriculture Organization (working draft)*. FAO:Rome. ([online](#))

Foreword

GAIN is pleased to provide support to this issue of the SCN News which focuses on the importance of iodine deficiency to public health, with particular emphasis on global and national efforts to improve iodine nutrition among populations. Over the past two decades, iodine deficiency disorders (IDD) and their manifestations have received a great deal of attention and resources in a major global effort to eliminate IDD through the universal iodization of salt (USI). A unique partnership between national governments and the salt industry was formed, catalyzed at the country level by international agencies, such as UNICEF, resulting in rapid progress towards the goal of USI.

This publication provides an opportunity to reflect on the progress towards sustainable USI programs and to identify success factors and lessons learnt in the process. Today, approximately 70.1% of the world's population is estimated to use iodized salt, in a total of 130 countries and as a result of these efforts, it has been estimated that close to 79 million infants are born with some degree of protection from the adverse consequences of iodine deficiency.

However, in spite of the success in many countries, USI programs have stalled in many settings and it is necessary to take an honest look at what is required in order to reach higher levels of coverage and to assure that achievements are sustained over the long term. One of the features distinguishing salt iodization from many other public health initiatives is that it requires a high level of involvement and motivation from multiple players. The salt chain consists of producers, packers, truckers, wholesalers and retailers, law enforcement officers and public health advocates. It is the intensification of the synergy amongst all the stakeholders that will make iodized salt accessible and affordable to all segments of populations. Innovation in this regard is needed in order to reach the remaining 30% of the population who are, by and large, marginalized groups that are often economically and geographically more difficult to reach. GAIN is committed to help finish the job of achieving USI.

The experience over the past twenty years shows that a comprehensive understanding and appreciation of the salt industry, including different production capacities and trade dynamics, is needed to identify gaps in achieving USI and opportunities to accelerate program activities. A renewed effort is required to 1) increase the overall supply of adequately iodized salt, 2) support Government oversight and the regulatory environment, and 3) develop market-based approaches to stimulate long-term supply and demand for iodized salt. While previous global efforts aimed primarily to reach high levels of coverage, it is now imperative to emphasize systems and capacities that move countries into sustainability.

GAIN intends to contribute to that effort. GAIN fights malnutrition by creating partnerships between the public and private sectors, and its know-how and experience in that field can make a significant contribution towards our common objective of USI. Reaching that objective requires increased collaboration and coordination horizontally as well as vertically between global advocates and national partnerships. The nutrition sector needs to understand where the chain from producers to consumers of iodized salt is dysfunctional or broken, and where we, as experts and practitioners, can effectively combine our skills, networks and resources to make it work sustainably for the benefit of deficient populations.

Marc van Ameringen

Executive Director, Global Alliance for Improved Nutrition (GAIN - www.gainhealth.org)

Features

Editorial

Eliminating Iodine Deficiency: Learning from an Untold Public Health Success Story

A major achievement in public health has been quietly unfolding over the past two decades. This special issue of SCN News attempts to document the evolution of this remarkable story in the words of some of the individuals who made it happen through the organizations and sectors that they represent. As [Gautam](#) points out: A unique combination of enlightened public policies, private industry action and civic sector commitment has led to exceptional global progress towards iodizing all edible salt and thereby protecting the world's population against iodine deficiency disorders (IDD). There is no other initiative that has drawn together the productive sector of society, the government sector, civic society and the general public in the manner that iodine deficiency elimination has done.

In 1990 less than one in five households in the world used iodized salt. Today 70% of households have access to iodized salt. During this time, nearly US\$ 400 million in external investment was matched by an estimated US\$2 billion in salt industry investment. The tremendous global progress already made through salt iodization (USI) means that every year, 90 million newborn's brains are protected against a significant loss of learning ability.

The job is not finished, however. Although there has been significant success, more effort is required in order to achieve complete coverage of iodized salt. This is especially important since the group not yet reached is among the more marginalized section of the world's population and in greatest need of protection against IDD. Around the world every year, 40 million newborns are not yet protected against IDD. A disproportionately large percentage of the rural poor do not have access to adequately- iodized salt. Thus the strategies used until now to expand coverage of iodized salt are not necessarily appropriate to reach the population that still remains unprotected from iodine deficiency. New strategies will need to systematically identify the bottlenecks or constraints that impede universal iodization and address them. Refreshing the strategies needed to reach the last mile of USI coverage touches upon all the elements outlined in [Hetzel's](#) model of IDD Elimination and the directions to be taken can be found in the papers within this edition of SCN News.

Salt iodization probably represents the first global experience in national fortification of a commodity to eliminate a public health problem. The experience of past years has shown that coordinated action by all sectors of society is the key to eliminating iodine deficiency in any given country: Governments pursue policies that protect newborns from preventable brain damage by supporting and sustaining salt iodization, and by monitoring progress; Salt industry and vendors produce and sell adequately iodized salt at a fair price in cities and villages every day; and Civil society assists in public education about the dangers of iodine deficiency, helping strengthen the public will to ensure that iodized salt remains available.

Partnership continues to be the underlying thread that holds the push towards IDD elimination together. The organizations with which many of the authors are affiliated, are now part of an active global alliance, the Network for Sustained Elimination of Iodine Deficiency, dedicated to advocating and supporting the cause of IDD elimination through their expertise, experience, programming and other resources.

Salt iodization was conceived and developed as a vertical program. As programs become established and mature they need to be embedded within a broader health and nutrition framework as part of an essential package of interventions to improve the health and well-being of people around the world. They are sustained only when ownership is fully assumed by all the sectors that collaborate to make it happen and ultimately the consumer expects and demands it as a birthright that the State should ensure.

While much research has been done in order to identify and prevent iodine deficiency, we still need the scientific community to continue refining advances in knowledge and technology on the etiology of the deficiency, optimal impact of interventions and the monitoring framework for sustained elimination of the problem. [Sullivan et al.](#) point out that effective monitoring and assessment of USI demands clarity on the methodology for measuring iodine nutrition status. Furthermore, policies continue to evolve and a clearer definition is needed to identify the different target groups that still need careful monitoring. From the supply

perspective, technology that has brought us the tools such as those used to measure iodine content of salt (rapid test kits) has also evolved. Looking ahead, it will be critical for technologies to be adapt to field application, especially in the context of USI programs addressing small salt producers who often serve remote and poor populations.

National ownership paves the way to permanent success. [Haxton](#) highlights the importance of sustaining political interest and commitment as a key ingredient and permanent element of all national programs to sustain USI and eliminate IDD. Both [Chen et al](#) and [Akunyili's](#) examples of China and Nigeria demonstrate this clearly. Setting up regional and/or national coalitions composed of the national entities involved - government ministers of industry and health, the salt industry, scientific groups, and civil society- can ensure that salt iodization is sustained. These coalitions must permanently ensure that high-quality iodized salt is produced, that only iodized salt is sold in all markets, that political commitment to ending iodine deficiency is consistently renewed, and that the public remains aware of the dangers of IDD associated with accepting uniodized salt. Countries in which USI programs have been weak or non-existent invariably have poorly functioning coalitions. We need to lean more about what makes coalitions successful and effective and share this knowledge with those countries struggling to get USI off the ground. *The Kiwanis* example as outlined by [Parker](#) clearly shows that effective communication and engagement can mobilize voluntary action and support from a grassroots to a global level. We need to seize that experience and multiply the effect.

While the progress on eliminating IDD through USI has been quietly unfolding; the threat of IDD has crept in and re-emerged in some countries and regions. We are warned against premature perceptions that the problem is solved. [Ling's](#) cautionary note about complacency and misinformation as well as the need for a renewed campaign in demand creation and social mobilization is a reminder to reach out to the civic and grass roots sectors of society. And that awareness needs to be evident in industrialized as well as developing countries. Just as governments need to establish (or refine) their legislation for USI, they must now consider how the legislation needs to be harmonized in a world of interrelated geo-politics and trade. This is somewhat new territory, as [de Jong](#) points out, which requires further attention, and governments should be encouraged to assist other countries towards USI. In addition, the salt industries from regions with established USI programs are reviewing their role in support of their counterparts in countries working to achieve USI.

The necessity of the salt industry's engagement in implementing USI programs is self-evident. What has been less so, is the role of small salt producers within USI programs. A better understanding of the market share of small scale salt production and its subsequent impact upon the USI program as well as the target population's iodine nutrition is needed. [Van den Briel et al.](#) discuss new approaches to bridge the iodization gap by bringing small scale producers into USI programs, helping them carve out new markets and simultaneously providing access to iodized salt for vulnerable groups and remote populations.

To fully understand the magnitude of the progress made and the work still ahead, we need to go beyond the marker of household consumption of iodized salt, we need more data that serves to monitor the effectiveness of the program and advocate for continued commitment by all stakeholders. We require more data about the investment that is needed to achieve the goal of universal salt iodization, about the productivity gains and the economic impact of improved IQ levels on the growth and wellbeing of a nation.

In the ultimate analysis, technological problems are not nearly as serious as operational ones related to making programs work in communities where undernourished or iodine-deficient people live. Issues of demand, supply and logistics, communications and community participation, partnership building across a wide spectrum of players - public and private - are equally important to ensure the success and sustainability of efforts to ensure universal iodization and eliminate iodine deficiency.

There is much more at stake in the effort to eliminate iodine deficiency. Success with salt iodization will give the government, industry, consumer groups and other stakeholders a new confidence to address other more complex micronutrient problems using salt as well as other food carriers to deliver essential vitamins and minerals to the population. Such an extension could potentially channel the capacities of the private sector - and the huge potential for good - in a constructive and responsible manner.

M.G. Venkatesh Mannar

President, The Micronutrient Initiative (www.micronutrient.org)

Global Progress in Addressing Iodine Deficiency through USI: The Makings of a Global Public Health Success Story—The First Decade (1985-1995)

Dr Basil S Hetzel (Chairman Emeritus, [ICCIDD](#))

Iodine deficiency is the most common preventable cause of brain damage with more than 2 billion people from 130 countries at risk. The global problem of iodine deficiency has been redefined by a readily transmitted population concept, with an easy acronym – the concept of the iodine deficiency disorders (IDD) – referring to all the effects of iodine deficiency in a population, that can be totally prevented by correction of iodine deficiency with special emphasis on brain damage and not just to goitre and cretinism (1983). This was followed by the creation of the International Council for Control of Iodine Deficiency Disorders (ICCIDD) supported by WHO and UNICEF with 700 multidisciplinary professionals from more than 100 countries, committed to providing technical assistance to national programs for the elimination of IDD (1986). The WHO policy of Universal Salt Iodization (USI) has been widely adopted which requires iodization of all food for human and animal consumption by the use of iodized salt (25-40 mg/kilo). Simple practical methods for monitoring – by the measurement of salt iodine and urine iodine were developed and promoted on a large scale with the technical assistance of the ICCIDD.

Key words: Brain, ICCIDD, IDD, iodine deficiency disorders, monitoring, salt iodization, USI

Introduction

Iodine deficiency is considered to be the most common cause of preventable brain damage in the world (WHO 1994). The problem arises when people live in an environment where the soil has been leached of iodine, either due to flooding of river valleys or by high rainfall or glaciation in hilly mountainous areas. The deficiency in the soil leads to deficiency in all forms of plant life including cereals, grown in the soil. Hence large populations living in systems of subsistence agriculture particularly in the developing countries, as in the great river valleys of Asia, are locked into the risk of iodine deficiency (Hetzel 1989).

Iodine is an essential element for human and animal development because it is a constituent of the thyroid hormones, thyroxine (T^4) and triiodo-thyronine (T^3). In a person affected by iodine deficiency, as the thyroid gland tries to maintain the level of thyroid hormones in the blood, it enlarges to form a goitre. But eventually it fails to maintain the hormone levels, with damaging effects on the development of the brain and other organs.

The relation between iodine deficiency and brain damage was originally proposed after studies showed the association between goitre and mental retardation (endemic cretinism). Later there was controversy about whether cretinism was related to iodine deficiency, until a controlled trial with iodized oil in Papua New Guinea established that cretinism could be prevented by correction of iodine deficiency before pregnancy (Pharoah et al 1971, Lancet Editorial 1972). The apparent spontaneous disappearance of cretinism in Europe was attributed to 'silent' correction of iodine deficiency by gradual dietary diversification together with the gradual use of iodine supplements associated with economic and social development (Burgi et al 1990). Studies with animal models (sheep, marmoset monkey, rat) confirmed that iodine deficiency caused retardation of foetal brain development (Hetzel and Mano 1989). The combination of the controlled trial and the results of the studies in animal models clearly established that prevention of brain damage could be achieved by correction of iodine deficiency before pregnancy.

Iodine Deficiency Disorders (IDD)

The results of the research required a re-conceptualization of the effects of iodine deficiency from the common lump in the neck (goitre) to include a spectrum of consequences. These include stillbirths as well as neonatal and other types of hypothyroidism, but the most important effect is that of foetal brain damage. To this end, the term iodine deficiency disorders (IDD) was proposed (Hetzel 1983) supported by a Lancet Editorial (1983) and has since been generally adopted throughout the world, including adoption by the Chinese without translation. The term IDD refers to all effects of iodine deficiency on growth and development in a human and animal population, which can be prevented by correction of the deficiency. Effects on brain function occur at all stages of life, from foetal damage to the effects of hypothyroidism in the neonate, child or adult (Table 1).

Social and economic effects result from iodine deficiency in both human and animal populations. In humans there is reduced school performance in children and reduced productivity in adults. Detailed calculations were made of the economic costs of medical assessment and treatment of goitre in Germany where there was still much uncontrolled IDD. The yearly costs of diagnosis were estimated at US\$250 million, of treatment at US\$300 million, of hours lost in working time for this medical care at US\$150 million, making a total of US\$700 million a year (Pffannensteil 1985). There are also significant effects on all livestock with impaired reproduction in poultry, sheep, goats and cattle, with reduced wool growth and milk production and reduced rates of survival in offspring. Such effects indicate that correction of iodine deficiency has direct economic benefits (Pandav and Rao 1997). The World Bank calculated that each dollar dedicated to IDD prevention would yield a productivity gain of \$28 (Levin et al 1993).

The magnitude of IDD

WHO estimated that there were in excess of 2.2 billion people from 130 countries at risk of IDD in the mid 90s (Table 2). These countries include the most populous— Bangladesh, Brazil, China, India, Indonesia and Nigeria (ICCIDD/WHO/UNICEF 1999). With the recognition that even mild iodine deficiency in the mother has effects on the rapidly growing foetal brain continuing into the first three years, and that these early effects, although preventable, are not reversible (Hetzel 1983, 89), this global scourge is of such great magnitude, that it provides one of the major challenges in international health (Hetzel et al 2004).

Bridging the gap between research and its application

There was an urgent need to bridge the great gap between research on the subject of iodine deficiency and brain damage and its application in public health programmes throughout the world. A beginning was made with a Symposium in 1983 at the 4th Asian Congress of Nutrition in Bangkok, which agreed on the need for public health action (Lancet 1983). Subsequently in response to an invitation to the Australian Government from the United Nations Administrative Committee on Coordination Sub-Committee on Nutrition (ACC/SCN), a report with a proposal for a global prevention programme was prepared and submitted to the ACC/SCN early in 1985. The report included a global review of the scientific evidence, a model for a national programme and a proposal to establish the International Council for Control of Iodine Deficiency Disorders (ICCIDD). The

Table 1: The Spectrum of Iodine Deficiency Disorders (IDD)*

Foetus	Abortions Stillbirths Congenital Anomalies Increased perinatal mortality Neurological cretinism: <i>mental deficiency, deaf mutism, Spastic diplegia, squint</i> <i>Neurological Cretinism</i> Hypothyroid cretinism: <i>mental deficiency, dwarfism, hypothyroidism</i> Psychomotor defects
Neonate	Neonatal hypothyroidism
Child and adolescent	Retarded mental and physical development
Adult	Goitre and its complications Iodine Induced Hyperthyroidism (IIH)**
All ages	Goitre Hypothyroidism Impaired mental function Increased susceptibility to nuclear Radiation

* Hetzel (1983, 1989); ** Transient following iodization, minimized by reduced rate of increase in iodine intake (WHO/UNICEF/ICCIDD 1996)

Table 2: Estimates of population at risk of IDD by WHO regions in 1997*

WHO regions	Countries with IDD	Total population in IDD countries	At risk population**	
		Millions	Millions	% ***
Africa	44	610	295	48%
Americas	19	477	196	25%
South-East Asia	9	1,435	599	41%
Eastern Mediterranean	17	468	348	74%
Europe	32	670	275	32%
Western Pacific	9	1,436	513	31%
TOTAL	130	5,096	2,226	38%

* Based on UN population Division (UN estimates 1997); ** The at risk population is the population living in iodine deficiency areas where total goitre rate (TGR) is more than 5%; *** Expressed as a percentage of the total population in the region (ICCIDD/WHO/UNICEF 1999)

Council would serve as an expert NGO available to agencies and governments to assist in the development of national programmes. This proposal was accepted by the ACC/SCN in 1985 with subsequent publication (Hetzel 1988).

International Council for Control of Iodine Deficiency Disorders (ICCIDD)

The ICCIDD, an international multidisciplinary network formed in 1985 with support from UNICEF, WHO and the Australian government, aims to bridge the gap between the research and its application in national programmes. The ICCIDD now comprises more than 700 multidisciplinary professionals from 100 countries with a majority from developing countries. The disciplines include endocrinology, nutrition, epidemiology, laboratory technology, salt technology, education, mass media and public health administration.

At the inauguration of the ICCIDD in Kathmandu in 1986, letters of support were received from the Director General of WHO (Dr Halfdan Mahler) and the Executive Director of UNICEF (Mr James Grant). A Symposium was held covering all aspects of the global problem including the global epidemiology with reference to all the WHO Regions, technical aspects of control programmes and proposal of a global strategy (Hetzel et al 1987).

The ICCIDD was formally recognized in 1987 as the expert group on all aspects of iodine deficiency disorders (IDD) by the UN System through the ACC/SCN. In 1987 the ACC/SCN also established an IDD Working Group of multilateral and bilateral agencies involved in nutrition programmes, and it was to this group that the ICCIDD reported each year as well as to WHO and UNICEF. In 1990 a Global Action Plan for the elimination of IDD by the year 2000 was proposed to the ACC/SCN by the ICCIDD, which provided for actions at the global, regional and national level. This plan was endorsed by the ACC/SCN (1990). In 1994 the ICCIDD was officially recognized by WHO as an NGO working collaboratively towards the elimination of IDD by the year 2000.

From its foundation the ICCIDD chose technical assistance to national programmes as the first priority. This led to a working relationship with the governments of IDD affected countries (usually Ministries of Health), with the leading international aid agencies WHO and UNICEF, and, more recently, with the salt industry. Important workshops on the assessment of IDD were held with WHO and UNICEF in 1994 and 2001 (ICCIDD/WHO/UNICEF 2001).

World Health Assembly

The 1986 World Health Assembly (WHA), with representation from more than 160 governments, passed a Resolution initially sponsored by Australia, which recognised the importance of iodine deficiency as a cause of brain damage and the need for effective programmes of prevention and control (WHO 1986).

This was followed by WHA Resolutions in 1990, calling for the elimination of IDD by the year 2000 and a later Resolution in 1996, calling for sustainability of the programme through systematic monitoring. Both included reference to the role of the ICCIDD and its availability to assist countries (WHO 1990, 1996).

World Summit for Children

The endorsement of the Global Action Plan was followed by adoption of the goal of virtual elimination of IDD by 2000 by the World Summit for Children on September 30th 1990 at a special meeting at the United Nations, New York. This meeting was attended by 71 Heads of State who signed a declaration providing 27 new goals for improved health and education for all children throughout the world (World Summit for Children 1990). This Declaration was subsequently signed by representatives of 88 other national governments. Such a Resolution was unprecedented and has since provided very important political support for national IDD programmes throughout the world. Following the World Summit, UNICEF proposed a mid-decade goal (1995) that all countries with an IDD problem should by this time have established a National Council for the Control of IDD and a separate control unit to initiate a salt iodization programme.

Universal Salt Iodization (USI)

The massive global problem of iodine deficiency has been met at the technological level by the iodization of salt. This measure had been shown to be effective in a number of industrialized countries. Prior to 1990 few

developing countries had large scale iodization programmes and it was estimated that less than 30% of salt was iodized (Dalmiya et al 2004). This has changed following the adoption of the policy of Universal Salt Iodization (USI) by the Joint UNICEF/WHO Committee on Health Policy (1994). USI requires that all food grade salt for human and animal consumption be iodized (WHO/UNICEF/ICCIDD 1996). This requires legislation. However, appropriate legislation did not always follow. The recommended level is 20-40mg iodine per kilo of salt. The addition of this amount of potassium iodate can be made with a greatly reduced salt intake if necessary.

The global partnership

An extended informal global partnership has developed over the years. This partnership includes the people, governments and salt industry of IDD affected countries; the international agencies WHO and UNICEF, the World Bank, the bilateral aid agencies and the technical agencies; the ICCIDD, MI, PAMM (Program Against Micronutrient Malnutrition, now Emory University), the salt industry and Kiwanis International. The establishment of the Network for the Sustained Elimination of Iodine Deficiency is described by Gautam and by de Jong in this issue of the SCN News.

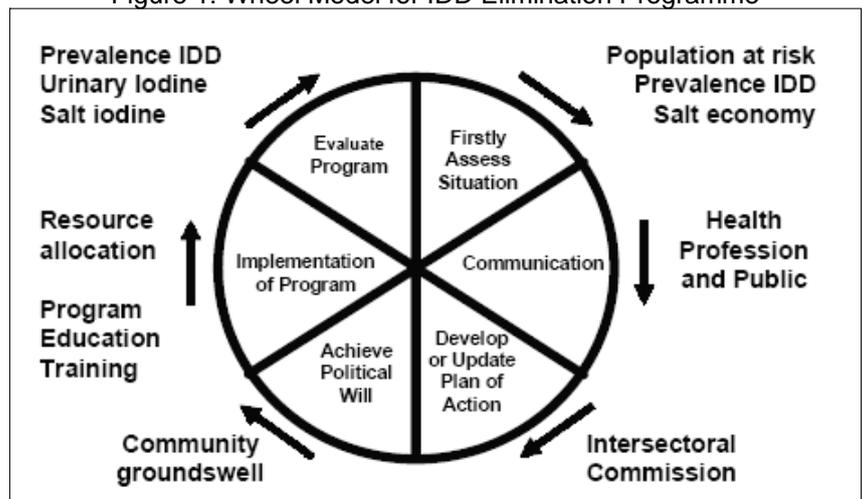
Development of national programmes

A significant factor in the development of national programmes between 1987 and 1998 has been a succession of annual regional meetings held throughout the world over 20 years by the ICCIDD with the collaboration of WHO and UNICEF. These meetings have been attended by representatives from Ministries of Health and other important sectors such as the salt industry and media in relation to the national programmes.

It is through these regional meetings for review of national programmes that the limited number of experts from the ICCIDD network have been able to communicate with professionals from many countries. This has subsequently led to consultancies and further contacts designed to identify and subsequently remove obstacles to progress. The expertise required includes epidemiology, the establishment of laboratories (salt iodine, urine iodine), advice regarding planning, education and communication, management, iodized salt and other iodine technologies. This is why the ICCIDD multi-disciplinary network has been developed to assist countries.

A series of WHO/UNICEF/ICCIDD Regional Reports (covering all regions) have been published. Notable progress has occurred in Africa. At the first African Regional meeting (Yaounde, Cameroon in 1987), only 22 countries were represented. At this time an IDD Task Force for Africa was established by the ICCIDD with WHO and UNICEF to

Figure 1: Wheel Model for IDD Elimination Programme



1. *Assessment of the situation* requires baseline IDD prevalence surveys, including measurement of urinary iodine levels and an analysis of the salt economy.
2. *Communication of findings* to health professionals and the public, so that there is full understanding of the IDD problem and the potential benefits of elimination of this most common preventable cause of brain damage. A community education campaign is required to educate all age groups about the effects of iodine deficiency with particular emphasis on the brain.
3. *Development of a plan of action* includes the establishment of an intersectoral committee or coalition on IDD and the formulation of a strategy document on achieving the elimination of IDD.
4. *Achieving political will* requires intensive education and lobbying of politicians and other opinion leaders.
5. *Implementation* needs the full involvement of the salt industry. Special measures, such as negotiations for monitoring and quality control of imported iodized salt, are required. It will also be necessary to ensure that iodized salt delivery systems reach all affected populations, including the neediest. In addition, the establishment of cooperatives for small producers, or restructuring to larger units of production, may be needed. Implementation will require training at all levels in management, salt technology, laboratory methods and communication.
6. *Monitoring and evaluation* require the establishment of an efficient system for the collection of relevant scientific data on salt iodine content and urinary iodine levels. This includes the establishment and the maintenance of suitable laboratory facilities.

promote national programmes. In 1996, 45 countries were represented including Angola, Eritrea, Mozambique and Republic of the Congo in spite of the occurrence of civil war in these countries. There has been significant progress in country programmes in Africa since 1987, including the Republic of the Congo.

The Social Process Model

At these regional meetings a 'wheel' feed back model for a national programme has been presented to show the social process involved, as shown in Figure 1 (Hetzel 1988). The model shows the diversity of functions that have to be linked together to achieve an integrated successful national IDD elimination programme, and involves six components clockwise in the hub of the wheel. Three key elements in the Social Process Model are: a national intersectoral coordinating body, commission or coalition; a plan of action for the elimination of IDD; and legislation on salt iodization. The 'wheel' model is driven by the 'marker' of salt iodine consumption and the urine iodine excretion of the community or population. Urinary iodine excretion provides an excellent indication of iodine intake, and can be easily assessed using the median level from a sample of just 40 subjects from each local community. These markers have provided the essential elements for monitoring the programme to assess whether iodine deficiency is being eliminated. Determinations should be carried out regularly every year. If there is evidence of inadequacy of iodine intake through iodized salt then appropriate measures can be taken at factory, retail or household level.

Measurements of urinary iodine have usually been carried out in children aged 8-12 years taking advantage of their availability in the school setting. However, if school attendance is reduced (through distance or poverty) then this must be followed up by sampling at the household level.

Another community group of great importance to the elimination programme are women of reproductive age, particularly including pregnant and breastfeeding women. These groups should receive special attention, for example as has been done in China where comprehensive data are now being collected.

The availability of the salt iodine and urine iodine determinations suitable for large-scale use is a great strength for the National IDD Elimination Programme. The effectiveness of the social process can be reliably and readily assessed through these determinations. Adequate resources must be provided for iodine measurements by funding trained manpower, equipment and materials.

Criteria for monitoring progress

The criteria for monitoring progress towards sustainable elimination of IDD as a public health problem were originally determined by a Joint WHO/UNICEF/ICCIDD Working Group on Assessment and Monitoring of IDD in 1994. They were endorsed at the subsequent meeting in 2001 (Table 3).

Report on progress in national programmes

In 1999 ICCIDD in collaboration with WHO and UNICEF published a report which reviewed the IDD global situation with reference to national programmes and provided an evaluation

Table 3: WHO/ICCIDD/UNICEF criteria for monitoring progress towards eliminating IDD as a public health problem*

Indicator	Goal
1. Salt iodization Percentage of households consuming effectively iodized salt	>90%
2. Urinary iodine Proportion below 100µg/L Proportion below 50 µg/L	<50% <20%
3. Thyroid size in school children 6-12 years of age: Proportion with enlarged thyroid (by palpation or ultrasound)	<5%
4. Neonatal TSH: Percentage with levels >5mU/L whole blood	<3%

* WHO/UNICEF/ICCIDD (1994)

Table 4: Household Consumption of Iodized Salt*
Status of Monitoring and Laboratory Facilities in 1997

WHO Region	IDD affected countries	%Household consumption	Monitoring salt quality	Monitoring iodine status
Africa	44	63%	29	24
Americas	19	90%	19	19
South-East Asia	9	60%	8	7
Eastern Mediterranean	17	66%	17	13
Europe	32	27%	14	10
Western Pacific	9	76%	8	6
Total countries	130		95	79
Total percentage	100%	68%	73%	61%

* ICCIDD/WHO/UNICEF (1999)

of progress from 1986 to 1997 (ICCIDD/WHO/UNICEF1999). According to the report, following the promotion of the goal of elimination of iodine deficiency, legislation on iodized salt and the sensitization of the salt industry, there had been a big increase in the consumption of iodized salt with global coverage of 68% of households in 1997 (Table 4). This compared with less than 20% before 1980 with only spasmodic efforts and no sustained commitment by governments to national programmes. All regions, except Europe, had achieved 60% or more but Europe had achieved only 27%. The poor achievement of Europe with only 27% coverage is correlated to the inadequate facilities for the monitoring of salt iodine and urine iodine. Of 130 IDD affected countries, 105 (77%) had national intersectoral bodies in place. Ninety eight (75%) had legislation on salt iodization in place and a further 12 had it in draft form. This indicates substantial progress with the establishment and functions of national programmes.

Factors in success

This global program for the elimination of brain damage due to iodine deficiency provides a model that could be applicable to a variety of other health, social and environmental problems. The former Director General of the WHO (Dr Gro Brundtland) has pointed out that the achievement of IDD elimination “will be a major and total public health triumph ranking with small-pox and polio”. It will be a major global triumph in the elimination of a non-infectious disease (WHA 1999). Some of the principal factors that I consider responsible for this success are:

1. The personal interest of James Grant, Executive Director UNICEF, was a significant factor in the first 10 years of the programme (1985-1995). Jim Grant used to travel with an iodine reagent in a bottle in his pocket. When attending a VIP luncheon or dinner he would ask for the salt cellar and check it with a drop of the reagent (sodium nitro-prusside) which produced a blue colour if iodine was present in the salt. I believe this direct approach certainly had impact for the benefit of national programmes along with the support of UNICEF Country Offices.
2. The Virtual Elimination of Iodine Deficiency Disorders by the year 2000 was included in the 27 goals accepted by the World Summit for Children in 1990. The World Summit provided major political support for National IDD Elimination Programmes.
3. The WHO/UNICEF policy of Universal Salt Iodization (USI) requires iodization of all food for human and animal consumption by the use of iodized salt (25-40mgI/kilo). The salt industry has also accepted and adopted this intervention as a permanent organized measure.
4. The global problem of iodine deficiency was redefined by a population concept, with an easy acronym – the concept of the iodine deficiency disorders (IDD) – referring to all gradations of the effects of iodine deficiency in a population, that can be totally prevented by correction of iodine deficiency with special emphasis on brain damage and not just to goitre and cretinism.
5. The International Council for Control of Iodine Deficiency Disorders (ICCIDD) supported by WHO and UNICEF with 700 multidisciplinary professionals from more than 100 countries, has provided technical assistance to national programs for the elimination of IDD as well as advice at global level on scientific issues.
6. Simple practical methods for monitoring – by the measurement of salt iodine and urine iodine have been made effective for use on a large scale with the technical assistance of the ICCIDD.

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Dr Basil Hetzel—winner of the Prince Mahidol Award

On 27 November 2007, it was announced that Dr Basil Hetzel was one of the winners of the Mahidol medical award. The awards are presented each year by the Prince Mahidol Foundation, chaired by HRH Princess Maha Chakri Sirindhorn. Dr Hetzel will receive the prize and participate in a ceremonial presentation by His Majesty the King at the Grand Palace on 30 January 30 in Bangkok, Thailand.

Read more:

Announcement in the Bangkok 'The Nation' newspaper ([online](#))

The official announcement of the Prince Mahidol Award ([online](#))

Global Progress in Addressing Iodine Deficiency through Universal Salt Iodization: The Makings of a Global Public Health Success Story—The Second Decade (1995-2007)

[Kul C. Gautam](#), (Deputy Executive Director, [UNICEF](#))

Global progress towards the elimination of iodine deficiency disorders (IDD) has been tremendous. Although the story is not yet over, the history and evolution of the global fight to eliminate IDD offers many lessons that could be applied to other public health efforts. Securing political commitment, ensuring iodized salt supply, forming national oversight coalition and partnerships with the salt industry together with effective education, communications and monitoring systems are key elements of the global success of the massive reductions in IDD through USI. As salt iodization programmes mature, many countries have transitioned from relying upon donor-support to self-financing. Ensuring sustainability remains one of the key challenges in the global fight to eliminate IDD.

Key words: IDD, iodine, iodine deficiency disorder, iodization, global, progress, programme maturation, salt, USI

Introduction

Iodine deficiency is the world's single greatest cause of preventable mental retardation (Hetzel 1983). It is especially damaging during early pregnancy and childhood. A mild iodine deficiency can cause a significant loss of learning ability, as well as other symptoms such as goitre, an abnormal enlargement of the thyroid gland. In its most severe form, iodine deficiency causes cretinism, stillbirth and miscarriage, and increases infant mortality (Delange 1994, 1999). A meta-analysis of 18 studies concluded that iodine deficiency alone lowered mean IQ scores by 13.5 points (Bleichrodt and Born 1994). The consequences of iodine deficiency are thus measurable in terms of loss of economic productivity. The good news is that all of these disorders are easily preventable (UNICEF/WHO, 1994).

The [World Health Organization](#) (WHO) and [United Nations Children's Fund](#) (UNICEF) have recommended Universal Salt Iodization (USI) as a safe, cost-effective and sustainable strategy to ensure sufficient intake of iodine by all individuals (UNICEF/WHO 1994).

In fact, salt iodization could well be the most successful public health effort in the past two decades. And if one takes into account the resulting drastic reduction in the risk of intellectual impairment caused by iodine deficiency, salt iodization might even be considered one of the greatest public health achievements of the 20th Century. The [World Bank](#) estimated that each dollar dedicated to the prevention of Iodine Deficiency Disorders (IDD) would yield a productivity gain of \$28, supporting the widely held view that elimination of iodine deficiency is one of the most cost-effective intervention programmes (World Bank 1994). A group of the world's leading economists confirmed during the Copenhagen Consensus meeting that the benefit-cost ratio for salt iodization could be as high as 520, the highest among all interventions related to hunger and malnutrition (Behrman 2004).

Global efforts were initiated in 1990 when the World Health Assembly passed a resolution (WHA 43.2) which adopted the goal of eliminating iodine deficiency as a public health problem in all countries by year 2000. Salt iodization programmes were accelerated when the necessary political will was generated through the "[World Summit for Children](#)" with the support of the United Nations (UN) System (UNICEF 1998). That Summit was the largest gathering of world leaders in history up to that time. It brought together 71 heads of State and Government and nearly 100 other leaders, mostly at the ministerial level. The World Summit set a goal of virtual elimination of iodine deficiency as part of its Plan of Action for child survival, development and protection (UNICEF 1990). This support led to the development of an extraordinary global partnership of countries, UN, bilateral agencies, technical institutions and the salt industry.

Prior to 1995 the iodization of salt was indicated only in countries that were recognized as having the IDDs cretinism and goitre, based on surveys. After 1995 all countries had to iodize salt regardless of having a proven IDD problem and USI was globally adopted as the main strategy to eliminate IDD. This resulted in a far greater acceleration during the second period (1995-2000) (Shrimpton et al 2002). The original commitment was again renewed at the UN General Assembly Special Session on Children (UNGASS) in 2002. In its Declaration - "[World Fit for Children](#)", leaders of some 190 high-level national delegations reinforced the need

to continue efforts toward sustained elimination of iodine deficiency by 2005 (UNICEF 2002a).

In the early 1990s, adults and children with goitres would have been common sights in the rural areas of countries such as China, Indonesia, Nepal and Zimbabwe. Individuals suffering from severe neurological deficits affecting hearing, speech and gait would not have been unusual. These clinical signs and symptoms of IDD were well-documented, but they represented only the most visible forms of the disorders. This resulted in a vast underestimate of the real problem: the loss of intellectual capacity in newborns due to an inadequate intake of iodine (Hetzel 1983). The shift to USI in the early 90s resulted in progress towards the goal of elimination of IDD as a public health problem.

Over the past decades UNICEF has advocated among policy makers, supported consultations, prepared guidelines, assisted countries with iodised salt plants, and worked with salt producers in quality monitoring. In coordination with many other partners, UNICEF has been working in more than 100 countries to ensure the elimination of IDD around the world. It is a testament to the strong commitment of governments, the salt industry, international nutrition groups, the UN system and other agencies that the most severe manifestations of IDD have nearly disappeared today and that in most countries the clinical manifestations of iodine deficiency are becoming rare.

Although the story is not yet over, the history and evolution of the global fight to eliminate IDD offers many lessons that could be applied to other public health efforts. A review of the progress made in the elimination of IDD reveals the importance of partnerships with salt producers, the evolution of national policies, the refinement in monitoring, and many other factors that are contributing to this global success.

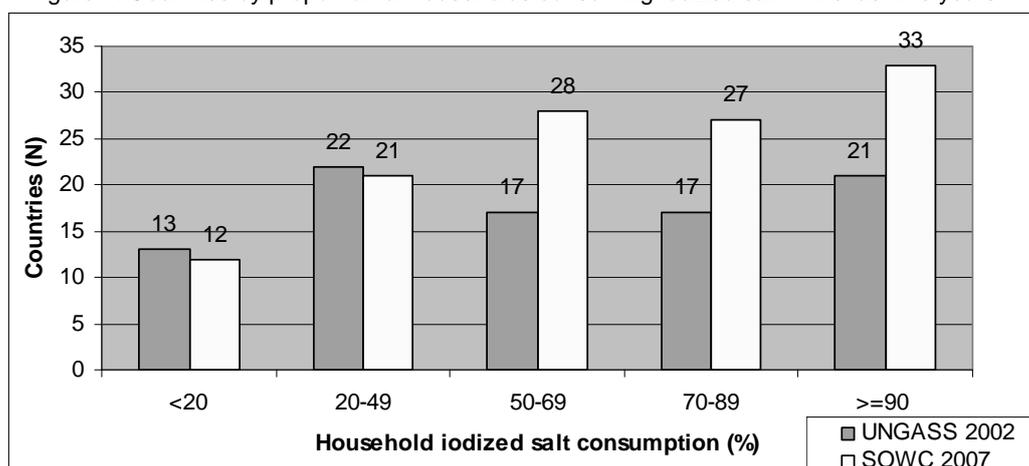
Remarkable progress

UNICEF estimates that only 20% of households in the developing world were using iodized salt in early 1990s (UNICEF 2001). By 2000, following intensified efforts to eliminate iodine deficiency, this figure had jumped to 70%. This is a remarkable achievement considering that salt iodization did not become the main intervention to combat iodine deficiency in Asia until the mid-1980s, and that in much of Africa programmes were not even started until the early 1990s.

The most recent UNICEF global database of the State of the World's Children 2007 indicated that the proportion of households in the developing world consuming adequately iodized salt officially remains at about 70% (UNICEF 2006). While this lack of change reveals the challenges that some countries face, it also reflects programme maturation, which is significant but less visible. In addition, data limitations make it difficult to generate a picture of global trends over short periods of time.

Progress since 1995 can be illustrated by the increase in the number of countries implementing salt iodization programmes and achieving the USI goal of over 90% of households consuming adequately iodized salt (WHO 1996). By 2005, about 120 countries were implementing salt iodization programmes compared to 90 in 2000. With more new countries reporting, our global database reflects a larger number of countries initiating USI programmes, and the global average may not well capture the achievements. The most recent estimates

Figure 1. Countries by proportion of households consuming iodized salt in the last five years



UNGASS 2002: Database 1997-2000 (N=90); SOWC 2007: Database 1998-2005 (N=121)

indicate that 33 developing countries have now reached the USI goal, up from 21 in 2000, and that an additional 27 developing countries are well on their way to reaching this goal, having achieved about 70% household coverage (Figure 1).

WHO estimated that the number of countries with IDD as a public health problem is down by half from

110 countries in 1993 to 54 countries in 2004. Of these 54 countries, 40 are only mildly iodine deficient as indicated by a goitre rate of less than 5% and urinary iodine concentration between 50-99 µg/L (WHO 2004). During the past decade, remarkable progress toward sustained elimination of iodine deficiency has been quietly unfolding. While it is valuable to review the data on progress made with regard to household coverage of iodized salt and population iodine status, there is evidence of overall programme maturation and sustainability. Early in the programme development, opinions differed regarding both the severity of the problem and the optimal solution, and these differences slowed programme momentum. In addition, the legislative environment was often not well developed with regard to salt iodization and there was a cautious interaction between private salt producers and the government. Monitoring systems were limited and often not well integrated into routine data systems. There was inconsistent incorporation of the cost of potassium iodate (KIO₃) into the routine production of salt for human and animal consumption. Fortunately, these programme elements have now matured in most countries.

Programme maturation

1. A shift to domestic financing

Salt production is a traditional and often stable industry because of salt's universal usage. The elimination of IDD does not depend on increasing salt consumption (on the contrary, increased salt consumption is actively discouraged by promoters of the elimination of IDD), but rather by promoting the exclusive use of iodized salt. Countries and companies must incorporate the cost of adding iodine to salt into the routine cost of doing business (Burgi and Zimmermann 2005). Ultimately the cost of the fortificant, KIO₃, should become part of the cost of production and thereby absorbed by the consumer.

During the early stages of the IDD/USI programmes, the supply of KIO₃ and iodization equipment were often supported by external development agencies. As IDD programs have matured, many countries have transitioned from a donor-supported to market-supported supply of KIO₃, including building private sector capacity to access supply. Today, more and more countries are no longer dependent on external assistance and salt iodization programs in many countries have become self-financed. This is because either government subsidizes the cost through the exemption of VAT for KIO₃, or the industry absorbs it. UNICEF supply database shows that the provision of KIO₃ through UNICEF has significantly decreased in the last 15 years (UNICEF 2007). Building the private sector capacity to access required supplies has supported this transition.

In many countries, public oversight is now being financed by government revenues and often integrated into the routine operations of relevant agencies. This shift towards increased domestic ownership and decreased reliance on donor support has been one of the greatest achievements of IDD elimination efforts, and constitutes a unique lesson learned in sustaining elimination of IDD through USI.

2. Improved political and regulatory environment

In 1994 WHO and UNICEF recommended making universal salt iodization mandatory for all countries with demonstrated iodine deficiency (UNICEF/WHO 1994). According to the latest Global Unified Matrix database,* 55 out of 117 developing countries enacted legislation (UNICEF 2005). The data shows that countries with supportive legislation have had a greater improvement in household coverage in the last decade - from 49% to 72% compared to from 40% to 49% in those without legislation.

However, establishing a legislative mandate for universal salt iodization is not enough. Governments must sustain their commitment to IDD elimination, allocating the necessary resources and empowering key ministries to play their respective roles. This includes ensuring adequate salt inspection and enforcement of regulations, adequate education, incorporation of information on iodine deficiency and its consequences in all educational curricula, and adequate overall programme oversight. These efforts will help sustain public awareness and demand for iodized salt (Trowbridge et al 1993).

* The Global Unified Matrix database on IDD/USI combines the percentage of households consuming iodized salt as per UNICEF NYHQ global database and WHO urinary iodine concentration database with the status of 10 WHO/UNICEF/ICCIDD programmatic indicators on sustainable elimination of IDD reported periodically by UNICEF country offices.

Experience shows that in some countries, a significant contributor to success has often been a 'visionary opportunist', a charismatic individual with a single-minded vision. Such a key leader can be extremely influential in building political commitment for the control of iodine deficiency and therefore needs to be identified and recruited early on within organizations and countries in order to facilitate the widespread adoption of programmes. One example of such an individual is Nigeria's head of the National Agency for Food, Drug Administration and Control (NAFDAC), who committed herself to eliminating iodine deficiency in this vast country; see paper by Akunyili in this issue of the SCN News.

3. Strengthened monitoring systems

By the mid-1990s, IDD was a recognized global health problem and most governments had made salt iodization an integral part of their national health and nutrition programme monitoring. Countries moved away from doing goitre surveys, instead paying closer attention to monitoring the production, quality and household use of iodized salt.

The WHO/UNICEF/ICCIDD recommendations on the use of Iodine test kits for monitoring salt iodization programmes was an important milestone in the monitoring system (WHO 1996). UNICEF made the test kits available through its supply division. The introduction of the test kit supported the switch in programme emphasis from IDD to USI. As the test kits became more important tools they were not only used to test salt at the point of consumption, but they also allowed household salt to be tested in household surveys such as the Demographic and Health Survey (DHS) or the Multiple Indicator Cluster Survey (MICS).

Programmes have gradually established monitoring systems, using micronutrient-specific surveys, as well as other national surveys such as DHS or MICS, and reported salt iodine content through food inspection systems. Governments have made progress in establishing quantitative analysis methods (primarily using titration) at production facilities, establishing production-level quality assurance procedures and improving overall monitoring. In addition, countries have established standardized laboratories to make it easier to assess urinary iodine, thus improving the availability and quality of data for measuring progress (Delange et al 2001). In the early 1990s, most salt producers were not accustomed to performing routine monitoring since salt production was usually designed to supply traditionally consumed salt—often with consumer preferences for crystal size and packaging. Food inspection systems traditionally focused on food safety, and testing of salt for iodine content added new responsibilities to an already overloaded system in many countries. Imported salt was not rigorously inspected.

Countries have addressed most of these issues by strengthening the monitoring of iodine levels in locally produced or imported salt, establishing more consistent standards (such as recognizing that household salt should contain a minimum of 15 ppm and not more than 40 ppm), and more consistently assessing household use of iodized salt. Countries have now recognized the limitations of using goitre prevalence as an assessment tool once programmes have started and have therefore shifted to urinary iodine concentration to reflect the iodine status of population (WHO, 2004). In addition, new measures of thyroid function have been developed (Zimmermann 2004). These improvements reflect the maturation of monitoring systems, suggesting that information quality is likely to continue to improve.

4. Stronger partnerships

A unique combination of enlightened public policies, private sector action and civic commitment has resulted in unprecedented global progress towards iodizing all of the world's salt and thus ending iodine deficiency. To protect their populations from losses in learning ability and from mental retardation that hampers the development of their citizens and their nations, more and more national leaders recognize the value of partnership with salt industry (Wang et al 1997).

In the past, salt producers were commonly excluded from dialogue on the elimination of IDD. But now more countries are taking concrete steps to introduce universal salt iodization through partnership with the private sector (Jooste 2003). Today, salt producers worldwide recognize their critical role in providing adequate iodine to the households they serve and at least 72 developing countries have adopted national public-private

coalitions that provide practical and effective mechanisms to raise and sustain commitments to IDD elimination (UNICEF 2005).

At the global level, efforts to strengthen such partnerships have resulted in the establishment of the [Network for Sustained Elimination of Iodine Deficiency](#), a public-private alliance aiming to coordinate, harmonize and accelerate progress on USI. The evolution of these partnerships has been essential for the sustained elimination of IDD.

Many donors have recognized the importance of salt iodization and the elimination of IDD. Advocacy efforts led to a major initiative by the Kiwanis International to adopt USI as their major service project. Kiwanis raised over nearly US\$100 million and helped more than 100 country programmes. The Bill and Melinda Gates Foundation, the Canadian International Development Agency (CIDA), and the United States Agency for International Development (USAID) continue to contribute to the elimination of IDD worldwide.

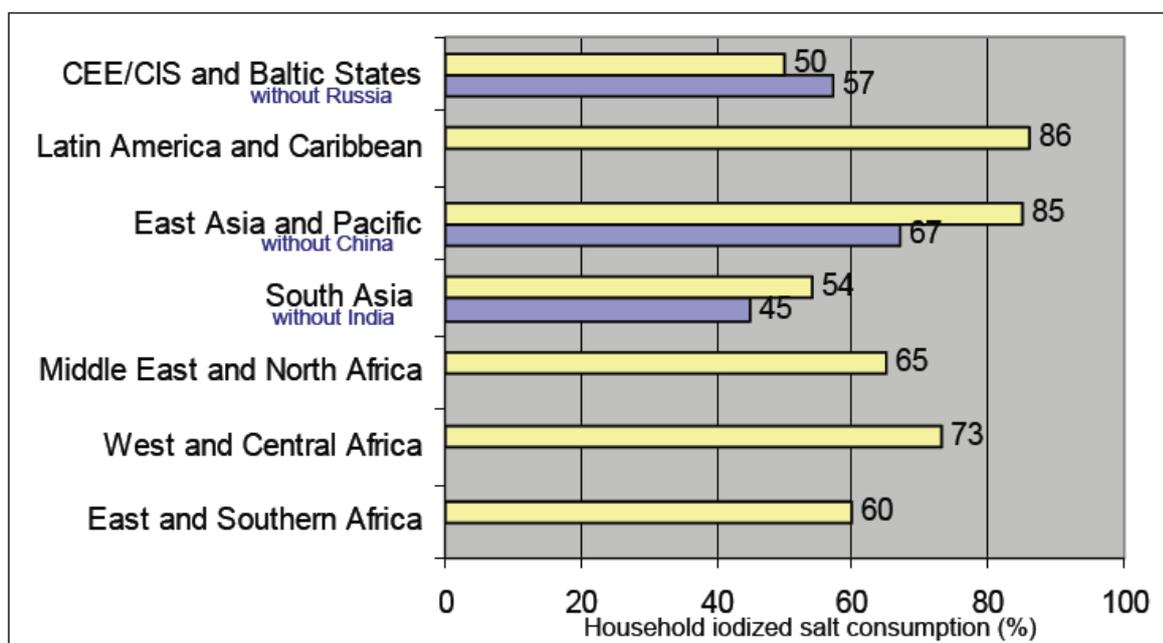
5. Strategic advocacy and communication efforts

Advocacy and communication are essential components of national strategies to eliminate iodine deficiency. Communication efforts have reinforced the accountabilities of various partners and mobilized the support of many actors, including national leaders, salt industry representatives, technical and professional groups, such as ICCIDD, and the general public including school children. See papers by Haxton and by Ling in this issue.

The Kiwanis International (KI) has had a major role in supporting different national efforts. KI in partnership with the US Fund for UNICEF successfully raised over \$90 million for the elimination of IDD to [give children "A Smart Start" in life](#). In various countries KI were also involved in a variety of programme elements including social mobilization and advocacy through meetings with government, community radio stations, salt importers and consumer organizations; and education of the public on the elimination of iodine deficiency through universal salt iodization (Kiwanis International 2007). See also paper by Parker in this issue. Other communication efforts have centred on developing special events.

China has proved that strong advocacy, social mobilization, and health education programmes can result in the sustained elimination of IDD (Wang et al 1997). China developed a national IDD day to spread messages about the importance of IDD and universal salt iodization programmes, and other micronutrient deficiencies. This national event also made it possible to disseminate messages among hard-to-reach social groups about the public's right to iodized salt. In addition to the IDD day, the Chinese government used '900 Million Farmers', a health-promotion project supported by UNICEF, as part of a nationwide campaign to promote the consumption of iodized salt. The campaign developed and aired key messages through the national

Figure 2. Proportion distribution of households iodized consumption by region.



television station to a thousand county stations. Initial feedback indicated that these programmes enabled wide dissemination of messages to the most critical target audiences ([UNICEF 2002b](#)).

The way forward

Since the 2002 UN Special Session on Children, many countries have reported continued progress towards achievement of the USI/IDD goal (UNICEF 2007). However, there are also countries which have not made tangible progress and need additional support to accelerate their efforts towards the elimination of iodine deficiency. In 2006, UNICEF identified sixteen “make or break” countries which needed to make special efforts and required extended support beyond 2005. The selection criteria singled out countries with a high number of unprotected newborns, a high level of salt production, a low level of salt iodization, as well as a need for special advocacy and professional support to renew strategies of the national IDD elimination programmes. The list includes those major countries which significantly contribute to regional and global coverage such as India, China and the Russian Federation (Figure 2). The analyses of the global database suggest that if the 16 make or break countries achieve USI, then the global average of households consuming iodized salt would be about 85%. Based on over two decades of lessons in USI programmes, we have learned that there are five guiding principles which are crucial to success of the elimination of IDD through USI:

- *Securing political commitment and advocacy.* Strong, continued government commitment and industry motivation are essential. Political commitment needs to be renewed through periodic advocacy events.
- *Effective education and communications.* Sustained communications through mass media, school, and health systems are essential in educating the public and salt producers about the elimination of IDD.
- *Ensuring iodized salt supply.* While voluntary iodization is beneficial in individual situations, mandatory iodization will ensure universal practice and access. Monitoring and enforcement of agreed-upon actions are important.
- *Forming national oversight coalitions.* National and sub-national coalitions provide practical and effective mechanisms to raise and sustain commitments to IDD elimination. Forming national coalitions with clearly defined roles and responsibilities can play a major, driving role in reviewing monitoring information for planning and promotion of collaborative work. Producers should consider forming salt associations in order to use their influence to ensure universal supply and access.
- *Effective monitoring systems.* A regular and effective monitoring system to check salt iodine levels from production to household is instrumental to a successful program. Another key component of salt monitoring is to assure quality at the point of production. Reporting and sharing results of regional and national iodine nutrition program monitoring are important to ensure the effectiveness of the programmes.

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ANNOUNCEMENT: just released:

**PROGRESS FOR CHILDREN
A World Fit for Children Statistical Review
UNICEF December 2007**



This special issue of *Progress for Children* analyses progress at global, regional and country levels, and it highlights disparities within populations. The publication extends and develops the 2000 statistical review of progress since the World Summit for Children in 1990 and is a major effort to gather and analyse information on how well world leaders have kept their promises to children. This statistical review is structured around the Millennium

Development Goals because these are currently the focus of the world's development efforts. Many of the World Fit for Children targets set at the Special Session are effectively stepping stones towards the 2015 MDGs, and governments will henceforth concentrate primarily on their MDG commitments. The World Fit for Children agenda includes vital issues

for children not covered by the MDGs, and this publication represents a unique opportunity to report on these concerns. *Progress for Children* is a statistical publication. But each statistic represents the lives of individual children, many of them blighted by ill-treatment or a lack of opportunity. Behind every one of these statistical assessments is a vision of a world in which children are healthy and reach their full potential, in which they are protected from disease and abuse – a world in which children's rights across the board are fully realized.

Advocacy Planning to Sustain Successful Elimination of Iodine Deficiency

David P. Haxton (Executive Director, [ICCIDD](#))

Every national effort to address iodine deficiency requires an advocacy plan and a communications strategy designed to support elimination and sustain the change it brings. It necessitates modern management using modern management tools and techniques. Each national programme requires a practical and efficient monitoring and report process that is regular, well supported, transparent and works for equal benefit of the people, the process and the policy makers. The advocacy plan should focus on sustaining progress with a long term view and make special efforts to keep political commitment regular and visible, public- private collaboration at the core of the process, and penetration of learning systems a priority of long duration. The current emphasis on the enormous success to date has the danger of creating hubris; a situation to be avoided since sustained elimination of a deficiency is a permanent priority.

Key words: Advocacy, IDD, iodine, iodized, global, progress, salt, USI

Addressing iodine deficiency and sustaining the success

In the effort to address iodine deficiency, experience over the past two decades has taught us a lot about identifying and addressing the problem through universal salt iodization (USI). Advocacy planning and coordinated national efforts are critical to sustain the progress. Regular 'health education' activities, while helpful, do not adequately support such interventions and the officers are not practiced in the imaginative communications and persuasive arguments needed to sustain political and economic commitment.

Other papers in this issue of SCN News describe the key components and requirements for successful achievement of USI and sustained elimination of Iodine Deficiency Disorders (IDD) relating to:

- *The product:* Sustained quality production of the product at fair prices and with universal accessibility
- *The process:* The many processes in national societies required to succeed: trained personnel, efficient and competent laboratories, monitoring and public reporting, financial support for essentials, application of laws and regulations; public information, and
- *The progress* in improving human nutrition: sustained monitoring of access to adequate iodine, public reporting of results, corrective actions.

It is timely to focus attention on the need for sustained success. However it is important to understand that the management and oversight demands for sustaining achievement differ from those needed for elimination of the deficiency. There are too many resources used for the plan of action, and not enough for permanence. This has resulted in 'backsliding', lowered quality, or inadequate oversight and public reporting and, thus, lack of accountability in many places.

Key considerations to ensure sustained oversight

Management of sustained oversight requires a blend of several actions on a permanent basis.

- Coalition: Investments and collaboration of professionals from multiple sectors viz. health and medical services, agriculture, education, industry, finance, trade, and labour
- Political commitment and responsible oversight
- An annual advocacy plan
- Production of quality products at a fair profit
- Market penetration to reach everyone in a nation
- Consumer demand for quality iodized salt at fair prices
- Quality assurance to confirm advancement in human nutrition
- Communications strategy to hold things together

In each country there is a need for a multi professional national coalition or committee for permanent oversight. While 'jump start' foreign assistance may be needed and has great value, the major long term investments to sustain delivery of iodine needs *forever* must be national - from the producers, from the public, from the government and from other national elements of the society. Foreign assistance is temporary. Sustained iodine nutrition is permanent.

There must be visible and regular political commitment to the protection of young brains from permanent damage. If it is the right of the people to be protected from preventable brain damage, then it is the obligation of political leaders to help assure that right. This must be manifested through national political executive leaders, through legislative leaders and the transparent application of laws and regulations, and by judicial assurance that laws will be enforced and quality products protected in the marketplace.

An annual advocacy plan must ensure that political commitments are renewed and not allowed to fade like the morning mist. Advocacy is not an event, but a process, and a permanent need. It must address the policy makers, the producers and processors as well as the public simultaneously, but in different ways using all channels available and all modern techniques. It is advocacy of the need for iodine which will sustain elimination of the deficiency, not mere pronouncements from afar.

Education and learning systems need to become the channels through which generational commitment to sustain adequate daily requirements of iodine are seen as the norm. The dangers of iodine absence and the values of its presence in the diet are essential learning needs. A 'one off' annual function for IDD Day, as valuable as it is, does not successfully transmit knowledge and information through the curriculum. In addition, it is important to address the issue of iodine nutrition for animals. Therefore the agriculture sector plays a key role in sustained elimination by creating demand for the product, by improving the quality and productivity of domestic animals and by assuring sustainable access to iodine.

Successful advocacy planning has been a major factor in the unfolding success stories of USI achievement and IDD sustained elimination in China, Iran, Kenya, Malawi, Nigeria, Zambia, Zimbabwe, and most of the countries of Spanish speaking America to name a few. The Government and industry in China, with the support and collaboration of international agencies, has committed to annual 're advocacy' activities to assure continued political commitment, assured sustained quality production, sustained oversight at provincial levels, and public education.

It is vital to assure that the national scientific community continue to seek new knowledge, but equally important to demand the more rapid application of this knowledge.

Key elements of an advocacy plan

An annual advocacy plan to address iodine deficiency should be designed to sustain political commitment to prevention of preventable brain damage. The Advocacy Plan must sustain high level commitment and leadership in the private sector (salt producers and food processors mostly), the public sector (regulatory and monitoring/ reporting officials) and the public (which needs to know the values of iodine in the diet and the dangers of its absence and to demand services to sustain elimination of the deficiency). An advocacy plan for iodine nutrition should seek to:

- Obtain and sustain political commitment nationally;
- Sustain knowledge and information about the values of iodine in the diet and the dangers of its absence;
- Press for clear understanding that every child has the right to reach its genetic potential; that it is wrong to allow children to be born mentally handicapped when we know how to prevent this.
- Use modern information, communication channels, and technology with imagination and flair, and with clear communications for those addressed;
- Implant the concept that good nutrition is good politics and that sustained USI and Elimination of IDD are not sectoral issues, but national issues; that USI and elimination of IDD absolutely depend upon the successful and efficient collaboration between private business entities, public policy leaders, scientific and academic knowledge centres, and the public.

Development Agencies and line Ministries need to sustain media commitment and attention through national investigative reporting. This is essential to sustain public knowledge, government commitment and producer support. National scientific, cultural, religious and civic media, along with daily press, radio, television and the growing access to cellular communications should be fully tapped.

Advocacy is not an event. It is a process; a sustained effort to assure that IDD stays eliminated. It requires persistence and professional oversight of multiple issues. Professional commitment to the national endeavour demands sustained attention. Those involved in the salt trade and the expanding business of processed food will remain allies and collaborators to the degree that their unique contributions are recognized and appreciated and to the degree that fairness, transparency and open dialogue is sustained regarding regulatory procedures and national discussions on iodine nutrition.

A National Coalition/Committee on Iodine Nutrition is a good channel to maintain solid communications, high level advocacy, and open professional discourse. Professional groups aligned with or dedicated to improved nutrition and public health need advocacy plans to succeed in sustaining a wide understanding of their proposals and the results of their research. Too often these plans do not consider the right target groups, be it those affected by the problem (the consumers) or those that can solve it (the providers).

It is difficult for most organizations to undertake advocacy and public information work that has a major emphasis on addressing the need as compared with the emphasis on the organization itself. It is more important to advocate for improved resources and more rapid application of solutions for nutritional problems of children, than it is to advocate for the needs of the organization attempting to provide them. An understanding of the national need will lead to greater understanding of the need for the organization and delivery process. The goals of the UN are the goals of the Member States. Agencies and NGOs support those; but governments are responsible.

A key issue is management. Tasks in ministries are assigned by organization of the ministry, not by capacity to oversee a multi-professional national activity. Management requires an effective and economical monitoring system relevant to elimination of a deficiency, rather than geared to a disease that depends upon private production of the preventive and private control of the outreach. Good monitoring is not mere counting of things, but gathering data and information for management oversight.

Many current monitoring efforts for IDD elimination do not fully address the managerial needs because the design is based on a disease surveillance model rather than a model related to expansion of market share. This is not to say no similarities exist. But too often, that approach suffers the common problem of inefficient use of the information gathered since it was often designed as a 'stand alone' exercise more than as a tool for program management.

Sustained USI and Elimination of IDD also require understanding of the national marketplace and changes in national habits. In the current situation of global progress, we have a large number of countries at the 90% or above level of household access to iodized salt. In addition it is likely that changing dietary habits will find more people consuming processed foods and eating meals outside the home. These activities will need to be taken into account in order to assure maintenance of adequate iodine levels in the diet.

The small list of countries with current access rates of less than 90% that seem to have stalled progress will need to address the appropriateness of the current strategies and in so doing take into account changing habits as well as obvious obstacles. The countries with little progress and low levels of household access will require special attention by national authorities and more aggressive application of the usual norms of a national elimination effort.

More imaginative use of the World Wide Web; and of the cellular telephone for improved and more rapid monitoring all merit priority attention.

USI is not a slogan; it is a commitment. IDD Elimination must be seen as a permanent national priority need. The oversight of USI is more than a sectoral task.

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Achieving and Sustaining USI through Teamwork: Intersector Partnerships and Role of Salt Industry

Justus de Jong ([EuSalt](#))

The salt industry might be considered as the most critical partner to progress in eliminating iodine deficiency through its role in production and supply of adequately iodized salt. For decades, in parts of the world, salt iodization programmes have been successful due to the cooperation between governmental authorities, health experts and the salt industry on a national level. The salt industry members of the Network for Sustained Elimination of Iodine Deficiency (Iodine Network) have confirmed their commitment to work on Universal Salt iodization (USI) to eliminate Iodine Deficiency Disorders (IDD). To address the obstacles to further progress of global IDD elimination, it is suggested that representation of the salt industry in the Network be expanded. Regional Iodine Networks should be established to encourage small scale producers to iodize their salt and to support governments in developing regulations. In industrialized countries, the salt industry is reluctant to play a prominent role in improving consumers' awareness about USI through the promotion of iodized salt lest this be perceived as putting pressure on health authorities with respect to their policy regarding salt consumption.

Key words: History, industry, iodization, network, partnership, producer, salt, universal, USI

History of salt iodization

The salt industry has played a major role in addressing the devastating effects of iodine deficiency through salt iodization. In 1831, the French investigator Boussingault, working in New Grenada (now Colombia), proposed introducing iodized salt in areas with severe goitre. However his advice was apparently disregarded. Although iodized salt had been used for some time in Austria, and in areas of both France and Italy around the middle of the 19th century (Holman and McCartney 1960), it was only after Marine and Kimball demonstrated the effectiveness of iodine as a goitre prophylactic (Marine and Kimball 1920) that the public health authorities in Michigan, USA were convinced of iodizing salt as a population based strategy to prevent goitre. Consequently, salt producers started the production of iodized table salt at a ratio of 1 pound iodine to 10,000 pounds salt (Kraske 1968). It was also their work that stimulated the (re)introduction of iodized salt to Europe. Starting in Switzerland in 1922, the production and use of iodized salt was followed in other European countries and the rest of the world. The Netherlands, for example, introduced iodized salt in 1928. In the decades following, salt iodization programmes have contributed to the reduction and elimination of iodine deficiency, in particular in the industrialized world. Iodized salt has been recognized as the most cost effective option to provide iodine (Holman and McCartney 1960). Alternative vehicles tested for mass administration of iodine, such as water, milk and sugar appeared to be less effective in providing timely and consistent amounts to all sectors of a population.

From the early 1920s the successes achieved in the elimination of iodine deficiency have been the result of cooperation on a national level. Governments, working with the salt industry, set and implemented plans for the production and supply of adequately iodized salt, including the relevant legal framework. Differences in geological conditions, food consumption patterns and the consequent differences in basic level of iodine nutrition, resulted in a great variety in the design of salt iodization programmes with respect to the level of iodine in salt, the iodine source, and the mandatory or voluntary use and the application(s) permitted. Most widely applied was the iodization of household salt. Iodization of salt used in food products was mostly limited to popular food, such as bread.

Universal Salt Iodization

As described by Hetzel and Gautam in this issue, a number of actors have been involved in addressing IDD through USI, in particular UNICEF, WHO, the International Council for Control of Iodine Deficiency Disorders (ICCIDD) and other global partners in the current Network for Sustained Elimination of Iodine Deficiency (Iodine Network). The salt industry has also played an increasingly important role. ICCIDD, which was proposed in a Joint WHO/UNICEF workshop on elimination of IDD in 1985 and formally inaugurated in 1986, initially had one representative from the salt industry on its board. In 1993 UNICEF and WHO adopted

Universal Salt Iodization (USI), i.e. iodization of all salt for human and animal consumption, as the main strategy to successfully addressing IDD. Consequently the role of the salt industry in addressing IDD was fully recognized.

Role of the salt industry on a global level in the progress of USI

Structure of the salt industry

The salt industry is a global business with production in over 100 countries. The estimated world production of salt in 2006 was 256MT. There are four main applications for salt: chlor-alkali production (38,5%), soda ash production (20%), human consumption (17,5%) and road de-icing (14%). In highly industrialized countries chemical applications are predominant whereas in less developed countries the market is dominated by use in food and agriculture.

Salt production processes and scale vary over a wide range, from cottage scale operations, producing less than 1,000 tons of salt a year through solar evaporation of sea or lake water, to very large operations producing several million tons a year either through solar evaporation or through (solution) mining of underground salt deposits. Currently nine large producers, of which five operate on more than one continent, control around one third of global production. China National Salt is the largest with 18.7MT per year (Roskill Information Services 2007).

Salt production in the enlarged EU and Switzerland is approximately 45 MT per year. Twenty-one European salt producers are members of the European Salt Producers' Association (ESPA, now EuSalt) (EuSalt 2007). In the USA salt production including salt in brine was at a level of 46 MT in 2006. The six major US salt producers as well as three other non US producers are regular members of the Salt Institute. The Institute has 31 other producers from all over the world as affiliate members (Salt Institute 2007).

Establishment of a global partnership, the Iodine Network

Recognizing the vital role of the salt industry in the global efforts against IDD and the need to involve relevant actors at the national level in these efforts, international development agencies and the scientific community started working on a global platform to help achieve the sustainable elimination of IDD through USI. This global partnership is today the Network for the Sustainable Elimination of Iodine Deficiency. The Network roots back to a loose alliance of organizations involved in supporting the USI strategy during the 8th World Salt Symposium (Salt2000) organized under the auspice of ESPA in The Hague (Geertman 2000). At a round table discussion, leaders within the global salt industry, top level representatives of UN agencies and executive leaders of bilateral donors, scientific and civic groups, agreed to join in a global alliance against IDD.

Leaders of the salt industry publicly expressed their specific role and responsibility in addressing IDD and their change in attitude from a reactive into an active role: "Certainly, the attitude of the salt industry has changed. We now know and do better; we go out and promote, we convey the message and we supply the technology" (Bierman 2000). The partnership identified priority working areas to achieve sustained USI and virtual elimination of IDD, including communication and education to improve consumers' awareness, transfer of appropriate technologies, monitoring of trends in iodine nutrition in developing and industrialized countries, and government support with clear and applicable policies.

In a Summit of Leaders hosted by the ESPA in Paris in January 2001, the design for such a Partnership was accepted and formed the basis for the Network for the Sustainable Elimination of Iodine Deficiency. The Network was formally launched in New York at the UN General Assembly, Special Session on Children (UNGASS), in May 2002. Within the Network, the global salt industry is currently represented by the ESPA, the Salt Institute (USA) and China National Salt Industry Corporation (CNSIC).

Salt industry's commitment towards USI

At the launch of the Network, the salt industry executives present reconfirmed their commitment concerning USI, expressed by the representative of the ESPA as follows: "*we understand the importance of salt*

iodization; we accept the responsibility to produce and supply quality iodized salt; we understand the iodization technology and supply it to those who need it; we help people understand how crucial iodine is; we cooperate with authorities to ensure that salt is properly iodized.”

Thus a greater part of the world's organized salt industry has entered into partnership with global public health and development agencies, medical and nutrition experts and civic organizations to focus efforts on the virtual elimination of IDD through supporting national efforts to achieve sustainable USI.

Current status of USI

As described by Hetzel and by Gautam in this issue of the SCN News, household consumption of iodized salt has increased from 25% in 1990 to 70% in 2005. Some regions are however, lagging behind, in particular Europe where only 27% of households report consuming iodized salt (De Benoist et al. 2003). In a recently published report, WHO extensively addressed all factors that have contributed to Europe's poor coverage of salt iodization in relation to other regions (WHO/UNICEF 2007).

Salt industry's role in further progress towards global USI

Representation of salt industry in the Iodine Network

With EuSalt, the Salt Institute and CNSIC in the Network, a substantial part of the world's organized salt industry is represented. However salt producers from about 40 countries with low iodized salt coverage (<60% households covered) are not yet represented (UNICEF 2007), including large salt producing as well as exporting countries such as India, Ghana, Ukraine, Senegal and Belarus. Other countries on the Network's "priority list" are Angola, Bangladesh, Egypt, Ethiopia, Indonesia, Pakistan, Philippines and Sudan. The Network Board should continue its efforts to involve the salt industry from these countries in the Network activities.

Regional Networks

It is proposed that Regional Iodine Networks be established in order to reach and involve salt producers which are not organized in associations already endorsing USI such as EuSalt, as well as the smaller salt producers in a country or region. Their structure should follow the regional salt producer meetings held in 1999 and 2000 and should focus on intersectoral collaboration to reach and sustain USI. The objective of Regional Iodine Networks regular meetings is to bring about positive effects from the involvement of salt producers as well as from national and/or regional representatives of other Network partners working in the field. These networks would also facilitate the dissemination of the USI message to small scale producers.

Small scale salt producers

Small scale producers (<5,000-10,000MT/yr) play an important role in achieving higher levels of availability of iodized salt, particularly in the developing world. Iodizing salt is a simple and inexpensive technology. However, small scale producers face a number of challenges, such as varying salt quality, inadequate packaging, and lack of technical expertise and equipment, as well as the means to purchase the iodine source. Small producers are also often unable to recover the incremental costs of iodization from consumers due to their market size. Having recognized these difficulties in the small producers sector, the Board of the Iodine Network has already considered how to address these bottlenecks. Options further elaborated elsewhere (Haxton and Mannar 2007) include establishing co-operatives of small producers, creating revolving funds for the iodine source, and creating or reinforcing a (national) procurement and supply system including purchase of equipment, supplies, and quality assurance support. Some of these initiatives are already operational. In line with these commitments, the salt industry representatives on the Iodine Network should consider setting up a programme by which they can offer technical support concerning salt iodization to (associations of) small producers.

Legislation of iodized salt

Production and supply of iodized salt require adequate and consistent regulations which are effectively enforced. However, in spite of the many countries that have embraced USI, there are still a few which do not yet have salt iodization legislation. In many other countries legislation is limited to household application only and there is great variation in the regulations from one country to another. This is particularly reflected in the European Union (EU) (WHO/UNICEF 2007), where most countries do not have mandatory iodization of edible salt. Iodine content, iodine source and application vary from country to country and the prescribed iodine level is, in many cases, not consistent with the WHO/UNICEF recommended standard of 20-40 ppm iodine.

Salt producers as well as food producers in the EU member states consider the prevailing legislative chaos in the region as a trade barrier, particularly for food products which use iodized salt, and may be an obstacle for improving iodine nutrition in those parts of Europe still considered iodine deficient.

In countries implementing salt iodization programmes, the majority of table salt is iodized but use of such salt in processed foods is limited or even prohibited. In the industrialized world an increasingly significant proportion of the total salt consumed comes from processed foods. The public health concern about salt as a risk factor for cardio-vascular diseases is the leading factor behind the current recommendations to decrease salt consumption through processed foods in particular. Interaction with food manufacturers is therefore fundamental for successful salt reduction (WHO 2006). The focus on salt reduction however, bears the risk of undermining adequate iodine nutrition. Therefore, governments should work on legislation that permits the use of iodized salt in processed foods as well as adjusting the iodization level of salt to reflect the reduced salt intake of the population. EuSalt supports the EU developments to realize a comprehensive harmonization of such regulations which would remove trade barriers and contribute to the sustained elimination of IDD.

A European Commission discussion paper on levels of vitamins and minerals added to foods suggests that only iodine should be allowed to be added to salt. This is because salt iodization has been recognized as the best option to assure controlled intake of iodine. The EuSalt members support these regulatory developments at the EU and national level for addition of iodine only to food grade salt.

Consumer awareness

A major obstacle to increasing the consumption of iodized salt is lack of consumer awareness about IDD and the role of iodized salt. Today, consumers are encouraged to reduce salt intake based on the public health concerns about the relationship between salt consumption and cardiovascular diseases. Though there is no evidence that increased use of iodized salt would increase total salt consumption, public health authorities are concerned that promoting iodized salt may interfere with their efforts to reduce salt consumption (WHO 2006). Although salt producers could continue disseminating messages on IDD and communicating the benefits of iodized salt as was done in the past, the salt industry, particularly in industrialized countries, is reluctant to put itself in the limelight. While the salt industry recognizes the need for good communication and education of the public at large in order to improve consumer awareness and achieve sustainable elimination of IDD through USI, it believes that education of the public at large is best undertaken by national governments with support from UNICEF and WHO. As such, the salt industry's role here is limited.

Successful examples of intersectoral cooperation

Box 1 lists examples of salt iodization in five countries. The examples from the pioneering countries Switzerland and the Netherlands show how adequate iodine nutrition can be achieved through tailored iodization programmes. The fact that for many years iodized salt has been produced and supplied by only one producer in The Netherlands and by two producers in Switzerland and that in the latter country salt import is still restricted might also have contributed to the success of the programmes. On other continents, with a shorter history of salt iodization, such as Kenya, Indonesia and Peru, USI progress has been achieved through intersectoral collaboration with the salt industry playing a key role.

Box 1: Country examples of salt iodization in partnership with salt industry

In an extensive review of the more than 80 year–old iodized salt programme in **Switzerland**, Bürgi shows the roles of salt industry, the Swiss Federal Government and other stakeholders, in addressing IDD (Bürgi 2005). After having observed, at the regional level, the positive effects of salt iodized at 7.5 ppm iodine, the Federal Government created the Swiss Goitre Commission in 1924, which was later succeeded by the Fluorine-Iodine Commission of the Swiss Academy of Medical Sciences. This Commission is a non governmental body made up of public health officials, medical and food experts, and salt manufacturers. It advises on the iodine content in salt. As existing levels were observed to be ineffective, the Commission raised the recommendation from 3.75 ppm in 1924 to 20 ppm in 1998. The Commission meets regularly to review data on developments in iodine nutrition and iodized salt production and makes proposals for the Federal Commission of Nutrition. The introduction of the salt iodization programme and cooperation of all the partners in the Commission has resulted in sustained success. Although it operates on a voluntary basis and manufacturers must offer both iodized and non iodized salt, 94% of households and 50% of processed food is iodized at 20 ppm.

The history of iodization programmes in **The Netherlands** is summarized in Table 1. Though not as structured as in Switzerland, cooperation between government, health and food authorities and the Dutch salt industry has resulted in successful adaptations of salt iodization programmes when needed. In the 1980s an observed decline in bread consumption in favour of bread replacements and cereals affected iodine nutrition in the population, in particular girls and young women, and goitre reoccurred. Following simulation studies on consumption patterns and iodine intake, the authorities decided to increase the iodine level in bread and table salt, and to permit use in other food products from 1997. The salt industry has been consulted on the consequences of changes in iodine levels and iodine sources. In 2001 the effects of the adaptation of the salt iodization programme have been published in a study that i.a. concluded “IDD no longer exists in The Netherlands” and “bread consumption remains the main source of dietary iodine” (Wiersinga et al 2001).

Table 1: Iodization programmes in the Netherlands

1928	start production iodized table salt (3-8 ppm)
1932-1941	regional iodization of drinking water
1942	bread salt iodized
1968	compulsory iodization of all bread salt (35 ppm)
1974	discontinuation of iodization of table salt
1981	iodized bread salt (45 ppm)
1982	reintroduction of iodized table salt; voluntary (25 ppm)
1984	use of iodized bread salt on voluntary basis
1997	iodized salt for bread and bread replacements (70-85 ppm), for meat products (20-30 ppm), for table salt (30-40 ppm)
1997	iodate is also permitted as iodine source

Kenya, a large salt producing and exporting country with four large salt producers supplying most of the edible salt, started IDD control through salt iodization at 20 ppm iodine in 1970. The iodine content has subsequently been increased up to the current level of 100 ppm, which should cover anticipated losses of iodine during transportation and storage. A recent survey (Bürgi, 2007) concluded a/o “Overall, the iodine deficiency situation has much improved over the past 30 years and reaches a stage where Kenya could join the list of countries declared free of iodine deficiency”. This success could only have been achieved through continual collaboration between salt producers, governmental authorities, scientific groups and development agencies.

The efforts to address IDD in **Peru**, have been reported in the IDD Newsletter over the years (Pretell 1998, 2003). To correct severe iodine deficiency problems in the country, intersectoral collaboration was essential. Under the responsibility of the Ministry of Health, active participation of many other sectors, notably salt producers, the media, health professionals, educators, local governments, and other ministries has been crucial to the success of the National IDD Program, which was created in 1983 and implemented in 1986. By 1996, household access to iodized salt had reached 90%. Part of the Program was an aggressive increase in the production of iodized salt, with one large salt producer supplying about 75% of the country’s demand, with the remainder supplied by about 40 medium and small producers.

The situation in **Indonesia** reflects just how crucial and also how difficult is the role of small salt producers in achieving USI. Salt iodization in the country started under Dutch rule in 1927, but stopped in 1945 when the salt monopoly was disbanded. Efforts to combat IDD began again in 1976 with UNICEF support but were not successful due to lack of accountability and coordination among the ministries involved and the private sector (World Bank 2001). The Indonesian government embraced the WSC goal in 1990 and a Presidential Decree enacted legislation on USI in 1994. However in spite of the considerable effort and investment by the World Bank and UNICEF since then, household use of adequately iodized salt, which initially increased from 50% in 1995 to about 73% in 2003, has remained stable in the last years. The major challenge is that non iodized salt is reaching consumers through direct sales from farmers or traders (UNICEF 2003). Further increase of household coverage will require additional creative efforts on the part of all partners involved and may necessitate new variations of partnerships. One recently investigated option to prevent leakage of non iodized salt into the market by small producers is manual iodization of raw salt, which does not require investing in upgraded salt or iodization equipment (Tanduk et al. 2006).

All these examples show that the key factors for progress and sustainability of USI programmes are responsible and vigilant governments, as well as co-operation between public health and food authorities, international agencies and the salt industry, which, when needed, can promptly increase or adapt iodized salt production and supply.

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Achieving and Sustaining USI: Successful Voluntary Action to Catalyze a Global Health Public Endeavour. The Kiwanis International Experience

Robert Parker ([Kiwanis International](#))

Abstract: In 1994, Kiwanis International set a goal to raise US\$75 million to virtually eliminate the world's most prevalent, preventable cause of mental retardation: iodine deficiency disorders (IDD). As of 2007, Kiwanis has raised and leveraged contributions of nearly \$100 million. The selection of a cause that fit the organization's purpose and resources was important to the ultimate success of Kiwanis International's first Worldwide Service Program. Kiwanis chose the elimination of IDD because the science was known, the solution was extremely cost-effective, the amount of money needed was within the membership's capability to raise funds, and the solution would permanently improve the futures of millions of children. A global fundraising campaign was a new experience for the traditionally locally-focused Kiwanis clubs and their members; so, the Kiwanis International Foundation honored IDD contributors through existing donor-recognition programmes, to which the members already were accustomed. Kiwanis's partnerships, such as those formed with UNICEF and salt producers, established Kiwanis as a major participant in global efforts to help children.

Key words: Fund, IDD, iodine, iodization, Kiwani, raising, salt, service project, USI, voluntary

Introduction: first worldwide service project

Founded in 1915, Kiwanis International develops and inspires everyday leaders to ensure a legacy of impactful service. It is joined in this mission by the rest of the Kiwanis organization:

- Kiwanis Kids, elementary school students of ages 6-10
- Builders Club, middle school students of ages 10 to 14
- Key Club, high school students of ages 14 to 18
- Circle K, college and university students
- Kiwanis Junior, young adults in Europe
- Aktion Club, an organization of adults who have disabilities
- Kiwanis International Foundation
- Key Leader, a life-changing experience designed to promote personal growth and community-building to a broad spectrum of students, not just academic achievers.

Today, the Kiwanis organization includes nearly 600,000 leaders in more than 70 nations (Kiwanis 2007).

Kiwanis International is governed by a Board of Trustees, the members of which are elected by club delegates attending the organization's annual convention. The clubs, however, are virtually autonomous and chiefly governed by their own boards. Hence, Kiwanis clubs traditionally serve the needs of their own communities. Prior to 1990, however, Kiwanis clubs had never joined together to address a specific global service need (Hapgood 1989).

Expanding Kiwanis' field of service

On October 1, 1990, then-Kiwanis International President Wil Blechman, MD, led the development of a three-year initiative titled, "Young Children: Priority One," to promote programmes supporting health and education among children: prenatal to five years old. The new project led to contacts with like-minded organizations including the Carter Center in Atlanta, Georgia. During a visit to the Carter Center, Dr. Blechman met Dr. William Foege, the Executive Director of the Task Force for Child Survival and Development and former chief of the Centers for Disease Control and Prevention, who urged Kiwanis to help the children of the world. He suggested that a Kiwanis representative attend two UNICEF meetings in Montréal, Québec: "Protecting the World's Children: Keeping the Promise" and "Ending Hidden Hunger."

Blechman was appointed as Kiwanis' representative to both meetings and returned to communicate UNICEF's request that Kiwanis International take up a global cause on behalf of the world's children. Among the potential causes were clean water, medication and micronutrient deficiencies. With the Kiwanis International Board's support, a resolution to develop a worldwide service project was approved by the House of Delegates at the 1993 Kiwanis International Convention in Nice, France.

After extensive evaluation and discussion, including member surveys, focus groups and interviews, the Kiwanis International Board submitted a proposal to the next House of Delegates to join UNICEF in its effort to virtually eliminate iodine deficiency disorders (IDD) throughout the world by year 2000. Kiwanis chose the elimination of IDD because the science was known, the solution was extremely cost-effective, the amount of money needed was within the membership's capability to raise funds and the solution would permanently improve the futures of millions of children. Borne on this momentum, the House of Delegates, convened at the 1994 Kiwanis International Convention in New Orleans, Louisiana, overwhelmingly gave its approval to the Worldwide Service Project to protect newborns and young children from IDD (Anonymous 1994a).

Evolution of Kiwanis' first worldwide service project

At the beginning of the project, Kiwanis' intended role was primarily that of fund raiser. Kiwanis International initially agreed to raise US\$50 million but increased its goal to US\$75 million in order to build salt-iodizing plants for the world at an average unit price of US\$50,000. Before long, it became clear that the needs of IDD-elimination programmes varied from one country to another. Most of the governments sought advice and assistance for public education, advocacy and legislation. They needed financial help to upgrade small, local salt producers and salt quality, as well as to procure iodine. The smaller countries in the developing world had little use of large, modern salt factories that required advanced technology to operate and maintain.

Kiwanis shifted its campaign strategy to emphasize the number of children's lives saved. Kiwanis contributions would not only purchase equipment, but they would also support legislative advocacy; educate salt manufacturers, health officials, salt merchants, families and communities; and support monitoring processes. Every five cents donated represented one child's life protected from iodine deficiency. Though this nickel-per-child approach could be interpreted in various ways, the five-cent rescue of one child proved more motivating than \$50,000 per salt-iodization machine.

To meet the challenge of collecting, acknowledging and dispersing donations, Kiwanis International partnered with the Kiwanis International Foundation. The Foundation already had two popular recognition programmes—the George F. Hixson Fellowship and the Tablet of Honor—both of which were used to build up the Foundation's unrestricted fund. But the Foundation opened these two prestigious programmes to recognize Worldwide Service Project donors. For Kiwanis clubs not accustomed to personal donations for global service, the Foundation's decision would prove to be one of the most effective incentives toward encouraging members' contributions (Anonymous 1997a).

One of Kiwanis' first challenges was to educate its officers and members about IDD. Most Kiwanis leaders—about 80%—live in North America, where goitre and other iodine deficiency disorders had been virtually eliminated decades earlier. But Kiwanians needed to learn that beyond the physical deformity of goitre, IDD caused worldwide human suffering and was an obstacle to social and economic development within families, communities and whole nations.

Through articles in the organization's official publication, KIWANIS magazine, Kiwanians began to learn that IDD was the world's leading cause of preventable mental retardation. They read about cretinism and IDD's effects on children's academic performance. They learned about salt production, packaging, distribution and marketing. Kiwanis convention speeches, forums and exhibits described and illustrated the myriad problems associated with iodine deficiency and motivated attendees to support the Worldwide Service Project—for the children of the world. In his role as honorary chairman of Kiwanis Worldwide Service Project Committee, actor and UNICEF Goodwill Ambassador Roger Moore attended many Kiwanis conventions, reporting on the world's progress against iodine deficiency and encouraging Kiwanians to continue the fight. Other celebrities lent their name and advocacy to Kiwanis (Anonymous 1994b). Actor and artist James Kiberd, a US Fund for UNICEF ambassador, dedicated his artwork *All It Takes Is a Teaspoon—All It Takes Is You* to the cause, and prints were offered as recognition rewards to large gift contributors (Anonymous 1996). The athletes of the Women's Tennis Association (WTA) videotaped public service announcements and staged autograph events at WTA tournaments (Anonymous 1997b). TV news broadcaster Hugh Downs chose IDD as the subject for his farewell *20/20* newsmagazine report, for which he interviewed High Point, North Carolina, Builders Club

leaders, who had collected more than \$8,000 for the IDD cause (Anonymous 2000). Sir Edmund Hillary promoted the Kiwanis campaign in New Zealand and Australia. As the project gained momentum, Kiwanis leaders began to realize that a large number of players were working to achieve universal salt iodization (USI). Above all, they learned the important role of salt producers in eliminating IDD.

The Worldwide Service Project—with its grand vision and lofty goal and the experience of all clubs working to achieve a common objective—energized and united the members. This, perhaps, is the programme's most lasting legacy to the entire Kiwanis organization (Blechman 1994). However, in addition it introduced the name “Kiwanis” to many countries that had not previously been aware of it.

Kiwanis partners with UNICEF

Though Kiwanis clubs exist in more than 70 nations, much of its membership lived in areas not affected by iodine deficiency. Nor did Kiwanis leaders have the scientific, marketing and public health expertise to implement IDD-prevention programmes in endemic areas. Therefore, Kiwanis relied on UNICEF experts to work with salt producers, various government ministries, national government officials, nongovernmental organizations, schools and others to develop a country plan for the elimination of IDD. These UNICEF-approved proposals included detailed budgets and timetables, which were submitted to Kiwanis International for consideration. An allocations committee, made up of officers of both Kiwanis International and Kiwanis International Foundation, made funding recommendations after review of each proposal. Once a proposal had been approved, the requested funds were transferred to UNICEF. It is important to note that, by agreement, all Kiwanis funds were used to support approved projects; no money was retained by UNICEF headquarters or its various country committees for administration or other uses.

Kiwanis received regular progress reports from UNICEF. In addition, Kiwanis leaders conducted on-site reviews with UNICEF staff members in a number of countries. Often the visiting Kiwanians met with government leaders to reinforce the value of the countries' IDD-reduction efforts.

Key Club International partnered with the US Fund for UNICEF to conduct annual Trick-or-Treat for UNICEF programmes to raise money for the Kiwanis organization's Worldwide Service Project. Key Club and US Fund continue their relationship to fund other global causes, such as HIV/AIDS in Africa.

Despite the clubs' strong traditions in serving only the needs of their communities, support of the Worldwide Service Project advanced steadily and the fight against IDD became immensely popular among club leaders. By 2002, the Worldwide Service Project for IDD elimination had reached its US\$75 million goal and Kiwanis had contributed more than US\$60 million to the national IDD elimination programmes in 90 countries through UNICEF. Along the way, Kiwanis built partnerships with salt producers, the International Council for the Control of Iodine Deficiency Disorders (ICCIDD), the World Health Organization (WHO), the Micronutrient Initiative (MI) and other organizations. These achievements firmly established Kiwanis International as an international service organization for children and the name of Kiwanis and its contributions to promote universal salt iodization became known throughout the world.

The scale of this global effort and the reporting of UNICEF provided Kiwanis the opportunity to monitor the effectiveness of its contributions and to report progress to Kiwanis leaders and Kiwanis supporters. The ability of members and their supporters to see the results being achieved by their contributions was vital to the continued success of the Kiwanis campaign (Blechman 1994).

Engaging Kiwanis' global membership

As the campaign gained momentum among the membership, Kiwanis International supplemented its printed campaign materials with videos, convention forums and eyewitness reports that proved to the members the significance of their support. Meetings were conducted at every level to educate Kiwanis leaders and their supporters of the problems associated with IDD, how it could be eliminated and how Kiwanis International would lead the international effort. They were shown how Kiwanis funds, Kiwanis advocacy and Kiwanis hands-on efforts could help change the world forever.

Kiwanis leaders visited countries that had suffered from IDD but were now benefiting from Kiwanis' support.

These volunteers communicated their findings to the general membership; writing articles, taking photos and making presentations to conventions, workshops and meetings. In every case, they reported that the Kiwanis contributions were making a real difference in the countries visited. Often the relationships established during these visits resulted in long term friendships between Kiwanians and the people they met.

The worldwide commitment of Kiwanis clubs to raise at least US\$75 million to help eliminate IDD began a new era for Kiwanis International. It was the first time that Builders Clubs, Key Clubs, Circle K clubs and Kiwanis clubs joined together to improve the lives of millions through one project. The Kiwanis Worldwide Service Project unified the nearly 600,000 adult and youth leaders of the Kiwanis organization (Blechman 1994). The Worldwide Service Project energized the total organization and enabled its members to see the world as an opportunity for Kiwanis and its new partners to improve the lives of children.

Forging partnerships

Kiwanis money has been a catalyst for other investments, often leveraging private salt producer investments as well as supplemental aid from foundations and governments. Significant partnerships with non-Kiwanis organizations were an important element of the progress Kiwanis helped to create.

As an example, Morton Salt, the largest salt producer in the United States, participated in the campaign in a number of ways. It produced 80 million boxes of iodized salt for sale to consumers and labelled each container with information about the Kiwanis project. In addition, Morton made available 500,000 countertop and stand-alone collection canisters to help with fundraising activities (Perry 1997). One of the highlights of the Kiwanis-Morton partnership was a US\$1,025,000 check presented to Kiwanis representing cash and in-kind donations made by Morton to the Kiwanis Worldwide Service Project. Another early example of how the IDD programme established important relationships was the development of its partnership with the Joseph P. Kennedy Jr. Foundation. Both groups are concerned about persons living with mental disabilities: the Kennedy Foundation through its support of the Special Olympics and Kiwanis through its campaign to virtually eliminate IDD, the world's most prevalent, preventable cause of mental retardation.

After presenting the Kiwanis story to the UN Foundation, which administers Ted Turner's gift to the United Nations, the foundation provided Kiwanis with a one-to-one \$1 million matching grant. The resulting \$2 million was used to fund projects in Africa's goitre belt (Guinea, Central African Republic, Angola, Congo and Chad). The Bill and Melinda Gates Foundation awarded \$15 million to the UNICEF/Kiwanis partnership to help fight IDD in priority regions and countries worldwide, including Eastern Europe, the Philippines, Sri Lanka and Pakistan (Fuller 2000).

Education and advocacy

Kiwanis leaders often played a role in securing governmental financial support of UNICEF IDD programmes. As an example Kiwanis leaders met with their elected representatives to brief them on the need for governmental support of the Kiwanis IDD effort. In addition, Kiwanis staff conducted annual meetings with US Congressional committee staff members to brief them on global progress and the need to support international aid to fund IDD projects. To reinforce the need, Kiwanis officers regularly testified at Congressional committee hearings. Each year upon congressional allocation of funds to IDD projects, Kiwanis staff and UNICEF staff met with the US Agency for International Development (USAID) to identify countries for US funding of IDD projects. Often projects have required both USAID and Kiwanis funding for full implementation. Similar Kiwanis advocacy took place in countries where there is a strong Kiwanis membership base. Due in part to Kiwanis advocacy, the governments of Canada, Belgium, Germany, Netherlands, USA, Australia, Japan and others contributed large sums to the effort.

Kiwanis leaders contributed to the progress of the global effort through their advocacy and hands-on support of iodization efforts. Kiwanis leaders visited Albania, Bangladesh, Bhutan, Bolivia, China, Costa Rica, Ghana, Guatemala, Madagascar, Nepal, Pakistan, Panama, Philippines, Russia, Senegal, Sri Lanka, Thailand, Ukraine and Vietnam. The value of these Kiwanis visits was demonstrated during a visit to Russia. Kiwanians learned that salt-iodization equipment was being held in customs and would not be released until substantial

duty had been paid. Kiwanis leaders met with leaders of the Russian Government and strongly advocated that a solution to the impasse be found. This created a strong movement within the Government to the point that the chief of the Customs Committee—a position comparable to that of a vice-prime minister—announced that the committee waived for one year all excise duties, providing time for UNICEF to negotiate a permanent solution (Brockley 1999).

In addition, in Kiwanis nations where IDD threatens, Kiwanis leaders have been strong advocates of universal salt iodization. In the Philippines, for example, Kiwanians have taken an active hands-on role both at the local and national levels. Kiwanis leaders meet regularly with UNICEF and others to develop strategies that will result in their people getting adequate iodine in their diets. Kiwanians have conducted meetings with Government leaders, and they continue to lobby for strong enforcement of a commitment for salt iodization throughout their country. Philippine clubs conduct health missions in rural villages, where their lessons on healthy diets include distribution of iodized salt and IDD information (Carson 1996).

Sustaining the success

As the Kiwanis organization reached and surpassed its \$75 million goal, it began to turn its fundraising focus on securing the sustainability of the progress it helped achieve in the fight against iodine deficiency. The Kiwanis International Foundation established an IDD sustainability fund, which continues to receive contributions from Kiwanians who want to ensure and bolster the gains made against iodine deficiency. As of December 2007, Kiwanis International had raised a total of nearly \$100 million to help fight IDD.

At the August 2000 Kiwanis International Convention, UNICEF Executive Director Carol Bellamy delivered encouraging news. In 1990, she reported, less than 20% of the people in IDD-affected areas had accessed to iodized salt. Ten years later, largely due to Kiwanis' Worldwide Service Project, 70% of the households in developing countries had access to iodized salt. Every year, 85 million children were born free from the threat of IDD (Bellamy 2000).

Charles J. Lyons, president of the US Fund for UNICEF summarized the success of Kiwanis' IDD campaign in a June 2005 statement: "Kiwanis International's determination to eliminate iodine deficiency is responsible for one of the greatest public health accomplishments of the last decade—a success that truly makes Kiwanis a member of the UNICEF family. The value of a gift to humanity such as this is, very simply, incalculable." (Anonymous 2005)

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Achieving and Sustaining USI:

Effective programme development and management. Lessons Learned from USI in China

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Abstract: Iodine Deficiency Disorders (IDD) is a very severe public health problem with a wide spectrum of impact, in which mental retardation is the major factor that threatens the quality of life and human potential in China. USI has been accepted as a major intervention in the whole country since 1995. China had already reached the goal of virtual elimination of IDD by the year 2000 and has maintained the sustainability of IDD elimination since then. Several factors have contributed to this success, such as a political commitment by the Chinese government, legislation on USI, a monopoly on iodized salt production and distribution, as well as a strict, effective and cooperative national monitoring system and quality control performed by concerned partners. The alliance between the Ministry of Health (MOH) and the salt industry plays a key role in the implementation of the USI programme in China.

Key words: China, IDD, iodine deficiency disorders, iodization, monitoring, monopoly, quality control, salt, USI

Introduction

Iodine Deficiency Disorders (IDD) were recorded, as goitre in ancient Chinese medical literature as early as 3,000 BC, and were recognized as a very significant public health problem. Since this time they have continued to threaten the quality of life, human potential and social-economic-cultural development in China. It was estimated that 720 million people were at risk for severe or moderate iodine deficiency prior to the initiation of the National IDD Control Program. Epidemiological surveys revealed that there were 35 million patients with visible endemic goitre and 250,000 subjects with typical cretinism. In many IDD endemic areas, 5-15% of children suffered from mild mental retardation (IQ 50-69) (Chen 2006). A meta-analysis of 36 studies from these areas showed that IQ distribution curves of children tended to shift to the left, with an IQ deficit of 11 points (Qian et al 2005). In China, as most cases of mild mental retardation is found in iodine deficient areas, this type of impairment is mainly caused by iodine deficiency.

Iodized salt intervention was first implemented in Chengde, Hebei Province and then expanded to all of Northern China after an important epidemiological survey, clinical investigation and intervention study undertaken in 1960, led by Prof Xianyi Zhu (H.I.Chu) and his endocrine research group from Tianjin Medical University (Yip et al 2004). This study demonstrated that iodine deficiency is the main etiology for endemic goitre and endemic cretinism and that iodized salt is the most effective intervention for correction of iodine deficiency for the whole population. The programme was later expanded to Southern China in the 1980s where IDD was also discovered. Subsequently the central government adopted the iodized salt programme as the main strategy in IDD endemic areas for the whole of China. Although the goitre rate had decreased and very few cretins were being born, IDD was not completely under control due to the lack of strong political will, irregular salt iodization and ineffective monitoring systems. In addition, the iodized salt programme was implemented only in moderate and severe iodine deficiency areas thus; mild IDD areas were not included (Chen 2006, Yip et al 2004).

Government decision, political will and the 1993 National Advocacy Meeting

At the historical World Summit for Children in 1990, Premier Li Peng signed the Summit declaration on behalf of the Chinese Government. Subsequently a National Advocacy Meeting was held by State Council in Beijing in 1993. Representatives of governors and different sectors from both national and provincial levels, as well as from International Organizations (WHO, UNICEF, UNDP, ICCIDD, World Bank) attended this historical meeting, which was a milestone for the elimination of IDD in China. The Chinese Government has made a political commitment for the elimination of IDD by the year 2000, followed by the same commitment from each province. In addition, the meeting resulted in the establishment of Leading Group for IDD Elimination headed by State Councilor Madam Peng Peiyun for multi-sectoral coordination at the central level (Yip et al 2004). Therefore, the Chinese Government as well as its political will and commitment have always played the key role in the National IDD Control Program. The State Council approved a new National IDD Control Program and a Regulation on mandatory salt iodization. Universal salt iodization (USI) was accepted as a

major intervention in the whole of China. Through its communications efforts, the National Health Education and Promotion Program and IDD Day play an important role for social mobilization and promotion of the consumption of iodized salt. The Ministry of Health (MOH) and the Salt Industry formulated a National Monitoring Plan on USI and evaluation of iodine nutritional status in the population.

Improvement of salt production facilities and expanded availability of adequately iodized salt

There were two major issues to be addressed while implementing the USI programme nationwide. First, enhancing the total annual production of iodized salt to meet the need for total consumption and, second, technical assistance was required to upgrade the production facilities in order to guarantee the quality of iodized salt. To accomplish this, the State Council set up a special “Fund for the USI Project”. The implementation and enforcement of the project played an extremely important role in the promotion of edible iodized salt in China. The total investment for the project amounted to 1 billion RMB (US\$ 125 million), of which the World Bank was able to fast track a loan totalling 27 million US\$ in 1995 (Yip et al 2004). The success of the project greatly enhanced the production capacity of iodized salt to a yearly total output of 8 million tons of iodized salt (Chen 2006), which could meet the needs of the USI programme nationwide (Figure 1). Meanwhile, the investment also supported the upgrading of salt production facilities using advanced technology and equipment, helped promote a tremendous scientific and technological advancement in the Chinese Salt Industry as a whole.

Legislation and monopoly

The State Council (the highest national policy making body) made a historical key decision to assure that all edible salt is properly iodized and to reverse the process toward the free market approach from 1980 onwards. In support of this decision, the Chinese Government promulgated “Iodized Salt Management Regulation for Control of IDD in China” and “Edible Salt Monopoly Regulation”. Following this, 34 local laws or regulations were formulated and enforced in each province in order to supply acceptable iodized salt and to prevent illegal salt from entering the market. This policy facilitated centralization of the salt industry and the continuation of a centrally planned system, rather than a free market mechanism, for the management of salt production and distribution.

A nationwide sales framework with a regulated salt market for the wholesaling and retailing of iodized salt was set up and continuously strengthened to assure edible salt iodization and distribution. Based on the policy, legislation and reform plan for the salt industry, a total of 108 larger salt producers were licensed to produce iodized salt only for human consumption. More than 6,000 licenses were issued for edible salt wholesaling by concerned companies, and 140,000 sets of licenses for edible salt transportation were issued every year. There is a strong ban on the production, transportation and sale of salt by any producers or salt wholesalers without legal licenses. The network adopted a modern system for logistics and distribution management, and helped to increase the popularity of edible iodized salt. The China National Salt Industry Company (CNSIC) defines the production quota for each salt plant and allocates geographic areas for salt distribution. The centralization of iodized salt production and distribution has resulted in very high coverage of iodized salt (Table 1) in all areas (except the most remote areas) and the centrally planned mechanism is able to effectively prevent non-iodized salt from entering the market.

Practical measures against illegal trade of non-iodized salt

CNSIC and Salt Industry Administrations at different levels have the authority to act as so called “salt police” to eliminate the trading of non-iodized salt at the production, transport or retailing levels. Non-iodized salt leakage is a long-term problem for the implementation of USI in some coastal provinces since there are many small salt plants owned by private interests or local government. A successful model to solve this problem has been implemented. The Provincial Governments made a decision to close down the small salt plants producing the illegal non-iodized salt and at same time the salt authorities and local governments provided a special fund to help these producers to start alternate lines of business in the former salt fields for ensuring their income such as fish or shrimp farming. This successful “closing/conversion” model now plays a valuable

role pushing forward the USI programme in remote areas. Illegal trade in Western China is a major problem, where natural salt like lake salt, rock salt or desert salt is available locally and the economic stability of the population is lower. Price competition between iodized and non-iodized salt is the major block for the USI Program. Recently we found some new cretins at an age of less than ten years in some remote villages with very low coverage of iodized salt (Chen 2007). To deal with this, the central and local governments decided to either implement an iodized oil programme for targeted populations or to provide financial subsidies in order to reduce the price of iodized salt in these high risk areas. In addition, governments provide iodized salt free of charge to very poor families. The lesson learned is that political commitment or a government's will is the key factor in solving problems for the USI programme in China.

Monitoring and quality control

Since the 1993 National Advocacy Meeting, China has established an effective monitoring system for its USI Program. There are five components for monitoring and quality control of USI:

1. Iodized salt quality assurance at production level: all the licensed salt plants have set up their own laboratories to monitor iodine concentration in salt during the production process, before packaging and before transportation. CNSIC has two centers in Tianjin and Sichuan province in charge of external quality control for laboratories.
2. Quality assurance at retail or market levels: The State Administration for Industry and Commerce led by the State Council is responsible for quality assurance of iodized salt at retail or market levels, and also for the supervision of non-iodized salt in market.
3. Iodized salt monitoring at county level: The National Technical and Training Support Team (NTTST) and National Reference Laboratory (NRL) located in China CDC carry out national monitoring of Iodized Salt at the household level in each county once or twice a year and MOH at the national and provincial levels give the financial support for these activities. Monitoring indicators including iodine concentration, coverage of iodized salt and coverage of non-iodized salt are tracked.
4. Impact evaluation, supported by MOH, is implemented every two or three years by using WHO/UNICEF/ICCIDD criteria for the monitoring progress and aimed towards eliminating IDD as a significant public health problem. Each province is considered as a basic unit for the epidemiological survey. The Probability Proportional to size (PPS) cluster method was accepted for assessing IDD prevalence. Schoolchildren aged 8-10 years old were chosen as the target population. The Center for Endemic Disease Control, China CDC performs this activity; and monitoring indicators include iodine concentration and coverage of

Figure 1: Production of iodized salt (10,000 tons)

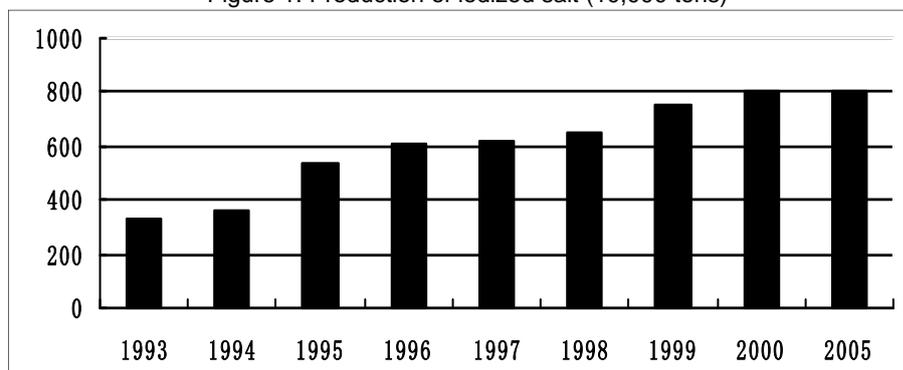


Table 1. National Monitoring Results in 1995, 1997, 1999, 2002 and 2005

Indicators	1995	1997	1999	2002	2005
The proportion of household consuming iodized salt (titration method)					
≥5 mg I/kg (%)	39.9	81.1	88.9	95.2	94.9
20-50 mgI/kg (%)	29.7	69.0	80.6	88.9	90.2
Median iodine level	16.2	37.0	42.3	31.4	30.8
Urinary iodine level in children					
Median(µg/L)	164.8	330.2	306.0	241.2	246.3
< 50µg/L(%)	13.3	3.5	3.3	5.8	5.6
TGR (%)					
Palpation	20.4	10.9	8.8	5.8	5
Ultrasonography	-	9.6	8.0	5.6	4

iodized salt at the household level, total goitre rate of schoolchildren, and urinary iodine concentration in schoolchildren. NRL is responsible for external quality control of salt or urinary iodine determinations. These activities were carried out in 1995, 1997, 1999, 2002 and 2005, respectively. These significant data (Table 1) showed that China had already reached the goal of virtual elimination of IDD by the year 2000 and has maintained the sustainability of IDD elimination after 2000 (Chen 2006).

5. Regular evaluation of these national monitoring results: The Ministry of Health (MOH) regularly organizes a consultation meeting when these activities are finished. The National IDD Advisory Committee to MOH and other experts or partners express their final suggestions, recommendations or consultations for government consideration. It is also an opportunity to share the data, experiences, and further cooperation among partners. The meeting also provides further intervention in order to solve problems discovered by National Monitoring Activity.

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ANNOUNCEMENT

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Richard Skolnik, the director of International Programs at Population Reference Bureau (PRB), is the editor of NNN. Richard retired from the World Bank in 2001, as the director of human development for the South Asia Region. He was deeply involved at the Bank in work on nutrition, family planning, health, and education. After leaving the Bank, Richard was a professor at The George Washington University, where he primarily taught global health to undergraduate students, and was the executive director at the Harvard School of Public Health of an AIDS treatment program for three countries in Africa. Richard was also actively involved in the establishment of Stop TB, served three rounds on the technical review panel of the Global Fund, and has served on a number of WHO working groups. In addition, Richard is the author of a recently published undergraduate textbook, *Essentials of Global Health*. PRB's nutrition-related articles and publications, plus more information about both PRB and Richard, can be found at www.prb.org. For more information please contact NNN@prb.org.

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Achieving and Sustaining USI:

Getting the Message Across to Change Policy, Attitude and Behaviour

Jack C. Ling (Chair Emeritus, [ICCIDD](#))

Abstract: It has been widely accepted in development circles that for any development programme to succeed there must be changes in policy at the political level, public attitudes and, ultimately, action by individuals. Sustained elimination of iodine Deficiency Disorders (IDD) certainly calls for changes in all these areas. All three require communication inputs and the delivery of messages to specific audiences to bring about the desired changes.

Key words: Advocacy, brain, communication, IDD, iodine, iodized, global, progress, salt, social mobilisation, USI

Introduction

IDD can rob children of up to 13.5 points of Intelligence Quotient (IQ), which can retard learning capacity (Hetzl et al 1984). For those fortunate enough to enroll in schools, IDD leads to poor educational achievements which in turn lead to low productivity as adults. For a child IDD is a factor in the economic and social well being for life. For a family and a community, indeed a nation, IDD affects the quality of human capital for development. This paper focuses on communicating messages about the serious impact of IDD on children's brain development, the *raison d'être* of the global effort to wipe out this deficiency.

USI, the chosen instrument against IDD

As Universal Salt Iodization (USI) has been adopted as the chosen instrument for combating IDD (Hetzl et al 1984), communication aspects of the production, the marketing and the consumption of iodized salt are at issue. A review of the current state of the global effort should provide the basis for the development of appropriate messages.

The phenomenal progress of the global effort has been cited in many fora of international health and development. Over a decade and a half, more than two billion more people have become users of iodized salt. This has meant an increase from less than a third to more than two thirds of the world's population benefiting from USI. By any measurement, this is an unparalleled marketing feat in the annals of food and dietary promotion.

Close to 40 million annual newborns remain unprotected

Yet, the global effort at sustained IDD elimination still falls short of the goal set by the United Nations at its 1990 Summit for Children and reaffirmed at the UN General Assembly Special Session on Children (UNGASS) in 2002. Some two billion of the world's total population, including close to 40 million newborns annually mostly in rural and economically disadvantaged areas, are not getting the protection of iodized salt against IDD.

Aspects of the intervention as basis for effective messages

As an international development program, the fight against IDD has more elements for success than many others. It is:

- *Affordable*, at a few cents a year for each child through a relatively simple method of fortifying salt with iodine;
- *Sustainable*, when the habit of using iodized salt is firmly established, requiring no further material input from public authority;
- *Cost-effective*, as its social as well as economic benefit is indisputable. Indeed, the World Bank economists have cited a number of micronutrients, including iodine, contributing to a possible factor of 5% in GDP (World Bank 1994).

USI supports the UN Millennium Development Goals

The intervention to fight against IDD is part of mainstream development. Sustained IDD elimination through USI contributes to most of the MDGs:

- Elimination of IDD *reduces infant and maternal mortality*
- USI reaches boys and girls alike; it *helps gender equality*
- USI improves school performance and *supports education for all*
- Reducing IDD *helps fight poverty* as the poor get an equal chance at a productive life
- USI *promotes public/private collaboration* for development, as health and education sectors work hand in hand with salt producers and food industries.

Early success slows momentum

It is clear from the above that there can be no shortage of effective IDD messages. IDD elimination work, to quote a colloquial term, should be a “no brainer.” Among those engaged in IDD communication, the refrain has been: “Find me a parent who will not knowingly trade his/her last possession for something to protect his/her child’s brain from injury and damage!” Yet, we face lacklustre progress in the last few years. In some areas, USI rates have actually retrogressed. Intractable challenges abound.

In a way, the very early success has sowed some of the seeds of weakened momentum. There has certainly been an IDD fatigue among policy leaders who have in recent years been overwhelmed by many ongoing and emerging dramatic health problems, i.e. malaria, HIV, SARS, and avian flu, to name a few. There is not a broad enough recognition that IDD work is the first global deficiency fight. By definition this requires a continuous, never ending effort, however simple the compliance behaviour may be, as in the daily use of iodized salt. Any prolonged interruption of the practice will bring back the full spectrum of IDD, including the devastating impact on the brain development of fetuses and infants, as surely as the sun rises.

Strengthened policy and political support for IDD elimination involving high-level re-advocacy efforts is dealt with elsewhere in this issue. One needs only to point out the importance of follow-up on political announcements and commitments at the national level. However, national government policy does not automatically translate into actions at lower levels of governments without concomitant advocacy efforts to mobilize local leaders to carry through with implementation. The 2005 and 2007 World Health Assembly resolutions on IDD calling for member states to report on iodine nutrition status every three years, for instance, provide only a framework for action. Without actual advocacy and awareness creation at the country level, the resolutions are nothing more than a few sheets of paper languishing in the bureaucratic drawers of health ministries.

Issues and barriers to iodized salt consumption

Communicating messages at the community and household levels are critical. Among the problems the global programme faces are:

1. *Local leaders, not convinced of the value of USI*, are not fully committed to wage a vigorous effort. Sometimes they have allowed local salt producers to produce non iodized salt. In many areas where USI is seriously lagging, local authorities have ignored the official policy of iodizing all edible salt and even condoned the sale of illegal salt. Where there are changes of leadership, especially at the community level, new arrivals are often not informed of the IDD threat. Some may assume that their predecessors have done the job and therefore IDD elimination is no longer a priority. With economic development considerations dominant in many countries, IDD elimination’s specific economic benefit should be stressed as part of local advocacy efforts.
2. *Consumers are not fully aware of the specific threat of brain damage in children caused by IDD*. In many countries, IDD elimination programs still provide graphic details of visible goitre and cretinism which often overshadow the broader, more serious, public health threat of brain damage in children. A number of informal enquiries in a number of countries have shown that the “big neck” or visible goitre effect of IDD still dominates knowledge among consumers. IDD’s brain damage threat to infants is not highlighted and is often lost among a plethora of other messages. Some even confuse the benefit of iodized salt with that of fluoride. In more than one country, rumors claimed that iodized salt really aimed at prevention of pregnancies; a hidden weapon of family planning. One unproven hypothesis was that IDD was mistaken

for IUD (intra-uterine device). There needs to be clear and direct messages about IDD's brain damage threat and its relevance to school performance and subsequent economic productivity for the family. Such messages should be disseminated through different channels (Rogers 1983), especially through schools and salt retailers. Where there are no longer cases of visible goitre, IDD education material should avoid showing pictures of "big necks." All IDD education materials should consistently deliver the same message.

3. *Poverty is a factor in some communities.* It is often contended that lack of cash prevents impoverished families from buying iodized salt, when free rock salt is readily available. Some families in poor areas no doubt need iodized salt at a price they can afford. However, even in impoverished households men often smoke cigarettes and drink beer. Messages with calculations of the cost of a pack of cigarettes or a bottle of beer against the annual cost of using iodized salt to prevent brain damage in children may facilitate a change of priority even among relatively poor families.
4. *There are cultural and/or religious barriers to USI* (De Mooij 1998). In areas of India, for instance, some consider tampering with natural food a taboo. In Xinjiang, China, the practice of dissolving rock salt in water is a deeply entrenched tradition. Such circumstances call for in-depth enquiries into people's beliefs and attitudes. Such assessments involving focus groups may yield data (quantitative and qualitative) and insights to possible obstacles to the consumption of iodized salt. Tailored messages developed with the participation of more enlightened members of communities may be needed to address specific beliefs. Obtaining the support of well respected community and religious leaders in disseminating messages via modern as well as traditional media could help ease the change of ingrained habits.
5. *Backsliding in the use of iodized salt at the household level* has appeared in many countries. It has occurred in Bolivia, Vietnam, Tanzania and many other countries. Again, this could be in part due to lack of understanding of the nature of IDD, whose prevention requires a regular intake of iodine. The usually high profile national launch of USI often manages to activate consumers to take up iodized salt. However without periodic reminders, the practice of such salt usage fails to take root. IDD messages should not overlook the consequences of interruption of the practice and consequent backsliding.
6. There is also *objection to USI based on the fear of salt's impact on hypertension.* Some medical practitioners may need to be persuaded that USI does not encourage more use of salt. It may also be necessary to confront scepticism generated by clinical issues such as hyperthyroidism and other effects of iodine overdose. In such instances, the broad benefit for the population at large should be stressed rather than cases which require individual attention (Favin and Griffiths 1991). Even very well established immunization campaigns carry isolated risks.
7. *Competition in the market place for foods claiming benefit for children is a hidden barrier for USI.* "Smart Start for Children" may be a pithy marketing slogan during the initial phase of a national program, but the reality is that numerous commercial food products, including food supplements, soft drinks and even sweets, also claim to bring health benefits to children, ranging from making them physically strong to intellectually smart. Salt, after all, is but one of numerous food items in the market place, albeit an inexpensive daily necessity. However, no other food can claim protection against brain damage. IDD marketing messages therefore should focus specifically on "brain damage."
8. *Leakage of inexpensive industrial salt and non iodized salt for animals into households* could disrupt USI. Educational messages focusing on this obstacle should be a priority for the salt industry and other actors. USI commitment includes salt for animals because animals too can suffer from IDD. In addition, the possibility of this salt being consumed by humans cannot be ignored.
9. Although the level of public awareness is often included in national reviews and monitoring exercises, there is *insufficient evaluation of the specifics of this awareness, or the quality of knowledge about IDD.* Knowledge about IDD has most often been limited to visible goitre. Educational material should instead point out the dangers of a re-emergence of IDD without the continuous ingestion of iodine.
10. Many USI programs do not pay enough attention *to the need for audience segmentation and the employment of professional services to design messages* (Ling et al 1992). More in-depth enquiries

involving community participation in identifying behavioural barriers and developing appropriate communication efforts are called for.

Weak efforts at demand creation

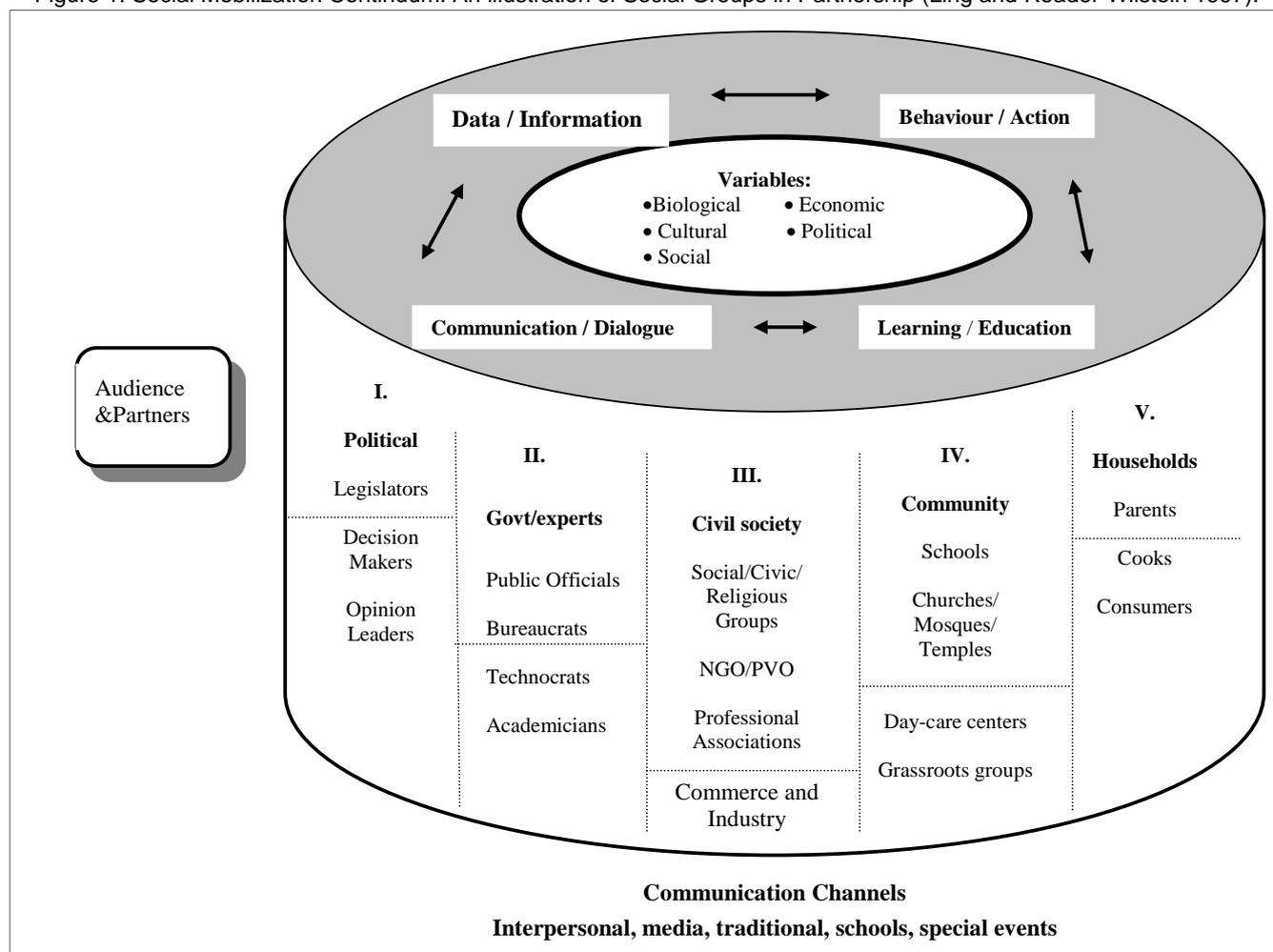
In some countries, the use of marketing practices in IDD elimination has not created the desired demand for iodized salt. More specifically, some of the marketing campaigns have been based on commercial experiences and have not taken into account the difference between gaining a percentage point of market share and the public health goal for 100% behavioural compliance. The practice of marketing with gentle and soothing messages in the commercial arena has often inhibited the need to deliver hard-hitting facts about the dire consequences of IDD.

The communication-based development strategy, Social Mobilization (Figure 1) and its strategic elements (Figure 2), designed to affect changes by way of informed choices at various levels of society is particularly suitable for sustained IDD elimination. It facilitates the design of appropriate messages advocating USI and their delivery via suitable marketing practices. It also helps programme managers to understand audience segmentation and to take appropriate measures in order to interact with various audiences.

Moving forward

Focused messages: While appropriately iodized salt must be available at affordable prices, it is equally important to encourage consumers to demand such salt. Good tidings about progress should be accompanied by calls for efforts to take up the remaining challenges. Beware the use of the word “victory”

Figure 1: Social Mobilization Continuum. An illustration of Social Groups in Partnership (Ling and Reader-Wilstein 1997).



Circumstances differ from country to country and often from one part of a country to another. The social mobilization strategy calls for partnership with all stakeholders. The five illustrated segments of society, representing national partners, provide inputs. As further elaborated in Figure 2, the Partners are supported by international development agencies. Process, which includes various elements of mobilization, leads to outputs. The ultimate end of development is improved economic and social status.

which implies finality when many challenges to sustain progress remain. There should be many more focused, professionally executed communication inputs directed at specific audiences. These should be appropriately segmented, and involve communities as a whole. The messages should be fine-tuned for better effect and focus on IDD’s impact on brain damage and the potential loss of IQ.

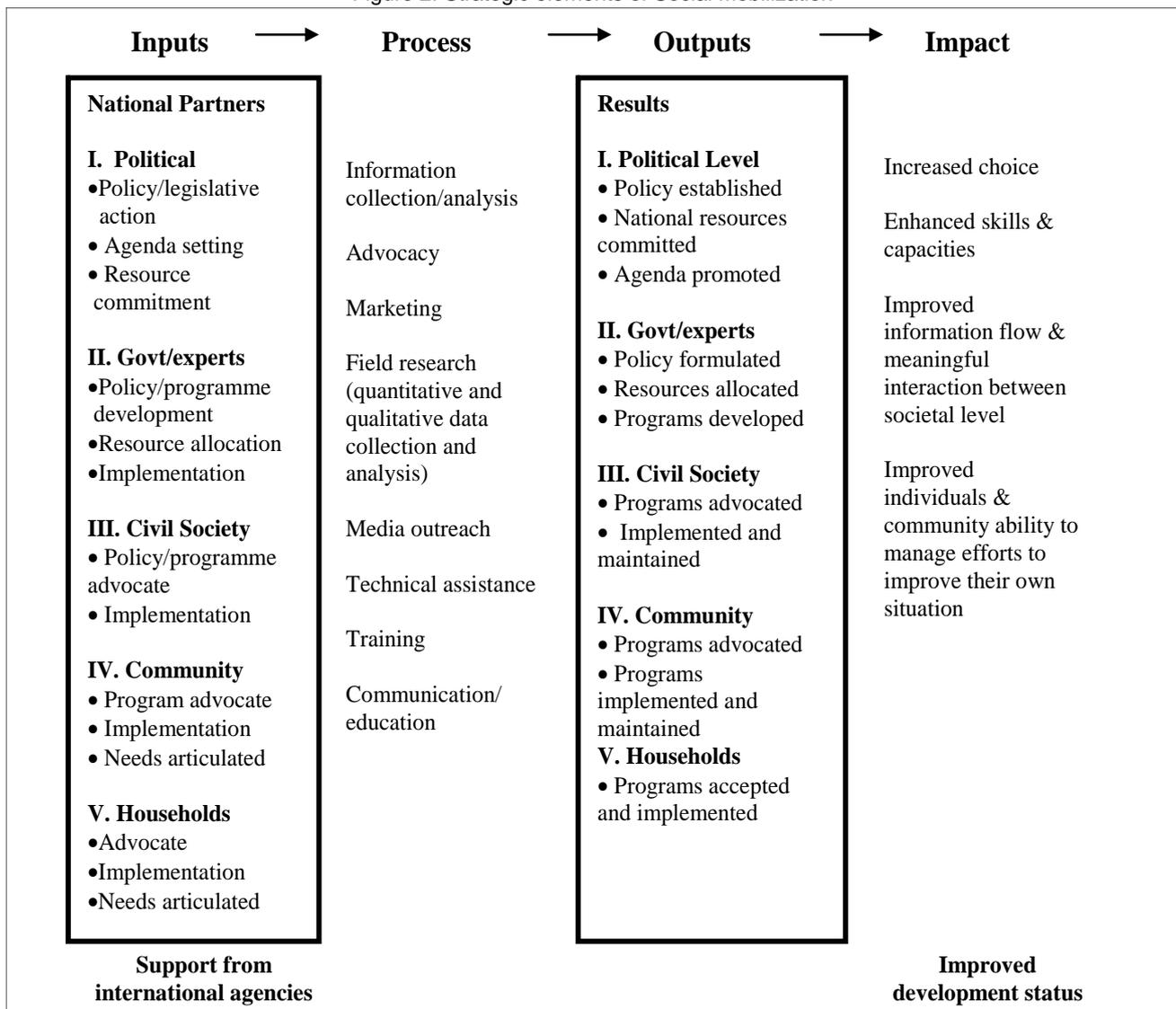
Highlighting economic benefits: Given the overwhelming emphasis on economic development at almost all levels of public authority, the economic benefit of IDD work should be stressed. Focus on cost effectiveness, GDP increases, and improvement in the quality of human capital will be helpful at the policy level.

Updated information: Prompt action should be taken to counteract misinformation, the consequences of which can be long lasting. It is necessary to respond to the exaggerated fear of salt on cardiovascular health. It is equally important to update medical texts about the brain damage dangers of IDD so that new medical and health professionals are in step with the current global effort.

Involving the education sector: It will become critical to bring the education sector into the IDD global fight as a principal stakeholder. School performance is a major responsibility of educators and IDD prevention should be part of their core concerns. Educating oncoming generations about IDD should start with children in schools. There has been ad-hoc collaboration to get IDD messages into school health programs and curricula, but the sector’s participation in IDD elimination should be systematic at all levels of the education ladder.

Salt industry as a key partner: The salt industry should not only produce and market iodized salt, but should be a key player in IDD education at the consumer level. In China, for instance, there are 750,000 licensed salt retailers; they represent a far larger army of IDD messengers than the relatively small pool of health

Figure 2: Strategic elements of Social Mobilization



educators. Salt retailers, especially those in rural areas, interact with consumers on a daily basis and they can focus on IDD, while health educators are often concerned with a wide variety of health issues.

Linking with broader development efforts: Effective partnership among various stakeholders, particularly between the health and salt sectors, should be a priority for the continuing fight. Even within the health and nutrition fields, collaboration between various programs is lacking. Concerted health education efforts should be made to link up with child health, child nutrition, maternal health, mental health, reproductive health, and health promotion colleagues. IDD elimination should be a stepping-stone on the road to many of the MDGs, which have been adopted by all member states of the United Nations.

Conclusion

Sustaining the habit of using iodized salt requires constant reminders. IDD Days, at the national and international level, can serve as the annual occasion to review progress and challenges, to reinvigorate flagging programs, and to encourage public participation via media and special events.

It may be true that no parent will wittingly put his/her child in harm's way, certainly not at the risk of life-long mental impairment, if all that is needed to avoid this danger is iodized salt. But if parents are unaware of the cruel facts of IDD, this truism is immaterial.

Despite communication being so much part of our daily activities, it is often taken for granted by development programme planners. Communication requires professional inputs and should be a deliberate part of all IDD programme designs and implementations.

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Achieving and Sustaining Universal Salt Iodization (USI):

Doing It Well Through Regulation and Enforcement. Lessons Learned from USI in Nigeria

Dora N. Akunyili (Director General, National Agency For Food and Drug Administration and Control ([NAFDAC](#)), Nigeria)

Abstract: Prior to 1993, Iodine Deficiency Disorders (IDD) were recognized as a public health problem in Nigeria. Following a series of international summits, meetings and resolutions, Nigeria initiated its USI program, deriving momentum from three key success factors; political commitment by government, commitment by salt industry and effective multi-sectoral partnership. In 1993, Universal Salt Iodization (USI) law was enacted and made mandatory in Nigeria. Within a period of five years access to adequately iodized salt had grown from a zero base in 1993 to reach an impressive level of 98% of Nigeria's households by 1998. This has been further sustained through aggressive enforcement by government and compliance by the salt industry, and Nigeria currently ranks high on global and regional report cards. In 2005, the goitre rate was 6.2%, down from 20% in 1993. Median Urinary Iodine excretion rate has consistently been over 130 µg/dl since 1999. Improvements in urinary iodine excretion and goitre rates have been substantive. In addition, the 10 point criteria for USI certification have consistently been met, which paved way for Nigeria's certification as the first country in Africa to achieve USI compliance in 2005 by the Network for Sustained Elimination of Iodine Deficiency. This paper summarizes Nigeria USI programme strategies and actions in hopes of assisting countries that have yet to achieve USI.

Key words: Enforcement, fortification, IDD, iodization, monitoring, Nigeria, partnership, regulation, salt, universal, USI

Introduction

Iodine deficiency is the single most common cause of preventable mental retardation and brain damage in the world. It is a major health problem in many parts of the world. IDD causes goitres and decreases the production of hormones (T^4 and T^3) vital to growth and development. In pregnant women, IDD causes mental retardation or cretinism with possible physical disability in children, and can also lead to miscarriage or still birth. Children with IDD can grow up stunted, mentally retarded and incapable of fast learning. Children in iodine depleted populations can have an Intelligent Quotient (IQ) of 10-15 percentage points lower than those of iodine replete populations. The reduction in IQ is irreversible.

Prior to 1993, Iodine Deficiency Disorders (IDD) were recognized as a public health problem in Nigeria. In 2005, the goitre rate was 6.2%, down from 20% in 1993. Median Urinary Iodine excretion rate has consistently been over 130 µg/dl since 1999. Although IDD were recognized as a public health problem in Nigeria for over four decades (Ekpechi 1967), efforts to establish an IDD control programme in Nigeria only gathered momentum after a number of global summits and meetings had been held, in particular, the World Summit for Children in New York (1990), the Policy Conference on Ending Hidden Hunger in Montreal (1991), the International Conference on Nutrition (ICN) in Rome and its subsequent resolutions (1992), the Organization of African Unity (OAU) sponsored Dakar Consensus of 1994, and the African Union (AU) Member States Summits in Addis Ababa (1995) and Cairo (1996). In 1992, a multi-sectoral consensus-building workshop was held in Nigeria on the need to establish Universal Salt Iodization (USI) program. Since the USI law was enacted in 1993, Nigeria managed—within a period of five years—to increase household access to adequately iodized salt from a zero base to an impressive level of 98% already in 1998. Table 1 shows a summary of results of the national assessment of the Nigeria USI programme from 1988 to 2005.

Nigeria programme strategies

Nigeria's success is mainly a result of three factors that have fostered and combined regulation, enforcement and compliance to the USI law: First, political commitment by government to regulation, enforcement and social marketing; Second, commitment by the salt industry; and, third, effective multi-sectoral partnership.

Political commitment by government to regulation, enforcement and social marketing

Salt Iodization was established by law in 1993 in Nigeria and made mandatory. The law (Nigeria Industrial Standard, NIS, 168:1992) stipulates that all food grade salt be fortified at 50ppm at ports and factories, 30ppm at retail. This was followed by the agreement and launch (by the Vice President of Nigeria) of a USI logo for ease of identification of all iodized salt and for communication purposes (Figure 2). The Law is en-

forced through inspection and testing by the Regulatory Agencies, namely, the Standard Organisation of Nigeria (SON) that sets the standards, and the National Agency for Food & Drug Administration and Control (NAFDAC) that enforces the standards.

Stringent penalties are meted out for violators of the law, including destruction of non-iodized or insufficiently iodized salt, closure of factories and payment of stipulated administrative fines backed up by NAFDAC Decree No 15 of 1993 (as amended in 1999).

NAFDAC has successfully monitored the iodized salt market by

halting endemic corruption among government regulatory officers through:

- Restructuring of regulatory processes.
- Staff reorientation and motivation.
- Various welfare packages including initiation and sustenance of “thirteenth” month salary.
- Hard work is rewarded through recognition, commendation letters, promotions, overseas inspection or training.
- Staff members who detect defaulting companies or report on other staff who compromise with defaulting companies are similarly rewarded.
- Corruption is severely punished. Staff involved in aiding or abetting defaulting companies are dismissed.

NAFDAC’s national network of decentralized monitoring system, with offices in all 36 states, and with FCT and laboratories in the six geopolitical zones of the country, offers a framework for effective regulation for salt marketing through strict inspection and enforcement of the USI law.

Awareness of IDD and the need for salt iodization is created and sustained through Social Marketing, with NAFDAC spearheading generic multi-channel communication campaigns on billboards, newspapers, televisions, radios, public notices, posters and publications in both English and vernacular languages. The awareness campaign targets policy-makers, manufacturers, religious/community leaders, consumers and other stakeholders. IDD and USI awareness is now integrated into the activities of NAFDAC’s Consumer Safety Clubs and established in Nigerian high schools.

In addition to social marketing, sensitization of the public is often achieved through NAFDAC-championed high level advocacy that is led by the Wife of the President, Ministers of Health, Industry and Commerce, and traditional rulers.

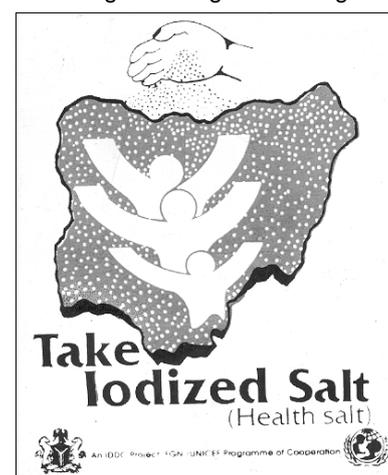
Commitment by the salt industry

The iodization of 98% of salt consumed in Nigeria is concentrated in the hands of 5 large domestic salt companies, with 640,000 MT capacity per year. This makes inspection and monitoring easier. The remaining

Table 1: Summary of results of assessment of the Nigeria USI program (1993-2005)

Year	Name of Study	Results
1988	Pre-USI Programme in 16 endemic states	67% TGR
1993	Baseline Survey	40% iodization; 20% goitre rate
1999	Sentinel site survey	98% USI, 11% goitre rate 133.9 µg/dl median urinary excretion
1999	Multi Indicator Cluster Survey	99.1% (urban) and 98.2% (rural) iodization
2001	National Food Consumption and Nutrition Survey	150 µg/dl median urinary iodine excretion rate
2002	National assessments	Factory/Distributor: 100% iodization Retail & Household: 98% iodization
2003	NDHS	97% adequate iodization at HH level, 1% inadequate
2003	National Assessment	99% iodization at distributor and retail levels
2005	National Assessment in households	98% iodization (90.5% adequate, 7.5% inadequate) and 2% non-iodization
2005	Goitre Prevalence Survey	6.2% TGR, 131 µg/dl

Figure 1: Nigeria USI logo



2% consists of salt smuggled into the country or produced by cottage industries in Nigeria. To attempt to ensure iodization of the remaining 2% non-iodized salt, NAFDAC has held a series of advocacy meetings with religious and traditional leaders on the need for salt to be iodized. Large salt producers are encouraged to buy the salt produced by the cottage scale producers. The larger salt processors are also encouraged to sell the non-iodized salt purchased from cottage industries to soap manufacturers and tanning industries. Salt manufacturers have an umbrella association for effective self-regulation and to ensure distribution of adequately iodized salt. They have taken the iodization programme as part of their social responsibility. NAFDAC also encourages salt industries to have efficient in-house quality assurance (QA) and quality control (QC) systems which are duly certified by the Agency.

NAFDAC recently imposed a ban on salt packaging in 25kg sacs, and gave the salt industries time until the end of 2007 to mandatorily pack salt for domestic use in small retail sizes (1kg and less) to enhance retention of quality iodine and content.

The Nigeria USI programme operates with minimal domestic financing and donor investment. The incremental cost of potassium iodate (KIO_3) is absorbed within the price of the salt, while the channels of distribution as well as brand marketing are effectively driven and funded by the industries, using the IDD logo as an official marketing emblem for iodized salt. NAFDAC's high profile image and reputation for protecting the rights of consumers also drives industry commitment and strengthens the confidence of consumers and other stakeholders in the program.

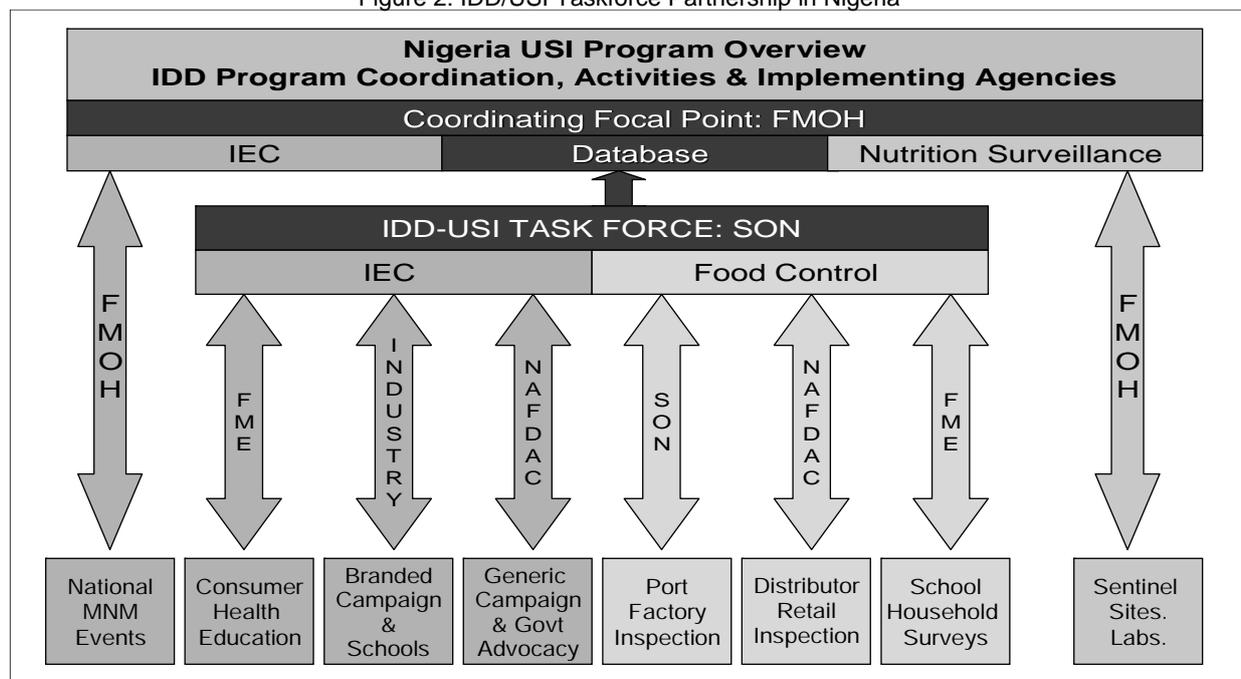
Multi-sectoral partnership

An IDD/USI taskforce was formed by public and private sector partners with well defined complementary roles and responsibilities (Figure 3). The taskforce builds human and technical capacity, monitors changes in production and consumption levels, and identifies gaps that may negatively impact the effectiveness and sustainability of the USI program. It has also opened multi-sectoral reporting channels to implement and monitor USI.

The defined roles and responsibilities of the various partners are as follows:

- The Taskforce Secretariat synthesizes data from factory, distributor, retail and household surveys and meets quarterly to review progress of USI.
- National Planning Commission (NPC) is the inter-sectoral planning unit of the Federal Government.
- Federal Ministry of Health formulates policies and assesses the impact of the program.
- Standards Organization of Nigeria (SON) sets and updates the standards, for instance, revision of the use of potassium iodide to potassium iodate as the fortificant, and change of analytical methods.
- NAFDAC enforces compliance via monitoring at factory, distributor, wholesale and retail levels, creates awareness, develops strategies to address the 2% shortfall in iodization, and sanctions defaulters. Salt is tested in the field by NAFDAC inspectors using qualitative iodine field test-kits and samples that have zero iodine level are taken to NAFDAC laboratories for confirmation by titration analysis.
- The Federal Ministry of Education (FME) monitors availability of iodized salt at the household level. Monitoring household access to quality iodized salt is done through a national sample of primary schools, with children bringing salt samples from their homes to school for testing. Samples of urine of the pupils are also analyzed for corresponding values of urinary iodine.
- Salt Industries (5 producers, with 8 factories) manufacture salt to standards set by SON, implement brand marketing, distribute products and engage in self-regulation.
- The media and consumer protection associations create awareness and advocate consumer interest.
- NGOs and research institutions provide technical support for research and analysis of samples, e.g. the Iodine Reference Laboratories.
- Donor agencies and development partners (e.g. UNICEF, Kiwanis International, and USAID) provide technical & financial support for training, monitoring, information-sharing as well as behavioural change communication.

Figure 2: IDD/USI Taskforce Partnership in Nigeria



This partnership has enabled all stakeholders to monitor trends in compliance at factory, wholesale, retail and household levels and intervene where necessary.

Results

Results in terms of coverage of iodization:

- *Iodization at factory level:* Since 1995, records of inspection at ports of entry and at salt factories consistently indicate 90-100% of consignments with iodine levels above 50ppm.
- *Iodization at wholesale and retail levels:* Results of wholesale and retail level surveys for 2002, 2003 and 2005 indicate that 97-100% of salt meet the standard of more than 30ppm iodine content. Since 2002, approximately 20,000 salt samples have been analyzed.
- *Access to iodized salt at household level:* Results consistently indicate that access to adequately iodized salt at the household level is over 98%.
- *Median urinary iodine excretion levels:* Biochemical assessments of urinary iodine mirrors the dramatically lower TGR recorded during the 1990s. A study published in Public Health Nutrition in 1998 reported mean levels of urinary iodine content of 146.5 µg/dl with a median of 133.9 µg/dl. In 2002, the study of the 16 endemic states by Egbuta et al reported urinary iodine content of 90-156 µg/dl. These results were reaffirmed by the Nigeria Food Consumption and Nutrition Survey (NFCNS) undertaken by the International Institute of Tropical Agriculture (IITA) in 2001, which found median urinary iodine levels in children under 5 years of age to range from 119 to 309 µg/dl. The UNICEF 2005 National TGR and Urinary Iodine Survey recorded a value of 131 µg/dl urinary iodine level.
- *Total goitre rate:* Studies confirm the impact of Nigeria's USI law on goitre prevalence: In 30 states, people affected dropped from 40 million in 1990 to less than 11 million in 1999 (ICCIDD 2000). The Nigeria 'Damage Assessment Report' (UNICEF/MI 2004) estimated a lower TGR of 7.7%. A national survey in 2005 put the national TGR at 6.2% (UNICEF 2005).

Having achieved sustained 98% of households' access to adequately iodized salt since 1998, a goitre prevalence rate of about 6%, and a median urinary iodine excretion of more than 130 µg/dl since 1999, Nigeria was certified as USI compliant in 2005 by the Network for Sustained Elimination of Iodine Deficiency. This made Nigeria the first country in Africa to achieve this feat. Nigeria currently ranks 6th on the global iodized salt consumption out of the 200 countries assessed and reported on the 2006 Global Score Card. Furthermore, the 10 point criteria for USI certification had been met, namely evidence of political commitment, a functional national multi-disciplinary body on IDD/USI, a national executive officer for IDD elimination, legislation and regulation on USI, commitment to assessment and re-assessment of progress,

public education and social mobilization, regular data at factory, retail and household levels, regular laboratory data on urinary iodine, industry maintenance of quality control, and a database for recording results of monitoring procedures. Nigeria has propelled West Africa to achieve household access to iodized salt of 71%; this figure would have dropped to 46% without Nigeria (Figure 3).

Conclusion

IDD is a silent threat to the growth and development of the child and also to national development. According to projections made by UNICEF and the Micronutrient Initiative (2004), the national benefits derived from a decrease in TGR (from 20% in 1993 to 7.7% estimated for 2004 in Nigeria, thereby saving 590,000 babies from intellectual impairments annually), would result in productivity gains of \$220 million per year to the Nigerian economy.

From Nigeria's success story, it is clear that with Government and public support, determination and hard work by key players, any country can do it. With the lessons learned from USI, Nigeria have decided to move beyond salt iodization and a range of staple foods are now fortified with Vitamin A.

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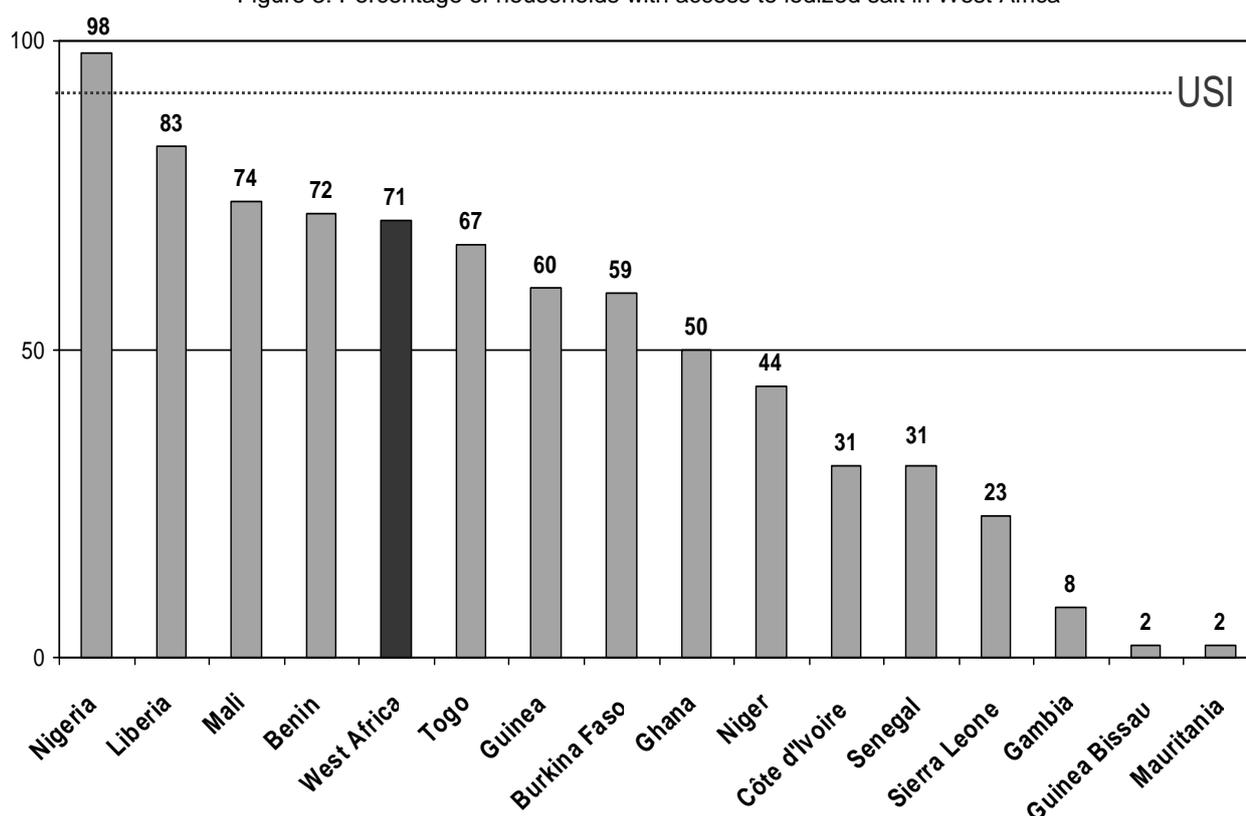
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Figure 3: Percentage of households with access to iodized salt in West Africa



Achieving and Sustaining USI:

Doing It Well Through Quality Assurance, Monitoring and Impact Evaluation

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Abstract: Assuring adequate iodine nutrition is key to preventing iodine deficiency disorders (IDD). The primary strategy for assuring adequate iodine nutrition in most populations is through the iodization of salt. The methods for assuring salt is adequately iodized and the assessment of iodine nutrition of populations are described.

Key words: assessment tool, IDD, iodine, iodized, ISPAT, quality assurance, monitoring, impact evaluation, salt, USI

Salt iodization and impact evaluation

To successfully eliminate iodine deficiency disorders (IDD), all salt for human and animal consumption must be properly fortified with iodine. The Iodized Salt Program Assessment Tool (ISPAT) is useful for reviewing a national salt iodization program, including its monitoring and evaluation (Houston et al 1999). We first discuss issues involved with ensuring that salt is properly iodized and then discuss assessment of the iodine nutrition status of a population.

Salt iodization at production and import

The goal of Universal Salt Iodization (USI) is to ensure that all salt for human and animal consumption, both locally produced and imported, is properly iodized according to the national legislative and regulatory environment (Nathan 1999). In addition to quality assurance by the producer of the iodization process (“internal monitoring”), inspection by government authorities (“external monitoring”) is needed to assess the quality of the internal monitoring and, in cases of non compliance, enforce fines or other penalties (Sullivan et al 1995). The testing of salt for iodine levels usually requires the use of both quantitative and semi-quantitative tests.

Importers of salt must ensure that the salt they order complies with national regulations, and the appropriate government agency needs to monitor points of entry. Points of entry must be monitored to prevent non-iodized or improperly iodized salt from entering the country. To ensure proper iodization of salt, the importer or government may enter into contracts with outside agencies that specialize in ensuring the quality of products to be imported (Sullivan et al 1995).

For the long-term success of the elimination of iodine deficiency disorders, all salt must be iodized to correct levels. Too little iodine in the salt can allow the negative consequences of iodine deficiency to occur, and too much iodine in the salt may increase the risk of adverse events, such as iodine induced thyrotoxicosis, and can undermine the public image of USI (WHO/UNICEF/ICCIDD 1998).

The Republic of Georgia has a history of iodine deficiency (UNICEF 2004a). In February 2005, the government enacted a law that banned the import and sale of non iodized salt. Currently, all iodized salt in Georgia for both human and animal consumption is imported, primarily from the Ukraine, with small amounts from Greece, Azerbaijan, Russia and Turkey. Regulations mandate iodization at 40 ± 15 parts per million (ppm), in line with the World Health Organization (WHO) criteria of 20-40 ppm (WHO/UNICEF/ICCIDD 1996). At the import level, all salt must pass through one of three major ports (Tbilisi, Batumi or Poti), where the Customs Department inspects the salt and, if satisfactory, provides a certificate of authenticity stating that the salt is iodized (UNICEF 2004b).

Monitoring at wholesale and retail levels

Some countries may be able to monitor iodized salt at the wholesale and retail levels. Usually the goal of monitoring at these levels is to ensure that wholesalers and retailers purchase and distribute only iodized salt. Some countries may have a governmental infrastructure for conducting inspections at these levels in a cost effective manner.

In Georgia, little monitoring currently takes place at the wholesale or retail level. The Ministry of Agriculture and State Standards Department are responsible for inspecting salt availability, storage, and packaging. As

part of a proposed national USI monitoring system, wholesale and retail shops will be randomly selected every four months for inspection of salt packaging and labelling and for testing of salt iodine content.

Proportion of households using iodized salt

The international goal for USI is for >90% of a representative sample of households to be using adequately iodized salt, defined as ≥ 15 ppm iodine (WHO/UNICEF/ICCIDD 2001) (Table 1). Currently, an estimated 70% of households worldwide use iodized salt (UNICEF 2006), up from less than 20% in the early 1990s (WHO/UNICEF/ICCIDD 1999). The percentage of households using iodized salt varies by UNICEF region of the world, from a low of 50% coverage in Central and Eastern Europe (CEE) and the Commonwealth of Independent States (CIS) region to a high of 86% in Latin America and the Caribbean (Table 2). In Europe, it has been estimated that 27% of salt is iodized (WHO/UNICEF 2007). A representative household survey to assess the proportion of households using iodized salt should be performed once it has been determined that the production and import of iodized salt appears to be successful. The testing of salt from households is usually performed in UNICEF Multiple Indicator Cluster Surveys (MICS) (www.childinfo.org), in Demographic and Health Surveys (DHS) (www.measuredhs.com), and in other nutrition- and health-related surveys. Frequently, salt is tested in the household by using a semi-quantitative method referred to as “rapid test kits” (Sullivan et al 1995). These rapid test kits are simple to use and provide results within a few seconds. Unfortunately, because the sensitivity and specificity of rapid test kit results can be low, samples of salt should be obtained from the households and sent to a laboratory where a quantitative test can be performed, either from all households or from a sample (Gorstein et al 2007). Through quantitative salt testing, the proportion of household salt with too little iodine or with excess iodine can be determined as well as the average iodine content.

Household-based surveys can also collect information on availability of original packaging, brand name and date of expiration, and the presence or absence of iodization labelling. Knowledge, attitudes, and practices concerning iodized salt and iodine deficiency can also be examined.

In countries where the iodization of salt is mandatory, determining the proportion of households using adequately iodized salt provides an external assessment of the adequacy of the monitoring of salt at production and import and can also detect “black market” salt. Black market salt is salt that does not undergo monitoring at the registered production and import sites. This product may be illegally produced local salt, salt for industrial use redirected to households, or illegally imported salt. The motivation behind black market salt is clear: because iodized salt costs more than non iodized salt, some individuals will knowingly sell non iodized salt at a reduced price, or will package non iodized salt as iodized, sometimes copying labels from legitimate salt producers. Once black market salt has been identified, these illegal sources of salt must be shut down.

In a national survey of IDD prevalence conducted by the government of Georgia and UNICEF in November 2005, the iodine content of household salt was meas-

Table 2: Percentage of households consuming iodized salt, 1998-2005. Source: UNICEF (2007).

Regions/Level of development	Household consumption of iodized salt
Sub-Saharan Africa	67
Eastern and Southern Africa	60
West and Central Africa	73
Middle East and North Africa	65
South Asia	54
East Asia and Pacific	85
Latin America and Caribbean	86
CEE/CIS	50
Industrialized countries	-
Developing countries	71
Least developed countries	53
World	70

Table 1: Summary of criteria for monitoring progress towards sustainable elimination of IDD. Source WHO/UNICEF/ICCIDD (2001).

Indicators	Goals
Salt iodization - Proportion of households using adequately iodized salt*	>90%
Urinary iodine - Proportion of school-age children with a UI below 100 $\mu\text{g/l}$ - Proportion of school-age children with a UI below 50 $\mu\text{g/l}$	<50%
	<20%

*Internationally defined as ≥ 15 ppm

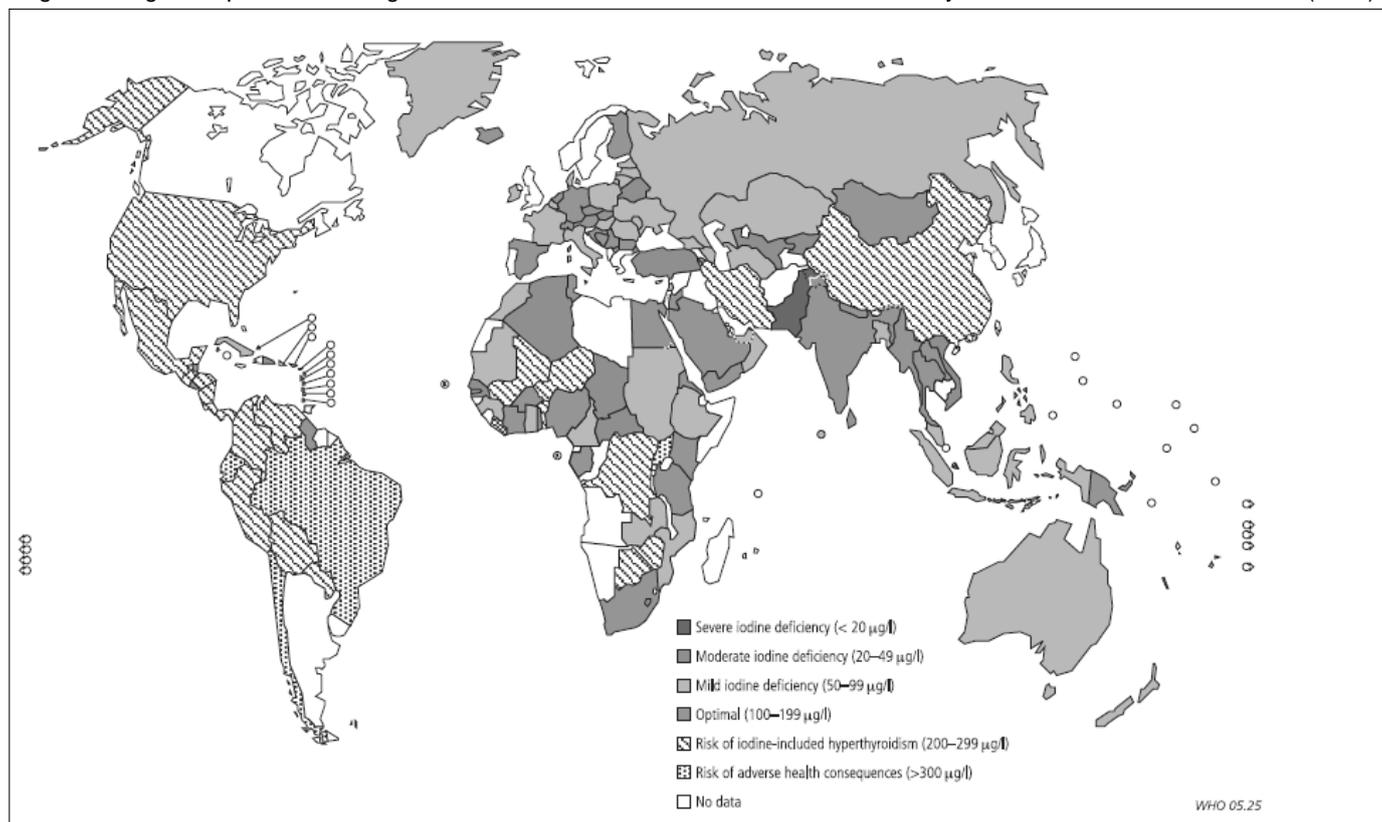
ured by asking a representative group of school-aged children to obtain a sample of salt from their homes. The children's parents were asked to complete a short questionnaire which included the manufacturer and expiration date of the household salt. To measure the iodine content of this household salt, the field team used two rapid test kits (one for potassium iodate and one for potassium iodide). A sub-sample of household salt samples was randomly selected for testing by iodometric titration. Of 957 salt samples analyzed with rapid test kits, 91% (95% confidence interval [CI]=87, 94) were adequately iodized (≥ 15 ppm). Iodometric titration in 136 salt samples indicated that 94% (95% CI=89, 97) were adequately iodized.

Iodine nutrition status of the population

Once a national USI program appears to be successful, it is important to assess the impact of USI on the iodine nutrition status of the population. An estimated 35% of the world's population, or around 2 billion individuals, have inadequate iodine nutrition (Andersson et al 2005). The degree of public health significance of iodine nutrition (as indicated by urinary iodine results by country) is presented in Figure 1. A Technical Consultation has recommended that a country's iodine status be assessed through urinary iodine levels from representative surveys conducted every 3-5 years (ICCIDD 2007).^{*} Issues involved with performing such a survey include determining the target group(s) and the indicator(s) of iodine deficiency.

Traditionally, surveys of iodine deficiency have been performed in schoolchildren around the ages of 6-12 years to assess the prevalence of goitre. Schoolchildren were a convenient group because investigators could visit schools and easily palpate a large number of children; it was believed that the iodine status in schoolchildren would reflect the iodine status of the general population. Because the developing foetus suffers the greatest damage as a result of iodine deficiency, two other potential target groups are non-pregnant women of childbearing age (usually 15-49 years) and pregnant women. As discussed later, there are criteria for assessing the iodine status of school-age children (WHO/UNICEF/ICCIDD 2001), preschool children, pregnant women, and lactating women (ICCIDD 2007). However, no international criteria are available for non-pregnant, non-lactating women of childbearing age. In household-based surveys, pregnant women, lactating women, and children less than 2 years of age represent a relatively small percentage of the

Figure1: Degree of public health significance of iodine nutrition based on median urinary iodine. Source: Andersson et al (2005).



^{*}For more details on how to perform a cross-sectional survey of micronutrient status, please refer to Gorstein et al (2007).

population and, if used as a target group, would dramatically increase the number of households that would need to be visited in order to achieve a given sample size. In addition, the collection of urine specimens from children less than 2 years of age in a cross-sectional survey would be difficult.

Although palpation is useful in identifying moderate to severe levels of iodine deficiency, it is less useful in situations involving mild levels of iodine deficiency because of low sensitivity and specificity as well as a high inter-observer variation in distinguishing between grade 0 (no goitre) and grade 1 goitre (a palpable but not visible goitre) (WHO/UNICEF/ICCIDD 2001). In addition, when the iodine nutrition status of a population improves, it may take years for most palpable goitres to return to normal size (Zhao et al 1999, Zimmerman et al 2003). These factors call into question the usefulness of palpation to assess changes in iodine status over time (Gorstein et al 2001). Ultrasonography of the thyroid gland to estimate thyroid volume can provide a relatively precise measurement of thyroid size, but inter-observer variation has been high. A number of thyroid volume reference curves have been published over the past 15 years (Sullivan et al 2005), and thyroid volume is also slow to change in an evolving iodine nutrition situation (Zhao et al 1999). Use of thyroid stimulating hormone (TSH) and thyroglobin (Tg) have been proposed as indicators of iodine status, but their usefulness in determining iodine status from cross-sectional surveys has had variable results (Copeland et al 2002, Sullivan et al 2005, Zimmermann et al 2006).

Because of concerns about the usefulness of thyroid size and biological markers of thyroid function, cross-sectional surveys should use urinary iodine levels as the primary indicator for assessing iodine nutrition status. Currently WHO has established optimal median casual urinary iodine levels of 100-199 µg/L for school-age children and of 150-249 µg/L for pregnant women (Table 3). For school age children, there are also criteria for the proportion with lower levels of urinary iodine (Table 1). What is not clear is whether it is acceptable to assess only school-age children, only pregnant women or whether both groups should be assessed. Because assessing pregnant women in a household-based survey is inefficient, an alternative strategy would be to sample pregnant women from prenatal care clinics.

While no international values exist for urinary iodine levels in non-pregnant/non-lactating women of child-bearing age, some experts believe the same range for school-age children would be applicable (Delange 2002). Another issue is that the urinary iodine status of school-age children may not reflect the urinary iodine status of women of childbearing age, pregnant and not pregnant (Copeland et al 2002, Caldwell et al 2005a). Consensus is needed on the appropriate target group(s) for assessing iodine nutrition status. In the mean-

Table 3: Epidemiologic criteria for assessing iodine nutrition based on median urinary iodine concentrations in school-aged children, pregnant women, lactating women, and children less than 2 years of age.

Source: For school-age children, WHO/UNICEF/ICCIDD (2001); for all others, ICCIDD (2007).

Median urinary iodine (mg/l)	Iodine intake	Iodine nutrition
School-aged children		
<20	Insufficient	Severe iodine deficiency
20-49	Insufficient	Moderate iodine deficiency
50-99	Insufficient	Mild iodine deficiency
100-199	Adequate	Optimal
200-299	More than adequate	Risk of iodine-induced hyperthyroidism within 5 or 10 years following introduction of iodized salt in susceptible groups
>300	Excessive	Risk of adverse health consequences (iodine-induced hyperthyroidism, auto-immune thyroid disease)
Pregnant women		
<150	Insufficient	
150-249	Adequate	
250-499	More than adequate	
≥500	Excessive	
Lactating women and children less than 2 years old		
<100	Insufficient	
≥100	Adequate	

time, in cross-sectional surveys, it might be prudent to assess the iodine nutrition status of school-age children and to sample pregnant women from prenatal clinics.

In some national cross-sectional surveys, the urinary iodine laboratory results have been considered invalid. Therefore laboratories must use recommended procedures for measuring iodine in urine (WHO 2001), have internal quality control, and also participate in an external quality control program. One such external quality control program is the Centers for Disease Control and Prevention's (CDC's) Ensuring Quality of Urinary Iodine Procedures Program (EQUIP) (Caldwell et al 2005b).

In Georgia's 2005 national IDD survey, urine samples were collected from 30 randomly selected students aged 6-12 years from each of 30 representative secondary schools. Iodine content was measured at Centre Hospitalier Universitaire Saint-Pierre in Brussels, Belgium. This laboratory is part of the International Resource Laboratories for Iodine (IRLI) Network. The median urinary iodine was 321 µg/L, and only 4.4% of the samples were below 100 µg/L.

In Switzerland, a survey conducted in 1999 led to concern over low median urinary iodine levels in school children and pregnant women (Zimmerman et al 2005). Because of these findings, the level of iodine in salt was increased from 15 ppm to 20 ppm. A survey in 2004 found improvements in the urinary iodine levels in both groups.

Iodized salt used in food production

Compared to the experience in assessing the proportion of households using iodized salt, there is relatively little experience in addressing the use of iodized salt in the food industry. Some countries require only table salt to be iodized, whereas others require both table salt and salt used by the food industry to be iodized. In developed countries, there is concern that only a small proportion of salt in the diet is derived from table salt and that most salt comes from processed foods, which in most countries is not iodized. The use and monitoring of iodized salt in the food industry is an area in need of further investigation.

Indicators of sustained elimination of IDD

A number of countries have been successful in eliminating iodine deficiency but have subsequently lapsed into significant iodine deficiency problems (for example, see Stewart et al 1996). WHO has provided a list of programmatic indicators important to ensuring the sustained elimination of IDD (Table 4). The [Network for Sustained Elimination of Iodine Deficiency](#), when requested, can provide an external assessment of a country's progress towards achieving USI.

In Georgia, the rapid virtual elimination of IDD is likely due to the effective implementation of legislation mandating the iodization of salt. Georgia has a strong regulatory structure, and the government has been willing and able to enforce legislation on the iodization of salt. For example, the chair of the Georgian National Fortification Alliance is also an influential member of parliament who regulates enforcement mechanisms. To sustain elimination of IDD, Georgia has introduced an ongoing monitoring and evaluation system to assess salt quality at all levels of the iodized salt supply. Ongoing political commitment and cooperation from salt importers in ensuring import of iodized salt are important for sustained elimination of IDD.

Conclusions

The proven strategy for eliminating iodine deficiency in the vast majority of populations is through the iodization of all salt for human and animal consumption. Key to this strategy is ensuring that all locally produced and imported salt meets the national standards for iodine levels. Periodic surveys should assess the proportion of households using iodized salt and the iodine nutrition status of the population. Iodine deficiency can be eliminated, but it requires continual oversight to ensure sustained success.

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Achieving and sustaining USI:

Operational considerations and challenges of involving small(er) salt processors

Experiences of the UN World Food Programme and the Micronutrient Initiative

Tina van den Briel ([WFP](#), Rome), Mohamed Mansour ([WFP](#), Rome), Luc Lavolette ([Micronutrient Initiative](#), New Delhi), Rizwan Yusufali ([Micronutrient Initiative](#), Johannesburg)

*Abstract: Enormous progress has been made in the elimination of iodine deficiency with the adoption of universal salt iodization. With 70% of households consuming iodized salt globally, more than 80 million newborns are annually protected from losses in mental capacity due to iodine deficiency. However, 70% is not enough. Every year approximately 38 million children are still born unprotected from iodine deficiency. 70% of these children live in just 25 countries. Most of these countries are also characterized by large numbers of very vulnerable, food insecure population groups, the most needy, 'hard-to-reach' people who usually have very little access to fortified foods; including iodized salt. The UN World Food Programme (WFP) teamed up with the Micronutrient Initiative (MI) to further build and strengthen the infrastructure required for iodized salt production in a number of countries. This paper focuses on some of the issues and challenges faced in the effort to expand and strengthen the supply-side of iodized salt production by working with small and medium-scale salt processors.**

Key words: Cottage scale, iodization, salt, small scale, medium scale, processors, self-help group

Introduction

Enormous progress has been made in the last decade since the international community, in coordination with national governments, set the goal for the elimination of iodine deficiency by 2000, and adopted universal salt iodization as the most effective strategy to achieve this goal. Between 1992 and 2000, the percentage of households consuming iodized salt increased from 20% to 70%, resulting in the annual protection of more than 80 million newborns in the world from losses in mental capacity due to iodine deficiency. However, 70% is not enough. Every year approximately 38 million children are still born unprotected from iodine deficiency; 70% of these children live in just 25 countries (UNICEF 2006). There is also evidence of backsliding among countries that were successful in controlling iodine deficiency in the past.

Among those 25 countries, UNICEF with its international partners identified sixteen "make or break" countries with the intention to ensure extended support beyond 2005. The selection criteria were: high number of unprotected newborns, low level of salt iodization, large salt export activities, as well as a need for special advocacy and professional support to renew strategies of the national IDD elimination programme. These countries were: Afghanistan, Angola, Bangladesh, China, Egypt, Ethiopia, Ghana, India, Indonesia, Niger, Pakistan, Philippines, Russian Federation, Senegal, Sudan and Ukraine.

Most of these countries are also characterized by large numbers of very vulnerable, food insecure population groups; the most needy, 'hard-to-reach' people who usually have very little access to fortified foods, including iodized salt. The UN World Food Programme WFP has ongoing programmes in these and many other countries and distributes iodized salt, as per its nutrition policies, wherever people are fully dependent on food assistance and thus are entitled to receive a general ration of cereals, pulses, fortified blended foods, fortified vegetable oil and salt. World wide WFP procures an average of 18,000 metric tons (MT) of iodized salt per year (average for period 2000 – 2006), supplying an estimated 10 million of the most vulnerable people per year with iodized salt. This salt is bought from 48 countries all over the world. In a few cases in the past WFP assisted producers in setting up the required machinery to iodize salt.

However, a grant from the Canadian International Development Agency enabled WFP to team up with the Micronutrient Initiative (MI) in 2005 to further build and strengthen the infrastructure required for iodized salt production in a number of countries. MI already had extensive experience with setting up and providing technical support to salt iodization programmes, and was therefore a logical partner in this initiative. Selected for this specific initiative were some of the countries classified as 'make or break': Ghana, India, Pakistan, Senegal and Sudan. At the country level, partnerships were established with the respective governments, the

* This paper refers to interactions with salt processors rather than salt producers because iodization occurs at the time of salt processing. In some cases processing is done by the producers themselves, but in others it is the purview of separate agents.

private sector, UNICEF, NGOs and other agencies as required.

Operational challenges: the case of the small to medium-scale salt processors

The existing salt production and processing infrastructure in these selected countries varies considerably; some countries still having large numbers of small to very small salt farmers, often involved in salt production only on a seasonal basis. For instance, in 7 out of the 10 salt producing villages in Rajasthan, India, there are 328 small (between 500 and 2500 MT per year) and 178 medium size (between 2500 and 15000 MT) salt producers. In Ghana and Senegal, there are many hundreds of salt farmers, men and women, unorganized and scattered along the distant and sometimes inaccessible fluvial and lagoon areas of these countries. In Pakistan, there are 1172 salt processors nationwide, out of which 165 scattered in 29 districts of the Northern provinces are being supported by the WFP/MI joint venture. In contrast, the major part of salt processing in Sudan is in the hands of only 16 processors, with a capacity ranging between 6,000 to 30,000 MT per year. These facts underscore the importance of focusing on small and medium-scale salt processors in the effort to expand and strengthen the supply side of iodized salt production .

Just like small farmers almost anywhere in the world, small salt processors are left behind in product development, thus not benefiting from any economies of scale. They pay relatively more for productive inputs, transportation, and access to markets. In the medium to longer term, and in the context of an increasingly competitive market, with a growing demand for quality products, their survival is unlikely.

This situation presents a challenging development paradigm: the retention of employment opportunities in rural areas remains an important objective for many governments, while at the same time free-market competition works against this tendency by driving out the smallest and poorest processors for whom this business is their livelihood.

Meanwhile the medium to small salt processors in e.g. Ghana, Senegal and India still provide an estimated 30 to 40 % of total salt production. It is these small processors that are the suppliers of much of the un-iodized salt that is consumed by the poorest segments of the population in those countries. The amount of time it will take for these small processors to be pushed out of business depends on a range of factors, including the governments' policies and enforcement of legislation by regulatory authorities and the degree to which these processors, perhaps with some initial help from external resources, are able to compete and adapt to a changing business environment.

Operational responses

Formation of self-help groups or cooperatives

Following extensive assessments of the salt production and processing sector carried out in the countries concerned, many hundreds of small salt processors were identified as in need of technical and infrastructural support to be able to iodize the salt which they process. As it is impossible, both from an operational and economic point of view, to support such large numbers of salt processors, these processors had to be organized into viable units to be able to absorb technical and financial inputs and to penetrate the iodized salt market. Social organization of salt processors resulted in the formation or enhancement of various types of cooperatives, organizations of mutual interest, and professional associations. These consisted of 15 Self Help Groups of small salt producers in Rajasthan State (India), one provincial and 29 district salt processors associations grouping 165 salt processors in Pakistan, one Salt Producers Association in Sudan, 2 medium size and 2 clusters (more than 200 members each) of Cottage Scale salt producers in Ghana, and 14 Economic Interest Groups in Senegal.

Once these groups were organized, but before any technical support was given, fifty formal letters of agreement were signed between the groups, WFP and MI, spelling out the rights and contributions of each party, the future obligations of salt processors in terms of adequate iodization, upkeep and maintenance of any donated inputs and procurement of potassium iodate (KIO₃), and the consequences for non-compliance. For example, in India, if after a review a processor is determined to be non-compliant, he is fined an amount relative to the value of free inputs (equipment, KIO₃) provided and if the non-compliance is repeated, he is

disqualified from the program.

Development of specific iodization equipment catered to the needs of producers

Fortification equipment seen during the field assessments was frequently sitting idle, rusted, or scavenged for parts. These units were not used because they were not designed for the capacity of the small salt operations and did not take into account the movement and handling of salt within those facilities. The “one size fits all” units provided in the past resulted in excessive costs and extra handling of salt, which in turn have discouraged continuous salt iodization.

It was therefore critical that appropriate equipment and technology be designed and applied. Based on thorough investigations and consultations with small salt processors, the re-design of iodization units was tailored to their needs and requirements. The units were tested first and in some cases modified before being introduced. Equipment support and commissioning was backed up by on site training in iodization techniques as well as in the use and maintenance of the equipment. All equipment was provided with essential spare parts for regular servicing and included stitching machines for packaging.

Training, monitoring and quality control

In addition to training in iodization, adequate use of potassium iodate, and equipment operation and maintenance, salt processors were trained to enhance their record keeping and management skills, basic business management, and internal quality control. All countries involved in this initiative have established a reliable monitoring system providing the basis for regular and timely reporting on essential indicators including production of iodized salt, use of KIO_3 and, in some cases, availability of iodized salt at the market place. Internal quality control is pursued in all countries although there is some variation in the implementation and performance of the latter activity. The Small Salt Processors - Self Help Groups in India have provided a good model for routine self-administered quality control using quantitative methods. The use of salt extenders has proved very effective in providing support to small producers and establishing a functional and reliable monitoring system. Salt extenders are external agents who provide regular, independent monitoring while also collecting feedback from processors. In addition to providing unbiased and timely information to project managers and government officials, they also assist in solving technical problems relating to equipment and in addressing supply constraints (e.g. KIO_3 availability). Through their regular visits to salt processors they serve as an important motivational force. This “extender” approach has also been used successfully in other public health programs such as tuberculosis control programs (rolling out of DOTS) and “integrated child health and nutrition days”.

Models for the provision of Potassium Iodate

Clearly, a major requirement for small processors is access to a sustainable and secure procurement chain for potassium iodate that is also affordable. One of the major inputs of this initiative is the provision of subsidized or free KIO_3 with parallel assistance to the establishment of a commercial, sustainable KIO_3 procurement system. In this regard, Senegal and India seem to lead the way with the establishment of a locally designed procurement model mutually approved by salt processors. In both countries, free or subsidized donations of KIO_3 have contributed to revolving funds managed directly by the producers' organization, or indirectly by a subsidiary procurement unit, which has been entrusted with the responsibility of purchasing and selling KIO_3 to the salt producers. In Pakistan, the project is in line with the national consensus to phase out the subsidy of KIO_3 gradually until complete disengagement is achieved by 2010. Potassium iodate is channelled through the salt processors' associations which buy it at a subsidized price and sell it to individual salt processors at an increasingly diminished subsidy rate. Sudan and Ghana are still assessing ways to phase out subsidy.

Accessing new markets

As learned from previous experience, small salt processors need assistance and even – initially- protection in order to stay in business. Some interesting experiments with promises of success are being undertaken to assist small salt processors in accessing competitive salt markets. In India, small processors are linked to

public food distribution programmes such as Mid Day Meal (MDM), Integrated Child Development Services (ICDS), and NGO special intervention programmes. In Ghana, women's groups in the north are supplied with salt by small processors and assisted by the project in transportation and packaging to ensure regular availability of iodized salt at an affordable price among poor populations with the highest prevalence of iodine deficiency. This has a dual advantage; smaller processors can carve out new markets for their product and access to iodized salt is created among the more vulnerable segments of the population.

Achievements, lessons learned and remaining challenges

The efforts involved in WFP and MI's initiative to work with and adjust inputs as well as technical support to the specific, well defined needs of small and medium scale salt processors were much more difficult and time consuming than originally envisaged. This is in part due to the fact that many of these processors are not part of the formal economy and are sometimes reluctant to join a project that will effectively 'formalize' them. However, those who have joined have seen that the benefits and, most importantly, their income earning capacity, outweigh the costs (e.g. taxation). This outcome has resulted in other salt processors seeking to join the programme. In retrospect, starting with a smaller number of processors and setting an example would probably have made it easier to enlist processors who were initially reluctant.

Clustering processors helps to bring down the costs of production and transport, thus putting producers in a better position to compete in the market. It also facilitates quality control, which in turn makes it easier to access a market for the salt because quality can be assured. Linking up with government systems for monitoring and quality assurance and reinforcing those systems as much as possible is essential. In addition, working with groups of processors provides opportunities to help ensure better care of the labourers in terms of protective wear, water, sanitation and health insurance.

Community ownership is an obvious and clear-cut criterion for success. In that context, it is also important to set clear criteria from the start as to which type of processors, in terms of production capacity, will be eligible to join the programme. The criteria should ideally be set in a transparent and participatory manner to avoid misunderstandings at the community level.

Once engaged at this level of collaboration and support, one is faced with the question as to where to draw a line between engaging with small processors to get their salt iodized and a more comprehensive approach in the realm of small and medium enterprise development work, which would lead to improving their overall business performance. It is important to consider the small and medium processors as part of a larger system that is influenced by developments in government policies and the market. On that basis, a judgment call needs to be made as to whether the small processors will remain in business long enough to make it worthwhile to engage with them. However, given the fact that their contribution to overall salt production is still very big (e.g. in Pakistan they process at least 85% of the salt) and that promotion of and support to salt iodization efforts are relatively inexpensive, it has been deemed worthwhile even if on a shorter-term basis.

Conclusion

By March 2008 a total of approximately 85,000 tons of iodized salt is expected to have been produced through this initiative – enough to meet the requirements of 42.5 million consumers. However, many challenges still have to be met to consolidate and sustain the current achievements; such as: enhancing the self-regulatory mechanisms of salt producers, improving government capacity to monitor USI and enforce legislation, and ensuring sustainability of production of iodized salt by salt producers through improved competitiveness and creation of commercial procurement services of KIO₃. However, even with these achievements USI cannot be achieved in the five countries described (Ghana, India, Pakistan, Senegal and Sudan), unless the same support is extended beyond this initial experiment to include all eligible smaller salt producers.

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Comments from the SCN News USI peer review team

The ten articles focusing on Universal Salt Iodization (USI) included in this SCN News were peer reviewed by members of the team listed below. There are a number of important policy and programme lessons that the peer review team wishes to share, which they feel are relevant to the broader nutrition agenda of accelerating the transfer of scientific knowledge into practice. These go beyond those referred to by Venkatesh Mannar in his editorial overview.

The first lesson is about following due process in order to create policy leverage at the national level. The importance of the normative voice of the World Health Organization at the country level was clearly understood by the architects of USI. As discussed in the papers by Hetzel and Gautam, the World Health Assembly was used to pass resolutions which pushed for the virtual elimination of IDD and for USI. The channel used to prepare the ground for these resolutions was the WHO/UNICEF joint committee of the health policy as mentioned by Hetzel. The SCN Working Group on IDD helped provide the space where the multiple actors (UN agencies, bilateral partners and non-government civil society actors) could contribute to the design, articulation and ongoing refinement of the IDD/USI strategy during the period 1994 to 2000.

The second lesson concerns the need to set standards beyond just preventing gross clinical deficiency. Prior to 1990, for a country to be considered to have an IDD problem a survey was needed to show the presence of goitre in school children. As the science evolved however, it became clear that Hetzel's spectrum of IDD was not only affecting populations which had individuals with visible goitres. Sub-clinical deficiencies, such as inadequate thyroid stimulating hormone (TSH) levels, affect newborns even in populations with no visible goitres. This realization led to the switching of goals from the virtual elimination of IDD as declared at the World Summit for Children in 1990 to USI of the WHA resolution in 1994 that became the goal at the UNGASS in 2002.

The third lesson is about making states responsible for achieving nutrition goals. Passing WHA resolutions for IDD and USI, as well as the WSC IDD elimination goal and the UNGASS USI goal has allowed the country level local champions and the extended network of supporters and facilitators including the UN agencies, to follow up with the national governments and ministries of health to push for action to get salt iodized. Although the role of the private sector is essential for getting the job done, as has been described in the paper of de Jong, the stewardship function of national governments is still critically important, as Haxton alludes to in his paper. While the examples of China and Nigeria described by Akunyili and Chen et al in their papers are good ones, there are many other nation states that still have to step up to the plate and shoulder these responsibilities. These include some large and relatively more developed countries such as India, Korea and Pakistan for example, with only 57%, 40% and 17% respectively of their household salt adequately iodized.

The fourth lesson is the importance of continuous monitoring and feedback of USI and IDD programmes in all countries. The use of varying levels of sophistication in monitoring the adequacy of national IDD mechanisms is well covered in the paper by Sullivan et al. This is not only a developing country issue but one that all countries have to pay attention to. Evidence of continuing hypothyroidism in Switzerland in the late eighties for example, led to the levels of iodine in salt being raised in the early nineties, which successfully resolved the problem.

The fifth lesson is that not all nutrition policy is necessarily based on a hard bed of evidence derived from randomized controlled trials. Evidence for the efficacy of salt iodization still doesn't exist*, and yet it is the most widely adopted of food fortification measures. The evidence for the effectiveness of salt iodization has been built out of the continuous monitoring and evaluation of large scale national salt iodization programmes. Fortunately, as can be verified by searching on Pub Med, still today a plethora of scientific studies is being published checking whether USI programmes are working as they should be and further refining the population indicator of optimal iodine status.

Lucie Bohac (Iodine Network), Tina van den Briel (WFP), Ian Darnton-Hill (UNICEF), Regina Moench-Pfanner (GAIN), Roger Shrimpton (SCN), Juliawati Untoro (UNICEF)

* Clar C, Wu T, Liu G and Li P (2002) Iodized salt for iodine deficiency disorders. A systematic review. *Endocrinol Metab Clin North Am* 31(3):681-98.

Programme News

Efforts to fast track Universal Salt Iodization

Senegal

Senegal is committed to the elimination of Iodine Deficiencies Disorders (IDDs) at the World Summit for Children in 1990 and at the Organization of African Unity (OAU) International Conference on Assistance to African Children in 1992. In 1994, a Salt Iodization Strategy to fight IDD was adopted which resulted in (i) a normative and regulatory framework for salt iodization and quality control methods; (ii) a Permanent Secretariat headed by the Secretary General of the Presidency and with representatives from the Ministries of Health, Trade, Family, Industry, Cottage Industry, and UNICEF; and, (iii) provision of equipment and supervision of small scale salt producers.

Senegal is a salt producing and exporting country. The estimated production is 450,000 tons of which 87% is exported to other West African countries. Production takes place in one industrial unit, ten semi-industrial units and around 10,000 small-scale producers. The small producers are mainly farmers for whom salt production is a secondary activity and whose techniques are rudimentary and do not guarantee quality. Although 90% of the salt produced in Senegal is iodized, most of it is for export. Household consumption rates of iodized salt increased from 9% in 1996 to 41% in 2005 (MICS1 and DHS4), showing that levels remain insufficient.

In 2006, to fast-track elimination of IDDs, Senegal revived its USI programme through fostering partnerships among the National Committee for the Fight Against Malnutrition (CLM), the Micronutrient Initiative (MI), WFP and UNICEF; replacing the Permanent Secretariat by a Technical Committee for USI (CTIUS) with representatives from Ministries of Health, Trade, Industry and Cottage industry, as well as the private sector; and, involving local governments to support salt iodization in their areas, and NGOs to encourage and facilitate adequate salt iodization among small-scale producers. To date 17 small producers in Kaolack, Fatick, Saint-Louis, Dakar and Kolda, have been supported with equipment and inputs (salt iodization units and potassium iodate). After one year of implementation of this new project, the achievements are as follows :

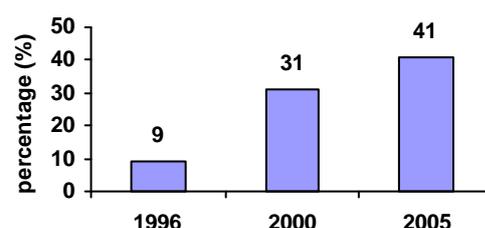
- Quarterly monitoring of salt iodization in production sites
- Revival of quality control system at three levels: by regional services of the Trade Ministry, by police and customs officers, and by the people
- Strengthening of organizational dynamics of small producers through Economic Interest Groups, including supervision missions and knowledge sharing sessions organized by the Cottage Industry Ministry
- Set up of a mechanism for sustaining the provision of potassium iodate through cost recovery and group purchasing
- Enhanced production of iodized salt. During the period covering July to October 2007, the Economic Interest Group supported by the project produced 15,250 tons of iodized salt

Despite these promising results, the attainment of universal salt iodization in Senegal will need more political commitment from the Government of Senegal and the support from the international partners.

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Graph: Consumption of iodized salt by households



Evidence-based iodization policy changes in the Philippines

Philippines

The Implementing Rules and Regulations (IRR) of the Philippine salt iodization law (1) in 1995 required iodized salt sold at retail should not be exposed to direct sunlight, high temperature, moisture and dust from the environment. However, since a majority of salt consumers buy salt sold in open heaps at public markets and village variety stores, the Nutrition Center of the Philippines undertook a study exposing iodized salt to the same harsh conditions that they meet in open markets in order to examine the evidence for or against this rule.

The study showed that iodized salt with high moisture content can retain iodine above the recommended levels (at production site: 70-150ppm for bulk packing and 60-100ppm for retail packing; at retail site: 50-100ppm for bulk packing and 40-100ppm iodine for retail packing) in spite of exposure to an open environment and use of ordinary packaging materials while in retail for 1 month and in storage for 6 months. The results support the need to iodize all salt intended for human consumption even if the salt is sold through open heap since iodine levels are conserved even after exposure to harsh conditions (2). The IRR of the law now excludes the previous limitations set when selling iodized salt at retail, thus increasing its accessibility and availability (3).

The study further suggested a step-wise reduction of the iodization standard since the retained iodine was above the recommended levels even after environmental exposure in retail and storage in bulk. The Food Nutrition and Research Institute further studied the stability of iodine at the salt farm production and endorsed lowered iodine content standards (4). Recently, the country's Bureau of Food and Drugs lowered the recommend standards of iodine levels of salt to 20-70 mg/kg across distribution channels (5). This will reduce the cost of iodization and encourage compliance among manufactures and traders. *By Rayco-Solon P, Maramag CC, Solon JAA, Solon FS.*

Nutrition Center of the Philippines, Western Bicutan, Taguig City, Philippines www.ncp.org.ph

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Brazil Impact of Salt Iodization in Brazil - Ministry of Health of Brazil

Iodine deficiency is a natural and permanent phenomenon widely spread throughout the world. People living in iodine deficient areas are at risk of developing Iodine Deficiency Disorders (IDD), as mental retardation, deaf mutism, congenital anomalies and goitre. Iodine deficiency also increases the cases of perinatal and infant mortality and risk of abortion.

In Brazil, IDD was first classified as public health problem in 1950, when about 20% of population had goitre. At the same time the Brazilian government has pursued Universal Salt Iodization (USI) in order to reduce the high prevalence of IDD. Since then, the Ministry of Health has already conducted four surveys to evaluate the impact of this intervention, showing significant decrease in goitre prevalence (20,7% in 1955; 14,1% in 1974; 1,3% in 1984; and 1,4% in 2000).

In order to sustain IDD elimination, the Brazilian government, in partnership with the salt industry, universities and NGOs, has recently reviewed the National Program of IDD Control, resulting in the publication of new technical and legal documents. In 2005, new legislation with the following official strategies to keep IDD elimination was published: monitoring of salt in industries; impact evaluation of salt iodization; updates on USI legislation; implementation of educational actions and social mobilization on the importance of IDD and consumption of iodized salt.

According to this legislation, Brazil must develop impact evaluation of salt iodization every three years. In 2008, Brazil will conduct a survey to evaluate the impact of salt iodization in the entire country, involving analysis of urine and salt samples of about 40,000 school-age children (6 to 14 years). The results are essential to evaluate if salt iodization offered in Brazil is able to provide enough quantity of iodine to prevent and to control the IDD without risk of diseases associated to excessive iodine consumption. Besides, the results will allow Brazil to update the international database systems and receive the "International Certificate of Iodine Deficiency Disorders Elimination".

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WHO/UNICEF Joint WHO/UNICEF Statement on Reaching Optimal Iodine Nutrition in Pregnant and Lactating Women and Young Children

Based on new evidence and lessons learned within the last decade, it appears that the most susceptible groups - pregnant and lactating women, and children less than two years of age - might not be adequately covered by iodized salt where Universal Salt Iodization is not fully implemented. This situation may jeopardize the optimal brain development of the fetus and young child. In order to address this issue, WHO convened a technical consultation on the prevention and control of iodine deficiency in pregnant and lactating women and in children less than two years of age. The consultation, held on 24-26 January 2005 in Geneva, Switzerland, made recommendations to ensure optimum iodine nutrition among these groups (1). As a follow-up to the meeting, and in order to provide programmatic guidance to implement these recommendations within the country programme planning process, WHO and UNICEF held a joint meeting on 15-16 November 2005 at UNICEF Headquarters, New York, USA.

The statement is available [online](#) from www.who.int/nutrition

1. WHO. Prevention and control of iodine deficiency in pregnant and lactating women and in children less than two years old. World Health Organization. Geneva (In Press).

New WHO Growth Reference data for children and adolescents 5-19 years **WHO**

WHO has recently published growth reference data for children and adolescents, 5-19 years (or 61-228 months). The WHO Reference 2007 is a reconstruction of the 1977 National Center for Health Statistics (NCHS)/WHO reference. It uses the original NCHS data set supplemented with data from the WHO child growth standards sample for under-fives. The same statistical methodology was used as in the construction of the WHO standards. [This reference](#) complements the WHO child growth standards for 0-60 months published in April 2006. www.who.int/growthref

Reference charts and tables by indicator:

BMI-for-age (5-19 years) ([online](#)); Height-for-age (5-19 years) ([online](#)); Weight-for-age (5-10 years) ([online](#))

HIV and Nutrition Consultation **WHO**

Countries from the South-East Asian Region, together with scientists, researchers programmers, decision makers, UN agencies, civil society groups, organizations of people living with HIV/AIDS, donors and bi-laterals, gathered in Bangkok, 8-11 October 2007, to find workable strategies for incorporating nutrition into national HIV prevention, care and treatment programmes in the South-East Asian Region. They reviewed the evidence, identified challenges, listened to experiences from the field and defined clear-cut next steps for change.

This Regional Consultation on Nutrition and HIV: Evidence, Lessons and Recommendations for Action in South-East Asia, was organized by the World Health Organization, in collaboration with UNICEF, WFP, FAO, UNAIDS, UNHCR, IAEA and the US National Institutes of Health, in direct response to its commitment to the World Health Assembly resolutions 59.11 and 57.14 where Member States are requested to make Nutrition an integral part of their response to the HIV/AIDS. This Consultation built on the experience of the Durban Consultation in 2005 for Southern Africa.

The South East Asian Region is home to nearly 4 million of the approximately 40 million people living with HIV/AIDS worldwide in 2006. At the same time, 79% of the world's malnourished children come from this Region and several countries report over 40% stunting, indicating persistent chronic malnutrition. This Region, with its large and rapidly growing populations, widespread malnutrition and burden of infectious and chronic disease, is particularly vulnerable to the HIV epidemic. In response to these issues the Participants agreed that:

1. Stronger advocacy and visibility was needed at the global and country level for incorporating nutrition into HIV/AIDS programmes.
2. Region specific data on the nutritional status of PLWHA should be developed by countries which should serve as an advocacy tool for policy.
3. International agencies should allocate part of the budget (a 5% figure was suggested) for nutrition support and care for HIV in countries. Resources should be allocated to fill the gaps.
4. A coordinated plan of action for nutrition and HIV should be developed by countries avoiding duplication of efforts. The full range of interventions should be used to meet the macro and micronutrient requirements including nutrition counselling.
5. Countries should develop monitoring and evaluation mechanisms.
6. A Participants' Statement emerged from the participants which outlined the key recommendations and actions for all stakeholders to take responsibility for and act effectively and urgently to meet the collective goals.

For more information, please contact Randa Saadeh, Scientist, Dept of Nutrition for Health and Development, saadehr@who.int, or Sharad Agarwal Communications Officer, Dept of Nutrition for Health and Development, agarwals@who.int or visit the [HIV and Nutrition Consultation website](#)

WHO Scientific Update on Trans Fatty Acids (TFA) **WHO**

WHO undertook a Scientific Update on Trans Fatty Acids (TFA) as part of the implementation of the Global Strategy on Diet, Physical Activity and Health. The Scientific Update reviewed the health effects of TFA from both epidemiological and experimental perspectives, as well as the feasibility of alternative replacements. The expert group met in Geneva from 29 to 30 October 2007 and reviewed scientific background papers prepared and further agreed to prepare six scientific review papers. These include: 1) General historical background of the work related to TFA and the Global Strategy; 2) Health effects of TFA: Experimental and observational evidence; 3) Quantitative effects on cardiovascular risk factors and coronary heart disease risk of replacing partially hydrogenated vegetable oils with other fats and oils; 4) Feasibility of recommending certain replacement or alternative fats; 5) Assessing approaches to removing TFA in the food supply in industrialized countries and in developing countries; and 6) Summary and conclusions of the Scientific Update.

Final papers will be published as a supplement of the [European Journal of Clinical Nutrition](#) by end-January 2008.

FAO/WHO FAO/WHO Scientific Update on Carbohydrates in Human Nutrition

As part of the normative work and the complimentary mandates of the two Organizations to periodically update nutrient requirements and regularly develop related global guidelines, FAO and WHO have been exploring the possibility of holding an expert consultation to update the work of the [1997 Expert Consultation](#) on Carbohydrates in Human Nutrition.

The background papers prepared for this Scientific Update and its conclusions have now been published in the [European Journal of Clinical Nutrition](#) (EJCN, Volume 61, Supplement 1, December 2007). Considered necessary given the developments and other relevant recommendations made during the intervening period, including those from [the 2002 Joint WHO/FAO Expert Consultation](#) on Diet, Nutrition and the Prevention of Chronic Diseases, FAO and WHO agreed in 2005 to undertake a scientific "update" on some of the key issues related to carbohydrates in human nutrition. The key issues identified included terminology and classification, measurement, physiology, carbohydrates and diseases (i.e. obesity, diabetes mellitus, cardiovascular diseases, and cancer), and glycemic index and glycemic load. This update of existing knowledge and evidence relating to the current recommendations was viewed as essential in the process leading up to a forthcoming Expert Consultation on Carbohydrates in Human Nutrition.

www.who.int www.fao.org

Interagency HIV and Infant Feeding: New evidence and programmatic experience

The optimal infant feeding choice for women living with HIV continues to be a major concern for health care providers, HIV-infected women and their families. At a consultation held in Geneva in October 2006, researchers, programme implementers, infant feeding experts, and representatives of the Inter-agency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Infants, gathered in order to review the substantial body of new evidence and experience that has been accumulating regarding HIV and infant feeding since a previous technical consultation in 2000. The aim was to further clarify and refine the existing UN guidance, which was based on the recommendations from the previous consultation. The group endorsed the general principles underpinning most of the 2000 recommendations and reached consensus regarding a range of new issues and their implications. The report of this meeting presents a summary of the new findings, conclusions and recommendations, and provides details of the discussions that took place.

WHO, UNICEF, UNFPA and UNAIDS. HIV and Infant Feeding: New evidence and programmatic experience: Report of a Technical Consultation, Geneva, Switzerland, 25–27 October 2006, held on behalf of the Inter-agency Task Team (IATT) on Prevention of HIV Infection in Pregnant Women, Mothers and their Infants. WHO, Geneva, 2006. Available [online](#).

FAO Global Forum on Food Security and Nutrition Policies and Strategies (FSN Forum)

The Global Forum on Food Security and Nutrition Policies and Strategies (**FSN Forum**) is an on-line community of nearly 500 members from more than 70 countries who share experiences, identify resources, provide peer coaching and support and find collective solutions to food security and nutrition (FSN) issues focusing on FSN policies. The FSN Forum was created as an initiative led by the Agricultural Development Economics Division (ESA), Food and Agriculture Organization of the United Nations (FAO). Since its launch on the 16th of October the Forum has held **four discussions, one peer review and offers 21 News articles, over 30 relevant Web links and 227 useful resource papers**. Topics of the two current discussions are the following:

- **"Nutrition education - essential but often neglected"** raised by Ms Jane Sherman, education consultant and facilitated by Ms Ellen Muehlhoff, Senior Officer, Nutrition and Consumer Protection Division, FAO ([available online](#))
- **"FSN Topics on which research is needed"** raised and facilitated by Mr Andrew McMillan, former FAO's director ([available online](#))

The discussions **topics, proceedings and summaries of the three closed discussions** can also be consulted [online](#)

- Emerging topics for the 2nd International Conference on Poverty, Food and Health, Lisbon 28th to 30th November 2007
- Drawing lessons from food security and nutrition research, analysis and information for improved decision making and response"
- Peer Review on "Livelihood Characterisation in South Sudan: use of physiographic & agro-climatic layers"

The FSN Forum is a neutral platform for knowledge and resource sharing among academic, research institutions, development practitioners and policy-makers/implementers around the world. The FSN Forum complements other FAO initiatives, such as the Acting Locally in Food Security, Nutrition and Livelihoods (FSNL) D-Group, which looks mainly at **local actions** ([link](#)), while the **FSN Forum focuses especially on research and FSN policy and strategies at all levels**. If you are involved in FSN, we warmly invite you to join the Forum, explore the resources and participate actively. Please register at FSN Forum website: <http://km.fao.org/fsn>. Contact: Ms Huyen Tran, huyen.tran@fao.org

Acting Locally in Food Security, Nutrition and Livelihoods: FSNL Discussion Group**FAO**

Today, networks and initiatives supporting interagency collaboration on strategies and policy-making are mushrooming throughout the development world and humanitarian community, in nutrition as well as in other subjects. An excellent tendency, one ought to recognize.

However, field operators - any operator, national or international, from UN agencies, Governmental institutions, NGO/CSOs (including confessional NGOs) working on nutrition, food security and livelihoods at local level - have often de facto been marginalised: they are spread all over the world, often in remote locations, rarely attend meetings but actually have hands-on experience. On the one hand they feel isolated and out of the information loop, and on the other they have a lot to contribute.

What is needed is a network to connect these people into a virtual community. While we are well aware that not all field actors have easy access to computers and internet, Information Technology is increasingly available worldwide, and relay institutions can help expand the network further.

The discussion group "Acting locally in food security, nutrition and livelihoods" (FSNL D-group) was thus set up and presented to the Household Food Security Working Group during the SCN 2007 Annual Session in Rome, but has only recently been launched.

This D-Group was developed in parallel to the Global Food Security and Nutrition Forum (FSN Forum, [link](#)), launched by FAO's Agricultural Development Economics Division (ESA) on October 16th, 2007. These two initiatives are complementary: while the latter is a multi-features platform involving, between others, academics, researchers and policy-makers in discussions focusing on policies and strategies, the FSNL D-Group is a lighter tool, allowing field operators to interact on issues of common interest.

The FSNL D-Group will also contribute to the documentation, sharing and peer reviewing of concrete field experiences, and will be linked to the 3W (Who does What, Where) contact management directory being developed in parallel, thus contributing to creating a pool of best practices and contacts for field activities.

For joining the "Acting Locally in Food Security, Nutrition and Livelihoods" D-Group (www.dgroups.org/groups/fao/FSN), subscribe [online](#) or contact Chiara Deligia, FSNL Moderator, at chiara.deligia@fao.org

Joining forces for ensuring Adequate Nutrition and Health**ECOWAS**

As a follow-up to the September 2006 10th ECOWAS Nutrition Forum in Cape Verde – which was strongly supported by the SCN, see SCN News #33 ([online](#)), the West African Health Organisation (WAHO) and Bioversity International, in technical cooperation with FAO, organized a regional workshop on Partnerships for Mobilizing the Diversity in Traditional Food Systems to Ensure Adequate Nutrition and Health.

The 2-day meeting which was supported by the Canadian International Development Agency (CIDA), the International Development Research Centre (IDRC), the Global Facilitation Unit for Underutilized Species (GFU) and the West African Economic and Monetary Union (WAEMU) was perceived as a major breakthrough since it was the first time policy and decision makers from the health and agriculture sectors in these countries met and worked together on a theme of common interest. Alleviating malnutrition can only be achieved if both sectors take the lead jointly at country level.

Food consumption patterns in Africa have been affected by economic, demographic and environmental change. Diets have become increasingly monotonous as traditional food systems are eroded and foods within the food systems are forgotten. The retrieval of indigenous knowledge and sustainable management of local biodiversity are key to both improved diets and sustainable livelihoods.

A total of 43 representatives from national, regional and international institutions and organizations, including representatives of the private sector, participated in the workshop. Participants were provided contextual information for effective policy formulation and programme implementation, including a presentation of the SCN on behalf of the Secretariat. Further information on the workshop and in particular the agenda and list of participants - can be found [online](#).

A key recommendation of the workshop was the creation of a data base of traditional and indigenous foods, and a mapping system for identifying available food sources at different times of the year. There was a general recognition of the fact that there already exists a wealth of knowledge and experience on which to build future activities but these need to be documented and shared. A mechanism should therefore be established to search and document such information and make them readily available. Improving safety, quality and competitiveness of traditional foods through improved food processing were explored. Participants identified the need for strong advocacy and effective multidisciplinary and multisectorial alliances and agreed on plans of action to be carried out upon return to their respective countries.

HKI**Initiative to fortify West Africa**

Helen Keller International (HKI) has recently embarked on a *Fortify West Africa* initiative which aims to contribute to the survival and development of women and children in West Africa. Deficiencies in essential vitamins and minerals (VMDs), such as vitamin A, iron and folic acid, are major causes of premature death, disability and reduced work capacity throughout the world. VMDs account for 10% of the global disease burden. One of the most cost-effective and sustainable strategies to control VMDs is to engage private sector food companies in food fortification and to promote wide consumption of these foods by those at risk. Food fortification is a common practice in North America and Europe, and HKI has led efforts to bring this technology to sub-Saharan Africa.

In partnership with the professional association of cooking oil producers of the 8-nation Economic and Monetary Union of West Africa and the West African Health Organization, HKI launched a regional cooking oil fortification initiative in April 2007 with financial support from the United States Agency for International Development (USAID), the Michael & Susan Dell Foundation, the Global Alliance for Improved Nutrition (GAIN), the Government of Taiwan, the Micronutrient Initiative (MI) and, most importantly, the industries themselves.

With vitamin A fortification of cooking oil underway in Burkina Faso, Côte d'Ivoire and Mali and regional norms being developed, the momentum for vitamin and mineral fortification of food continues to build. HKI is harnessing this momentum to expand the fight against VMD in the region to build a wheat flour fortification strategy. The Michael&Susan Dell Foundation has committed another \$1.6 million to support this effort, which will complement funding from GAIN and USAID.

Cooking oil and wheat flour are excellent vehicles for fortification with vitamin A (cooking oil) and iron and folic acid (wheat flour). They are both centrally processed in most countries in the region, providing an entry point for the fortification to take place. Cooking oil has been proven to be the easiest food vehicle to fortify with vitamin A, and numerous studies in West Africa have shown a high level of market penetration. Wheat flour is a good vehicle because it is widely consumed on a daily basis in many forms, and fortification has minimal or no perceptible effect on taste and texture.

www.hki.org

UNICEF**Revised UNICEF Mid-Upper Arm Circumference (MUAC) tapes**

UNICEF has revised the old MUAC tapes which had a red cut-off at 12.5cm due mainly to the demand created for numbered bands that can be used at community level for identifying children with SAM - i.e. red cut-off at 11.0cm. As there is no internationally agreed standard MUAC cut-off for moderate acute malnutrition which tends to be country specific and reflective of resources available, it was decided that UNICEF supply division would provide two tapes giving options for 12.5cm or 12.0cm cut-offs - so that UNICEF country offices can decide on the most appropriate for their context. Revised MUAC tapes can be ordered from UNICEF country offices. If large quantities is requested, it would be better to contact UNICEF procurement services directly with a request and the form required will be sent. Tapes available are:

- Standard MUAC tapes, cut-offs at 11.0cm (red) and 12.5cm (yellow), line at 21.0cm (for pregnant&lactating women). Available for dispatch from UNICEF Supply Division warehouse (code: S0145600). Cost - \$6.93 for pack of 50.
- Customized MUAC tapes, cut-offs at 11.0cm (red) and 12.0cm (yellow), line at 21.0cm (for pregnant&lactating women). Available as a special order from UNICEF Supply Division. Code U350000—specification "customized MUAC - Ethiopia type". Cost - depends on ordered quantity.

Contact: Alan McNulty, amcnulty@unicef.org

HarvestPlus**A Food-Based Approach Introducing Orange-Fleshed Sweet Potatoes Increased Vitamin A Intake and Serum Retinol Concentrations in Young Children in Mozambique**

A team of researchers led by Jan W. Low (formerly with Michigan State University) has found that Orange-Fleshed Sweet Potatoes (OFSP) can increase vitamin A intake and serum retinol concentrations in young children in Mozambique. In Mozambique, the prevalence of vitamin A deficiency among children ages 6 months to 5 years is estimated at over 70 percent. OFSP is a strong candidate for a food-based approach to combat this, as many varieties are very rich in beta-carotene, the precursor for vitamin A in plant foods. It is also well accepted by young children, a good source of energy, easy to cultivate, propagated vegetatively and fairly drought resistant once established.

The effectiveness of introducing OFSP was assessed in a two-year integrated agriculture and nutrition intervention in 741 households in Mozambique. The study was quasi-experimental, prospective, controlled, and longitudinal. The intervention was undertaken in three drought-prone districts (two intervention, one control) in Zambézia Province. The areas selected have high levels of young-child malnutrition, a monotonous diet with cassava as the primary staple, and a very poor resource base.

To increase production of OFSP and vitamin A intake, the project aimed to simultaneously increase farmers' access to OFSP vines, increase nutrition knowledge and create demand for OFSP, and ensure sustainability through market development. To assess progress and impact, nine surveys were taken over the two years, gathering data on socioeconomic and demographic characteristics of the households, production and sales of OFSP, nutrition knowledge, and dietary intake of the children. Blood samples were collected from all study children for bio-chemical analysis.

Finally, sweet potato plots were measured annually and prices of major sources of vitamin A were monitored monthly in markets. At the end of two years, five of the nine introduced varieties of OFSP were well accepted by farmers in terms of taste and agronomic performance, and plot size increased over 10-fold in intervention households, from an average of 33 m² to over 350 m². Caregivers in intervention households attended an average of eight nutrition education sessions; their knowledge of nutrition and vitamin A also increased relative to baseline and relative to caregivers in control areas.

Between-group differences in knowledge were also reflected in differences in several child feeding practices. Intervention children were ten times more likely than control children to eat OFSP three or more days during the previous week, their vitamin A intakes were much higher than those of control children, with the OFSP providing about 35 percent of vitamin A intake among intervention children (and 90% for the individual children who ate OFSP on the recall day). Controlling for confounding factors, mean serum retinol increased in intervention children but did not increase significantly in control subjects.

This study demonstrates the high potential public health importance of an integrated agriculture-nutrition intervention. Prevalence of low serum retinol concentrations remained the same in control areas and dropped from 60 to 38 percent among intervention children (controlling for infection). In control areas, the final estimate of prevalence was nearly identical to baseline despite the fact that all children had access to vitamin A supplements. In this and similar contexts, food-based interventions may be most needed as complements to capsule distribution. For intervention children, the reduction in prevalence was substantial, but the final round prevalence of nearly 40 percent highlights the need for multiple strategies. This should serve to underscore the relevance and importance of numerous efforts currently underway. Food-based approaches using OFSP clearly have potential to increase young child vitamin A intakes and serum retinol concentrations in areas where baseline prevalence of deficiency is high and where any type of sweet potato has previously been cultivated.

By Jan W. Low, Mary Arimond, Nadia Osman, Benedito Cunguara, Filipe Zano, and David Tschirley. This research was funded by the Micronutrient Initiative, the Rockefeller Foundation, USAID and HarvestPlus. Reference: Low JW, Arimond M, Osman N et al. A Food-Based Approach Introducing Orange-Fleshed Sweet Potatoes Increased Vitamin A Intake and Serum Retinol Concentrations in Young Children in Mozambique. [The Journal of Nutrition](#), 2007, 137(5): 1320-1327.

New GAIN incentives to improve infant and young child nutrition

GAIN

GAIN is launching new Program on Infants & Young Child Nutrition, which goal is to encourage private companies, not-for-profit organizations and public-private partnerships to improve children's nutrition by bringing to market low-priced, high quality fortified complementary foods and / or fortified complementary food supplements. The target group is children between 6-24 months living in low-income families in developing countries.

GAIN will offer assistance by way of a mix of grant and loan funds and technical support. Assistance could be sought for one or more of pre-startup activities and subsequently for operational activities. The amount of financing available will depend on the potential market coverage and impact of project as well as the implementation capacity of the recipient. Funding will be available for up to three years.

GAIN is looking to stimulate the production and marketing of foods and supplements suitable for infants and young children that: conform to the highest international nutrition standards; are affordable and accessible to the poorest; promote and respect the International Code on the Marketing of Breast Milk Substitutes; and, will be sustainable from a business point of view. More information including criteria and conditions for receiving assistance is available from

www.gainhealth.org/childnutrition

University of Medical Sciences, Ahvaz

Iran

Department of Nutrition at Jundi-Shapour University of Medical Sciences, Ahvaz, Iran, has started the largest research project in the field of nutritional evaluation and dietary planning in National Iranian Drilling Company (NIDC) industries which is planned for the first time in this area in Iran. In this study, samples from all operational drilling oil wells throughout the country and also oil fields in Persian Gulf are being investigated for workers' energy expenditures, dietary patterns, cardiovascular risk factors, blood biochemical indicators, and possible nutritional deficiencies. The literature in this area is very scarce and the findings could be regarded as a considerable database for future works. The investigators would be appreciated to hear the valuable experiences from all the world in this area.

For more information and contact please refer to: Reza Amani (rezaamani@hotmail.com), Associate Professor, Head, Department of Nutrition, Faculty of Paramedicine, Jundi-Shapour University of Medical Sciences, Ahvaz, Iran.

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SCN TF-AME calls for contributions to its inventory of nutrition indicators

The Task Force on Assessment, Monitoring and Evaluation (TF-AME) of the SCN Steering Committee has asked Judith Appleton, a social nutritionist with 25 years' field and HQ experience in projects, programmes, policy and advocacy in a variety of organisations, to inventorise and comment on nutrition indicators currently in use.

The purpose is for the TF-AME to make an inventory of these indicators and assess their usefulness according to robustness (relevance, timeliness, specificity, accuracy) and user-friendliness (measurability) in various contexts as well as to provide the basis for advancing an SCN discussion of key nutrition indicators in decision-making, planning and evaluating various kinds of impact and outcome, in different sectoral, geographical, socio-economic and cultural contexts.

The overall categories these will slot into in this piece of work are:

- food/food security/food chain
- health/ill-health
- care, of each family member

In our comments we will also highlight linkages between indicators and natural clusters of indicators.

It would be very helpful if you would send Judith (judith.appleton@zen.co.uk) your current guidelines for the identification and development of indicators and their use in your organisation. Web addresses where she can find relevant documents would be helpful. You may wish to add your own views of the usefulness of the main indicators in use in your organisation, as well as further papers on, examples of, or documentation on indicator use, both in your organisation and in any collaboration and partnership work you have been involved in with other organisations. Please send:

1. current guidelines on indicators used in your organisation
2. your own views of the usefulness of these and other indicators for your organisation and elsewhere
3. references of key papers, or your thoughts, relating to nutrition indicators - If there is a website where these documents can be found, kindly provide the address
4. your experience of nutrition-related indicators developed for use in any sector

The TF-AME is also trying to pin down experience with assessing nutritional outcomes not only in activities labelled nutritional, but in many sectors—non-nutritional health, in humanitarian and non-humanitarian food security operations, in education, in agriculture, in forestry, in fisheries, in rural development, in urban development, as well as related to trade, transport and finance. If you have experience of nutritional aspects of work in any of these areas, perhaps through collaboration, please let me know how any nutritional impacts and outcomes in these areas have been assessed, according to which indicators, and how those indicators have been developed. Any papers with views on indicators that you find particularly useful, and/or thoughts you may have had on nutrition indicators yourself, will also be of interest to the endeavour.

The Task Force is preparing a paper for discussion by SCN in Hanoi early March, we therefore ask you to send Judith examples of your ideas as soon as possible. Please do not hesitate to call her to discuss any or all of the above, to see TF-AME's note on its Areas of Work, or to see Judith's TOR. Judith will get straight back to you on any queries and points you raise.

Many thanks from TF-AME and Judith for your time and help.

Please address all correspondence about the inventory to
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Speaker's Corner

The Speaker's Corner of this edition of SCN News focus on food labels and human rights responsibilities of the corporate food sector vis-à-vis consumers. Boyd Swinburn, who has taken over as the leader of Task Force on Human Rights Responsibilities of the Corporate Food Sector the SCN Working Group on Nutrition, Ethics and Human Rights after the former Task Force leader Kate Baillie left IASO earlier this year, argues that whereas the massive interest of the sector to provide and market healthy food and drink is much welcome by nutritionist, there is an urgent need for a global food profiling system which is not confusing for the consumer. Jup van't Veld is Secretary of the Choices International Foundation. The Foundation was set up in 2007 by Campina, Friesland Food and Unilever to coordinate the global implementation of the Choices Programme and safeguard its integrity and credibility. He describes the background and main features of the programme and progress in implementation. We hope that the two articles by Swinburn and van't Veld will stimulate debate among the SCN News readership.

The front-of-pack battleground for nutrient logos

Boyd Swinburn, WHO Collaborating Centre for Obesity Prevention, Deakin University, Melbourne and Leader of the Task Force on Human Rights Responsibilities of the corporate food sector

"There are no healthy or unhealthy foods, only healthy or unhealthy diets." Thank goodness we can now officially bury this old mantra that has been long-repeated by the food industry and many nutritionists. A plethora of logos, many of them recently created by food companies, are now jockeying for position on the front of food packaging to pronounce on the healthiness of the product inside. However, there is an understandable scepticism about why the food companies have now embraced systems that brand foods as the healthy or (far less frequently) unhealthy choices. The potential for increasing consumer confusion is enormous because the messages will inevitably conflict and the general mistrust of industry promotion of nutrition marketing messages may rub off on more independent sources of information. Thus, there is an urgent need to apply some basic human rights and public health principles to achieving consistency and credibility of nutrient profiling systems and their applications.

Nutrient profiling, which is the science of classifying foods according to their nutritional composition, has been with us for some time, but in the last few years the number of classification systems has increased enormously (Rayner et al 2001, Grunert and Wills 2007). Originally, government regulations allowed food nutrient claims such as 'low salt' or 'reduced fat' and 'nutrition signpost' systems such as the Australian and New Zealand Heart Foundations' Pick the Tick or the Swedish Keyhole allowed foods to carry a logo from an independent organization to signal a healthy choice. More recently, supermarket chains in the UK have introduced traffic light logos on their own-brand products and large food companies such as Kellogg, Kraft, Pepsi, and Unilever have also developed their own classification systems. In Australia, the Food and Grocery Council is currently recruiting food manufacturers to place a percent daily intake logo on the front of pack. Add to this the specialised logos such glycemic index or gluten-free and consumers are now facing an explosion of front-of-pack signals about the health value of the foods they are about to buy.

Each system does have the potential benefits of providing short-hand signals to the busy consumers about the nutrient composition of food products and setting the nutrient standards for manufacturers to aim for in the formulation of foods (Noakes and Crawford 1991, Young and Swinburn 2002). However, the risks, especially of consumer confusion and scepticism, are now increasing significantly as each large food company launches its own system of criteria, names and logos. The distortion of messages and information by large food companies is a major contributor to the public confusion about nutrition (Nestle 2007), and truly independent systems and messages are needed which have no connection with food companies.

Food is a global commodity and a fundamental human right. Therefore, the solutions will need to be global and UN agencies have already made important progress in operationalising these human rights. Strategies to ensure 'adequate food' will need to incorporate all aspects of the food system (including marketing and nutrition education/information) (UNCESCR 1999) and 'the highest attainable standards of health' has been interpreted by the United Nations System Standing Committee on Nutrition to include the 'human right of children and adolescents to be free from obesity and related diseases' (SCN 2006). Also, the UN agencies and the United Nations University have made significant progress in identifying international harmonisation approaches for nutrient-based dietary standards (King and Garza 2007).

Public health principles will need to be applied to nutrient labelling and signposting as part of the efforts to achieve these rights and a plethora of nutrient profiling systems applied only to the foods at the healthy end of the spectrum falls far short of achieving clear, independent, consistent, accessible nutrient information on all foods and beverages. Signposts need to communicate that some foods are more healthy and some are less healthy and only a graded system such as traffic lights can achieve this. An effective system will need to be consistent and mandatory rather than inconsistent and voluntary. Consumers need to have confidence that the underlying nutrient profiling system (which they are unlikely ever to see or understand) comes from an independent, trusted source which has no vested commercial interests. This essentially means a government mandated system, preferably based on international definitions, for example from the World Health Organization.

In my past life, I have been the Medical Director of the Heart Foundation of New Zealand and I have been and still am a great advocate of the Pick the Tick program. I recognise that as an early runner in this area, it has served a tremendous purpose in engaging the industry in healthier food composition and engaging consumers in healthy food choices. However, its two biggest limitations are that the symbol is only for the healthier choices (giving no signals to the less healthy choices) and even within the healthy choice range, it is only on a minority of products. Reach will always be the limitation of a voluntary program for healthier products only, and this also applies to the 'Choices' logo.

So, why have some of the big players in the food industry made such a dramatic U-turn and are now heading down the road of nutrient profiling? Where is the bottom line in this? For some (such as the UK supermarkets) it seems that it probably is about informing consumers and thereby gaining a marketing advantage. However, for other food companies, it seems suspiciously like trying to head off mandatory front-of-pack systems such as traffic lights and create positive public relations. Maybe I am being too cynical here. Maybe I have been around too long as a public health advocate battling against tobacco companies and now food companies as they use their substantial resources and connections to undermine public health initiatives. Maybe I have just not seen enough evidence of the public beneficence displayed by large multinational companies, that is not driven by the bottom line, to be a believer.

Is a common nutrient profiling system (or more correctly, a food profiling system, since food characteristics need to be included as well as nutrient content) even possible or desirable? At this point, it is important to look beyond the front of the pack. A nutrient profiling system would have multiple public health nutrition applications, so we need to be sure that it can be as consistent and integrated as possible across those applications. In the UK, the Food Standards Authority (FSA) system of creating a single score from combining the healthy and unhealthy nutrients is being used to define foods which cannot be advertised to children (Food Standards Agency UK 2007). Food Standards Australia New Zealand (FSANZ) have taken the FSA system and modified it slightly to determine disqualifying criteria for foods that are able to make health claims (Food Standards Australia New Zealand 2007). Food profiling systems have also been used to define foods that are not able to be sold in schools (NSW Government Childhood Obesity Summit 2002). Other potential uses are: to form the basis for nutrition education, define which foods should attract taxes or subsidies, provide specific nutrient goals for food manufacturers, and to guide organizational food policies.

Each of these applications has requirements from a food profiling system and it has yet to be determined how well all these requirements can be incorporated into a common, integrated system. Many of them need the system to provide a single score to qualify or disqualify a food for a particular purpose. For example, the FSA system uses a score to identify the 'red' foods which will be disqualified from being able to be marketed to children. One could also envisage that in the future the bar may be lifted so that only 'green' foods would qualify to be marketed to children. The single FSA score is based largely on assigning a weighting to the positive and negative nutrients. However, it does also allocate a value to fruit and vegetables and the FSANZ model extended that to include weightings for cheese and oils. A traffic light system like the ones being used in the UK supermarkets defines red, amber and green for a number of specific negative nutrients such as sugar, salt, fat and saturated fat, so this would need to be accommodated in an integrated system.

Another major decision needed in the design of a food profiling system is whether it tries to apply common criteria over all types of food or it divides food into categories which have different criteria. Common criteria would certainly be the most parsimonious and the most consistent for consumers. However, to be fully functional and coherent it may need to identify some specific food category parameters and this has happened to a degree with the FSA system which is relatively 'across the board' compared to other systems such as Pick

the Tick and Choices which have different criteria across dozens of categories.

What is needed to progress this issue is to get some agreement about the fundamental applications of a food profiling system or systems. What tasks does it need to perform, how well does it perform them? – this will entail much modelling and consultation. There will be anomalies with any of the candidate systems – foods we consider healthy being classified as unhealthy and vice versa. The systems will need to be tweaked and undoubtedly will have exceptions and side rules to cope with the anomalies. It is not apparent at this early stage which of the existing systems would provide the best backbone for a more integrated system that can fulfil the functions described above.

The unabated rise of the obesity and diabetes epidemics globally and the rapid increases in cardiovascular diseases in lower and middle income countries (WHO 2002) have placed a real urgency on developing food profiling systems to underpin the multiple public health nutrition applications outlined above. There is a strong case to be made for the UN Agencies (including the World Health Organization, the Food and Agriculture Organization and the UN Human Rights System) to take the lead in this vital challenge.

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Making the healthy choice the easy choice:

The Choices Programme as a credible industry initiative

Jup van't Veld, Secretary, Choices Foundation International

In its 2004 *Global Strategy on Diet, Physical Activity and Health*, the World Health Organization signalled a sharp rise in obesity and diet-related chronic diseases. WHO called on industry:

- to limit the levels of saturated fats, trans-fatty acids, free sugars and sodium in existing products
- to provide consumers with adequate and understandable product and nutrition information
- to issue simple, clear and consistent food labels and evidence-based health claims
- to help consumers make informed and healthy food choices.

The challenge of front-of-pack labelling

Although many consumers are increasingly aware of the need for a healthy diet, they often have difficulty in making the right decisions when buying their food and beverages. Available information in the nutrition facts

box is hard to understand for a layman, and if consumers take the time to study it, it is often misinterpreted.

Front-of-pack labels give easier accessible information about the nutritional characteristics of food products. However, we begin to see a proliferation of logo's and claims, which threatens to make it only harder for the consumer to trust and understand the variety of messages. (This is further complicated by a simultaneous proliferation of social and ecological labels).

Some collective labelling schemes have been proposed, but they often leave it up to the consumer to interpret the data. The Guideline Daily Amounts (GDA) scheme, adopted by the Confederation of Food and Drink Industries in Europe (CIAA), is informative in supplying the key figures; yet the consumer has to compare these figures in order to deduct the healthy choice. The traffic light system assigns red, amber and green "lights" to products, but again the consumer needs to compare the colour scheme on different alternatives. If all lights are red, or all are green, this deduction is not too hard – but usually the picture is much more complicated...

An alternative is to apply labels that do the interpretation for the consumer, like "ticks" and "smileys". In principle they can be complementary to the more objective schemes like GDA. In these cases, however, it is vitally important that the credibility is safeguarded. Especially if the labelling scheme is carried out by food industry, consumers will tend to distrust the information.

One label fits all: The Choices Programme

The Choices Programme is an industry initiative that aims to tackle these challenges. Its essence is a front-of-pack stamp on products that pass an evaluation against qualifying criteria, based on international dietary guidelines. An independent scientific committee, chaired by Prof. Jaap Seidell of the Free University of Amsterdam, is responsible for designing and periodically reviewing the qualifying criteria.

The Choices stamp has two distinct effects: it helps consumers in the quick moment of decision to make the healthy choice, and it stimulates food companies to improve the composition of their products in order to obtain a Choices stamp. The main characteristics of the Choices Programme are: It is *simple* - One positive stamp makes it easy for the consumer to make the healthy choice in a split second. It is *credible* - The qualifying criteria were derived on the basis of international dietary guidelines. The scientific committee will periodically review the criteria and adapt them to the latest scientific insights and technological developments. An independent, accredited certifying agency is to evaluate products against these criteria before they are allowed to carry the Choices stamp. It is *globally applicable* - The criteria are applicable to all categories of food and beverages. As they were derived from international guidelines, they are valid in all countries. It is *open to all companies* - All companies from food industry, retail and catering can participate. Current partners include several SME's: it is important to note that the programme is not only suitable for the "big guys". Regulatory schemes often pose huge problems for SME's; the Choices Programme is designed to trigger the innovative potential of smaller companies as much as that of larger ones.

Scientific basis: what consumers want

A recently published scientific article by Feunekes et al (2008) describes consumer research into the effectiveness of different labelling formats in four European countries. Consumer friendliness as well as the effect on decision making were investigated. The results show that front-of-pack labelling is indeed effective in influencing the purchasing behaviour of the consumer. On consumer-friendliness there are only slight differences between most formats, although the more complex schemes appear to be too complicated for those consumers that describe themselves as having little nutritional knowledge.

An important finding is that the more complex formats take some 10 seconds more to interpret than simple "ticks" or "stars". In the actual shopping environment, where purchasing decisions are usually made in a few seconds time, simple formats are therefore the most appropriate – like the Choices stamp.

*Scientific basis: setting the criteria**

The objectives of the qualifying criteria are: to limit the intake of saturated fat, trans fat, sodium and added sugars; to ensure the intake of beneficial nutrients, such as dietary fibre; and, to promote an appropriate en-

* The qualifying criteria can be downloaded from www.choicesinternational.org. They have been designed by scientific committees in the Netherlands and Belgium, and will be reviewed in 2008 by the international scientific committee.

ergy intake. Generic benchmarks for saturated fats, trans fats, sodium and added sugars have been derived from WHO recommendations*. Where appropriate, criteria for energy and dietary fibre are applied to specific food categories.

As much as possible generic criteria are applied across the board. However, for some product categories it would be impossible to fully comply with those for technological or taste reasons. In order to stimulate product innovation in these categories as well, a “best in class” approach was used, adapting some of the qualifying criteria to make them challenging but not prohibitive. This approach is stricter for “non-basic” (e.g. snacks) than for “basic” (e.g. bread) categories, thus positively discriminating those categories that contribute to the intake of beneficial nutrients. It is expected that, with ongoing innovation, these criteria will get stricter in the future.

The question arises, of course, how far such a category-specific approach should be followed. Another question is whether the “best in class” approach could lead to different criteria in different countries or regions. Such questions are to be answered by the scientific committee. An approach that weighs “positive” and “negative” nutrients against each other, as proposed in some other schemes, was rejected by the scientific committee as it has insufficient scientific basis. The qualifying criteria are dynamic. Periodically they will be reviewed by the scientific committee against new scientific insights, technological developments and market situations.

Results and effectiveness

The Dutch Choices Programme has grown, within one and a half year, from three to 85 participants, among which nearly all supermarket formulas and the leading catering companies. Over 1,500 products have been granted the Choices stamp. And results are beginning to show: Eighty-eight percent of Dutch consumers recognise the Choices stamp, 50% understand what it means, and some 70% frequently or incidentally buy products for their Choices stamp. A first market analysis, as well as claims by some of the participating companies, show that products carrying the Choices stamp have a better market performance – although it is too early to get a clear picture on sales figures relative to other products. First reports from participating companies show that tons of sugar, saturated fat and sodium have already been removed from products as a result of product development aimed at compliance with the qualifying criteria.

In order to get a well-founded insight in the effectiveness of the Choices Programme, a monitoring and evaluation programme is being set up under the supervision of two independent scientists, members of the Dutch scientific committee (Prof. Jaap Seidell and Prof. Hans Brug). This will study effects on consumers (knowledge, recognition, behaviour) and producers (sales effects, changing product composition, innovation based on qualifying criteria), and will attempt to calculate overall health effects.

As the programme is being implemented in other countries, we intend to set up comparable monitoring and evaluation programmes. Thus we expect to come up with “hard evidence” that the Programme actually achieves what it aims for: to help the consumer to make the healthy choice, and to stimulate industry to improve its product portfolio.

Unique prospect

No other front-of-pack labelling scheme offers the same value as the Choices Programme. It is simple, credible, science-based, globally applicable and accessible for all companies in food industry, retail and catering, including SME's. It is a straight answer to the WHO's call for action and can prevent a confusing proliferation of logo's.

Reference

Feunekes GIJ, Gortemaker IA, Willems AA, Lion R and van den Kommer M (2008) Front-of-pack nutrition labelling: Testing effectiveness of different nutrition labelling formats front-of-pack in four European countries. *Appetite* 50(1): 57-70.

Contact: info@choicesinternational.org, www.choicesinternational.org

* The criteria for individual products are less stringent than the recommendations for daily intake, as not every component of a daily diet contributes to the intake of these nutrients.

Obituary and Personal Remembrances

Patrice Jelliffe – Died March 14, 2007



Patrice Jelliffe, an icon of the breastfeeding movement, and a prolific writer on child health issues, died peacefully at her home in California on March 14, 2007. She, with her late husband Derrick Jelliffe, made enormous contributions to the fields of infant feeding, tropical pediatrics and international nutrition. Their huge body of published books and papers, often jointly authored, leaves a rich and permanent legacy.

With the death of Patrice Jelliffe we mourn the passing of a very special and wonderful lady – and she really was a lady. For me it is the ending of a friendship that spanned 48 years beginning in East Africa in the 1950's with Pat and Dick (as they liked to be called), and ending quite recently in a visit to Patrice's home in Bel Air in Los Angeles when her health was deteriorating, and now with her death.

Dick died on March 18, 1992 in that house at aged 71. I was privileged to be the main speaker at two major memorial events in his honour. One was at the American Public Health Association Annual Meeting in Washington in 1992 and the second at the IUNS International Nutrition Congress in Adelaide, Australia in 1993. On both occasions in describing the great achievements made by Dick Jelliffe, I recognized and stressed that almost all of these were joint achievements of the two Jelliffes – Patrice and Derrick, a true dyad.

Two books authored by Derrick B. Jelliffe and E.F. Patrice Jelliffe became “bibles” for me, and for many working in the area of international nutrition. These are “Human Milk of the Modern World” in 1978 and “Community Nutrition Assessment” in 1989. Both were published by Oxford University Press, and were revised, updated and reprinted many times. These books had great influence and still remain very useful sources of information.

Another important contribution of the Jelliffes was their founding and long years of Editorship of the Journal of Tropical Pediatrics in its several guises. Patrice continued its stewardship as Editor of the Journal long after Dick's death. This was a rare dedication. This journal has made a major contribution to the science, but especially to the practice of mother and child health care, particularly in low income environments.

In 1993, at a ceremony at the White House in Washington, DC, President Clinton awarded Patrice the President's Certificate of Commendation. This was “for her lifetime work and commitment to the world's children as a public health expert promoting nutrition education, in nursing education and fostering breastfeeding world wide.” This was a rare honour.

I first met Pat and Dick Jelliffe in 1959, at a medical conference in Dar es Salaam in Tanzania. I was 30 years of age, a young doctor running Songea District Hospital in southern Tanzania near the Mozambique border. The Jelliffes were then at Makerere University in Uganda and had already published many papers there and from their earlier work in the Sudan, Nigeria, the West Indies and India. For the first time I was nervously presenting a scientific paper at a major medical conference. How would this renowned couple react to this? I was incredibly relieved to find how supportive, helpful and friendly they were. My paper entitled “Malnutrition as a case of anaemia in children”, with their help, became my first research publication. As neighbors in Uganda and Tanzania we kept in close touch, met quite often and they became close friends until their deaths.

The very last time I was with Dick and Pat together, was in New York City in April 1991. Two months earlier with a few colleagues, we had worked together in a conference room in UNICEF headquarters, with the help of Jim Grant, to establish WABA, the World Alliance for Breastfeeding Action. Now we were trying to set up a structure for WABA, a modus operandi and management entity – not an easy task. Our work, more or less done, after two long days of work we all met for a late dinner. With a little wine consumed the Jelliffes in-

vented the “WABA crawl”, a kind of Caribbean calypso dance, led of course by the ebullient, glamorous, ever smiling Patrice. The “crawl” is still performed at WABA celebrations.

I have some rich and happy memories of times spent with Pat in the years following Dick’s untimely death. One was at the International Congress of Nutrition in Adelaide, Australia in 1993. Patrice participated actively in protests against Nestle funding for the Congress. She also helped lead an evening candle lit vigil outside the Congress, and spoke eloquently and emotionally about the immorality, and conflict of interest, in a Congress of Nutrition accepting financial support from manufacturers of breastmilk substitutes.

Five years later in Montreal in Canada, with WABA allies and young people from McGill and Montreal Universities, Pat was at the center of similar protests opposed to funding of the IUNS Congress by corporations which manufacture breastmilk substitutes. But, also at scientific sessions, Patrice Jelliffe, the professional, was raising important questions and making very constructive comments and was discussing with young researchers the possibility of publishing their work in “her” Journal of Tropical Pediatrics.

I believe that Pat’s six years in Uganda with Dick were the happiest and most productive phase of her life. It was an extraordinarily active period for both of them, and their work was totally intertwined. While in Uganda they conducted numerous field surveys and investigations. They collaborated incredibly well together, often with small teams of workers, and frequently in remote and difficult areas. They examined children, they treated all comers, and they learnt not only about nutritional status and disease, but also about local cultural factors which influenced the malnutrition and disease they encountered. This, influenced largely by Pat’s sociological interests, was pioneering medical anthropology and action research. It is an early example of combining ethnographic and biological investigations, leading to community action. During their years in Uganda their writing seemed to reach incredible proportions, almost all joint publications, with numerous books, book chapters and papers.

The Jelliffes left Makerere University in Uganda in 1966 when Dick was appointed by WHO and FAO to become the founding Director of the Caribbean Food and Nutrition Institute on the Mona campus of the University of the West Indies in Jamaica. In 1972 they made their last move to Los Angeles when Dick became the Professor of Public Health and Pediatrics, and Pat was appointed Lecturer and Researcher in the UCLA School of Public Health. With teams of workers and graduate students the Jelliffes conducted abbreviated nutrition surveys in numerous developing countries from their base at UCLA. These abbreviated surveys broke new ground in providing useful information quickly and at relatively low cost. The Jelliffes believed that “the purpose of nutritional assessment should be appropriate action to attempt nutritional improvement”.

Pat was a pioneer in child health, infant feeding and medical anthropology. She always presented the “human touch” to what ever work was being done. Where ever she went she radiated wisdom, warmth and willingness to help young professionals, young mothers and young children.

Michael C. Latham

ANNOUNCEMENT:

World Breastfeeding Week 2008: *Mother Support: Going for the Gold*

Breastfeeding results from a reproductive health continuum for the mother to the child with no beginning or end, from generation to generation. When a practice is disrupted, it must be restored. However, restoration of the breastfeeding culture demands more resources and mobilization.

In conjunction with the Olympics next August, WBW 2008 calls for greater support for mothers in achieving the gold standard of infant feeding: breastfeeding exclusively for six months, and providing appropriate complementary foods with continued breastfeeding for up to two years or beyond.

As every country sends its best athletes to compete at these global games, [WABA](#) maintains that it is important to remind ourselves that, in a similar fashion, a healthy young athlete can only emerge from a healthy start on life. Read the full announcement at <http://worldbreastfeedingweek.org/pdf/WBW2008Announcement.pdf> and stay updated with ideas for action, activities, downloadable materials, reports etc at www.worldbreastfeedingweek.org

Joint FAO/WHO Expert Consultation on Fats and Fatty Acids in Human Nutrition

Call for Experts

FAO and WHO are planning to hold an expert consultation on fats and fatty acids in human nutrition in last quarter of 2008. The first expert consultation on Fats and Oils in Human Nutrition was held in 1977. A second expert consultation on the subject was held in 1993, with the subsequent report of the consultation being published in 1994. There have been many developments in the field in the intervening fourteen years, and the 1994 report and its recommendations need to be critically reviewed and updated where necessary.

The specific objectives of the expert consultation are to:

- Review the scientific evidence to determine, based on a set of agreed upon criterion, nutrient requirements for total fat and fatty acids for different life stages (infants, children, adolescents, adults, elderly and during pregnancy and lactation)
- Assess the risk to adequate growth, development and maintenance of health of insufficient intake of total fat and fatty acids
- Assess the risks and health effects of excessive intakes of fat and fatty acids, in particular, total fats, saturated fatty acids and trans fatty acids
- Assess the risks and benefits associated with particular aspects of dietary fat and provide recommendations based on a review of this body of scientific evidence

Expertise required

FAO/WHO are seeking experts in one or more of the following areas:

- Assessment of criteria for establishing nutrient requirements for fat and fatty acids;
- Evaluation of epidemiological data related to risk and benefits of insufficient and excessive fat and fatty acid intake in different life stages;
- Evaluation of the risks and benefits to adequate growth, development and maintenance of health based on results from clinical, experimental and genomic studies;
- Methods of chemical analysis of fats, fatty acids and other lipids
- Aspects of fat digestion and metabolism throughout the human lifecycle
- Manufacturing, processing and regulatory aspects related to fats and fatty acids

The deadline for application submission is 31 January 2008.

For more information and for the application form, please visit

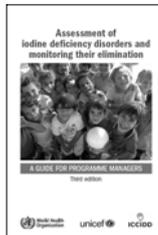
www.fao.org/ag/agn/nutrition/requirements_en.stm

or www.who.int/nutrition

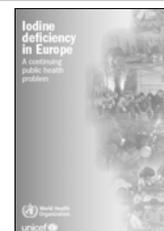
Publications



Nutrition Information in Crisis Situations (NICS) Supplement:
Assessing micronutrient deficiencies in emergencies: Current practice and future directions
 SCN ([online](#))



Assessment of iodine deficiency disorders and monitoring their elimination:
 A guide for programme managers, 3rd edition
 WHO/UNICEF/ICCIDD
 ([online](#)) www.who.int, www.unicef.org,
www.iccidd.org



Iodine deficiency in Europe:
a continuing public health problem
 WHO/UNICEF
 ([online](#))

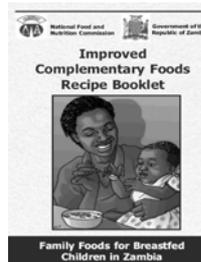
The State of Food and Agriculture 2007:
Paying farmers for environmental services



FAO ([online](#), E/F/S/A/C)

This document explores the potential for agriculture to provide enhanced levels of environmental services alongside the production of food. The report concludes that demand for environmental services from agriculture - including climate change mitigation, improved watershed management and biodiversity preservation - will increase in the future, but better incentives to farmers are needed if agriculture is to meet this demand. Included in this issue is a mini CDRom of the FAO Statistical Yearbook 2005-2006 Vol.2/1, containing time series data for 200 countries. www.fao.org

Improved Complementary Foods recipe Booklet:
Family Foods for Breastfed Children in Zambia



FAO/UNICEF ([online](#))

This recipe booklet is the first of its kind available in Zambia. It is for everyone who genuinely cares about improving the nutrition and health of infants and young children. It is for community service providers such as community nutrition promoters, peer educators and other development agents from the health, community development and agricultural sectors working with families and community groups. The booklet is intended as a companion guide to the Growth Promotion Counselling Cards, to be used primarily by community nutrition promoters.

Breaking the Rules, Stretching the Rules 2007 (BTR 2007)
 IBFAN/ICDC



BTR 2007 focuses on marketing practices of 12 baby food companies and 13 feeding bottle and teat companies. BTR is based on more than 3000 observations submitted to ICDC from 67 countries between June 2004 to November 2007. Each company report is prefaced by a profile and a "look at this" box which highlights a mind-boggling marketing

practice by the company. Electronic version: ibfan1@gn.apc.org,
 Hard copy: ibfanpg@tm.net.my

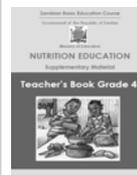
Evidence on the long-term effects of breastfeeding, systematic reviews and meta-analysis



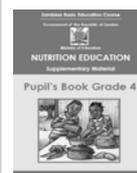
WHO ([online](#))

The Department of Child and Adolescent Health, in collaboration with the epidemiology unit in the University of Pelotas, Brazil, conducted this systematic review and meta-analysis of studies to assess the association between breastfeeding and blood pressure, diabetes and related indicators, serum cholesterol, overweight and obesity, and intellectual performance. Subjects who were breastfed experienced lower mean blood pressure and total cholesterol, as well as higher performance in intelligence tests. Prevalence of overweight/obesity and type-2 diabetes was lower among breastfed subjects. All effects were statistically significant but for some outcomes their magnitude was relatively modest.

Nutrition Education: Supplementary Material:
Teacher's and Pupil's Books Grade 4



FAO/Curriculum Development Centre
 Zambia



These education materials are intended to help tackle the widespread problem of malnutrition among Zambian school children. They are based on the basic school classroom curriculum for nutrition education as identified by teachers, heads teachers, local nutritionists and education standards officers. The geographical area targeted was Luapula but most of the issues apply equally to other Zambian provinces. ([online](#) [teacher's](#) - [pupil's](#))



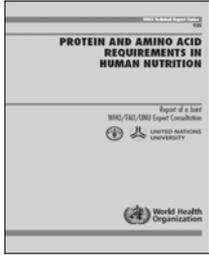
Children and the Millennium Development Goals:
Progress towards a World Fit for Children
 UNICEF ([online](#)), www.unicef.org



The Millennium Development Goals Report 2007
 UN ([online](#))

See also: Africa and the Millennium Development Goals: 2007 update
www.un.org/millenniumgoals

Protein and amino acid requirement in human nutrition: Report of a Joint WHO/FAO/UNU Expert consultation



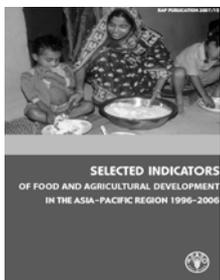
WHO/FAO/UNU ([online](#))

This report arises from the Joint WHO/FAO/UNU Expert Consultation on Protein and Amino Acid Requirements in Human Nutrition, held at WHO headquarters from 9 to 16 April 2002. It builds on the work of several earlier consultations and meetings. Since last expert consultation in 1981 scientific knowledge and field experience have now moved far enough forward that a review of the expert opinion is warranted. This report is not an end-point, but an important step in the continuous quest for scientifically-based answers, and for understanding the implications of these answers in terms of improved nutrition and health.

www.who.int www.fao.org www.unu.edu

www.who.int www.fao.org www.unu.edu

Selected indicators of food and agricultural development in the Asia-Pacific region 1996-2006



FAO ([online](#))

This comprehensive and detailed compilation of statistics on farming, livestock, fishery, forestry and nutrition in Asia-Pacific countries for the decade 1996-2006. The publication uses mostly FAO statistics based on information provided by member countries. Included is a table reporting on the status of organic farming in the region and a section on country profiles. It provides a handy comparison of changes over the past decade in the use of agricultural land and farm inputs, production of farm and horticulture crops, livestock, fisheries, forestry and agricultural trade in countries of the Asia-Pacific region, where over 53 percent of the total population were engaged in farming and related activities. [www.fao.org](#)

www.fao.org

Water, sanitation and hygiene: Quantifying the health impact at national and local levels in countries with incomplete water supply and sanitation coverage



Fewtrell L, Prüss-Üstün A, Bos R, Gore F, Bartram J - WHO ([online](#))

This guide aims to assist in the development of a quantitative estimate of health impacts attributable to water, sanitation and hygiene (WSH) related risks at country or local level. Most of data available for the methods used cover developing countries, and this guide is therefore mainly relevant to developing countries. Eleven diseases or injuries are reviewed. The disease burden from malnutrition is linked to WSH risks because of repeated diarrhoea and intestinal nematode infections especially affecting children. Several infectious diseases such as intestinal nematode infections, schistosomiasis, trachoma or dengue in certain regions are almost entirely attributable to WSH-related risks. The fraction of the other diseases attributable to WSH should be estimated based on the basis of expert judgement and, where possible, a systematic review of the literature. Methods for pooling of expert judgement and for systematic literature reviews are outlined in this guide.

www.who.int

www.who.int

State of the World's mothers 2007: Saving the Lives of Children Under 5

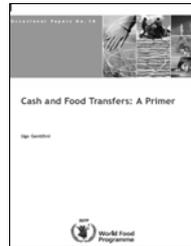


Save the Children ([online](#))

This document focus on the 28,000 children under age 5 who die every day from easily preventable or treatable causes and the tragic fact that basic, lifesaving remedies still are not reaching millions of mothers and children in need. This report helps to bring attention to low-cost solutions that have the greatest potential to save lives. It also identifies countries that are succeeding in tackling this problem, showing that effective solutions to this challenge are affordable – even in the world's poorest countries.

[www.savethechildren.org](#)

Cash and Food Transfer: A Primer



WFP ([online](#), E/F/S)

The objective of this paper is to unpack the various aspects of the "cash versus food" debate, to map out where the controversies lie and to demonstrate the need for a more pragmatic, balanced and context specific approach. A key message is that appropriateness cannot be predetermined since programme objectives, the economics of food consumption, market analysis, costs effectiveness and efficiency, capacity requirements and beneficiary preferences all play a role in determining the most appropriate option or combinations of options. [www.wfp.org](#)

[www.wfp.org](#)

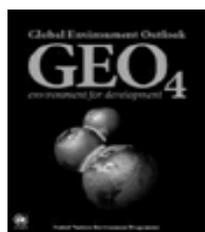
FAO

1. **Ending Poverty, Hunger and Malnutrition in Africa: incorporating food security, nutrition and livelihood objectives into common development assistance frameworks. A review of the external policy environment**
2. **Incorporating Food Security, Nutrition and Livelihood Objectives into Community Action Processes (CAP) - Frameworks for Building Organizational Capacities**
3. **Incorporating Food Security, Nutrition and Livelihood Objectives into Community Action Processes (CAP) - Evaluating Organizational Capacities**
4. **Passport to Improving Nutrition in Social Protection and Agricultural Development Initiatives**

The analysis of the external policy environment (1) points to the critical need for technical support to help build the capacity of regional and national situations for designing, delivering and managing more effective programmes.

A framework is proposed (2) for developing the organizational capacity required to incorporate food security, nutrition and livelihoods objectives and considerations into development planning; a 6-step approach is described for evaluating organizational capacities (3) and lastly a passport is available (4) that provides key questions to be asked when collecting information to help guide the design of interventions and forms part of the FAO guidelines for Incorporating Food Security, Nutrition and Livelihood Objectives into Community Action Processes. These 3 papers provide useful tools and ideas to work with governments and other national stakeholders to develop enabling policies for nutritional improvement as well as for emergency preparedness plans and activities. *Contact: Brian.Thompson@fao.org*

Global Environment Outlook 4

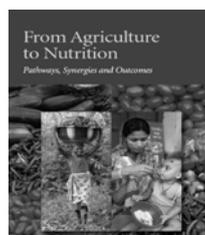


UNEP ([online](#))

The fourth report in the Global Environment Outlook (GEO) series from the United Nations Environment Programme (UNEP) provides a comprehensive, scientifically credible, policy-relevant and up-to-date assessment of, and outlook for, the state of the global environment. GEO-4 is published 20 years after the landmark World Commission on Sustainable Development's Brundtland Report of 1987. Environment for Development is the GEO-4 underlying theme and the report pays special attention to the role and impact of the environment on human well-being as well as to the use of environmental valuation as a tool for decision-making. GEO-4's specialized report, the Summary for Decision Makers is an essential guide for policy-makers. Both publications are excellent tools for teaching and research and relevant in the field of international environmental governance as they highlight policy opportunities for a more sustainable approach to economic growth and development.

www.unep.org

From Agriculture to Nutrition: Pathways, Synergies, and Outcomes



IFPRI/ The World Bank ([online](#))

This paper is a "must read" and has important implications for agricultural and food security programmes aimed at tackling hunger and malnutrition. Based on a review of the evidence, it argues that hunger and malnutrition in the world will not be eliminated through agricultural production or raising incomes alone, unless such interventions are complemented by interventions that address other determinants of nutrition, such as improving the quality of diets, child feeding practices, water, sanitation and healthcare. This document presents fresh evidence which supports earlier findings showing that agricultural interventions are most likely to be successful in reducing child malnutrition if they incorporate a strong nutrition information/education component and employ gender considerations. "

www.ifpri.org www.worldbank.org

Household Food Insecurity Access Scale (HFIAS) for Measurement of Food Access:

Indicator Guide VERSION 3 August 2007



Coates J, Swindale A, Bilinsky P ([online](#), E/F/S)

The HFIAS is composed of a set of nine questions that have been used in several countries and appear to distinguish food insecure from food secure households across different cultural contexts. These questions represent universal domains of the experience of insecure access to food that can be used to assign households and populations along a continuum of severity. The information generated by the HFIAS can be used to assess the prevalence of household food insecurity (access component) (e.g., for geographic targeting) and to detect changes in the food insecurity situation of a population over time (e.g., for monitoring and evaluation). The questions can be added to a standard baseline and final evaluation survey.

www.fantaproject.org www.usaid.gov

Food assistance program in the context of HIV/AIDS

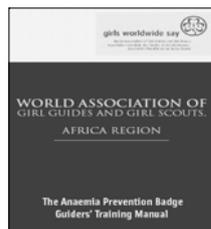


FANTA ([online](#))

As the links between food insecurity and HIV become better understood, there is increasing acknowledgment in the development community of the corresponding need to integrate food and nutritional support into a comprehensive response to the epidemic. This guide is intended for program directors, program advisors and senior program managers who are directly involved in the analysis and formulation of food assistance strategies and country program activities at HQ and in regional and field offices.

www.fantaproject.org

Girl Guides Anaemia Prevention Badge Project



FANTA/RCQHC/WAGGGS

([online](#), E/F)

The Girl Guides Anaemia Prevention Badge Project is a program built to reach adolescent girls in East and Southern Africa with information and activities on anaemia prevention and control. Under the program, Girl Guides (ages 7-18) can earn a badge in anaemia prevention through educational programs and community involvement in anaemia control. FANTA and the Regional Centre for Quality of Health Care (RCQHC) developed an Anaemia Prevention Badge Handbook and Workbook for the Girl Guides as well as a training manual for Girl Guide leaders.

www.rcqhc.org www.fantaproject.org www.waggsworld.org

HIV, Nutrition and Food Security: What we can do



The World Bank and other agencies ([online](#), E/F/S/C)

This document is a synthesis of existing international technical guidance on HIV/AIDS, nutrition, and food security, which is a valuable contribution to efforts that support the integration of nutrition and HIV/AIDS projects and programs. The synthesis aims to provide decision makers and service providers, especially those who design and manage programmes, with guidance on how nutrition may be integrated into HIV/AIDS prevention and treatment. Most of the recommendations draw on international guidelines and should also be applicable in other AIDS-affected regions in the world where public resources are constrained.

www.worldbank.org



HIV and Infant Feeding: New evidence and programmatic experience

WHO/UNICEF/UNAIDS/UNFPA

www.who.int

www.unicef.org

www.unaids.org

www.unfpa.org

Essential delivery care practices for maternal and newborn health and nutrition



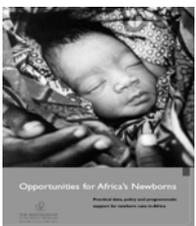
PAHO ([online](#), E/S)

This publication highlights and reinforces the importance of several delivery care practices for short and long-term maternal and newborn health and nutrition. It briefly outlines the evidence supporting the recommended delivery care practices for improving maternal and infant health and nutrition, and then proposes an integrated sequence of steps for the implementation of the recommended practices. Because the document focuses on both the public health consequences of the recommended practices as well as practical aspects for their implementation, it is equally useful to health-care practitioners involved in maternal and newborn health and nutrition as to public-health policy makers.

www.paho.org

Opportunities for Africa's Newborns:

Practical data, policy and programmatic support for newborn care in Africa AED ([online](#))



Each year at least 1.16 million newborns die in Sub-Saharan Africa. The African region has the highest rates of neonatal mortality in the world, and has shown the slowest progress so far in reducing neonatal deaths. However there is hope. In the past year the rate of policy change in African countries far exceeded expectations, providing opportunities to accelerate progress for maternal, newborn and child health.

www.aed.org

The Human Right to Food as a U.S. Nutrition Concern: IFPRI Discussion Paper

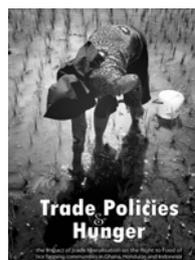


Messer E, Cohen MJ ([online](#))

The U.S. government has continually expanded food and nutrition assistance at home and abroad, but not within a human rights framework. What might a human rights perspective add, and what are the continuing rationales of the opposition? Qualitative analyses of historical policy position papers, testimonies, research reports, and the popular nutrition literature are used to evaluate how human rights and the HRF—as framing and rhetoric—have influenced nutrition policy, public and official understanding, and outreach. In this documentation process, the authors also integrate information from the wider "human rights" positions of the food-and-nutrition advocacy community to demonstrate where these different advocacy agents, organizations, and agendas fit in this process of advancing a HRF sensibility.

www.ifpri.org

Trade Policies and Hunger: The impact of trade liberalization on the right to food of rice farming communities in Ghana, Honduras and Indonesia.



FIAN ([online](#))

The aim of the present study is to find out whether the Right to Adequate Food of specific rice producing communities in Ghana, Honduras and Indonesia has been negatively affected or violated through specific rice trade policies. The study therefore analyses causal chains, first between sharp increases of rice imports and hunger, malnutrition and food insecurity, and second between these import increases and certain trade and agricultural policies. Possible other factors, such as natural disasters, land tenure arrangements or access to infrastructure are given due attention in order to put the influence of trade policies in context. The case studies also distinguish between the different responsibilities of national governments, external states and intergovernmental organizations.

www.fian.org

Review of the Vitamin A supplementation program for children aged 6-59 months and postpartum women in Cambodia

Helen Keller International

([online](#))

www.hki.org



India Micronutrient National Investment Plan 2007-2011

The Micronutrient Initiative

([online](#))

www.micronutrient.org



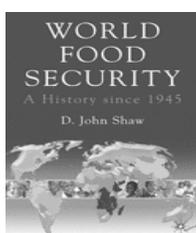
Micronutrient Update 2007



Mukuria AG, Kothari MT ([online](#))

Micronutrient deficiencies are major contributors to morbidity and mortality among women and children in the developing world. This update of 2002 Micronutrient Update presents information on women and children from Demographic and Health Surveys conducted between 2000 and 2005.

www.usaid.org



World Food Security: A History since 1945

Shaw DJ

www.palgrave-usa.com



Stuffed and starved: markets, power and the hidden battle for the world food system

Patel R

www.stuffedandstarved.org

Select the Best Positive Selection to Improve farm Saved Seed Potatoes:

1 - Trainers Manual, 2 - Farmers Field Aid



1 - Provides the technical background and training approach to teach farmers in developing countries to increase potato yields by improving the quality of farm saved seed potatoes. In 8 training modules a demonstration experiment compares current farmer practice with positive seed potato selection.



2 - Leaflet outlining the basic principle of positive seed potato selection and providing colour pictures of major potato diseases. Meant as a reference for farmers trained on positive seed potato selection and to promote informal farmer to farmer transfer of the technology.

www.earthprint.com

Biofuels for Transport: Global Potential and Implications for Energy and Agriculture

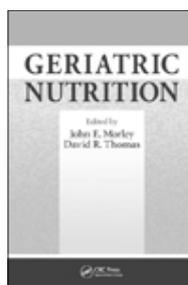


Earthscan/BMELV/FNR/GTZ

The world is on the verge of an unprecedented increase in the production and use of biofuels for transport. The combination of rising oil prices, issues of security, climate instability and pollution, deepening poverty in rural and agricultural areas, and a host of improved technologies, is propelling governments to enact powerful incentives for the use of these fuels, which in turn sparking investment.

www.earthscan.co.uk

Geriatric Nutrition



Morley JE, Thomas DR (eds)

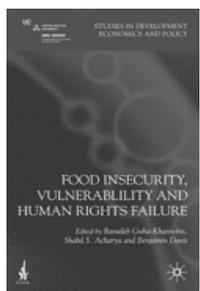
This book presents basic knowledge, current clinical practice, and novel ideas for geriatric nutrition; reviews nutritional status, assessment, and requirements in older people; provides specific data on the management of diabetes, obesity, depression, dementia, and cardiovascular disease; considers ethical and cultural issues; and offers prescriptions for enteral and parenteral nutrition. Exploring new ideas in normal, pathological, and optimal nutrition, Geriatric Nutrition ties basic research with clinical practice to further the understanding of nutrition in older persons.

www.crcpress.co.uk

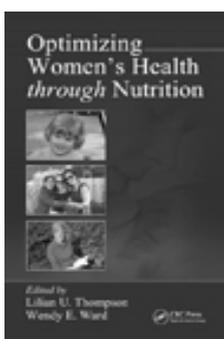
Food Insecurity, Vulnerability and Human Rights Failure

Guha-Khasnobis B, Acharya SS and Davis B (eds)

www.palgrave-usa.com



Optimizing Women's Health through Nutrition

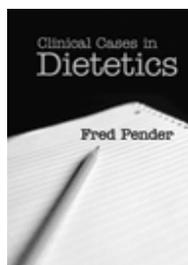


Thompson LU, Ward WE (eds)

This book provides current information on women's health and nutrition; delineates biological and physiological differences between genders, disease rates, and responses to food; discusses the etiology of each disorder and the food components that can modulate the disease process; and covers the relationship of nutrition to health for women throughout the life span.

www.crcpress.co.uk

Clinical Cases in Dietetics

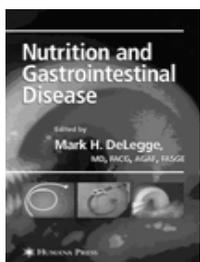


Pender F

Learning how to deal with actual cases and developing the ability to arrive at a reasoned clinical judgment are important parts of a student's training. This unique text presents a series of clinical cases of increasing complexity and range. Readers are taken through a structured way of thinking that facilitates clinical reasoning and the arrival of a justified treatment plan. Each case includes a commentary and opportunities for reflection on practice, and identifies key learning points.

www.blackwellpublishing.com

Nutrition and Gastrointestinal Disease

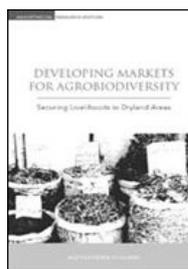


Delegge M

This volume serves as a practical reference in nutrition support for the clinical gastroenterologist and for other clinicians with similar interests. Authors provide expert nutritional knowledge and management to improve outcomes to combat problems such as short bowel syndrome, inflammatory bowel disease, celiac disease and obesity.

www.humanapress.com

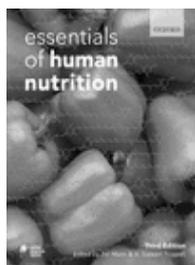
Developing Markets for Agrobiodiversity: Securing Livelihoods in Dryland Areas



Giuliani A

Reduced agrobiodiversity can leave communities highly vulnerable to changing climatic, economic and political pressures. This book, based on cutting edge research in Syria by Bioversity International (IPGRI), presents practical proposals for establishing markets and securing livelihoods in difficult dry land areas.

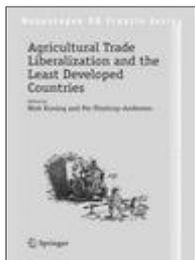
www.earthscan.co.uk

Essentials of Human Nutrition: Third Edition

Mann J, Truswell S (eds)

This book is designed as an introductory to nutrition science and practice for students, health providers, fitness instructors or anyone who wants to learn more about nutrition. It emphasizes that nutritional science encompasses a spectrum of disciplines and involves the use of many methodologies. The chapters are written by leading international experts who have been asked to

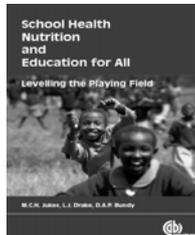
focus on what they think are the essentials in their respective fields. The chapters are organized into 8 parts: energy and macronutrients, organic and inorganic essential nutrients, nutrition related disorders, foods, nutritional assessment, life stages, clinical and public health, and special case studies. This book can certainly contribute to improved understanding and practice of human nutrition across a range of professions whose formal training may not include much nutrition. www.oup.com

Agricultural Trade Liberalization and the Least Developed Countries

Koning N, Pinstrup-Andersen P (eds)

Although the current round of international trade negotiations was called a Development Round, very little was accomplished before the negotiations stalled in mid-2006. Developing countries as a group stand to gain very substantially from trade reform in agricultural commodities. It is less clear how the 50 countries identified by the UN as

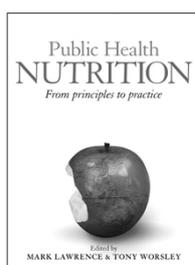
'Least Developed Countries' (LDCs), which have been subject to special consideration in international trade negotiations, would fare. Would they lose their preferential trade access to the OECD markets and, if so, would these losses exceed the potential gains from liberalized trade? Or would low-income countries that currently receive high prices for commodities such as sugar in some OECD-country markets be out-competed by countries such as Brazil in a liberalized market? More generally, would any benefits from liberalized agricultural trade be captured by middle-income countries with good domestic infrastructure and well-functioning markets, leaving few or no economic benefits to the LDCs? www.springer.com

School Health, Nutrition, and Education for All: Levelling the Playing Field

Jukes MCH, Drake LJ, Bundy DAP

This book is aimed at a wide audience; from policy-makers to implementers. It draws on the latest evidence in the field of school health and nutrition to introduce the complexity and scale of the school, health and nutrition issues preventing nations from fulfilling the promise of Education for

All. The authors affirm that to reach the six goals agreed in the 2000 Dakar Framework for Action, it is mandatory to improve children's health and nutrition. The book examines: Challenges to the health and nutrition of school age children; health and nutrition issues relating to access to education, including issues of enrolment, drop-out and absenteeism; the long-term effects of early childhood illness on educational achievement; the evidence that children's learning suffers from poor health and nutrition while they are at school; and the costs and benefits of implementing school health and nutrition programmes. www.cabi.org

Public Health Nutrition: From principles to practice

Lawrence M, Worsley T (eds)

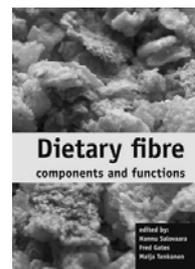
A systematic, research-based overview of the central principles and practice issues in the growing field of public health nutrition. With chapters by leading international experts, this is essential reading for practitioners and students in public health, nutrition, health policy and related fields.

www.allenandunwin.com**Ethics, Hunger and Globalization**

Pinstrup-Andersen P, Sandøe P (eds)

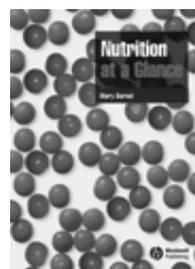
This book adds an ethics dimension to the debate and research about poverty, hunger, and globalization. Outstanding scholars and practitioners from several disciplines discuss what action is needed for ethics to play a bigger role in action by governments, civil society, and the private sector to reduce poverty and hunger within the context of globalization. The book concludes that

much of the rhetoric by policy makers is not followed up with appropriate action, and discusses the role of ethics in attempts to match action with rhetoric. The book also concludes that a better understanding of the values underlying both public and private sector action towards the alleviation of poverty and hunger would lead to more enlightened policies and greater success in attempts to achieve the Millennium Development Goals. The interaction between ethical, economic, and policy aspects is discussed and scholars and experienced practitioners from several disciplines suggest how such integration may be promoted.

www.springer.com**Dietary fibre components and functions**

Salovaara H, Gates F, Tenkanen M

Dietary fibre is of interest to both science and industry, and yet despite growing awareness of its benefits to health and nutrition, intakes remain below the recommended level. This book is essential reading for all researchers and those who concern themselves with bioprocesses and food technology. 'Dietary fibre components and functions' aims to cover the most up-to-date research available on dietary fibre and is a useful tool for all scientists involved in research and development in this field.

www.wageningenacademic.com**Nutrition at a Glance**

Barasi M

Nutrition at a Glance continues the popular series style of providing succinct information in a user-friendly and well illustrated format. A resource for students in need of an introduction to the area or a revision tool, this book will also serve as a handy quick reference for busy professionals.

www.blackwellpublishing.com

Bulletin Board

Miscellaneous:

The African Journal of Agriculture Research

The African Journal of Agricultural Research (AJAR) is currently accepting manuscripts for publication. AJAR publishes high-quality solicited and unsolicited articles, in English, in all areas of agriculture. All articles published in AJAR will be peer-reviewed. One key request of researchers across the world is open access to research publications. The African Journal of Agricultural Research is fully committed to providing free access to all articles as soon as they are published. We ask you to support this initiative by publishing your papers in this journal. Instruction for authors and other details are available at www.academicjournals.org/AJFS. Prospective authors should send their manuscripts to ajfs@academicjournals.org

Joint FAO/WHO Expert Consultation on Fats and Fatty Acids in Human Nutrition: Call for Experts

FAO and WHO are planning to hold a Joint Expert Consultation on Fats and Fatty Acids in Human Nutrition in the fourth quarter of 2008. A Call for Experts for this Consultation has been posted. Deadline for application submission is 31 January. For more information please see [page 74](#) in this issue of *SCN News*.

Theme of the **World Breastfeeding Week 2008** is
Mother Support : Going for the Gold.
Read more on [page 73](#) in this issue of the *SCN News*

Trainings:

Global Dimensions of Nutrition

This postgraduate course series is offered annually in English by the University of Oslo through its Department of Nutrition at the Faculty of Medicine and Norwegian Centre for Human Rights under the Faculty of Law, and the Akershus University College. Three successive six weeks/10 ECTS modules include:

1. The World Nutrition Situation – Data and Issues
2. Nutrition, Globalisation and Governance;
3. Nutrition and Human Rights.

Each module may be taken separately but a minimum of two modules is recommended given their interconnections. Start-up: 8 January 2007.

www.uio.no/studier/emner/medisin/nutri/ERN4323/index.xml

Contact: *Alieu S.K. Cham* at a.s.cham@medisin.uio.no

2nd International Course on

Nutritional Care and Support for People Living With HIV/AIDS

4-28 March 2008, Kisumu, Kenya. www.tichafrika.org or www.gluk.ac.ke

New E-learning course: Livelihoods Assessment and Analysis

Course available at www.foodsec.org/dl/dlcourselist_en.asp or on CD-Rom by writing to information-for-action@fao.org

This course introduces the concept of livelihoods and the components of the livelihoods framework. It also provides guidance on assessing livelihoods in different food security contexts and on selecting and interpreting livelihoods indicators. French speaking persons might also be interested in the 4 e-learning courses FAO have produced in French. Contact: cristina.lopiore@fao.org, denise.melvin@fao.org

The Human Right to Adequate Food

An online course on the human right to adequate food will be offered March 3 - May 23, 2008 by Professor George Kent of the University of Hawai'i. This course will build knowledge and skills for the practical application of human rights to governance at every level, from the local to the global, using the human right to adequate food to illustrate the basic principles. Overall, the primary objective is to help participants learn how to design rights-based social systems, and how to assess and recommend improvements for existing systems.

The course will be conducted entirely online through Transcend Peace University. The cost is 200 Euro for participants coming from non-OECD countries and 400 Euro for residents of OECD member states.

www.transcend.org/tpu/index.shtml

Meetings and conferences:

14th International Conference of the Society for Research on Human Milk & Lactation

31 January-5 February 2008
Perth, Australia
www.isrhml.org.umu.se

35th SCN Session

2-7 March 2008, Hanoi, Vietnam
Documentation, agendas and registration are available at the [SCN website](#)

International Symposium: Underutilized Plant Species for food, nutrition, income and sustainable development

3-7 March 2008, Arusha, Tanzania
www.icuc-iwmi.org/Symposium2008
Symposium08@avrdc-rca.co.tz

Unite For Sight Fifth Annual International Health Conference: Building Global Health For Today and Tomorrow

12-13 April 2008, Connecticut, USA
www.uniteforsight.org/conference/2008

Central European Congress on Food

9-11 April 2008, Cavtat, Croatia
www.pbn.hr/CEFood2008

16th European Congress on Obesity

14-17 May 2008, Geneva, Switzerland
www.eco2008.org

35th Annual International Conference on Global Health: Community Health

27-31 May 2008, Washington DC, USA
www.globalhealth.org/conference

2008 Pacific Health Summit with special focus on "Nutrition"

16-18 June 2008, Seattle, USA
www.pacifichealthsummit.org or Ms. Sheila Charles scharles@nbr.org

IMEKO International Conference on Metrology of Environmental, Food and Nutritional Measurements

9-12 September 2008, Budapest, Hungary
www.icem2008.mke.org.hu

A new update from the [IAEA Schools for Nutrition](#) is now available.
www.iaea.org

New! SCN EMail Update

Receive news and updates by email on a monthly basis! Ask us to add you to our contact list, at scn@who.int

UNITED NATIONS SYSTEM

STANDING COMMITTEE ON NUTRITION

The Administrative Committee on Coordination (ACC), which was comprised of the heads of the UN Agencies, recommended the establishment of the Sub-Committee on Nutrition in 1976, following the World Food Conference and with particular reference to Resolution V on food and nutrition. This was approved by the Economic and Social Council of the UN (ECOSOC) by resolution in July 1977. Following the reform of the ACC in 2001, the ACC/SCN was renamed the United Nations System Standing Committee on Nutrition or simply “the SCN”. The SCN reports to the Chief Executives Board of the UN, the successor of the ACC. The UN members of the SCN are ECA, FAO, IAEA, IFAD, ILO, UN, UNAIDS, UNDP, UNEP, UNESCO, UNFPA, UNHCHR, UNHCR, UNICEF, UNRISD, UNU, WFP, WHO and the World Bank. IFPRI and the ADB are also members. From the outset, representatives of bilateral donor agencies have participated actively in SCN activities as do nongovernmental organizations (NGOs). The SCN Secretariat is hosted by WHO in Geneva.

The *mandate of the SCN* is to serve as the UN focal point for promoting harmonized nutrition policies and strategies throughout the UN system, and to strengthen collaboration with other partners for accelerated and more effective action against malnutrition. The *aim of the SCN* is to raise awareness of and concern for nutrition problems at global, regional and national levels; to refine the direction, increase the scale and strengthen the coherence and impact of actions against malnutrition worldwide; and to promote cooperation among UN agencies and partner organizations. The SCN’s annual meetings have representation from UN agencies, donor agencies and NGOs; these meetings begin with symposia on subjects of current importance for policy. The SCN brings such matters to the attention of the UN Secretary General and convenes working groups on specialized areas of nutrition. Initiatives are taken to promote coordinated activities—interagency programmes, meetings, publications—aimed at reducing malnutrition, reflecting the shared views of the agencies concerned. Regular reports on the world nutrition situation are issued. *Nutrition Policy Papers* are produced to summarize current knowledge on selected topics. *SCN News* is published twice a year, and the *NICS* (formerly *RNIS*) is published quarterly. As decided by the SCN, initiatives are taken to promote coordinated activities—interagency programmes, meetings, publications aimed at reducing malnutrition, primarily in developing countries.

ANN VENEMAN
CHAIR

ROGER SHRIMPTON
SECRETARY

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The
Micronutrient
Initiative



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Global Alliance for
Improved Nutrition

