



Sustainable Elimination of Iodine Deficiency

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SUSTAINABLE ELIMINATION OF IODINE DEFICIENCY

**Progress since the 1990
World Summit for Children**

CONTENTS

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Foreword	1
Executive summary	2

CHAPTERS

1. Ending iodine deficiency: A two-decade turnaround	5
2. Overview of progress	9
Global progress	9
Regional analysis	10
Progress of country programmes	14
3. Programme maturation	19
Shift to domestic financing	19
Improved political and regulatory environment	20
Strengthened monitoring systems	22
Stronger partnerships	25
Advocacy and communication	25
4. Future directions	29
'Make-or-break' countries	29
The way forward	29



ANNEXES

Acronyms	33
Household iodized salt consumption by country	34
Notes on data	40

FIGURES

1. Major United Nations milestones for elimination of iodine deficiency	6
2. Distribution of countries by proportion of households consuming adequately iodized salt	9
3. Household consumption of adequately iodized salt, worldwide, 2000–2006	11
4. Household consumption of adequately iodized salt by region, 2000–2006	11
5. Distribution of infants unprotected against IDD by region, 2000–2006	11
6. Progress in households consuming adequately iodized salt in Latin America and the Caribbean	12
7. Progress in households consuming adequately iodized salt in East Asia and the Pacific	13
8. Progress in households consuming adequately iodized salt in West and Central Africa	13
9. Progress in households consuming adequately iodized salt in the Middle East and North Africa	14
10. Progress in households consuming adequately iodized salt in Eastern and Southern Africa	15
11. Progress in households consuming adequately iodized salt in South Asia	16
12. Progress in households consuming adequately iodized salt in CEE/CIS	17
13. Potassium iodate purchased using UNICEF resources	20
14. Shifting from external assistance to domestic financing in Egypt	20

BOXES

1. IDD and the Millennium Development Goals	7
2. Islamic Republic of Iran: Sustained political will brings a sustained turnaround	21
3. Ghana: The many benefits of partnership	23
4. Panama: Iodizing all salt – with help from ‘The Hammer’	24
5. Cambodia: A 10-year effort produces dramatic gains	26

TABLE

1. ‘Make-or-break’ countries	30
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This report marks almost two decades since the 1990 World Summit for Children set the goal of virtual elimination of iodine deficiency disorders (IDD). At that time, IDD was a public health problem in many parts of the world – affecting more than 2 billion people, exacerbating learning capacity and productivity, and in some cases, reversing human development.

This report has three purposes. First, it reviews the global and national efforts to eliminate IDD during the past two decades. And it shows how governments, the salt industry and communities, with UNICEF support, have made great progress in eliminating iodine deficiency through universal salt iodization. Second, it captures the lessons learned and best practices in the elimination of IDD in various countries. Third, it proposes an agenda against IDD as a vital step towards preventing adverse effects on international development and human potential. I believe these provide a good sense of where UNICEF has been, of its current priorities and, to the extent possible, of where it is headed.

Ideas and knowledge have changed and expanded dramatically since the 1990 Summit. Accordingly, so has our ability to make children's lives better. The global community, almost unanimously, has committed itself to doing just that, as expressed in the words and ethos of the World Summit Declaration and *A World Fit for Children*.

After a slow start, the world's efforts towards eliminating IDD through universal salt iodization gathered strength during the mid-1990s, as we saw at the United Nations

FOREWORD

General Assembly Special Session on Children in 2002. Since then, there has been remarkable progress in rallying political leadership, strengthening partnerships with the salt industry, and mobilizing financial and technical resources for salt iodization, even in some of the world's poorest nations.

A worldwide effort has dramatically raised the proportion of people consuming iodized salt from less than 20 per cent in 1990 to about 70 per cent by 2000. Thirty-four countries have achieved the elimination of iodine deficiency through universal salt iodization. By 2006, more than 120 countries were implementing salt iodization programmes, an increase of one third in just six years compared to the 90 countries with such programmes in 2000.

The mark of a civilized society is how well it takes care of its most vulnerable and deprived communities. If we fail to reach newborns in these communities, we will be consigning them to an intergenerational cycle of poverty and injustice.

Tackling the problem of IDD is among the most affordable and feasible propositions, requiring already existing and proven technology, and minimal financial investment. The solution, as we all know, is to ensure universal access and consumption of small quantities of iodized salt. If properly implemented, with the investment of only about 10 cents – one dime – per year per person for adequately iodized salt, we can help prevent cretinism, stillbirth, miscarriage and infant mortality due to iodine deficiency and save future generations from loss of learning ability.

Partnerships have been crucial in turning the tide against IDD. Former United Nations Secretary-General Kofi Annan singled out the universal salt iodization/iodine deficiency disorders work as a model of public-private partnership for development. We now need to further strengthen this partnership to extend and sustain IDD elimination permanently into the future.

But despite the remarkable progress made, there is still much left to do to ensure that every child is protected from the world's primary cause of preventable brain damage. There are still some 38 million children born every year at risk of lifelong brain damage associated with iodine deficiency.

We owe it to these children, and to the future of our world, to ensure they are born healthy and grow up with every chance to realize their full human potential. This great public health and nutrition effort requires the favourable blending of participation among the private sector, securing political commitment and advocacy, establishing effective education and communications, and forming national oversight coalitions and effective monitoring systems.

Harry Labouisse, UNICEF's second Executive Director, said, in the names of WHO and UNICEF, "It ought to be a crime that one more child be allowed to be born mentally handicapped when we know how to prevent it!" This statement was right then and is still right today.

Nicholas Alipui
Director of Programme Division, UNICEF



Over the past 20 years, a worldwide effort has been under way to reduce the number of people at risk of iodine deficiency disorders. These disorders result from a diet low in iodine, which is particularly damaging during early pregnancy because it retards foetal development, especially brain development, causing a range of intellectual, motor and hearing deficits. Iodine deficiency is the single greatest cause of preventable mental retardation, a problem that is easily and inexpensively prevented by iodizing all salt for human and animal consumption.

UNICEF estimates that less than one fifth of households in the developing world were using iodized salt at the time of the World Summit for Children in 1990. Some experts believe universal salt iodization may be the most successful public health effort of the past two decades.

The proportion of households consuming adequately iodized salt has increased to some degree in every region of the world, yet large differences in levels of consumption remain. Two regions are close to achieving the goal: Latin America and the Caribbean, with 85 per cent of households consuming adequately iodized salt, and East Asia and the Pacific, with 84 per cent.

Since the 2002 United Nations Special Session on Children, many countries have reported continued progress towards the goal of eliminating iodine deficiency

EXECUTIVE SUMMARY

through universal salt iodization. Others face severe challenges. In 2006, UNICEF identified 16 countries in need of special efforts and extra support. If these countries achieve universal salt iodization, about 85 per cent of households worldwide will be consuming adequately iodized salt.

Progress goes beyond numbers. Another mark of achievement is programme maturation, which has been reflected in widespread agreement on the techniques for solving the problem, government responsibility for financing, improved political and regulatory environments, strengthened monitoring systems, stronger partnerships, and realization of the key role of advocacy and communication.

The efforts towards universal salt iodization have resulted in five guiding principles that are crucial to sustained success:

- **Secure political commitment:** Robust, continuous government commitment and industry motivation are essential. This commitment needs to be maintained through regular advocacy.
- **Form partnerships and coalitions:** Partnerships between governments and donors, between governments and salt producers, and among all those supporting elimination efforts need to be strengthened at all levels.
- **Ensure availability of adequately iodized salt:** The salt industry must recognize iodization as a fundamental responsibility; governments must work with salt producers to improve their capacity; and producers must maintain and improve this capacity. This will require collaboration between governments, manufacturers and traders.
- **Strengthen monitoring systems:** A continuous and effective monitoring system is essential. Three types of monitoring are needed, covering the salt iodization process from the factory to the household, the impact on a population's iodine levels, and the overall sustainability of the programme.
- **Maintain education and communication:** Communication efforts should articulate concrete accountabilities and include specific messages tailored to the entire range of audiences, including national leaders, the salt industry, the media, technical and professional groups, teachers and families.



ENDING IODINE DEFICIENCY: A TWO-DECADE TURNAROUND

Iodine deficiency is the world's single greatest cause of preventable mental retardation. It is especially damaging during the early stages of pregnancy and in early childhood. In their most severe form, iodine deficiency disorders (IDD) include cretinism, stillbirth and miscarriage, and increase infant mortality. Even mild deficiency can cause a significant loss of learning ability – about 13.5 intelligence quotient points at population level – as well as other symptoms such as goitre, an abnormal enlargement of the thyroid gland (Bleichrodt and Born 1994). In addition to infringing on the rights of children, iodine deficiency results in a loss of economic productivity and slows progress towards achievement of the Millennium Development Goals. The good news is that it is easily preventable.

A diet low in iodine is the main cause of iodine deficiency. It usually occurs among populations living in areas where the soil has been depleted of iodine because of flooding, heavy rainfall or glaciation. If the soil is deficient in iodine, so are the

plants grown in it, including grains and vegetables that people and animals consume.

38 million newborns in developing countries every year remain unprotected from the lifelong consequences of brain damage associated with iodine deficiency disorders.

There are almost no countries in the world where iodine deficiency was not a public health problem. About 38 million newborns in developing countries every year remain unprotected from the lifelong consequences of brain damage associated with iodine deficiency disorders.¹ This shortcoming affects a child's ability to learn, and later in life, to earn; therefore preventing children, communities and nations from fulfilling their potential.

International support for the elimination of iodine deficiency dates from the World Summit for Children in 1990 (Figure 1). As part of the Summit's Plan of Action, world leaders agreed to a goal of elimination of iodine deficiency. This commitment led to the development of an informal global partnership, the Network for Sustained Elimination of Iodine Deficiency, which included United Nations and donor agencies, members of the scientific community, non-governmental organizations and the salt industry.

Since 1994, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) have recommended universal salt iodization² as a safe, cost-effective and sustainable strategy to ensure sufficient intake of iodine by all individuals (UNICEF, WHO 1994).

Prior to the mid-1990s, the onus to iodize salt was only on countries that were recognized as having a public health problem, as indicated by surveys finding significant levels of cretinism and goitre. In 1994, UNICEF

¹ 'Iodine deficiency disorders' refers to all of the ill effects of iodine deficiency in a population that can be prevented by ensuring an adequate intake of iodine.

² Universal salt iodization is indicated by at least 90 per cent of households consuming adequately iodized salt.

FIGURE 1: Major United Nations milestones for elimination of iodine deficiency

Year	Milestone	Programme progress
1990	Declaration of the World Summit for Children includes goal of virtual elimination of iodine deficiency disorders 43rd World Health Assembly accepts IDD elimination by 2000 as a major public health goal for all countries	Accelerated programme initiation and a shift from supplementation to salt iodization
1994	UNICEF-WHO Joint Committee on Health Policy endorses universal salt iodization as a safe, cost-effective and sustainable strategy to ensure sufficient intake of iodine by all individuals	IDD prevention and control through expansion of salt iodization programmes
2002	UN General Assembly Special Session on Children adopts <i>A World Fit for Children</i> , the declaration that set the goal of sustainable elimination of IDD by 2005	Programme maturation with improvements in enforcement, public education and advocacy, monitoring and partnership with salt industry
2007	<i>A World Fit for Children</i> commemorative session reviews progress in achieving and sustaining IDD elimination through universal salt iodization programmes	Enhancements in programme sustainability

and WHO called on all countries to iodize salt regardless of whether they had a documented IDD problem. This allowed a far greater acceleration of efforts over the next decade. The pledge was renewed at the United Nations General Assembly Special Session on Children in 2002. In their action plan, *A World Fit for Children*, 190 high-level national delegations reinforced the need to continue efforts towards sustained elimination of iodine deficiency by 2005.

A massive worldwide effort dramatically raised the proportion of people consuming iodized salt, from less than 20 per cent in the early 1990s to about 70 per cent by 2000. Thirty-four countries have achieved the universal salt iodization goal. If the reduction in intellectual impairment caused by iodine deficiency is taken into account, salt iodization might even be considered one of the most successful

public health achievements of the latter 20th century. The World Bank has estimated that each dollar dedicated to prevention of iodine deficiency disorders yields a productivity gain of \$28, supporting the widely held view that elimination of iodine deficiency is also one of the world's most cost-effective programme interventions (World Bank 1994).

Before global efforts to stop IDD began in the 1990s, adults and children with goitre were common sights in the rural areas of some developing countries. Individuals suffering from severe neurological deficits affecting hearing, speech and gait were not unusual. These clinical signs and symptoms of IDD were well documented, but they only represented the most visible forms of the disorders. The result was a vast underestimation of the real problem: the loss of intellectual capacity in newborns due to

inadequate iodine in their mothers' diets (Dunn and Delange 2001).

In coordination with many other partners, UNICEF has been working in more than 100 countries to ensure the elimination of IDD. It is a testament to the efforts of international nutrition groups and the commitment by United Nations and other agencies that the most severe impacts of IDD have nearly disappeared. The clinical manifestations of iodine deficiency are becoming rare in most countries (WHO, 2004) – but millions remain unprotected from the lifelong loss of learning ability associated with IDD.

Elimination of iodine deficiency also contributes to six of the eight Millennium Development Goals agreed to by UN Member States in 2000 (Box 1). Meeting these goals would transform the lives of millions of children during the next 10 years.

BOX 1:

IDD AND THE MILLENNIUM DEVELOPMENT GOALS

- Goal 1** – *Eradicate extreme poverty and hunger*: Eliminating IDD increases learning ability and intellectual potential, leading to better educated citizens earning higher wages.
- Goal 2** – *Achieve universal primary education*: Improved cognitive development and learning potential leads to improved school performance and reduced drop-out rates.
- Goal 3** – *Promote gender equality and empower women*: Eliminating IDD in children reduces women’s childcare burdens, frees up household resources and allows women more time for income-generating work.
- Goal 4** – *Reduce child mortality*: Reducing iodine deficiency lowers rates of miscarriage, stillbirth and other pregnancy complications, and neonatal deaths.
- Goal 5** – *Improve maternal health*: Lower rates of thyroid disease and other clinical results of iodine deficiency improve the health of women of reproductive age.
- Goal 8** – *Develop a global partnership for development*: Programmes for sustainable elimination of iodine deficiency strengthen partnerships at global, regional and country levels. They also leverage resources and commitments through alliances of public organizations, civil society and the private sector.



OVERVIEW OF PROGRESS

GLOBAL PROGRESS

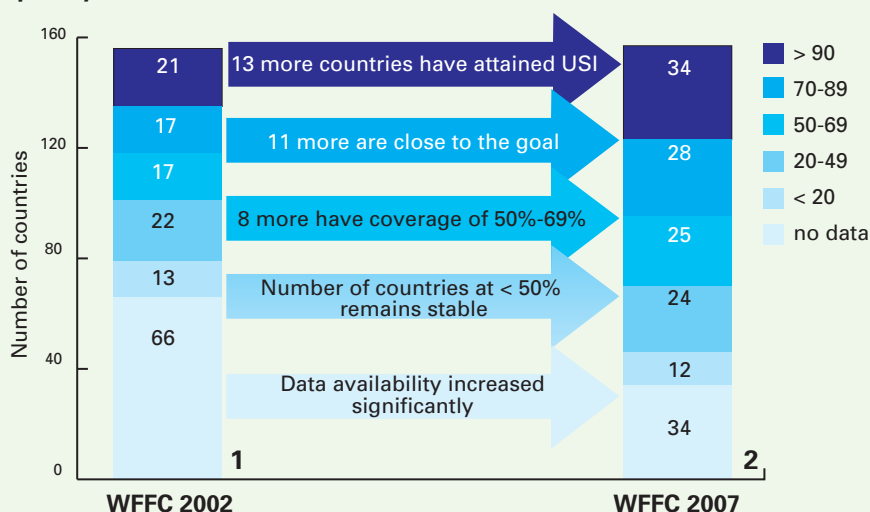
UNICEF estimates that less than 20 per cent of households in the developing world were using iodized salt in the early 1990s (UNICEF 2001). By 2000, the average had jumped to some 70 per cent. This is a remarkable achievement, especially considering that as late as 1994, 48 countries with established IDD problems had no salt iodization programmes at all.

The most recent UNICEF global database indicates that the propor-

tion of households in the developing world consuming adequately iodized salt officially remains at about 70 per cent (*Annex 1*). While this lack of change since 2000 reveals the challenges that some countries face, it also reflects maturation of the IDD elimination programme, which is significant but less visible. Part of the maturation has been in the area of monitoring, where impressive improvements have occurred in the quality and availability of data on household iodized salt consumption (*Annex 2*).

Progress since 2000 can be illustrated by the increase in the number of countries implementing salt iodization programmes and achieving the goal of at least 90 per cent of households consuming adequately iodized salt. By 2006, around 120 countries were implementing salt iodization programmes – an increase of one third in just six years over the 90 countries with such programmes in 2000. With more new countries reporting, the global database may reflect a larger number of countries initiating salt iodization programmes.

FIGURE 2: Distribution of countries by proportion of households consuming adequately iodized salt since the 2002 Declaration of A World Fit for Children



REMARKABLE PROGRESS HAS BEEN MADE SINCE THE 2002 WORLD FIT FOR CHILDREN DECLARATION: MORE THAN 120 COUNTRIES ARE NOW IMPLEMENTING SALT IODIZATION PROGRAMMES – AN INCREASE OF ONE THIRD IN JUST SIX YEARS.

1. Data source: *Progress since the World Summit for Children: A statistical review* (UNICEF 2001), based on data collected between 1997 and 2000.

2. Data source: *Progress for Children: A World Fit for Children statistical review* (UNICEF December 2007), based on data collected between 2000 and 2006.

The global average may not capture achievements given an increase in the number of countries with data, and subsequently an increase in the number of countries used to calculate such global aggregate figures.

The most recent estimates indicate that 34 countries have reached the universal salt iodization goal, up from the 21 reported in the 2001 edition of *Progress Since the World Summit for Children: A statistical review*. An additional 28 countries are well on their way, having achieved greater than 70 per cent household coverage, up from 17 (Figure 2). While some countries still have a distance to go, the situation today is dramatically better than close to a decade ago.

WHO estimates that the number of countries where iodine deficiency disorders are a public health problem was reduced by half – from 110 countries in 1993 to 54 in 2003. Of these 54 countries, 40 have only mild deficiency (WHO, 2004).

The following analysis shows how the programmes have evolved, how countries have attained success and what challenges remain.

REGIONAL ANALYSIS

The proportion of households consuming adequately iodized salt has increased to some degree in every region of the world. Yet, large differences in levels of iodized salt consumption remain. Two regions, Latin America and the Caribbean,

and East Asia and the Pacific, are approaching the universal salt iodization target, while Central and Eastern Europe/Commonwealth of Independent States (CEE/CIS) and South Asia are furthest from attaining the goal (Figure 4).

Despite remarkable progress in many countries, approximately 38 million newborns in developing countries risk the lifelong consequences of brain damage associated with iodine deficiency annually. The South Asia region, with 18 million infants born at risk of IDD every year, carries the highest burden (Figure 5).

Latin America and the Caribbean

(Figure 6): This region is closest to achieving universal salt iodization. Eighty-five per cent of households throughout Latin American and the Caribbean consume adequately iodized salt, and 14 countries in the region are considered to have achieved the goal. This is the result of efforts by national governments that began in the mid-1980s and accelerated during the 1990s.

East Asia and the Pacific (Figure 7):

Coverage continues to improve in this region, where 84 per cent of households consume adequately iodized salt. The steadily improving picture is due to increases in almost every country. Also encouraging is the fact that disparities between countries within the East Asia and Pacific region are falling. In the mid-1990s some countries had coverage lower than 20 per cent, but all countries are now well above this

level. By the mid-2000s, at least seven countries have coverage above 60 per cent, two of which have achieved universal salt iodization.

West and Central Africa (Figure 8):

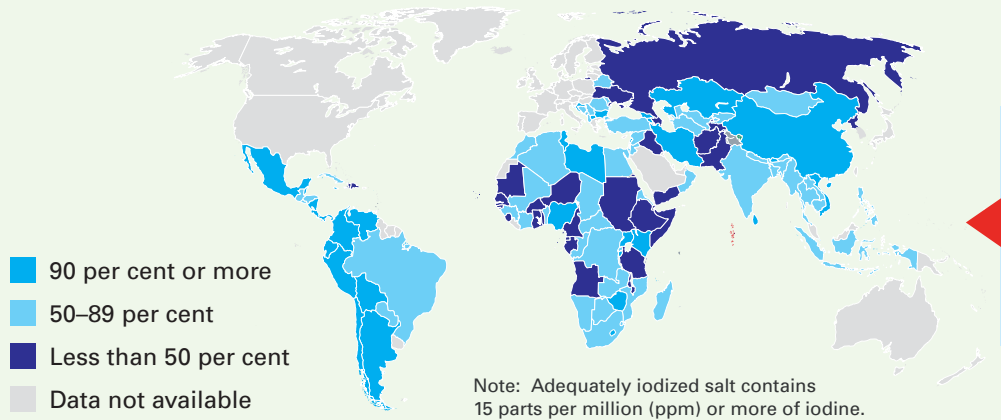
Progress in West and Central Africa has been tremendous, with 72 per cent of households consuming adequately iodized salt. This increase was significantly influenced by the high coverage of the two countries that make up more than half the region's population: Nigeria, where 97 per cent of households consume adequately iodized salt, and the Democratic Republic of the Congo, where the figure is 72 per cent.

Government commitment, advocacy, promotion and effective monitoring have been key components for the significant progress in these two countries. In Sierra Leone, war and conflict were a major disruption of local production of iodized salt and the subsequent decrease in the ability of households to access iodized salt.

Middle East and North Africa

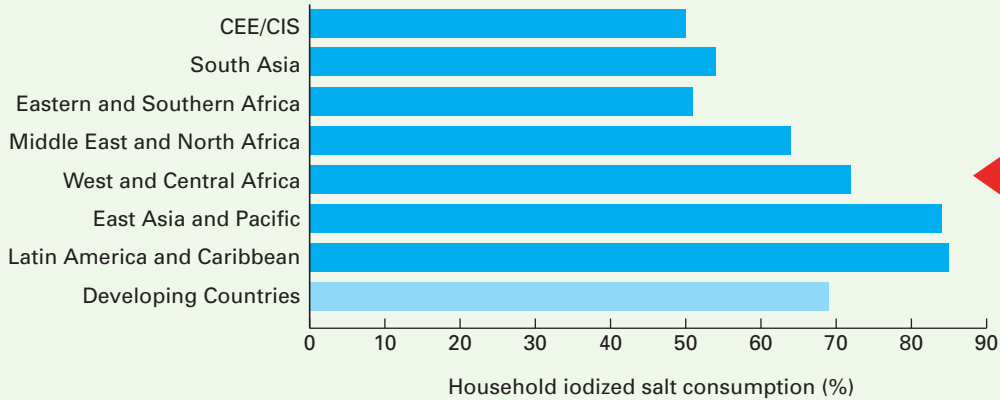
(Figure 9): Throughout this region, 64 per cent of households consume adequately iodized salt. The Islamic Republic of Iran, Lebanon and Tunisia are considered to have achieved the goal of universal salt iodization. In Algeria, Egypt, Jordan, the Occupied Palestinian Territory, Oman and the Syrian Arab Republic, household consumption of adequately iodized salt is at least 50 per cent, although Algeria's consumption declined during the civil conflict that ended in 1999. Sudan (1 per cent),

FIGURE 3. Household consumption of adequately iodized salt, worldwide, 2000–2006



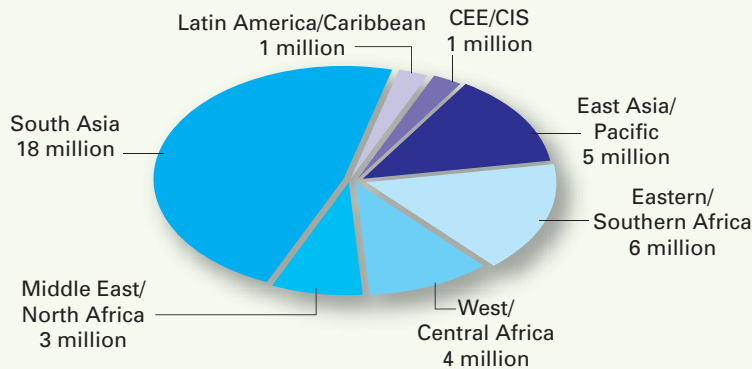
Source: United Nations Children’s Fund, *Progress for Children: A World Fit for Children statistical review*, UNICEF, New York, December 2007, p. 8.

FIGURE 4: Household consumption of adequately iodized salt by region, 2000–2006



Source: UNICEF global database.

FIGURE 5: Distribution of infants born in developing countries annually who are unprotected against IDD, by region, 2000–2006



Source: United Nations Children’s Fund, *Progress for Children: A World Fit for Children statistical review*, Number 6, UNICEF, New York, December 2007, p. 8.

34 COUNTRIES HAVE REACHED THE UNIVERSAL SALT IODIZATION GOAL

LATIN AMERICA/ THE CARIBBEAN AND EAST ASIA/PACIFIC ARE NEARING THE TARGET OF UNIVERSAL SALT IODIZATION

38 MILLION NEWBORNS ARE NOT PROTECTED FROM IODINE DEFICIENCY

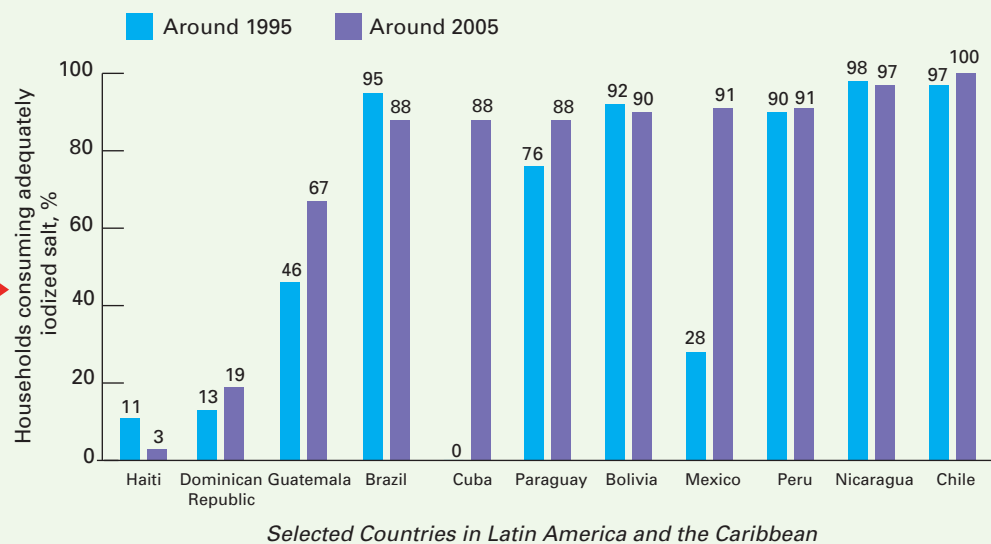


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Iraq (28 per cent) and Yemen (30 per cent) remain challenges. In Egypt and the Syrian Arab Republic, government commitment, advocacy, promotion and partnership with the salt industry have been key factors in the tremendous progress of salt iodization programmes.

Eastern and Southern Africa (Figure 10): In the region, 54 per cent of households consume adequately iodized salt. Based on available national surveys, five countries in Eastern and Southern Africa are considered to have achieved the universal salt iodization goal: Burundi, Kenya, Lesotho, Uganda and Zimbabwe. This progress is quite significant given these countries' challenges, including the AIDS pandemic, persistent food insecurity and widespread poverty. These same

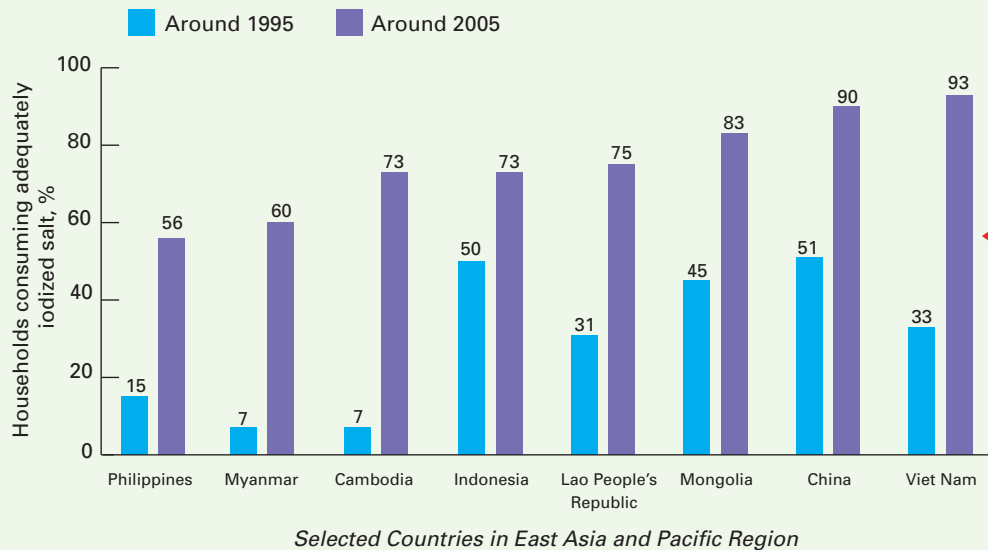
FIGURE 6: Progress in households consuming adequately iodized salt in Latin America and the Caribbean



LATIN AMERICA AND THE CARIBBEAN ARE CLOSEST TO ACHIEVING UNIVERSAL SALT IODIZATION

Note: This figure includes only countries that have verified data for both time periods (Annex 2).
Source: UNICEF global databases.

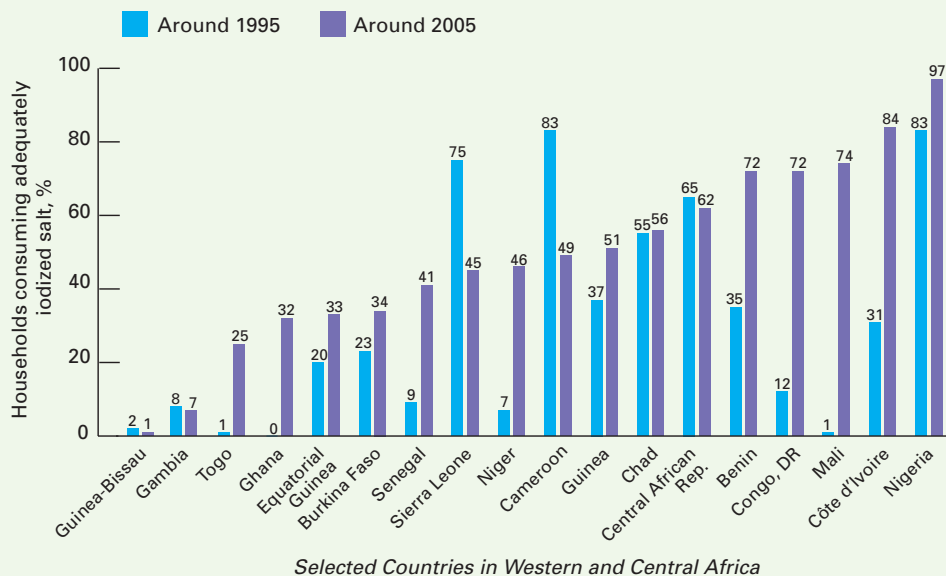
FIGURE 7: Progress in households consuming adequately iodized salt in East Asia and the Pacific



DISPARITIES BETWEEN COUNTRIES WITHIN THE EAST ASIA AND PACIFIC REGION ARE DECREASING

Note: This figure includes only countries that have verified data for both time periods (Annex 2).
Source: UNICEF global databases.

FIGURE 8: Progress in households consuming adequately iodized salt in West and Central Africa



PROGRESS IN WEST AND CENTRAL AFRICA HAS BEEN TREMENDOUS, WITH 72 PER CENT OF HOUSEHOLDS CONSUMING ADEQUATELY IODIZED SALT

Note: This figure includes only countries that have verified data for both time periods (Annex 2).
Source: UNICEF global databases.

challenges have led to a decline in some countries, such as Malawi and the United Republic of Tanzania, because they have hampered monitoring, quality assurance and advocacy campaigns.

South Asia (Figure 11): The South Asia region has the second lowest regional rate of household coverage, with just 51 per cent of households consuming adequately iodized salt. Just two countries, Bhutan and Sri Lanka, are considered to have achieved the universal salt iodization goal, while in Pakistan, only 17 per cent of households consume iodized salt. In Bangladesh and Sri Lanka strong government commitment has advanced the salt iodization programmes over the past 10 years.

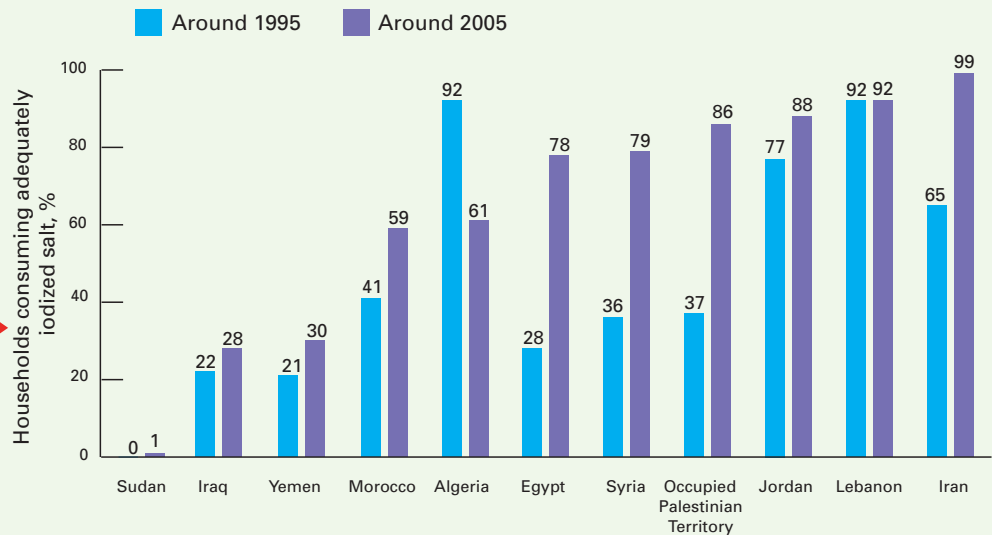
Central and Eastern Europe and the Commonwealth of Independent States (Figure 12): The average household consumption of adequately iodized salt for CEE/CIS remains the lowest of all the regions, at about 50 per cent. The figure is held down by the Russian Federation, the most populous country in the region, where just 35 per cent of households consume iodized salt. Yet six countries have exceeded 90 per cent coverage of iodized salt, and the majority of countries are now above 50 per cent.

PROGRESS OF COUNTRY PROGRAMMES

Based on current national development and progress, countries can be grouped into four categories: those



FIGURE 9: Progress in households consuming adequately iodized salt in the Middle East and North Africa



THROUGHOUT THE MIDDLE EAST AND NORTH AFRICA, 64 PER CENT OF HOUSEHOLDS CONSUME ADEQUATELY IODIZED SALT

Note: This figure includes only countries that have verified data for both time periods (Annex 2).
Source: UNICEF global databases.



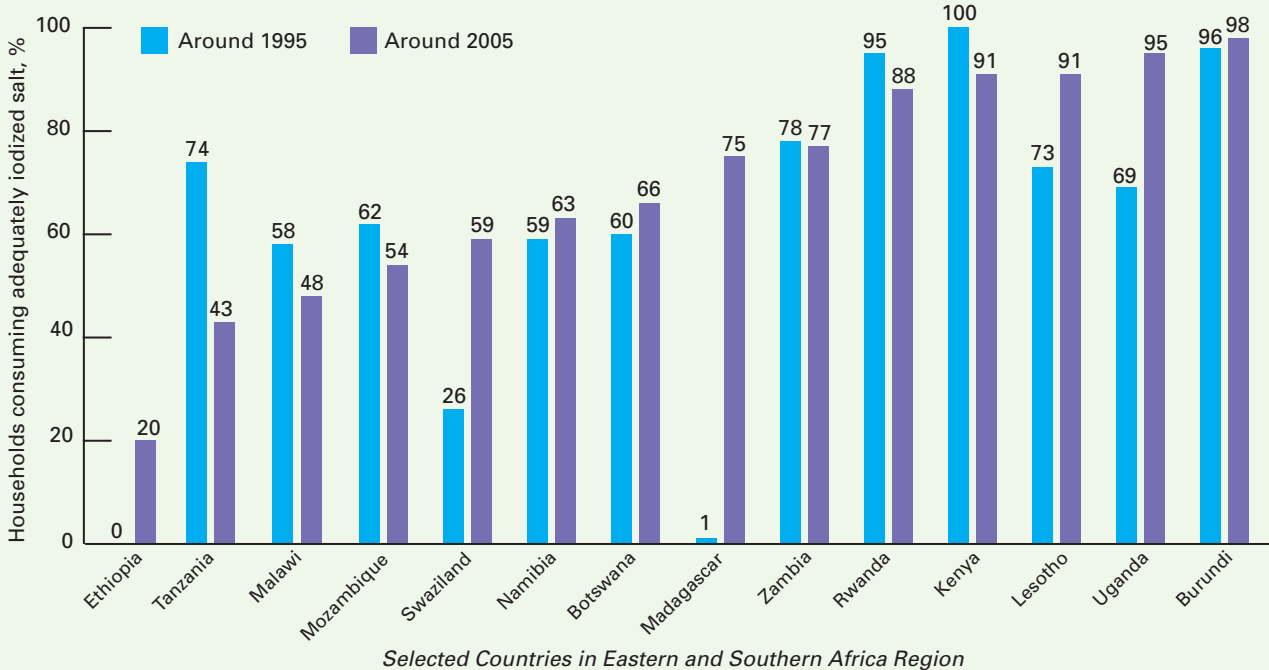
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that have met the goal, those on track to reach it, those declining or lagging, and those with low coverage (< 20 per cent) and no progress.

1. Countries that have met the goal

Worldwide, 34 countries have eliminated iodine deficiency disorders through universal salt iodization. Prior to 1990, adults and children with goitre would have been common sights in the rural areas of Bhutan, Bolivia, China, Ecuador and Zimbabwe; individuals suffering from severe neurological deficits affecting hearing, speech and gait would not have been unusual. Through universal salt iodization, the severe manifestations of iodine deficiency in these countries have virtually disappeared

FIGURE 10: Progress in households consuming adequately iodized salt in Eastern and Southern Africa



Note: This figure includes only countries that have verified data for both time periods (Annex 2).
Source: UNICEF global databases.

today. Most of these successful countries have strong government and salt industry commitments for salt iodization, improved political and regulatory environment including passed legislation mandating iodization of salt, effective monitoring systems, strategic advocacy and communications efforts and stronger partnership with salt industry.

2. Countries on track

In addition to those that have achieved universal salt iodization, there are 38 countries that can be classified as being 'on track' to eliminate IDD (*Annex 2*). Twelve of these countries have a current coverage of 80 per cent or more, needing just a little push to reach the universal salt iodization goal. There are also 11 countries that have made phenome-

nal improvements with an increase greater than 40 percentage points over the past decade, despite remaining at a current coverage below 80 per cent. Many of these countries, including Bangladesh, Egypt, Kyrgyzstan and the Philippines, have been making steady progress even during recent years. Some countries 'on track', such as Afghanistan, still have a way to go before reaching universal iodization but show promise with recent significant gains. Much can be learned from countries that have made substantial progress but have not yet achieved the goal. Many of these countries have established systems for production and importation of iodized salt, put monitoring systems in place and achieved reasonable levels of government commitment. Some countries are

now self-sufficient in purchasing potassium iodate, needing no further donor support for production. In many countries, the dramatic improvement in availability and use of adequately iodized salt, has led to a parallel improvement in iodine nutrition. The critical issues facing these countries are the vulnerability and sustainability of these programmes.

3. Countries declining or lagging

Approximately 24 countries have faced challenges, resulting in a decline or stagnation in coverage (*Annex 2*). Countries where progress has stagnated include those like Nepal and Chad, that have initiated programmes and improved household use of iodized salt, but have been unable to increase coverage beyond a certain point, usually

FIGURE 11: Progress in households consuming adequately iodized salt in South Asia



Note: This figure includes only countries that have verified data for both time periods (*Annex 2*).
Source: UNICEF global databases.

because of issues relating to salt production or importation. Other countries in this category have experienced a decline of greater than 10 percentage points over recent years, such as Togo, Iraq, Tanzania, Ghana and Central African Republic. Some countries lack the political will to move programmes forward. Others must navigate between the capacity of small producers and finding a mechanism to ensure that salt for human consumption is adequately iodized. Still others face instabilities created by the economics of importing iodized salt; for instance, if the government inspection and enforcement system is weak, non-iodized salt enters the market. In rare situations, consumers are sceptical of any food fortification and may be wary of iodized salt. This calls for creative

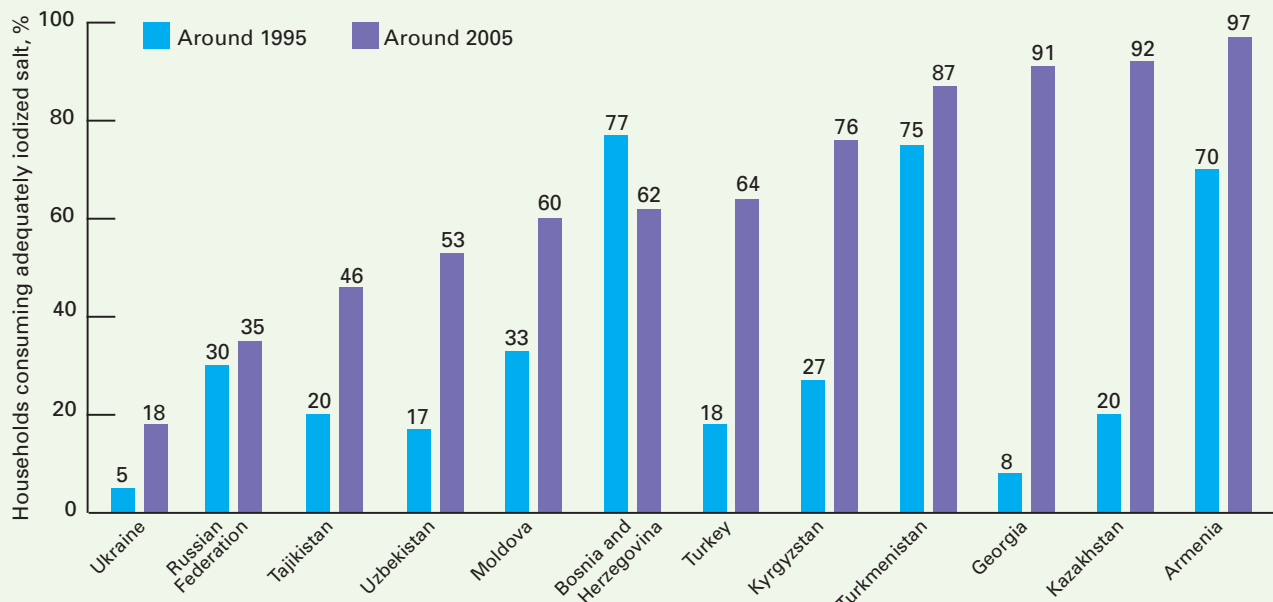
solutions. Many countries faced with these obstacles have found ways to overcome them, but achieving the goal may take time, and national governments must be persistent, and the salt industry supported.

4. Countries with low coverage (< 20 per cent) and no progress

Less than 20 per cent of the population are consuming adequately iodized salt in a total of 12 countries. Some countries facing such low coverage have not been able to establish adequate iodization programmes; not enough iodized salt is available for their people, and there is little assurance that it will be available in the near future. Many of these countries are involved in conflict or have poorly developed salt industries. This list includes Haiti, Somalia and Sudan,

which continue to struggle with implementation of all health programmes; Ethiopia and Pakistan, which have trouble initiating a good quality integrated programme; and Guinea-Bissau and Mauritania, which have faced border conflicts likely to have impaired trade. While progress in these countries is very important, developing any health programme, particularly one involving trade, is difficult under the current conditions. In these cases, much work is needed to establish a sufficient supply of adequately iodized salt and distribute it to the population. In countries with high levels of iodine deficiency and no evidence of improvement in the salt industry, alternative sources of iodine may be needed.

FIGURE 12: Progress in households consuming adequately iodized salt in CEE/CIS



Selected Countries in Central and Eastern Europe and the Commonwealth of Independent States

Note: This figure includes only countries that have verified data for both time periods (Annex 2).

Source: UNICEF global databases.



PROGRAMME MATURATION

During the past decade, progress towards sustained elimination of iodine deficiency has quietly unfolded. A unique combination of enlightened public policies, private sector action and civic commitment has resulted in unprecedented global advances in iodizing the world's salt and thus ending iodine deficiency. While it is valuable to review the data on household consumption of iodized salt and population iodine status, another indicator of progress is programme maturation.

In the early days of the campaign to end iodine deficiency disorders, opinions differed both on the severity of the problem and on the optimal solution. Those differences slowed programme momentum. In addition, legislation mandating iodization was not in place in many IDD-affected countries. And the private sector and governments did not typically see each other as partners, so there was relatively little collaboration. Fortunately, these programme elements have matured in most countries.

Shift to domestic financing

Eliminating IDD does not depend on increasing salt consumption but

rather on promoting the exclusive use of iodized salt. Countries must incorporate the cost of iodization, which is minimal, into the routine cost of producing or importing salt used for human and animal consumption. The cost of the fortificant should be part of the cost of production and be absorbed by the consumer. Fortunately, these additional costs are very low at \$0.1 per capita per year.

A unique combination of enlightened public policies, private sector action and civic commitment has resulted in unprecedented global advances in iodizing the world's salt.

Early in the campaign towards universal salt iodization, donors often supported the capital costs of establishing iodization capacity and provided the fortificant. Increasingly, governments are subsidizing the cost of potassium iodate or the industry is absorbing it,

so fewer countries are depending on donors to provide the fortificant. Many countries are building private sector capacity to access supply. More and more countries are financing their own salt iodization programmes; the marketplace is absorbing the industrial costs, which are invisibly passed on to the consumer due to the negligible cost of iodization. As Figure 13 shows, UNICEF provision of potassium iodate has decreased significantly since 1992. Building private sector capacity to obtain required supplies supported this transition.

Another growing trend is government financing of regulatory enforcement and monitoring, as reflected in ministry staffing and line budgets. Sometimes these costs are being integrated into systems of food control and nutrition surveillance. This declining reliance on donor support promises to be one of the greatest achievements of IDD elimination efforts. It constitutes a unique lesson learned in sustaining elimination of iodine deficiency disorders through universal salt iodization.

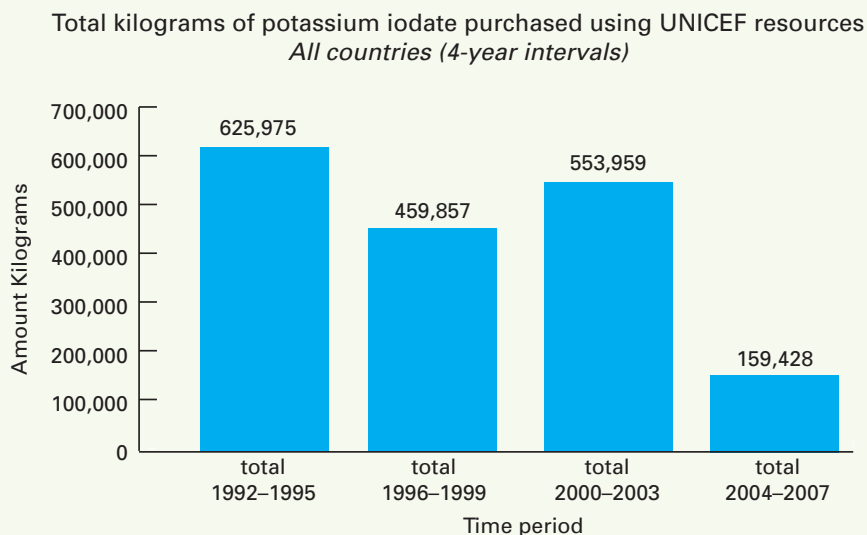
Egypt is a good example of how shifting responsibility for iodate supply aids sustainable elimination of

IDD (Figure 14). UNICEF partially supported procurement of potassium iodate in the mid-1990s, but this role has been gradually taken over by the Government and the private sector. Since 2002, the Egyptian

Government has paid the total cost of procurement, which averages about \$500,000 annually for about 30 tonnes. UNICEF procures the iodate for the Ministry of Health and Population, which reimburses the

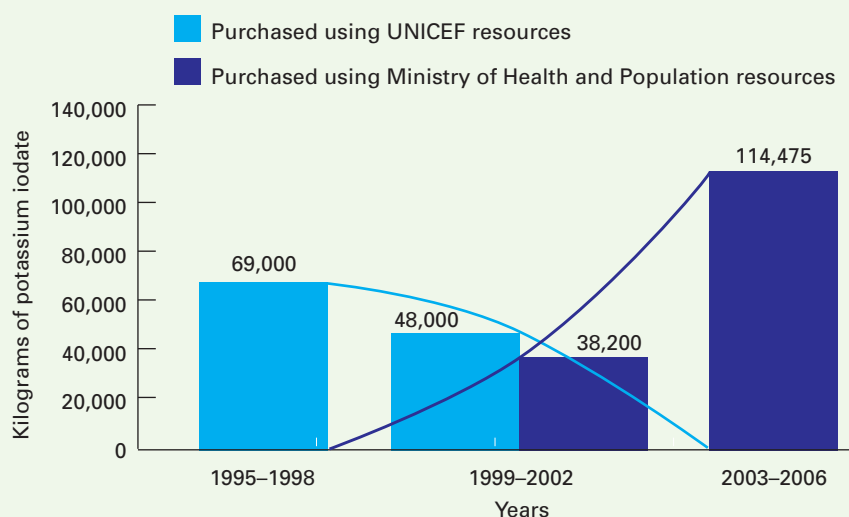
organization for its cost. Salt producers pay the taxes, transportation and related administrative costs. The potassium iodate is distributed to salt manufacturers according to a quota system; public sector companies receive about 75 per cent and private companies about 25 per cent. The Ministry monitors distribution and utilization. With greater local ownership also came improvements in coverage, as Egypt has experienced a steady increase in the proportion of households consuming adequately iodized salt from 28 per cent in 2000 to 56 per cent in 2003 and most recently, 78 per cent between in 2005.

FIGURE 13: Potassium iodate purchased with UNICEF resources



Source: UNICEF Supply Division, 2007.

FIGURE 14: Shifting from external assistance to domestic financing in Egypt



Source: UNICEF Supply Division, 2007.

Improved political and regulatory environment

In 1994, WHO and UNICEF recommended making universal salt iodization mandatory in all countries that had demonstrated iodine deficiency (UNICEF/WHO 1994). According to the latest UNICEF global database, 55 out of 117 developing countries have enacted legislation that appears to be effective. The data show that countries with legislation have a greater increase in household consumption of iodized salt than those without legislation.

However, mandating universal salt iodization through legislation is not enough. Governments must demonstrate their commitment to IDD elimination by allocating the necessary resources and empowering key ministries to play their respective roles.

BOX 2:

ISLAMIC REPUBLIC OF IRAN: SUSTAINED POLITICAL WILL BRINGS A SUSTAINED TURNAROUND

Just 50 years ago, iodine deficiency disorders (IDD) were endemic in the Islamic Republic of Iran. At the end of the 1950s, goitre afflicted 10–60 per cent of the population. But since the IDD National Committee was established in 1988, the country has all but eliminated IDD.

“In 1989, Iran introduced a new programme to achieve universal salt iodization in the country, which effectively led to the elimination of IDD,” says Seyed E. Asaei, early childhood development specialist with UNICEF Iran. “By May 1995, Iran had a total of 40 units producing iodized salt, and their products were distributed throughout the country. This programme still exists and is led by an executive officer who answers to the Government on all issues related to the IDD initiative.”

Legislation requiring universal iodization was passed in 1992. This important step was accompanied by a far-reaching education and social mobilization campaign that persuaded the general public about the merits of iodized salt and the health hazards related to IDD.

Statistics from the period between 1989 and 2006 give a vivid picture of the campaign’s success. The total goitre rate in schoolchildren fell from 68 per cent to less than 10 per cent, and consumption of adequately iodized salt in Iranian households mushroomed to more than 98 per cent. Most important, the intelligence quotient of children in previously hard-hit areas went up by 9 per cent.

Progress is regularly assessed, and many more laboratories are now able to provide the necessary analysis and data on salt and urinary iodine levels. The IDD executive officer has a mandate to regularly collect data on salt iodine at the factory, retail and household level in each of the country’s 28 provinces, and the findings are confirmed by laboratory analysis. Every five years, goitre rate, iodized salt consumption and urinary iodine are monitored on the national level. Every three months, environmental health specialists visit markets in urban areas to test the salt at retail level. Everywhere food is produced – restaurants, hospitals, child care centres and canteens – salt iodine levels are checked regularly, and the results are fed into national databases. In rural areas, testing is done once a year in every household and every six months in schools.

“Cooperation from the salt industry with regard to the quality control is excellent,” says Mr. Asaei. “The Ministry of Health and Medical Education maintains a database that contains the results of these regular monitoring procedures, particularly for salt iodine and urinary iodine.”

The turnaround in the Islamic Republic of Iran has been strong political will leading to a coherent, far-reaching and sustainable policy to promote awareness and provide iodized salt to virtually everyone. “Another crucial element of Iran’s achievements is cooperation,” says Mr. Asaei. “Without efficient and committed collaboration between health care providers, IDD experts, salt producers, communication specialists and consumer associates, the IDD initiative could not have been as successful.”



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Necessary actions include ensuring adequate salt inspection and enforcement of regulations, incorporating information on iodine deficiency and its consequences into educational curricula, and providing adequate programme oversight. These efforts help sustain public awareness and demand for iodized salt.

In some countries, one of the key success factors is a charismatic individual with a single-minded commitment to the cause. He or she needs to be identified and recruited early on to facilitate the widespread implementation of programmes. One such example is the head of

Nigeria's National Agency for Food, Drug Administration and Control. She has made it her personal mission to eliminate any food or drug that is not what it says it is or what it should be, including iodized salt.

Experience in the Islamic Republic of Iran (*Box 2*) shows how unflinching government commitment over many years leads to an effective and sustainable IDD elimination programme.

Strengthened monitoring systems

By the mid-1990s, IDD was widely recognized as a problem, and many governments had made salt iodization an integral part of their national

health and nutrition programme monitoring. Countries moved away from doing goitre surveys, which were not sufficiently accurate and did not necessarily reflect the current iodine status of the population. Instead, the focus shifted to monitoring salt production, quality, household use and urinary iodine levels.

Governments and the salt industry made progress in establishing quantitative analysis methods (primarily using titration) at production facilities, developing production-level quality assurance procedures and improving monitoring. Previously, most salt producers had not been accustomed to

BOX 3:

GHANA: THE MANY BENEFITS OF PARTNERSHIP

Ghana has struggled to increase consumption of adequately iodized salt among its population, and in 1995, less than one per cent of households were reported consuming adequately iodized salt. In 2001, collaboration began with Unilever, a company that had successfully introduced iodized salt into India. Unilever's Annapurna iodized salt accounts for about 50 per cent of the iodized salt on the market in Ghana. In addition, production of the salt in Ghana has created around 200 jobs.

One of the company's strategies was to introduce small sachets, in sizes of 100, 250 or 500 grams, which helps preserve the iodine and makes the salt affordable. This was a successful technique because the higher cost of a good quality fine granular salt which was also iodized had been a big obstacle to selling it in Ghana, where more than a quarter of the population lives on less than one dollar a day. When Hindustan Lever introduced this product to the Indian market, it was the first brand in the world to be endorsed by the International Council for Control of Iodine Deficiency Disorders.

Another successful strategy has been a nationwide marketing campaign, involving several key partners. Advertisements promoting Annapurna salt, based on health information supplied by the Ministry of Health and UNICEF Ghana, have been aired on local television and radio stations. A series of road-shows have taken the message to all parts of the country. Aligning the brand's health messages with those of Ghana's Health Service helps build consumer confidence.

To reach remote villages, Unilever and UNICEF have teamed up with local institutions already providing microcredit to rural women. With seed monies from UNICEF, the women are able to buy the iodized salt in large quantities for sale to other villagers. Over 400 women have participated, giving them a source of income while helping decrease iodine deficiency. In another project, coordinators from the School Health Education Programme have been visiting over 3,200 schools, mostly in rural areas, to educate schoolchildren about the importance of using iodized salt – messages they take home to their parents.

"This really has been a win-win situation," says Raphael da Silva, former head of Unilever's Popular Foods team in Africa. "Unilever has developed a successful business, and UNICEF and the Ghana Health Service have achieved much greater take-up of iodized salt." Mr. da Silva adds that the decision to have the salt produced locally has also benefited local employment and manufacturing.

UNICEF's Ernestina Agyepong agrees. "Before we teamed up with Unilever, it took a lot of advocacy getting all the salt producers to understand the importance of iodine and quality standards," she says. "Unilever knew all this already and had the production and marketing know-how to promote iodized salt. Above all, they had the willingness to do things with dispatch."

With just one third of Ghana's households consuming adequately iodized salt by 2006, the job is not finished. This innovative approach should be further fostered and strengthened in order to accelerate national progress.

BOX 4:

PANAMA: IODIZING ALL SALT – WITH HELP FROM ‘THE HAMMER’

In Panama in 1996, finding evidence of iodine deficiency disorders would not have been a difficult task. For example, Ocu hospital, about 90 miles from Panama City, typically had a caseload of around 1,500 patients suffering from goitre – one of the most recognizable side effects of an iodine-deficient diet.

Ironically, at that time, most of the salt being produced in Panama for human consumption was being iodized. However, the poorest Panamanians often used cheaper salt meant for animals, which was not iodized. The solution was to convince reluctant salt producers that they needed to iodize all salt, and that adding just a nickel’s worth of iodine to animal salt would keep any human consuming it safe from iodine deficiency disorders for a year.

Convincing the salt producers was not an easy task and required the dedication of people from all areas. One such advocate was Ernesto Boyd, a soft-spoken, grey-haired Panamanian businessman with an unlikely nickname: The Hammer. Boyd acquired his nickname working as the head of the Kiwanis International initiative to stamp out iodine deficiency disorders in Panama.

Travelling thousands of miles, Boyd wore out at least one car visiting hospitals and schools, often with his wife, Evelina. His goal was to make sure that people at risk for IDD were being tested for iodine deficiency, and to educate children and adults about the importance of iodized salt. Working with UNICEF and the Ministry of Health, he helped push through legislation requiring specific levels of iodine in ‘all’ salt – whether it was meant for humans or animals.

His dedication paid off. In 2002, Panama was declared free of iodine deficiency disorders. In 2003, Boyd was commended for his efforts. But his greatest reward, he says, is, knowing that 70,000 to 80,000 children every year won’t be born with mental deficiencies from lack of iodine.

performing routine monitoring because salt production usually focused on responding to consumer preferences for crystal size and packaging. Food inspection systems had typically emphasized food safety, and the mandate to test salt for iodine content added new responsibilities to an already overloaded system in many countries. Imported salt was not rigorously inspected.

Many countries have now addressed most of these issues by strengthening monitoring of iodine levels in locally produced and imported salt, establishing more consistent standards (such as requiring salt to contain 20 to 40 parts per million of iodine) and more consistently assessing household use of iodized salt. Many countries have established laboratories to assess urinary iodine levels, improving the availability and quality of data for measuring progress. Progress in monitoring systems can be noted by the tremendous increase in the number of countries with data on household iodized salt consumption as well as those estimates based on testing salt for presence of iodine and reporting a cut-off for iodine content (*Annex 2*).

Countries have also recognized the limitations of using palpated goitre as an assessment tool and have shifted to measuring urinary iodine concentration to determine the iodine status of the population. In addition, new measures of thyroid function have been developed. These improvements reflect

the maturation of programme monitoring systems, suggesting that information quality will likely continue to improve.

Stronger partnerships

A unique combination of enlightened public policies, private sector action and civic commitment has resulted in unprecedented global progress towards iodizing all the world's salt. In the past, salt producers were commonly excluded from the dialogue on elimination of IDD. But now, more countries are taking concrete steps to introduce universal salt iodization through partnerships with the private sector. Salt producers worldwide recognize their critical role in providing adequate iodine to the households that buy their product.

At least 72 developing countries have adopted national public-private partnerships that provide practical mechanisms to raise and sustain commitments to IDD elimination. Lessons from Ghana show that capitalizing on the interests of salt manufacturers has been essential to the success of salt iodization strategies (Box 3). The partnership between the Government and the salt industry has been a win-win situation, with sales of iodized salt growing due to public education on its importance.

Donors have recognized the importance of universal salt iodization towards the elimination of IDD. A major initiative by Kiwanis International since the early 1990s has helped to raise and leverage approx-

imately \$100 million for UNICEF salt iodization programmes in more than 100 countries (Box 4). The Bill & Melinda Gates Foundation, Canadian International Development Agency (CIDA) and United States Agency for International Development (USAID) continue to aid elimination of IDD worldwide. The public-private Network for Sustained Elimination of Iodine Deficiency works to coordinate and harmonize efforts to keep progress on track.

Advocacy and communication

Advocacy and communication play an essential role in national strategies to eliminate iodine deficiency. Successful communication efforts articulate concrete accountabilities and reach out to specific audiences,



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BOX 5:

CAMBODIA: RAISING AWARENESS IMPROVES HOUSEHOLD CHOICES

It is lunchtime in the quiet town of Kampot, Cambodia, on the banks of the Kampot River. As the Roeun family sits down for a meal of sour soup, rice and fried fish, the bare room is filled with the delicious scents of tamarind and garlic.

“My wife and I make sure that we use only iodized salt,” says Sokha Roeun, head of the family and a father of three. “I learned the importance of using iodized salt,” he declares proudly. “It helps to avoid many health problems.”

Only about 7 per cent of households in Cambodia consumed iodized salt in 1995. To address this serious public health issue, the Government began a national programme for salt iodization in 1999. In 2003, a national decree was issued stipulating that all salt produced, imported and used for human and animal consumption must be iodized.

The majority of salt sold in Cambodia is produced in the provinces of Kampot and Kep. In May 2004, a community of salt producers was formed in those areas, bringing together all 188 major salt producers. The group is responsible for iodizing all salt produced in Kampot and Kep and ensuring internal quality control, as well as for marketing and distribution.

But for many families who live in salt-producing areas of the country, it is often easier to take salt straight from the field, before it is iodized. Non-iodized salt is also illegally imported from neighbouring countries and is readily available on the market, often at a fraction of the cost of locally produced salt.

Ensuring that salt is iodized, therefore, is only one part of the battle. Raising awareness in households is vital to making sure that every consumer chooses iodized salt.

“There was a campaign here in Kampot,” says Mr. Roeun, a carpenter. “I attended one meeting and my neighbours also talked about the same messages, which were aired on TV and radio.”

The coordinated effort by salt producers, the Government, UNICEF and other development partners has led to very notable results. According to recent data, 73 per cent of households were consuming iodized salt in 2005.

including national leaders, salt industry representatives, the media, technical and professional groups, teachers, and the general public, including parents of schoolchildren. Such initiatives aim to encourage political leaders to support legislation requiring iodization, teach people at all levels about the importance of iodine and create markets for iodized salt (Box 5).

Schools have a key role in promoting use of iodized salt because attendance is generally more consistent than attendance at health facilities. Schools also have a skilled workforce of teachers and administrators who already interact with the community. School-based communication strategies have been implemented in various countries such as India, the Lao People’s Democratic Republic, Nigeria and Uzbekistan. These initiatives linked schools to the resources of the education and nutrition sectors, teaching young people – especially girls and young women – about the risks of iodine deficiency, the importance of iodized salt and how to use iodine test kits to assess the iodine content of salt samples brought from their homes.

When the white salt granule turns purple, this means that the sample has iodine content. After the test, the schoolchildren share the result with their mothers. Their exchanges focus on the fact that iodized salt is a ‘smart’ salt that prevents mental impairment – a boost to their school performance. This simple exercise conveys an important health message to children



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that they can take home to their families. It helps their mothers decide to buy iodized salt and leads to positive behaviour change. Spreading messages about iodine deficiency disorders is crucial in a country where iodine deficiency is a public health problem. The cost of this exercise is negligible, making it an extremely attractive, cost-effective measure.

Many communication efforts have centred on special events. China held a national competition in 2002 for a logo and slogans promoting iodized salt. Youth representatives and more than 40 members of the press participated in launching the competition, which was organized by the Chinese National Committee for Care of Children. Most of the key

national television and radio stations covered the event. The competition was one of the major elements in the country's IDD consumer education/marketing plan of operation.

China also held a national IDD Day to spread messages on the importance of eliminating iodine deficiency disorders through universal salt iodization. The national event made it possible to disseminate messages among hard-to-reach social groups, such as those living in remote areas, on the public's right to use iodized salt. The Government also used '900 Million Farmers', a health-promotion project supported by UNICEF, to encourage consumption of iodized salt. The campaign developed and aired key messages through the

national television station and 1,000 county television stations. Initial feedback indicated that these programmes reached the most critical target audiences with key messages.

Kiwanis International has played a major role in supporting national advocacy efforts in many countries. In Burkina Faso, for example, Kiwanis supported social mobilization through meetings with community radio stations, salt importers, consumer organizations and catering associations; drama performances in six provinces; and production and broadcast (in local languages) of radio and television shows and advertisements that encouraged behaviour change and informed choices.



FUTURE DIRECTIONS

'Make-or-break' countries

Since the United Nations Special Session on Children in 2002, many countries have reported continued progress towards universal salt iodization. However, some countries have made little tangible progress. In 2006, UNICEF identified 16 'make-or-break' countries that need additional support to accelerate their efforts (*Table 1*). These are major salt-producing countries with high numbers of unprotected newborns, low levels of salt iodization, and a need for special advocacy and technical support to renew national IDD elimination programmes. If these 16 countries achieve universal salt iodization, the global average of households consuming adequately iodized salt will be about 85 per cent.

THE WAY FORWARD

In 2005, UNICEF issued a new IDD strategy defining its role and laying out a road map for its support of efforts for global elimination of IDD (UNICEF 2005). The document specified additional organizational strategies for countries in different stages of progress. Support to regions and countries depends on their current status of progress and specific situation and is categorized as follows:

Short-term support (hands-on assistance to achieve universal salt iodization): In countries with the highest rate of infants unprotected against IDD and with low household access to iodized salt, UNICEF support focuses on accelerating efforts to expand access to iodized salt. This implies revising and adjusting programme strategies and action plans to ensure comprehensive implementation based on country progress. The country situation dictates priority actions to mobilize commitment and update strategies. The 16 make-or-break countries fall into this group and merit special focus.

Medium-term support (technical assistance to sustain universal salt iodization): UNICEF support focuses on ensuring that sustainability mechanisms are in place. This includes building the capacity of national institutions to sustain the IDD elimination programme so that it is a part of the government's routine responsibilities. It also includes implementation of a strategy for phasing out UNICEF and donor support. Countries with large populations and low coverage rates, in emergency situations or with many small-scale production facilities need additional support.

Long-term support (partnerships for programme advancement): When countries reach the goal of sustained elimination of IDD, remaining UNICEF support is in the form of joint actions with partners in the Network for Sustained Elimination of Iodine Deficiency. Support for long-term activities focuses on incorporating new scientific evidence and research findings into national programmes, improving monitoring by introducing new international recommendations, enhancing collaboration between countries regionally and globally, and introducing new methods and tools.

The experience gained in more than two decades of implementing salt iodization programmes has provided a wealth of lessons learned in how to achieve and sustain progress. These lessons can be summarized in five guiding principles:

- **Secure political commitment:** Strong, continuous government commitment and industry motivation are essential to sustaining momentum. Such commitment is not a 'one-off' event – it needs to be renewed through regular advocacy.

TABLE 1: 'Make-or-break' countries

Country	Total population (thousands)	Annual number of births (thousands)	Households consuming adequately iodized salt (%)	Year of survey	Infants unprotected against IDD (thousands)	Population unprotected against IDD (thousands)
India	1,151,751	27,195	51%	2005	13,298	563,206
Pakistan	160,943	4,358	17%	2002	3,617	133,583
China	1,320,864	17,309	90%	2005	1,696	129,445
Russian Federation	143,221	1,506	35%	2002	979	93,094
Ethiopia	81,021	3,159	20%	2005	2,530	64,898
Indonesia	228,864	4,427	73%	2003	1,185	61,244
Ukraine	46,557	417	18%	2005	341	38,037
Philippines	86,264	2,295	56%	2003	1,001	37,611
Sudan	37,707	1,225	1%	2000	1,219	37,518
Bangladesh	155,991	4,013	84%	2006	630	24,491
Afghanistan	26,088	1,272	28%	2004	916	18,783
Egypt	74,167	1,828	78%	2005	400	16,242
Ghana	23,008	700	32%	2006	473	15,553
Angola	16,557	792	35%	2001	516	10,779
Niger	13,737	683	46%	2006	369	7,418
Senegal	12,072	435	41%	2005	255	7,086

Source: Demographic and Health Surveys (DHS), 2003 and 2004.

- Form partnerships and coalitions:** Partnerships between governments and donors, between governments and salt producers and traders, and among all those supporting elimination efforts need to be strong at all levels. National and subnational coalitions with clearly defined roles and responsibilities can play a driving role in promoting collaboration. By forming associations, salt producers and traders can enhance their influence to ensure universal supply and access.
- Ensure availability of adequately iodized salt:** Only mandatory iodization will ensure universal access. The salt industry must recognize iodization as its fundamental responsibility, governments must work with salt producers to improve their capacity, and producers must maintain this capacity. This will require governments to work closely with small enterprises, including traders, and occasionally to provide revolving funds to ensure a consistent iodine supply. Marketing and sales must reach geographically and socially isolated communities.
- Strengthen monitoring systems:** Three types of monitoring are needed: one covering salt iodine content at every point from production to the household; one covering impact, to determine whether people have adequate levels of iodine in their bodies (referred to as iodine nutrition); and one covering the overall programme sustainability, which includes elements ranging from whether the country has legally



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mandated salt iodization to whether schools teach the importance of iodine. Monitoring results should be linked to information on iodine nutrition status and should include mechanisms to ensure that the results reach, and are used by, the appropriate decision makers. Results should be shared regularly with the general public.

- **Maintain continuous education and communication:** Persuasion is an essential component of national strategies to eliminate

iodine deficiency. Communication efforts should articulate concrete accountabilities and should include specific messages tailored to the entire range of audiences, including national leaders, the salt industry, technical and professional groups, teachers and families. Messages must be delivered through all types of media, ranging from television to person-to-person, and must be regular and ongoing.

These guiding principles underlay the actions that have raised the

percentage of households consuming iodized salt from less than 20 per cent almost two decades ago to 70 per cent today. The day is coming soon when no child's life will be diminished by the devastating mental and physical consequences of this easily preventable deficiency. But the job is not finished. The strategies used to make this remarkable achievement are proven and affordable. All that is needed is the commitment to continue the effort.

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ACRONYMS

CEE/CIS	Central and Eastern Europe/Commonwealth of Independent States
DHS	Demographic and Health Surveys
HQ	headquarters
IDD	iodine deficiency disorders
MICS	Multiple Indicator Cluster Surveys
MOH	Ministry of Health
MOPH	Ministry of Public Health
ppm	parts per million
UNICEF	United Nations Children’s Fund
WHO	World Health Organization

Household Iodized Salt Consumption by Country

Country	Households consuming adequately iodized salt 2000-2006				Total population (thousands) 2006	Annual no. of births (thousands) 2006	Unprotected Newborn (thousands)	Unprotected Population (thousands)
	Per cent	Year	Cut-off (ppm)	Source				
Afghanistan	28	2004	not noted	MOPH (2004) Summary Report of the National Nutrition Survey Afghanistan 2004	26,088	1,272	916	18,783
Albania	62	2000	15+	MICS 2000 (reanalysed by UNICEF HQ, December 2002)	3,172	52	20	1,221
Algeria	61	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	33,351	694	273	13,107
Andorra	–				74	0	–	–
Angola	35	2001	15+	MICS 2001 (reanalysed by UNICEF HQ, December 2002)	16,557	792	516	10,779
Antigua and Barbuda	–				84	0	–	–
Argentina	90 x	1996	not noted	UNICEF Country Office (1996) Fax Reference: BUE/NY/035/96	39,134	690	69	3,913
Armenia	97	2005	15+	MOH/UNICEF (2005) Report on Results of National Representative Survey of Iodine Nutrition and Implementation of Universal Salt Iodization Program in Armenia	3,010	36	1	90
Australia	–				20,530	255	–	–
Austria	–				8,327	77	–	–
Azerbaijan	26	2000	15+	MICS 2000 (reanalysed by UNICEF HQ, December 2002)	8,406	129	95	6,187
Bahamas	–				327	6	–	–
Bahrain	–				739	13	–	–
Bangladesh	84	2006	10+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	155,991	4,013	630	24,491
Barbados	–				293	3	–	–
Belarus	55	2003-2004	not noted	Belarus State University Center for Sociological and Political Studies (2003/04) Sociological Study with Salt Testing	9,742	91	41	4,374
Belgium	–				10,430	110	–	–
Belize	90 x	1994	not noted	MOH (1994) Iodized Salt Survey	282	7	1	28
Benin	72	2001	15+	DHS 2001	8,760	358	101	2,479
Bhutan	96	2002	not noted	MOH/UNICEF (2002) Anemia Among Men, Women and Children in Bhutan	649	12	0	25
Bolivia	90	2003	not noted	DHS 2003	9,354	264	26	926
Bosnia and Herzegovina	62	2005	20+	MOH/UNICEF (2006) Iodine Status of the Population of Bosnia-Herzegovina	3,926	35	13	1,492
Botswana	66	2000	15+	MICS 2000	1,858	47	16	635
Brazil	88	2000	15+	MOH (2000) ThyroMobil Project	189,323	3,720	454	23,097
Brunei Darussalam	–				382	8	–	–
Bulgaria	100	2006	15+	MOH (2006) File Ref. 48-06-5	7,693	69	0	0
Burkina Faso	34	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, Apr 2007)	14,359	641	425	9,520
Burundi	98	2005	not noted	MOPH (2006) Report of the National Survey on the Population's Nutrition (French)	8,173	381	8	163
Cambodia	73	2005	not noted	DHS 2005	14,197	377	104	3,904

Country	Households consuming adequately iodized salt 2000-2006				Total population (thousands) 2006	Annual no. of births (thousands) 2006	Unprotected Newborn (thousands)	Unprotected Population (thousands)
	Per cent	Year	Cut-off (ppm)	Source				
Cameroon	49	2006	25+	MICS 2006 (reanalysed by UNICEF HQ, May 2007)	18,175	649	330	9,251
Canada	–				32,577	338	–	–
Cape Verde	0 x	1996	15+	MOH/UNICEF (1996) National Survey on IDD and Iodized Salt Consumption in Cape Verde	519	15	15	518
Central African Republic	62	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, May 2007)	4,265	157	59	1,608
Chad	56	2004	15+	DHS 2004	10,468	482	213	4,627
Chile	100	2006	20+	MOH (2006) Reglamento Sanitario de los Alimentos	16,465	249	0	0
China	90	2005	20+	China Centre for Disease Control (2006) 2005 China IDD Monitoring Report	1,320,864	17,309	1,696	129,445
Colombia	92 x	1997	not noted	MOH/PAHO/WHO/UNICEF (1998) Control of Iodine Deficiency Disorders in Colombia (Sp)	45,558	884	71	3,645
Comoros	82	2000	15+	MICS 2000 (reanalysed by UNICEF HQ, December 2002)	818	28	5	145
Congo	82	2005	15+	DHS 2005	3,689	132	24	664
Cook Islands	–				14	0	–	–
Costa Rica	97 x	1996	not noted	MOH (1996) National Nutrition Survey	4,399	80	2	132
Côte d'Ivoire	84	2004	not noted	MOPH/UNICEF (2004) Evaluation of the Fight Against IDD in Côte D'Ivoire (French)	18,914	684	107	2,951
Croatia	90 x	1999	not noted	National Institute of Public Health/UNICEF (2000) Analysis Report of the Croatian National Institute of Public Health and UNICEF Croatia	4,556	41	4	456
Cuba	88	2005	15+	Oficina Nacional de Estadísticas (2005) National Survey of Nutrition and Food Hygiene	11,267	121	15	1,352
Cyprus	–				846	10	–	–
Czech Republic	–				10,189	93	–	–
Democratic People's Republic of Korea	40	2004	not noted	Central Bureau of Statistics/Institute of Child Nutrition (2004) DPRK 2004 Nutrition Assessment Report of Survey Results	23,708	321	192	14,177
Democratic Republic of the Congo	72	2001	15+	MICS 2000 (reanalysed by UNICEF HQ, December 2002)	60,644	3,026	862	17,284
Denmark	–				5,430	62	–	–
Djibouti	0	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, Apr 2007)	819	24	24	816
Dominica	–				68	0	–	–
Dominican Republic	19	2006	15+	Oficina Nacional de Estadísticas (2006) ENHOGAR	9,615	231	188	7,836
Ecuador	99 x	1999	not noted	MoPH (1999) National Goitre Program Report (Spanish)	13,202	285	3	132
Egypt	78	2005	15+	DHS 2005	74,166	1,828	400	16,242
El Salvador	62	2002	15+	MOH (2002) Situation of Fortified Foods, El Salvador	6,762	159	60	2,570
Equatorial Guinea	33	2000	15+	MICS 2000	496	19	13	331
Eritrea	68	2002	15+	DHS 2002	4,692	186	60	1,501
Estonia	–				1,340	14	–	–
Ethiopia	20	2005	15+	DHS 2005	81,021	3,159	2,530	64,898
Fiji	31 x	1994	not noted	National IDD Survey 1994	833	18	12	575
Finland	–				5,261	58	–	–
France	–				61,330	763	–	–
Gabon	36	2001	15+	MOPH/WHO/UNICEF (2002) Final Report of the 2001 National Study on the Prevalence of IDD in Gabon (French)	1,311	34	22	839

ANNEX 1.

HOUSEHOLD IODIZED SALT CONSUMPTION BY COUNTRY (continued)

Country	Households consuming adequately iodized salt 2000-2006				Total population (thousands) 2006	Annual no. of births (thousands) 2006	Unprotected Newborn (thousands)	Unprotected Population (thousands)
	Per cent	Year	Cut-off (ppm)	Source				
Gambia	7	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	1,663	60	56	1,553
Georgia	91	2005	15+	WHO/UNICEF (2007) Eliminating Iodine Deficiency in the Republic of Georgia: Overview of 2005 National Survey	4,433	48	5	417
Germany	–				82,641	683	–	–
Ghana	32	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	23,008	700	473	15,553
Greece	–				11,123	103	–	–
Grenada	–				106	2	–	–
Guatemala	67	2002	15+	CONAFOR/INCAP/OPS/UNICEF (2002) The Situation of Food Fortification, Guatemala (Spanish)	13,029	445	147	4,300
Guinea	51	2005	not noted	DHS 2005	9,181	374	184	4,517
Guinea-Bissau	1	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	1,646	82	81	1,631
Guyana	–				739	13	–	–
Haiti	3	2005-2006	15+	DHS 2005-2006	9,446	269	261	9,153
Holy See	–				1	–	–	–
Honduras	80 x	1998	25+	Departamento de Control de Alimentos (2000) Report on the Household Survey, Micronutrient Section (Spanish)	6,969	199	40	1,394
Hungary	–				10,058	93	–	–
Iceland	–				298	4	–	–
India	51	2005-2006	15+	Ministry of Health and Family Welfare (1005-06) National Family Health Survey	1,151,751	27,195	13,298	563,206
Indonesia	73	2003	30+	SUSENAS 2003	228,864	4,427	1,185	61,244
Iran (Islamic Republic of)	99	2005	not noted	MOH (2005) Anthropometric Nutritional Indicator Survey II	70,270	1,407	18	914
Iraq	28	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	28,506	937	671	20,410
Ireland	–				4,221	66	–	–
Israel	–				6,810	137	–	–
Italy	–				58,779	544	–	–
Jamaica	100 x	1999	not noted		2,699	55	0	0
Japan	–				127,953	1,087	–	–
Jordan	88	2000	not noted	MOH/UNICEF (2000) Assessment of IDD Among Jordanian Children After Introduction of Iodized Salt	5,729	152	18	670
Kazakhstan	92	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, May 2007)	15,314	289	23	1,225
Kenya	91	2000	15+	MICS 2002	36,553	1,447	136	3,436
Kiribati	–				94	0	–	–
Kuwait	–				2,779	50	–	–
Kyrgyzstan	76	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	5,259	113	27	1,257
Lao People's Democratic Republic	75	2000	15+	MICS 2000 (reanalysed by UNICEF HQ, December 2002)	5,759	156	38	1,417
Latvia	–				2,289	21	–	–
Lebanon	92	2004	15+	PAPFAM 2004	4,055	74	6	324
Lesotho	91	2004	15+	DHS 2004	1,995	59	5	186
Liberia	–				3,579	184	–	–
Libyan Arab Jamahiriya	90 x	1993	not noted		6,039	144	14	604
Liechtenstein	–				35	0	–	–
Lithuania	–				3,408	30	–	–

Country	Households consuming adequately iodized salt 2000-2006				Total population (thousands) 2006	Annual no. of births (thousands) 2006	Unprotected Newborn (thousands)	Unprotected Population (thousands)
	Per cent	Year	Cut-off (ppm)	Source				
Luxembourg	–				461	5	–	–
Madagascar	75	2003-2004	15+	DHS 2003-04	19,159	714	176	4,713
Malawi	48	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	13,571	566	294	7,057
Malaysia	–				26,114	556	–	–
Maldives	44	2001	15+	MICS 2001	300	7	4	168
Mali	74	2001	not noted	DHS 2001	11,968	579	152	3,136
Malta	–				405	4	–	–
Marshall Islands	–				58	0	–	–
Mauritania	2	2000-2002	not noted	DHS 2000-01	3,044	102	100	2,986
Mauritius	0 x	1995	not noted	MOH (1995) A Survey of Nutrition in Mauritius and Rodrigues	1,252	19	19	1,252
Mexico	91	2003	15+	Asociación Mexicana de la Industria Salinera (2004) Advances in Salt Iodization in Mexico (Spanish)	105,342	2,109	190	9,481
Micronesia (Federated States of)	–				111	3	–	–
Moldova	60	2005	15+	DHS 2005	3,833	44	18	1,541
Monaco	–				33	0	–	–
Mongolia	83	2005	not noted	MICS 2005 (reanalysed by UNICEF HQ, April 2007)	2,605	49	8	440
Montenegro	71	2000	15+	MICS 2000 (Former Republic of Yugoslavia)	601	8	2	176
Morocco	59	2005	not noted	MoH (2005) Report on Household Iodized Salt Use in Morocco (French)	30,853	635	262	12,711
Mozambique	54	2003	not noted	DHS 2003	20,971	856	396	9,710
Myanmar	60	2003	15+	MICS 2003	48,379	897	361	19,497
Namibia	63	2000	not noted	DHS 2000	2,047	53	20	759
Nauru	–				10	0	–	–
Nepal	63	2000	15+	Central Bureau of Statistics (2000) BCHIMES	27,641	791	296	10,338
Netherlands	–				16,379	188	–	–
New Zealand	–				4,140	57	–	–
Nicaragua	97	2003	15+	MOH (2004) Integrated system of monitoring nutrition interventions (SIVIN): first progress report 2002-2003 (Spanish)	5,532	139	4	177
Niger	46	2006	15+	DHS 2006	13,737	683	369	7,418
Nigeria	97	2003	15+	DHS 2003	144,720	5,909	160	3,907
Niue	–				2	0	–	–
Norway	–				4,669	56	–	–
Occupied Palestinian Territory	86	2006	15+	Palestinian Central Bureau of Statistics (2006) Palestinian Family Health Survey	3,889	143	20	556
Oman	61 x	1998	not noted	MoH (1998) Monitoring Universal Salt Iodization in Oman	2,546	57	22	993
Pakistan	17	2002	not noted	Pakistan Institute of Development Economics (2002) National Nutrition Survey 01/02	160,943	4,358	3,617	133,583
Palau	–				20	0	–	–
Panama	95 x	1998	not noted	MOH (1998) Monitoring System of Salt Iodization (Spanish)	3,288	70	4	178
Papua New Guinea	–				6,202	191	–	–
Paraguay	88	2000-2001	15+	General Directorate for Statistics and Censuses (2001) Integrated Household Survey 2000-01 (Spanish)	6,016	153	18	710
Peru	91	2004	15+	MOH-INS/CENAN (2004) National Monitoring of Nutritional Indicators	27,589	584	51	2,428

ANNEX 1.
HOUSEHOLD IODIZED SALT CONSUMPTION BY COUNTRY (continued)

Country	Households consuming adequately iodized salt 2000-2006				Total population (thousands) 2006	Annual no. of births (thousands) 2006	Unprotected Newborn (thousands)	Unprotected Population (thousands)
	Per cent	Year	Cut-off (ppm)	Source				
Philippines	56	2003	not noted	Food and Nutrition Research Institute (2004) Sixth National Nutrition Survey 2003	86,264	2,295	1,001	37,611
Poland	–				38,140	358	–	–
Portugal	–				10,579	113	–	–
Qatar	–				821	13	–	–
Republic of Korea	–				48,050	455	–	–
Romania	74	2004	15+	Emory University (2004) National Nutrition Status Survey	21,532	213	55	5,598
Russian Federation	35	2002-2003	not noted	KAP Survey 2000–2003	143,221	1,506	979	93,094
Rwanda	88	2005	15+	DHS 2005	9,464	420	51	1,155
Saint Kitts and Nevis	100	2000	not noted	Main Health Centre, Child Health	50	1	0	0
Saint Lucia	–				163	3	–	–
Saint Vincent and Grenadines	–				120	2	–	–
Samoa	–				185	5	–	–
San Marino	–				31	0	–	–
Sao Tome and Principe	37	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, May 2007)	155	5	3	98
Saudi Arabia	–				24,175	612	–	–
Senegal	41	2005	15+	DHS 2005	12,072	435	255	7,086
Serbia	73	2000	15+	MICS 2000 (Former Republic of Yugoslavia)	9,851	126	34	2,630
Seychelles	–				86	3	–	–
Sierra Leone	45	2005	15+	MICS 2005 (reanalysed by UNICEF HQ, April 2007)	5,743	262	145	3,182
Singapore	–				4,382	37	–	–
Slovakia	–				5,388	53	–	–
Slovenia	–				2,001	18	–	–
Solomon Islands	–				484	15	–	–
Somalia	1	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	8,445	371	367	8,344
South Africa	62 x	1998	15+	Medical Research Council (1998) National Survey of the Iodine Concentration of Household Salt in South Africa	48,282	1,102	414	18,154
Spain	–				43,887	468	–	–
Sri Lanka	94	2005	not noted	Medical Research Institute (2005) Nationwide IDD School Survey	19,207	295	19	1,229
Sudan	1	2000	15+	MICS 2000 (reanalysed by UNICEF HQ, March 2002)	37,707	1,225	1,219	37,518
Suriname	–				455	9	–	–
Swaziland	59	2000	15+	MICS 2000 (reanalysed by UNICEF HQ, December 2002)	1,134	33	13	462
Sweden	–				9,078	101	–	–
Switzerland	–				7,455	69	–	–
Syrian Arab Republic	79	2003	15+	MOH (2003) Study on Use of Iodized Salt in Syria	19,408	529	110	4,017
Tajikistan	46	2005	15+	MICS 2005 (reanalysed by UNICEF HQ, April 2007)	6,640	185	99	3,559
Thailand	58	2005	not noted	MICS 2005 (reanalysed by UNICEF HQ, April 2007)	63,444	936	397	26,900
The former YR Macedonia	94	2005	20+	MOH (2005) Report on the Activities Implemented by the National Committee for Iodine Deficiency	2,036	23	1	122
Timor-Leste	72	2000	15+	MICS 2000	1,114	46	13	312
Togo	25	2006	15+	MICS 2005 (reanalysed by UNICEF HQ, April 2007)	6,410	242	181	4,782

Country	Households consuming adequately iodized salt 2000-2006				Total population (thousands) 2006	Annual no. of births (thousands) 2006	Unprotected Newborn (thousands)	Unprotected Population (thousands)
	Per cent	Year	Cut-off (ppm)	Source				
Tonga	–				100	3	–	–
Trinidad and Tobago	28	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, May 2007)	1,328	20	14	959
Tunisia	97	2000	15+	MICS 2000	10,215	172	6	342
Turkey	64	2003	15+	DHS 2003	73,922	1,378	502	26,908
Turkmenistan	87	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	4,899	108	15	661
Tuvalu	–				10	0	–	–
Uganda	95	2000-2001	15+	DHS 2000-01	29,899	1,406	73	1,555
Ukraine	18	2005	15+	MICS 2005 (reanalysed by UNICEF HQ, April 2007)	46,557	417	341	38,037
United Arab Emirates	–				4,248	69	–	–
United Kingdom	–				60,512	715	–	–
United Republic of Tanzania	43	2004-2005	15+	DHS 2004-05	39,459	1,589	899	22,334
United States	–				302,841	4,248	–	–
Uruguay	–				3,331	51	–	–
Uzbekistan	53	2006	15+	MICS 2006 (reanalysed by UNICEF HQ, April 2007)	26,981	619	290	12,654
Vanuatu	–				221	6	–	–
Venezuela (Bolivarian Republic of)	90 x	1998	15+	National Institute of Nutrition (1999)	27,191	595	60	2,719
Viet Nam	93	2005	15+	KAP Survey on the Use of Iodized Salt and Salty Condiments in Reproductive Aged Women in Vietnam in 2005	86,206	1,654	119	6,207
Yemen	30	2003	15+	MoH (2003) Family Health Survey	21,732	839	591	15,321
Zambia	77	2002	15+	DHS 2001–2002	11,696	470	106	2,643
Zimbabwe	93 x	1999	30+	Iodine Deficiency Disorders Situation in Zimbabwe in 1999	13,228	372	25	873

x represents figures falling outside the 2000–2006 year range

SUMMARY INDICATORS

Sub-Saharan Africa	64
Eastern and Southern Africa	54
West and Central Africa	72
Middle East and North Africa	64
South Asia	51
East Asia and Pacific	84
Latin America and Caribbean	85
CEE/CIS	50
Industrialized countries [§]	–
Developing countries [§]	69
Least developed countries [§]	55
World	68

§ Includes territories within each country category or regional group.

Notes on Data

A. Improvements in data quality and availability

Great strides have been made to enhance programme monitoring, leading to increased availability and improved quality of data on household consumption of iodized salt over the past decade.

A 40 PER CENT INCREASE IN AVAILABLE DATA HAS OCCURRED DURING THE PAST DECADE:

Many more countries have data now than in the early-to-mid-1990s. UNICEF first published a database containing household iodized salt consumption data in *The State of the World's Children 1997*. In that report, only 88 countries had available data. There are 123 countries in UNICEF's current database with a national estimate for household iodized salt consumption, representing an increase in available data points of 40 per cent. The increase in data availability has actually improved most over the past few years. For example, in *Progress since the World Summit for Children: A statistical review* (UNICEF 2001), there were still only 90 countries with data

on household consumption of iodized salt, indicating that the bulk of the 40 per cent increase noted above has been recent.

DATA QUALITY HAS IMPROVED TREMENDOUSLY DURING THE PAST 10 YEARS:

Shift from production to consumption estimates: Household consumption of iodized salt was only added to major household surveys starting in the mid-1990s, and even then, not all countries had estimates based on household data. In the early-to-mid-1990s, many national estimates were based on extrapolations from iodized salt production figures. Current points in UNICEF's database are from household surveys or monitoring systems which rely on household level assessments, measuring consumption.

Introduction of assessment for presence of iodine in household salt samples: Although the move from production- to consumption-based estimates was a positive one, it still introduced some bias in that they were often based on self-reporting. Even some early DHS did not test household salt for presence

of iodine, relying on self reporting by the respondent or a cross check against the label/brand name of the salt by the enumerator. Rapid test kits, which allow for semi-quantification of iodine content, were introduced into many surveys as a means of cross checking a sample of salt within the household during survey enumeration in the mid- 1990s. This helped to decrease bias of estimates based on household survey data and represents one of the first examples of direct testing in household surveys. At present, nearly all MICS and DHS as well as most other national household surveys/monitoring mechanisms include a salt testing component using iodine rapid test kits. There is a possibility that the quality of data related to iodine content of salt from household surveys may improve even further over the next decade, given new recommendations stipulating the use of titration for a more accurate assessment of iodine content in salt samples gathered through household surveys.

More countries reporting cut-offs for iodine content: There were 43

countries with data points verified to be based on consumption estimates in UNICEF's first published database (*The State of the World's Children 1997*). Of these 43 countries, only 6 (or 14 per cent) reported any cut-off for iodine content of tested salt, and only 2 countries (or 5 per cent) reported a cut-off of 15 ppm or greater. Of the 123 countries in UNICEF's most recent database, 86 countries (or 70 per cent) reported any cut-off for iodine content of salt, with 77 countries (or 63 per cent) reporting a cut-off for iodine content of ≥ 15 ppm.

Improvement in the area of data availability and quality has made analysis of progress at the regional and global levels unfeasible, and may partially explain the levelling-off in the global coverage figure at around 70 per cent. For example, the huge increase in the number of data points derived using rapid test kits for assessment of iodine that have a ≥ 15 ppm cut-off, complicates trend analysis. This is because in many cases, baseline data points may have been artificially inflated, if there was no cut-off for iodine content specified. Since there can be a 10–15 per cent difference in coverage estimates between the use of salt with any iodine compared to salt with 15 ppm or more, current estimates may reflect improved programme quality.

B. Data used in this report

Data in this report are from UNICEF's database on household

consumption of iodized salt. Unless stated differently below, all references to "countries" in this report deal with developing countries as well as non-developing CEE/CIS countries that comprise UNICEF's database. Specific information on each figure is presented below.

FIGURE 2:

There were a total of 156 countries in the database for the first bar and 157 countries in the database for the second bar. The difference in the number of countries is due to the separation of Serbia and Montenegro in 2006.

FIGURE 5:

Please note that this graph is based on developing countries only (i.e., presentation of CEE/CIS region does not include non-developing countries, such as the Russian Federation).

FIGURES 6–12:

The following criteria were applied to obtain points for country-level progress graphs:

1. Data points used had to be from a source that had supporting documents (e.g., survey report).
2. Data points had to be from a consumption-based estimate. All production-based data were excluded.
3. When various data points existed, MICS and DHS were used preferentially as much as possible.

4. For the "around 1995" data point, the point closest to 1995 was chosen, except for those where another point was used in *Progress for Children: A World Fit for Children statistical review* (UNICEF December 2007). The year range for the baseline point was 1990–2000.
5. For "around 2005", the latest available data point in *The State of the World's Children 2008: Child survival* (UNICEF December 2007) was used. The year range was 2000–2006.
6. There had to be at least four years between data points for each country.

FIGURES 13 AND 14:

Data were from UNICEF Supply Division databases that document potassium iodate purchased by country by year in kilogram and dollar amounts.

CATEGORIZATION OF PROGRESS:

The following criteria were applied to categorize progress of individual countries in the area of household consumption of iodized salt as presented in figures 6–12. Note that all developing countries, as well as non-developing countries in the CEE/CIS region, were included in this assessment. A total of 157 countries were assessed, of which 112 have sufficient data to be categorized.

1. ATTAINED THE GOAL OF UNIVERSAL SALT IODIZATION (34 COUNTRIES)

a) Countries in this category are those with a most recent estimate, as appearing in *The State of the World's Children 2008*, of ≥ 90 per cent.

2. ON TRACK (38 COUNTRIES)

a) **Countries close to reaching the goal:**

- Countries with a most recent estimate between 80 per cent and 89 per cent and for which there is no strong evidence indicating a decline or stagnation.

b) **Countries making a significant increase:**

- Countries with a most recent estimate between 20 per cent and 79 per cent, which experienced an

increase of ≥ 20 percentage points over the past decade.

- Countries with a most recent estimate between 20 per cent and 79 per cent, which experienced a recent increase of ≥ 10 percentage points, as well as an increase of ≥ 20 percentage points over the past decade.

3. DECLINING OR LAGGING (24 COUNTRIES)

a) **Countries experiencing a significant decline:**

- Countries with a most recent estimate between 20 per cent and 79 per cent, which experienced a decrease of ≥ 15 percentage points over the past decade.

- Countries with a most recent estimate between 20 per cent and

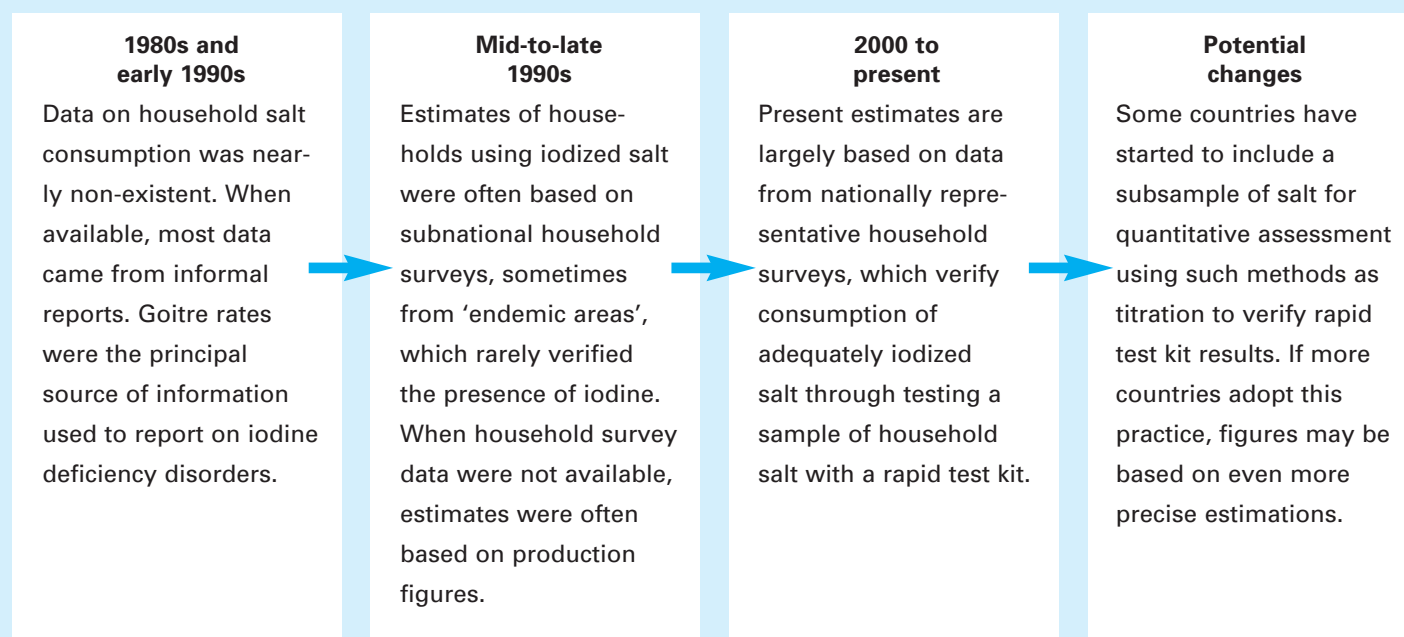
79 per cent, which experienced a recent decline of ≥ 10 percentage points, regardless of change over the past decade (i.e., even if there was an increase over the past decade of ≥ 20 percentage points).

b) **Countries stagnating:**

- Countries with a most recent estimate between 20 per cent and 79 per cent, with a change of < 10 percentage points over the past decade.

- Countries with a most recent estimate between 20 per cent and 79 per cent, with a recent change of < 10 percentage points, regardless of change occurring over the past decade (i.e., even if there was an increase over the past decade of ≥ 20 percentage points).

Summary of improvements in data quality for Household Iodized Salt Consumption Data



4. LOW COVERAGE (12 COUNTRIES)

a) Countries with a most recent estimate of ≤ 20 per cent (regardless if there has been a decline, increase, stagnation or if it is the only data point).

It should also be noted that there were 45 countries for which level of progress could not be determined as they either had:

- Not even one valid data point (34 countries).
- Only one valid data point which was >20 per cent and <80 per cent (nine countries).
- At least two valid data points, but with a year span of less than four years between them (two countries).

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