

**THE ROADMAP TOWARDS ACHIEVEMENT OF
SUSTAINABLE ELIMINATION OF IODINE DEFICIENCY**

OPERATIONAL GUIDANCE: 2005 AND BEYOND

UNICEF, 2005

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Background

During the past 25 years it has become widely recognized that most consequences of iodine deficiency such as impeded brain development and low IQ, occur in the absence of clinical manifestations such as cretinism and goitre. Iodine deficiency constitutes the world's single and most common cause of preventable mental impairment. Iodine deficiency is particularly damaging during early pregnancy since it retards fetal development, especially brain development, resulting in a range of intellectual, motor and hearing deficits.

Globally 130 countries and 2.2 billion people¹ are estimated to be at risk of iodine deficiency, including the world's most populous nations. At the same time, the calculations by the World Bank showed that each dollar dedicated to IDD prevention would yield a productivity gain of \$28, proving the widely considered assumption of IDD elimination as one of the most cost-effective programme interventions².

The goal to eliminate iodine deficiency disorders was first adopted at the World Summit for Children (WSC) in 1990, where Heads of States and Governments from more than 70 countries established a number of goals to improve and protect children's lives. A framework for action identifying Universal Salt Iodization (USI) as the central strategy to achieve the WSC goal was developed at the Conference on Hidden Hunger in 1991, elaborated upon at the International Conference on Nutrition in 1992, and subsequently included in many National Nutrition Plans.

In 1994, a special session of WHO and UNICEF Joint Committees on Health Policy agreed that USI is a safe, cost-effective and sustainable strategy to ensure sufficient consumption of iodine by all individuals. The adopted document³ suggested strategies for prevention and control of iodine deficiency disorders and recommended to:

"Iodize all salt for human and animal consumption (including salt for food processing) (Universal Salt Iodization) in all countries where iodine deficiency disorders (IDD) are a public health problem; where full salt iodization is not possible in areas where IDD are a severe⁴ public health problem, supplementation with oral or injected iodized oil will be recommended as a temporary measure. "

The goal for sustained IDD elimination was renewed at the UN General Assembly Special Session for Children in May 2002, with a commitment to achieve sustainable elimination by 2005. The outcome document of the Special Session, *World Fit for Children*, states:

"Achieve sustainable elimination of iodine deficiency disorders by 2005, and of vitamin A by 2010, reduce by one third the prevalence of anemia, including iron deficiency, by 2010, and accelerate progress towards reduction of other micronutrient deficiencies, through dietary diversification, food fortification and supplementation. "

To reinforce activities on IDD elimination worldwide, the Global Network for Sustained Elimination of Iodine Deficiency was founded and announced at a special event of the UN General Assembly Special Session in 2002. The Network, currently chaired by UNICEF, is an alliance of

¹ (ICCIDD/UNICEF/WHO, 1999)

² (Levin et al 1993; Pandav and Rao, 1997)

³ "World Summit for Children -Mid-Decade Goal: Iodine Deficiency Disorders (IDD)", UNICEF-WHO Joint Committee on Health policy, Special session, Jan 1994

⁴ Cretinism, total goiter rate > 30% and median urinary iodine level < 20 µg/dl, or > 40%) of newborn infants have TSH > 5 mU/litre of whole blood

major organizations that share a common commitment to assist countries to reach the goal of sustained elimination of iodine deficiency through salt iodization.

The virtual elimination of IDD will also contribute to the achievement of following Millennium Development Goals:

- *Eradicate extreme poverty and hunger*: Increased learning ability and intellectual potential leads to higher earnings. In addition, the burden of diseases and pathologies related to IDD will be eliminated.
- *Achieve Universal Primary Education*: Improved cognitive development and learning potential leads to improved school performance and reduced drop out rates.
- *Promote gender equality and empower women*: Reduces childcare burden for women, frees up household resources and allows women more time for income generating work.
- *Reduce child mortality*: Reduced Iodine Deficiency (ID) will contribute to decreased rates of miscarriages, stillbirths, and other pregnancy complications, as well as early neonatal deaths.
- *Improve maternal health*. Lower rates of miscarriages, thyroid diseases and other clinical outcomes of ID, will improve the health status of women of reproductive age.
- *Develop a global partnership for development*. The programmes for sustainable elimination of iodine deficiency ensure a strong partnerships at the global, regional, and country level and leverage resources and commitment through alliance of public organizations, civil society, and private sector, for the elimination of one of major hindrances to nations' development.

USI Programs: Strategies and Elements to Ensure Sustainable Success

Ensuring Government Commitment and Leadership

Government support, leadership, and commitment are essential to strategic planning and effective implementation of IDD elimination programmes. Public policy support and government leadership ensures that IDD elimination is a national public health and economic development priority. Establishing a regulatory mandate for USI, allocating necessary resources, and empowering multiple ministries to play their respective roles- including food control and enforcement, public health and nutrition monitoring, and public education - are the government's main roles and responsibilities.

On the international level, through the World Summit for Children, the United Nations General Assembly Special Session, and other declarations, most governments are officially committed to IDD elimination and to USI implementation. However, one of the main barriers to achieving and sustaining IDD elimination is lack of leadership and ownership of the USI programme by government which needs to be a special target of advocacy efforts.

Legal and Regulatory Basis for USI

Mandatory regulations are a basic expression of government commitment to USI. In the absence of mandatory regulations, some producers will typically capture a market niche, however the industry as a whole will not move to universal iodization. A comprehensive USI law should apply to all salt production for human and animal use regardless of the producer size and whether salt is domestically produced or imported.⁵ Effective USI legislation and related regulations require the

⁵ A guide to fortification legislation is available from: Nathan, Rose "Food Fortification: Legislation & Regulations Manual" PAMM, UNCEF, USAID, World Bank, 1995. It may be also found at <http://www.micronutrient.org/idpas/pdf/315RegulationOfFortified.pdf>

input and review of the salt industry, trade representatives, as well as all government authorities involved in the oversight of the salt market.

Enforcement Mechanisms

In addition to adopted laws, the implementation of USI requires significant efforts to ensure that the laws are enforced. This requires a set of rules, instructions, and standards with clear definitions of roles and responsibilities for all institutions that have responsibility for, and routine contact with, the salt industry and market. In many cases, these institutions extend beyond the health sector to include the Ministries of Agriculture, Trade and Finance. Their responsibilities should include contact with salt farmers or producers, salt processors and packagers, industrial food processors as well as importers/exporters.

These regulations, unlike laws, can be flexible and modified with changes in the production and market situation, household coverage, or iodine nutrition indicators. For example, the frequency of testing and reporting and other indicators may be adjusted to the changing situation in salt industry or in the market. Or, the standards for iodine levels in salt may be revised after determination of urinary iodine levels in population.

Capacity Building of Government Agencies

Legislation and regulatory documents provide a legal framework for the designated State Agencies to enforce proper implementation of USI. However, the agencies also need human, technical and institutional capacity to perform the functions specified by regulations. Additional resources, training, and technical facilities may be required to competently fulfil designated responsibilities such as external quality control of iodized salt, market and trade control, or programme monitoring and reporting. While these activities may involve initial investment and technical assistance, once developed, they become routine functions requiring minimal ongoing financing and support.

Industry Ownership and Capacities

While it is critical for the government to provide an enabling environment for USI, it is industry that is crucial for its implementation. Therefore, iodization must be perceived as a basic responsibility of industry, its “norm”, as basic as ensuring product hygiene or other standards of quality. At the same time, industries’ understanding of their responsibilities and technical requirements for salt iodization will make a critical contribution to planning and implementation of USI.

Initiating salt iodization may require technical assistance to producers to establish the salt fortification processes: procurement mechanisms to purchase fortificant and equipment, support to undertake start-up and training activities, the conduct of internal quality control (particularly for iodine content), and to undertake marketing and consumer information.. In many countries, special activities such as support in founding Industry Associations, or establishing joint and/or revolving funds, have served as mechanisms to build producer capacity and commitment and also lower costs of procurement and maintenance.

Multi-Sectoral Coordination Process

For effective and sustained implementation, USI programs must capitalize on the distinct contributions and varying roles of public, private and civic sectors. Salt is not produced or distributed by government agencies or health experts but by enterprises with practices and

perspectives that are often different from the public sector. On the other hand, the legal framework and normative standards necessary to change industry practice are not enacted by producers but by government authorities. Therefore, achieving and sustaining successful elimination of IDD depends on mutually reinforcing contributions from a range of participating actors.

A key condition for the success of USI is a distinct mechanism that coordinates these contributions as well as integrates reporting from industry, government and other involved sectors; and facilitates periodic reviews of the program. The structure, membership and legal basis of a national coordination mechanism may vary depending on country situation and needs. For example, salt-importing countries will have customs or other import-regulating agency as a key partner, while in countries with many producers, the representatives of industry or associations will be the most important players.

Information, Education, and Communication

Advocacy and communication are essential components of national strategies to eliminate iodine deficiency. Communication messages should articulate concrete accountabilities, and should target various audiences across all levels of society. At the minimal level, the target groups should be:

- National leadership, in order to create and maintain political champions for USI;
- The salt industry, including producers, processors and distributors as well as food processors, retailers and others in order to ensure effective implementation.
- Technical audiences in government, and medical, academic and technical institutions to ensure their full contribution and support; and
- The general public to create consumer acceptance and awareness, to ensure that consumers accept and recognize the added value of consuming iodized salt.

The scope of communication activities and the selection of target audiences will vary according to specific country situations and needs. In countries where there is no USI legislation, it may be necessary to focus communication efforts on leadership and industry in order to promote legislation. When preparing advocacy events, special attention should be given to local authorities at the regional and sub-regional level, acknowledging their responsibilities, authority, and capacity for communication both with industry and consumers (including inspection at the production and market level). Once a USI law is in place, and iodized salt is in the market, the scope of communication activities can be broadened to include public campaigns aimed at increasing awareness, acceptance and demand for iodized salt.

To ensure accuracy, relevance and effectiveness, communications campaigns should be based on current knowledge, concerns, attitudes and practices of the target population. Misconceptions about the rationale for USI, negative impact on food preparation, and other potential problems should be identified and addressed by specific and appropriate communication messages.

Sustainability of communication efforts is an important pre-requisite for programme success. Several approaches may be used to establish sustainability: integration of USI messages into educational systems, such as schools and colleges, as well as the use of product labelling to deliver messages about the importance of iodine in salt. These activities will allow ongoing information and the raising of awareness, at no additional costs.

Elaborating Monitoring Mechanisms

The sustained elimination of IDD through implementation of USI requires a well established system to monitor population iodine status, use of iodized salt, and programme implementation. In other words, impact, process, and the programme must all be monitored.

Impact monitoring

The monitoring of population **iodine nutrition status** reflects the status of iodine nutrition in the target population and includes assessment of **impact** indicators, such as:

- a) Levels of urinary iodine levels in population;
- b) Levels of TSH in newborns⁶; and
- c) Goitre rates: may be used for preliminary assessment of the magnitude of the problem during the initial stages of USI/IDD elimination programmes. However, on-going monitoring of the programmes requires updating urinary iodine levels to assess the population iodine nutrition at a particular point of programme implementation. Changes in goitre prevalence cannot be a proper determinant of changing iodine nutrition status since goitres rates are slow to respond to added iodine in the diet.

Process Monitoring

The monitoring of salt iodization and access to iodized salt includes a set of process indicators for achievement of IDD elimination. The proportion of households using adequately iodized salt, defined at the level of at least 15 ppm, is the most important end-point process indicator that reflects the consumption patterns of iodized salt. However, monitoring at production, distribution and market levels is a pre-requisite for successful implementation – and very important in ensuring access at the household level. These indicators and the points at which they are measured may differ depending on salt production-, import-, trade-, and market-related situations. Additional monitoring activities may be needed at food processing sites and for ensuring use of iodized salt for livestock.

The capacity, resources and systems should be in place to sustain routine monitoring of salt production, distribution and consumption to ensure continued operation of the program as well as capture changes in production and consumption, and to identify trends that may impact on the effectiveness, safety, and sustainability of USI.

Programme Monitoring

Programme monitoring includes criteria to facilitate the assessment of **programme implementation and coordination**. An effective programme monitoring system includes not only proper collecting and reporting of information but also efficient feedback and adjustment mechanisms that will allow continuous improvement of USI. Roles and responsibilities for government or independent public health institutions to monitor programme implementation status should be defined in USI enforcement documents and are important to ensure efficient functioning of monitoring system.

⁶ For full information on recommended monitoring tools and methodologies, as well as assessment criteria for achievement of sustainable IDD elimination, refer to WHO, “Assessment of Iodine Deficiency Disorders and Monitoring their elimination: A guide for programme managers”, second edition. WHO/UNICEF/ICCIDD: Geneva, 2001.

Ensuring Sustainability

When initiating salt iodization programmes or expanding population coverage, plans to sustain the programme achievements are crucial. Ensuring sustainability requires a number of factors which should be integrated into the USI planning process. In addition to the most important pre-requisite for sustainability, **adopted and enforced legislation**, others are:

- an understanding of the consequences of iodine deficiency and its vital role in contributing to the nation's economic and social development by all partners
- effective inter-sectoral co-operation and co-ordination to ensure cost-effective implementation as well as broad-based support and acceptance.
- governments' acceptance that optimal iodine nutrition, which enables full mental and cognitive development, is a child's fundamental right. Within this framework, USI is considered an entitlement of the entire population, especially of the most vulnerable groups, with government held accountable for ensuring results.
- Integration of USI messages into formal and informal educational systems as existing channels to maintain public awareness. In addition, iodine nutrition related topics should be included in the education and continuing training of medical and health professionals, teachers, food scientists, economists, and other technicians and thus enable relevant key sectors to continuously support national leadership.

Sustained Domestic Financing:

Sustained elimination of IDD also implies sustained operation of salt iodization without donor support and to be based on domestic financing and resources. Industrial costs are absorbed by the marketplace and are invisibly passed on to the consumer. Public oversight is financed by government revenues, and often integrated into the routine operations of the relevant agencies.

Over the past 10 years a number of donors – international agencies, bilateral governments and civil society organizations – have funded salt iodization programmes worldwide. This support is sometimes instrumental to overcome initial barriers for USI. However, it is important that external financing is structured as a temporary boost and does not create expectations for continued subsidy and dependence on donor support. Hence, while supporting USI programs, it is important to pay particular attention to the following questions:

- Is there a transition plan in place from donor financing to domestic financing?
- If UNICEF or another international agency is involved in the support of ongoing operations, particularly the procurement of potassium iodate, what is the exit strategy? Is there a plan to raise the capacity of producers to purchase fortificant and maintain the iodization process and equipment?
- Are government oversight, regulatory practices and monitoring expenses reflected in staffing and funding lines in the relevant ministries or integrated into ongoing systems of food control and enforcement and nutrition surveillance? If donors are involved in support of ongoing operations what is the exit strategy?

Criteria for Progress towards and Achievement of Sustainable Elimination of IDD Through Universal Salt Iodization

The format and content of reporting on national progress towards the elimination of IDD varies considerably from country to country. However, a unified reporting system is required as part of the commitments made at UN General Assembly Special Session. The set of indicators of progress

has been developed by ICCIDD/UNICEF/WHO⁷, which allows monitoring the progress and indicating achievement of sustainable elimination of IDD through USI (see Annex 1).

The Network for Sustained Elimination of Iodine Deficiency has developed a “Unified Reporting Matrix” in order to communicate national progress to global audiences in a way that allows easy comparison, across time, countries and regions (see Annex 2), and to identify gaps in the implementation of programmes. Addressing these gaps will help to ensure sustainability.

Addressing the Challenges to Accelerate the Achievement of USI

In the light of lessons learned over the past decade, it is useful to review the challenges faced by many countries. A review of country experiences indicates that the following barriers may constrain progress and suggests possible solutions which may be considered while adjusting strategies for achieving and sustaining USI (Annex 3).

Is Coverage of 90% of Households Sufficient? Poor and Hard-to-Reach Populations

The criteria for the achievement of USI-- household coverage by iodized salt (90% and more) and urinary iodine levels⁸-- reflect levels of iodine nutrition for the majority of population. However, a small proportion of individuals may still remain unprotected. In populous countries, this small proportion may actually represent a very large number of people. The information and situational analysis from numerous countries concludes that in most cases the remaining unprotected population segments continue to consume inexpensive non-iodized salt meant for industrial use, from small scale producers; others, due to geographic access, may consume salt free-of charge from natural deposits. Although these groups are small as a proportion of the total population, they deserve high attention since they represent a poor and high-risk population with numerous needs, and in most cases, are deprived of basic rights to health, nutrition, and development.

In order to reach these hard-to-reach populations, iodine deficiency packages should be central to community-focused interventions, and part of a comprehensive package of activities for the areas with the most disadvantaged populations.

Identifying Opportunities to Accelerate Achievement of USI and Sustainable Elimination of IDD in Countries with Different Levels of Progress

Identifying Opportunities to Accelerate Production and Supply: Countries with Low Coverage Status

Despite progress in many countries, 42 countries are reporting less than 50% population coverage with access to iodized salt. This group of countries will need to enhance and expand their existing

⁷ Please refer to:

1. Monitoring Universal Salt Iodization programmes, first edition, ICCIDD, MI, PAMM, UNICEF, WHO, 1995,
2. “Assessment of iodine Deficiency Disorders and Monitoring their elimination, as guide for programme managers”, second edition, 2001, ICCIDD, UNICEF, WHO.
3. Assessing Country Progress in Universal Salt Iodization Programs: Iodized Salt Program Assessment Tool (ISPAT), edited by Robin Houston, Mahshid Lotfi, Rose Nathan, and Chandrakant Pandav, 1999, Also available at: <http://www.micronutrient.org/resources/publications/Assessing%20Country%20Progress.htm>

⁸ see Annex 1

programmes by engaging new partners, stimulating old allies, developing fast-track strategies, and identifying resources.

A review of the programme status would include identifying major challenges and planning for urgent adjustments and actions including:

- Facilitating dialogue among government and the salt trade to strengthen the regulatory framework, including the launching of USI law if not yet adopted.
- Support to establishing or strengthening of multi-sectoral coordination and programme management
- Support to strengthening of transparent food control and law enforcement including timely reporting between food control and business sector.
- Defining initiatives to address the supply of non-iodized salt from specific industry segments including reducing leakage from large producers, strict control of imported salt or developing the capacity for small scale iodization.
- Where a consistent supply of iodized salt is available in the market place, support public marketing and communication campaigns to raise value of iodized salt and consumer awareness.

Achieving the Goal and Sustaining the Progress: Countries on Verge of Reaching USI

Countries in this category may consider using the potential achievement of the USI goal by 2005 as an opportunity to re-energize partners and expand their support base by the following activities:

- fast-track the development of additional approaches, and identify resources to expand programmes to achieve > 90% of households using iodized salt;
- review threats to sustainability of current achievements;
- ensure that MICS, DHS, and other survey will be well timed to capture improvements in household coverage and population iodine nutrition to motivate renewed efforts
- assess timing for an independent programme evaluation;
- define an exit strategy for any donor funding and transition to domestic financing.

Given that the intensive efforts in launching USI cannot be sustained indefinitely, an analysis may be useful to assess threats to sustaining achievement of current coverage of iodized salt including:

- Defining pressure in the market place from non-iodized salt.
- Understanding consumer awareness, acceptance and demand.
- Identifying obstacles to open transparent relations between government food control and the salt sector.
- Transitioning from donor supported to market supported supply of potassium iodate, including building private sector capacity to access supply.
- Integrating government food control and nutrition monitoring functions into routine operations

Countries Preparing to Report or Reported on Achievement of USI: Focus on Sustainability

Failure to sustain IDD elimination is usually not technical or scientific but rather due to declining leadership and ownership of the USI programme by government, weak systems for monitoring, manage, and coordinating implementation. In many cases, the decreased donor support to the programme without other well-established sustainability mechanisms may lead to certain level of backsliding. Hence, countries achieving more than 90% of households using iodized salt should especially ensure that strategies to sustain the achievement are in place.

Additional Considerations for Countries with Large Populations and Large Number of Unprotected Newborns

Several countries with large populations are facing significant challenges to reach the 2005 goal. Most of these countries still have a low percentage of households using iodized salt⁹. Even in countries with 90% coverage rates, however, due to the large number of births, the remaining 10% uncovered still constitutes a high number of newborns unprotected from iodine deficiency.

In these countries, population groups from different geographic areas generally have varying degrees of access to iodized salt. Therefore it is important to consider a disaggregated analysis of indicators at the population, production, and market level for differential problem solving. Even though the 90% coverage goal may have been reached, it is important to ensure that this high coverage rate is consistent among each geographic area, and that no significant discrepancies exist among population groups.

UNICEF Support to USI/IDD Elimination: 2005 and Beyond

Achievement of sustainable elimination of iodine deficiency involves phasing-out UNICEF and other donors' support, as programme implementation increasingly becomes the routine responsibility of the government and of the private sector. Modest residual support from UNICEF may work to ensure that the country-led USI programme is kept in line with the latest developments and international technical recommendations.

UNICEF's support to concrete regions and countries will depend on their current status of progress and country-specific circumstances, but in general it may be categorized as follows:

Short-Term Support

In countries with low access to household salt, UNICEF support will focus on accelerated efforts to expand coverage towards the achievement of the 2005 USI goal. This will imply revision and adjustment of programme strategies and 2005 action plans to ensure comprehensive planning and implementation based on analysis of current country progress. The country situation will dictate priority actions, to mobilize commitment and update strategies. In parallel, all countries are encouraged to strengthen above-mentioned sustainability mechanisms.

Medium - Term Support

In countries that have reached the goal of USI, UNICEF support will be focused on ensuring sustainability mechanisms are in place, including building capacity of national institutions to maintain the programme so that it is a part of their routine responsibilities, with implementation of phase-out strategy and actions.

The group of countries that still has not reached the goal of USI (some countries with large populations that have low coverage rates, countries in emergency situations and countries with a larger number of small-scale production facilities) will still need support for additional 1-2 years to make the final efforts to reach USI.

⁹ China is exception since has reached high coverage rates

Long - Term Support

In a long-term, when the countries have already reached the goal of sustained elimination of iodine deficiency, residual support from UNICEF will often be channelled through joint actions with ICCIDD, WHO, and other main partners within the Network for Sustainable Elimination of Iodine Deficiency. The support for long-term activities will require only modest financial resources from country offices and generally minimal dependence on additional donor funding. However, UNICEF's support in periodic advocacy or in facilitating technical and programme adjustments will be essential for sustained elimination of iodine deficiency. Support will focus on:

- bringing new scientific evidence and research results from the international arena to national programmes
- assisting in improvement of the monitoring process through the introduction of new recommendations adopted at the global level by UNICEF, WHO, ICCIDD, and others
- supporting continuous collaboration between the countries at the regional and global level
- introducing new methodologies and tools, which may include supplementation, for the elimination of iodine deficiency among hard-to-reach and poor populations beyond USI indicator of 90% coverage, thus ensuring the equal rights of all children and women, especially of the most disadvantaged groups providing new updates and guidance to the countries based on the worldwide experiences and lessons learnt

List of acronyms

DHS	Demographic Health Survey
ICCIDD	International Council for Control of Iodine Deficiency Disorders
IDD	Iodine Deficiency Disorder
IQ	Intelligence quotient
ISPAT	Iodized Salt Programme Assessment Tool
MICS	Multiple- Indicator Cluster Survey
PAMM	Programme Against Micronutrient Malnutrition
ppm	parts per million
SOWC	State of the World's Children
UI	Urinary Iodine
UNICEF	United Nations Children's Fund
WHO	World Health Organization
WSC	World Summit for Children
USAID	United States Agency for International Development

ANNEXES

Annex 1: Criteria for Achievement of Sustainable Elimination of IDD¹

Population iodine nutrition status indicators

The programme success has to report that the optimal levels of iodine nutrition have been reached in surveyed population:

- Proportion of population with UI levels below 100 µg/l - less than 50%
- Proportion of population with UI levels below 50 µg/l - less than 20%

Process indicator

- Proportion of households using adequately iodised salt² - more than 90%

Programme indicators

While the factors contributing to the sustainability of USI vary according to country situations, experience and lessons learned indicate that there are components and elements to ensure sustainability that are consistent across countries. The set of indicators developed by ICCIDD/UNICEF/WHO suggests assessing USI program sustainability by ensuring an attainment of at least eight out of the ten indicators listed below:

1. An effective, functional national body (council or committee) responsible to the government for the national programme for the elimination of IDD (this council should be multidisciplinary, involving the relevant fields of nutrition, medicine, education, the salt industry, the media, and consumers, with a chairman appointed by the Minister of Health);
2. Evidence of political commitment to universal salt iodization and the elimination of IDD;
3. Appointment of a responsible executive officer for the IDD elimination programme;
4. Legislation or regulations on universal salt iodization (while ideally regulations should cover both human and agricultural salt, if the latter is not covered this does not necessarily preclude a country from being certified as IDD-free);
5. Commitment to assessment and reassessment of progress in the elimination of IDD, with access to laboratories able to provide accurate data on salt and urinary iodine;
6. A programme of public education and social mobilization on the importance of IDD and the consumption of iodized salt;
7. Regular data on salt iodine at the factory, retail and household levels;
8. Regular laboratory data on urinary iodine in school-aged children, with appropriate sampling for higher risk areas;
9. Cooperation from the salt industry in maintenance of quality control; and
10. A database for recording of results or regular monitoring procedures, particularly for salt iodine, urinary iodine and, if available, neonatal TSH, with mandatory public reporting.

¹ “Assessment of iodine Deficiency Disorders and Monitoring their elimination: A guide for programme managers”, second edition, ICCIDD, UNICEF, WHO, Geneva, 2001, WHO.

² Defined at 15 ppm of iodine in salt

Annex 2: Most Common Challenges and Ways to Overcome in Reaching USI

Lack of Policy Support to USI

In some countries the commitment at the United Nations General Assembly Special Session to achieve USI by 2005 has not been translated into domestic policy, or a USI law has not been adopted and /or enforced. Absence of USI law is most closely associated with low coverage of iodized salt. Of 16 countries reporting less than 20% of households using iodized salt, 13 have no official USI regulation. This inadequate political commitment may be due to a number of reasons including:

- *Perceiving IDD as a Clinical or Health Issue:* Iodine deficiency is perceived as a clinical problem of goitre, cretinism or other clinical manifestations, with little understanding of the national economic development consequences. Without this broader perspective, it may be difficult to expand support beyond the health sector and secure the multi sectoral commitment and leadership necessary to achieve USI.
- *Underestimating the Magnitude of IDD.* Misinterpreting IDD as a limited issue confined to remote or “endemic areas” often leads to the consideration of limited and targeted interventions. With no connection to a population-wide threat, it is difficult to marshal support for a population-wide intervention such as USI.
- *Unfamiliarity with key facts about USI.* For a number of reasons, there may be a perception that the salt industry and government food control infrastructure cannot safely and effectively implement USI. Some groups may feel that iodized salt will not be accepted by consumers or that iodized salt is appropriate for some kinds of household or industrial food preparation. There are a variety of other misconceptions and suspicions about USI which block successful mobilization of the necessary support for USI. It is critical that these are recognized and addressed.
- *Reservations from the Health Sector:* Key health sector groups may express concern that added iodine in the diet may increase salt consumption and therefore may lead to increase in cardiovascular and other diseases. Objections from the medical and health community that often advise on public health policy may provide an excuse for government inaction, an opportunity for interest groups to oppose USI, and allow misconceptions about USI to grow.

In the mentioned cases, UNICEF may facilitate a process of simultaneous consultation and audience research to assess the performance of past advocacy and communication, identify key gaps and address key questions about the lack of progress in adopting USI policy including:

- Has the national economic development case for IDD elimination been persuasively made?
- Is the need for population-wide rather than clinical intervention understood?
- Is there sufficient country data to describe the national threat and make the case for IDD elimination?
- Has USI been clearly presented as feasible, affordable, effective and safe intervention?
- Have communications to key stakeholders in sectors beyond health been overlooked?
- What kinds of data, research, communications or other actions are needed to address the key objections?

Based on an understanding of these key questions, advocacy events might focus on:

- Creating deeper awareness of IDD among political and technical leadership groups
- Intensifying efforts to involve additional stakeholders and partners including the private sector;
- Presenting new data and messages to address specific objections such as:
 - a.) Prevalence data on IDD
 - b.) National economic consequences (UNICEF/MI Vitamin & Mineral Deficiency Report and other important materials)
 - c.) Consumer trials indicating acceptance of iodized salt in pickling and other use of salt at home or by the food industry
 - d.) Experience from other countries to reaffirm feasibility and effectiveness of USI
- Present the basic structure and costs (and benefits) of the USI program and gain consensus of a strategic plan to promulgate a USI law

Lack of Ownership or Commitment to Implement USI

In a number of countries government leaders have not taken full ownership or responsibility for the program. In some cases, IDD elimination and USI may be perceived predominantly as a concern of the international community or a “donor-driven” process. In other cases, a law may be promulgated as a result of advocacy by the nutrition or health sector without broad multi sectoral consultation needed among government, industry or other key institutions to concretely move forward with implementation. Therefore, in the competition for public attention and resources, USI fails to attract priority and consequently, no serious efforts are taken to address industrial feasibility, empower the proper channels of government or invest in the supporting public and private infrastructure needed to make USI a reality. Currently, more than half the countries with less than 50% coverage of adequately iodized salt have USI laws on the books, but the implementation and enforcement is not actively pursued.

In these cases, it may be necessary to facilitate convening stakeholders in a process to reinvigorate and renew the advocacy process including frank and open assessments of the failure to translate the law into reality. This may include:

- a) Review questions about the commitment and awareness of stakeholders and their involvement in instituting the USI law:
 - Was there sufficient input from all implementing public agencies with the role in oversight of trade, food quality and safety, or other public quality assurance function? Are their roles and responsibilities clearly defined? Are there any unresolved reservations and/or objections within government ministries?
 - Was there sufficient input from private business sector including representatives of salt producers, salt refiners/processors, food processors and importers/exporters?
 - Are there particular objections that need to be addressed regarding commercial viability including: acceptance by consumers and industrial processors (pickling, etc); transparent enforcement of USI in the market place and unfair competition from non-iodized salt; or financing for start-up costs and cash flow for potassium iodate and other costs?
- b) Review and assess the technical regulations in the USI law to determine:
 - Are the appropriate directorates or institutions sufficiently empowered?
 - Are the enforcement procedures clearly elaborated?
 - Is their sufficient technical capacity of the implementing agencies to enforce USI?
 - Is there a concrete and itemized 3-5 year food control and enforcement plan and budget?

Based on these assessments, a multi-sectoral technical dialogue may be facilitated to reach an agreement and provide an opportunity for:

- Multi-sectoral input, review and amendment of the USI law.
- Clarification of institutional roles and responsibilities.
- Broaden the range of stakeholders to fill key gaps in support or communication.
- Identify the strategic investments to address key reservations and objections.
- Identify the most pressing resource and capacity building needs.
- Gain consensus on milestones towards implementation of USI including a goal for end of 2005.

Difficult Market Environments

Unlike many health programs that must be funded indefinitely by the public sector, salt iodization is essentially a business activity that requires commercial viability. Government legislation, enforcement, public education, monitoring and other USI components must work to enable the market to sustain a small increase in the costs of production, usually at the consumer level. The ability of the market to absorb these costs is influenced by a number of market factors including:

- *Level of centralization of raw salt producers, refiners, packers, distributors and importers.* A “classic” fortification program, modelled on the successful experiences in Europe and North America fortification, is founded on a relatively centralized and technically sophisticated industry. When the salt industry is dispersed and decentralized, the USI program must implement a more complex and intensive work program to successfully communicate with numerous industry players, provide technical assistance and enforce quality assurance and monitoring.
- *Grades of salt available in the marketplace.* Table salt for direct human consumption usually represents only a segment of national salt utilization. Salt for industrial use is often available, inexpensive and may be widely consumed at the household level in many countries. A large market for non-iodized salt represents competition for iodized and therefore poses regulatory, enforcement and pricing challenges to USI program.
- *Costs of Iodization:* Added costs for industrial start-up and improvements as well as recurring costs for potassium iodate, internal quality control, maintenance, packaging and marketing, will determine the degree to which prices need rise to finance the costs of fortification. When less expensive non-iodized salt is available in the marketplace, the USI program must ensure that iodized salt is attractive to consumers and competitively priced. In general, the higher the cost differential between iodized and any available non-iodized salt, the steeper are the barriers to successfully sustaining USI.

Some common market environments presenting barriers to achievement of USI include:

Leakage from Large and Medium Sized Producers: Industrial Salt in The Market

In many countries household coverage of iodized salt remains low despite the presence of USI law, visible communication and enforcement efforts to implement USI, and dominance of large and medium scale producers in the marketplace. In these cases, some salt may be iodized specifically for household use, but there is significant leakage of inexpensive bulk industrial salt into retail markets and households. A series of interventions may be considered in these cases, including:

- a) Opening channels of communication to food processors, distributors, wholesalers and retailers to expand industry ownership of USI process by:
 - Raising awareness of IDD and their role of these private sector players in providing good iodine nutrition.
 - Identifying and eliminating misconceptions that may present barriers to their acceptance of iodized salt.
 - Collaboratively identifying critical points in the distribution chain where key players may not be informed or supportive or define other strategic opportunities to prevent leakage of bulk industrial salt.

- b) Facilitate a multi sector process to review and amend the scope of salt regulation including:
 - Ensuring USI law applies to all salt for human and animal consumption including industrial or imported salt as well as coarse salt produced outside the formal sector.
 - Defining the responsibilities and obligations of salt traders, distributors or wholesalers possibly including special regulations for all companies dealing with non-iodized salt.
 - Considering whether the USI law and/or regulations need to empower agencies beyond the normal chain for food safety and quality inspection and enforcement in order to more effectively address leakage from the industrial to the retail distribution chain.
 - Exploring how the USI law can most effectively empower, motivate and resource local and municipal authorities to widen the scope of control over industrial salt distribution.

- c) Build the capacity of food control and enforcement personnel to track and distinguish iodized from non-iodized salt. This may involve:
 - Considering packaging requirements or other regulations for industrial salt enabling inspectors to more easily identify non-iodized salt produced for industrial use.
 - Ensuring inspectors have consistent access to spot tests kits as well as timely access to titration laboratories for “legal samples” needed for enforcement and quality assurance.
 - Educating inspectors on the importance of salt iodization so that they place a priority on salt inspection among their many competing responsibilities for food quality, safety and other duties.
 - Ensuring proper guidelines the frequency inspections as well as procedures for sampling, testing and reporting.

- d) Empowering consumers to demand quality iodized salt as required by law:
 - Promoting benefits of iodized salt to consumers with generic campaigns along with official logos or labels enabling consumers to identify salt with claim of compliance to USI.
 - While it is difficult for individual consumers to distinguish iodized from non-iodized salt, NGOs representing consumers can be a powerful tool to pressure large companies that may be sensitive to organized consumer pressure and loss of sales or reputation. The risk of these consequences may outweigh the perceived cost savings of non-compliance with USI.

Widespread Consumption from Imports

Many countries import a substantial proportion of their edible salt. When these imports enter through a limited number of ports or roads, investments in communication and enforcement at point of entry may be a cost-effective approach to significantly increase iodized salt coverage in a short time-frame. These investments should focus on ensuring that:

- USI law specifically mandates the iodization of imported salt and regulations properly designate the responsible authorities responsible for regulating imports. Often the responsibility for imports is distinct from control over domestic industry and is housed in the ministries of trade and finance or in independent port authorities and customs commissions.
- Capacity building for customs inspectors and related personnel at points of entry. USI program should ensure that they: a) understand the importance of USI, b) specifically empowered by law to undertake inspections, c) provided with critical information including advance notice of incoming salt shipments, d) trained in the use of salt testing kits, e) backed-up by a nearby titration facility, and f) provided with clear procedures for impoundment or other effective sanctions for non-compliance.
- Channels are open to empower local authorities. As governments decentralize, municipal authorities at port cities or border towns are often responsible or in control of overseeing import inspection activities. Therefore, the awareness and support of mayors and other local authorities is vital to establishing control at the various points of entry.
- Channels are open for communication to importers and distributors. Often these companies are distinct from the domestic food industry and involved in brokering transactions for many kinds of imported goods. They may be not immediately identified as part of the food industry or the salt industry. Ultimately, this sector will be responsible for specifying iodized salt from their international suppliers. Therefore, their awareness of USI and collaboration with authorities is a key to successful enforcement.
- Normally it is the responsibility of importing countries to enforce the quality of products coming across their borders. However, pressure may be exerted on exporting governments and producers through regional and global networks. To address obstacles to achieving this kind of bi-lateral cooperation, regional and global mechanisms may be explored to involve governments of exporting countries as well as regional trading blocs or global partners

Widespread Production from Small Scale Producers

Fortification among small-scale producers presents a challenge to IDD elimination and to USI in a number of countries with large sea coasts or other easily accessible natural salt deposits. In particular these situations are characterized by the following challenges:

- Feasibility of fortification from sometimes thousands of small scale production and distribution facilities is not proven from experience in industrial countries and may not respond to conventional fortification strategies;
- Even if supplying only a fraction of national consumption, small producers may influence the overall market by offering a competitive non-iodized salt or providing examples of widespread non-compliance and thereby providing large scale producers with a rationale for not complying with USI;

- Small scale “salt farmers” often supply rural and low income groups at highest risk for severe IDD. They and their families are also often among the high risk.

Therefore, addressing iodization at the small scale level may be a critical element to achieving USI and IDD elimination. However, strategies to expand fortification to this sector must overcome a number of significant barriers including:

- Small scale salt farmers are typically among the lowest income segments and do not have the financial capital or technical capacity to iodize without significant assistance and monitoring by public agencies. This is compounded by the fact that small scale production is usually unrefined, unpackaged and of low quality. Therefore investment is needed not only for iodization but also for upgrading the overall processing and packaging.
- Enforcement in this environment will be difficult because small scale producers comprise an informal business sector. They are not registered or licensed, not inspected by food authorities, and often their number or whereabouts is unknown.
- In a number of countries, enforcement and sanctions of mandatory food law on this low income group raises a number of social, political and humanitarian issues.
- In rural areas most often supplied by this sector, communication channels to create producer awareness or consumer demand are limited.

Programs to expand USI to this sector may require a significant investment of financial and human resources as well as ingenuity and perseverance. Strategies to involve the small scale sector will require public financial commitment and a significant effort at the local level involving municipal government, NGOs or other channels that reach producers and consumers at the grassroots level.

Experience of USI programs involving the small scale production sector suggest the potential to build on the following options:

- While there may be a very large number of producers classified as small scale, often only a handful produce a relatively significant share of the salt from the informal sector. This limited and more manageable number of larger producers can be identified and targeted for communications, capacity building, financial incentives and special ongoing monitoring.
- When small-scale producers are concentrated within a relatively limited geographic area, it may be possible to organize producer cooperatives and build their capacity to iodize salt at a jointly owned facility. Intensive communications may be needed to change their traditional way of doing business and motivate them to bring their raw salt to the cooperative facility for final refining, iodization and packaging. It will be also necessary to mitigate the perception of unfairness created by the fact that some producers are located further from the iodization facility and therefore put at a disadvantage.
- In some cases a large private company or a public-private joint venture enterprise may systematically purchase raw salt from small-scale producers for iodization at a larger facility and subsequent sale as a packaged or branded product. This option involves commitment by a large company as well as communications and brokering by government to assist the recruitment of small scale producers. The difference between the “wholesale” price paid by the bulk purchaser and the retail price available at local markets will need to be addressed in order to prevent small scale producers from continuing to supply traditional local customers.

Long-term trends may indicate that efficiencies of large-scale production, preference of rural consumers for branded products, or other market forces may eventually reduce or even eliminate small scale salt market. Nevertheless, in short to medium term, interventions to address fortification in this informal sector are necessary to achieve USI. In the case of small pockets of at-risk populations supplied by small scale producers, investments expanding USI to small scale producers should be evaluated relative to resources needed to achieve comparable coverage via other interventions such as distributing iodised salt or iodised oil capsules free of charge, especially to at-risk populations.

Competitive and Pricing Pressures

Theoretically, mandatory legislation and enforcement requires all producers to invest equally in salt iodization and therefore there is no added competitive pressure from the USI process. However, if leakage of competitive non-iodized salt to the market creates undue pressure on producers of iodized salt it may be appropriate for the public sector to intervene and mitigate these competitive pressures by lowering the cost of iodization and allowing iodized salt to compete on more favourable terms. Subsidy of recurring costs of potassium iodate may address pricing pressure but is not usually sustainable. However, there are a number of low cost or no-cost options for targeted and sometimes temporary public incentives that may narrow the price differential between iodized and non-iodized salt including:

- Tariffs on imported potassium iodate and iodization equipment, or VAT on the marginal increase in the retail price of iodized salt may actually serve to raise general revenues to the government. Therefore, duty free status or VAT exemption for these imported inputs may be cost-neutral options for partial public financing of USI.
- While the cost of iodization may be recouped in the marketplace, the purchase of potassium iodate and fortification equipment may require “up-front” investment by producers. Revolving funds and credit systems may provide a low cost strategy to ease this cash-flow burden.
- In some cases, public provision of central purchasing and distribution for potassium iodate and iodization equipment may provide cost savings to producers.
- Technical assistance to build capacity for iodization can also improve operations to make them more efficient and less costly. It may also be possible to provide technical assistance to achieve these greater efficiencies in salt production and marketing, and thereby offer pathways to offset the additional costs of iodization.
- In addition, lowering the added cost of production, public investments in social marketing to create consumer demand may add value to iodized salt thereby offsetting the competitive pressure of a higher retail price.
- Investments in effective food control systems that ensure strict and transparent USI enforcement that works to raise the costs and risks of non-compliance with USI and reward producers who comply.

Annex 3. Template of Unified Reporting Matrix

		Commitment at the national (macro) level				Commitment at system, institution, and community (meso) level				Outcome at the individual/household (micro) level			Impact at the population level	
										Salt iodization			Iodine Nutrition	
Region	Country	National multi-sector Coalition is formed and functional (at least 1 meeting quarterly, discussing accomplishments /achievements, setting plans)	National USI Law or Regulation has been enacted	A National Officer responsible for USI is appointed	Commitment to (re)assess national progress is evident (assessment of progress is undertaken at least every 5 years)	Regular Salt Iodine Data is collected at factory, retail & household	Urinary Iodine Data on school children is regularly collected	Salt Industry maintains quality assurance of iodized salt	Database established with mandatory public reporting	Consumer education and social mobilization is continuous	% of Households using adequately iodized salt, mid-decade of 1990s data	% of Households using adequately iodized salt- latest data, and trends	National median UIC (mcg/L) and year	% Population with UIC <100mcg/L