International Council for the Control of Iodine Deficiency Disorders (ICCIDD)

Sustained Elimination of Iodine Deficiency Disorders in Bangladesh, Ethiopia, Ghana, Sudan and Tanzania

Final report

April 2012-March 2013

May 31, 2013

ICCIDD

GLOBAL NETWORK

Project funding

CIDA contribution: $377,000

Partner cost share: None

Other sources of support: None

Project time frame

Actual start date: April 1, 2012

End date: March 31, 2013

Contact information

Name: Daniel Levac, CPA, CA

Title: Treasurer

Address: P.O. Box 5030, 375 des Épinettes, Ottawa, ON, K1E 3E0

Phone number: 613-323-7488

Email address: dlevac@sympatico.ca

Final report

The present narrative and financial report has been prepared in accordance with CIDA's grant agreement 2003-00-31, for the project entitled "Sustained Elimination of Iodine Deficiency Disorders in Bangladesh, Ethiopia, Ghana, Sudan and Tanzania, signed on March 23, 2012.

Previous reports

Previous deliverables for this agreement include:

-Semi-annual financial and narrative report, submitted to CIDA on November 4, 2012

-Report on progress towards an anti-corruption and whistleblower policy.

The ICCIDD board approved the conflict of interest policy and the whistleblower policy at their annual meeting of September 6 and 7, 2012. This was reported to CIDA on October 2, 2012.

-Report on progress in implementing the recommendations from the review undertaken by Duska-Anena Development Associates (DADA) Inc. The final status report was provided to CIDA on November 18, 2012.

Report authors

Professor Michael Zimmermann, executive director, ICCIDD

Dr. Vincent Assey, ICCIDD regional coordinator for East and Central Africa

Dr. John Egbuta, ICCIDD, regional coordinator for West Africa

Dr. Roland Kupka, ICCIDD regional coordinator for West Africa

Dr. Izzeldin Hussein, ICCIDD regional coordinator for the Eastern Mediterranean and North Africa

Professor Chandra Pandav, ICCIDD regional coordinator for South Asia

Table of contents

Country chapter: Ethiopia

Country chapter: Ghana

Country chapter: Sudan

Country chapter: Tanzania

Communication appendix

Sudan, annex 2-SudanNow magazine clip

Sudan, annex 3-Project photos

Tanzania, annex 3-Launch of Food Fortification Programme

Tanzania, annex 4-Photos

Online resources (videos, photos, and newsletters)

Bangladesh

http://www.iqplusin.org/downloads/sept-%202012.pdf

http://www.iccidd.org/newsletter/idd_feb13_bangladesh.pdf

http://www.iqplusin.org/downloads/dec-2012.pdf

Ethiopia

http://www.youtube.com/watch?v=q9iuV6vieeI

Sudan

http://www.nme.com/nme-video/youtube/id/yNmSxG2MCV4

Financial report……..Attached file

Executive summary

1. Overall assessment

Iodine deficiency disorders (IDD) are the most common cause of preventable brain damage worldwide. As of 2010, 1.88 billion people had deficient iodine intake across the world. This problem is particularly common in South-East Asia and Africa. Health experts recognize universal salt iodization (USI) as a safe and cost-effective measure to address iodine deficiency; global health agencies have made USI a major focus of IDD control.

The ICCIDD-CIDA collaboration aimed to create an enabling environment for sustainable USI and long-term IDD elimination in five countries: Bangladesh, Ethiopia, Ghana, Sudan, and Tanzania. These countries were chosen for specific reasons that we discuss in each national chapter. They also share a common concern for IDD as a serious public health threat.

Our overall strategy was to work in close collaboration with international agencies already engaged in regional USI/IDD efforts, such as UNICEF, the Global Alliance for Improved Nutrition (GAIN) and the Micronutrient Initiative (MI), to optimize resources and avoid overlapping. At the same time, we put the emphasis on building consensus and setting up functional coalitions with national partners and key stakeholders, to ensure ownership and sustainability. As a well-established focal point at national and regional levels, our role was to advocate, broker alliances, and offer technical support.

In all five countries, we set out to achieve immediate outcomes that would contribute to increase household access to iodized salt in the short-to-medium term. From an operational perspective, we followed a three-pronged approach that aimed to:
-leverage comparative strengths and existing resources;
-address critical needs, gaps, and roadblocks;
-and seize emerging opportunities to influence policy making and public opinion.

To a varying degree in each country, we managed to make significant progress in two key areas: a) setting up or consolidating existing institutional frameworks and networks for advocacy, coordination, oversight, and policy steering; b) increasing local capacity for production and quality control of iodized salt. These immediate results have built momentum towards USI and laid a solid foundation for further work in all five countries and their immediate regions.

We provide a detailed account of outputs, outcomes, and activities in the operations chapter of each country report. In the following sections, we discuss key achievements, lessons learned, and recommendations emerging from our intervention across all countries.

2. Operations implementation

We discuss operations implementation, including outputs, outcomes, and activities, in separate attachments to each country chapter.

3. Outcomes

a. Immediate outcomes

Activities under this project have strengthened IDD control programmes in all participating countries. This required ICCIDD interventions at different levels.

As proposed in the grant agreement, we started by carrying out situation analyses of IDD control policies and implementation; oversight functions; and relations between government, private sector, and civil society. We identified needs, gaps, and potential leverage points for cost-effective actions. Equally important, we learned from previous failure and success. In Ethiopia, where we had not initially proposed a situation analysis, we soon realized it would be extremely difficult to implement the planned activities without identifying the main obstacles on the road to salt iodization.

The resulting monographs provided up-to-date information and strengthened advocacy and communication capacity among partners and key stakeholders. They also improved

their ability to track progress towards USI in all participating countries. In Sudan, the CIDA-funded situation analysis had direct and immediate impact on legislative outcomes: policy-makers used our report as supporting evidence to draft and enact a new law banning the production of non-iodized salt. This outcome exceeded our expectations at the onset of the ICCIDD-CIDA project.

The baseline situation in all participating countries required interventions to provide or restore coordination, oversight, and policy steering ability. Our work on this front ranged from increasing stakeholder involvement, an essential first move in each country, to helping revive an existing coalition in Ghana, launching a long awaited IDD programme in Ghana, and setting up multi-sector alliances in Sudan, Ethiopia, and Bangladesh. These activities facilitated greater exchange of knowledge and experiences, helped to establish trust between key stakeholders –in particular, government and salt producers-, and contributed to avoid overlapping and dispersion of efforts, a common hindrance across the board. Most crucially, they built momentum for USI and IDD control.

Intense sensitization through workshops, seminars, and advocacy meetings resulted in deeper commitment from a range of stakeholders, including government officials, parliamentarians, salt producers and inspectors, organizations of the civil society, journalists, and academics. There is evidence of this commitment in immediate outcomes across all countries, from Tanzania's president personal engagement to ensure sustainable provision of potassium iodate to budgeting of laboratory supplies at district level in his country; from a national strategy currently being drafted to achieve USI by 2018 in Ghana, to enactment of legislation banning the production of non-iodized salt for human consumption in Sudan.

In all five countries, we joined and supported communication initiatives to increase visibility, awareness, and knowledge of USI and IDD. To avoid duplication, we coordinated our outputs with local governments and development partners such as GAIN and UNICEF. At the time of this report, Ghana Health Services, with funding from ICCIDD-CIDA and UNICEF, was implementing a communication strategy based on a

national 2011 study of knowledge, attitudes, and practices of salt consumers, traders, and producers. With input from ICCIDD and other partners, the Bangladesh Institute of Health Sciences developed and released an advocacy booklet. In Tanzania, we joined and contributed to launch the Scaling-Up Nutrition campaign and the Food Fortification programme, two country-wide initiatives aimed at tackling nutrition deficiencies, including IDD.

Also pivotal for sustained progress towards USI, our work improved local capacity for quality assurance and control of iodized salt at production, distribution, and retail. Here again, our activities varied according to country needs, though we carried out some core actions across all countries. We procured and distributed laboratory supplies and we trained salt inspectors and laboratory personnel from government, NGOs, and the private sector. We also procured and distributed salt testing kits for quality monitoring.

In some countries, we contributed new data to support policy making and track progress concerning USI and IDD control. In Ethiopia, we produced a quality assessment report on salt iodization with knapsack technology in major production sites. This study provides reliable baseline data to measure the impact of training on salt quality in the short term and to track progress towards USI in the mid-to-long term. In Ghana, our quantitative analysis of iodized salt added value to qualitative assessment done by UNICEF and thus provided a more accurate picture of iodized salt coverage. In Tanzania, we drafted a report on salt quality from samples taken during supportive supervision in 59 production sites.

There are encouraging signs of immediate impact on quality control and monitoring where it matters most. In Tanzania, training and sensitization of regional and district leaders resulted in the establishment of surveillance systems in low performing regions. Some of these surveillance nodes were already submitting reports in May 2013. The government of Ethiopia assigned salt inspectors trained by ICCIDD to examine salt transported by truck at 19 checkpoints across the country; in the second half of 2013, it will set up sentinel sites to measure salt quality and population iodine status.

Some of these contributions will have regional repercussion. In Ghana, we laid the foundation to reactivate the national iodine laboratory at the University of Ghana as the only regional center of excellence to track population iodine status and for measuring salt quality at household, market, and production levels.

These newly created or recently revived institutional frameworks and quality control systems are far from being consolidated to the point of self-sustainability. We have laid solid foundations, but they require institutional and financial support and technical guidance in the short-to-mid term.

b. Intermediate outcomes

We expect important mid-term changes from immediate outcomes of the ICCIDD-CIDA intervention. In a few years, our work –if properly sustained by national governments and international partners- will have resulted in reliable autonomous quality control systems, increased levels of salt testing, and improved quality of iodized salt across all participating countries. Sustained advocacy and communication interventions (such as the one beginning to unfold in Ghana, with ICCIDD-CIDA support, at the time of this report) should bolster household demand for iodized salt.

In most cases, immediate outcomes from the ICCIDD-CIDA project should gather momentum and generate political goodwill for USI and IDD control. In Bangladesh, for example, we expect activities related to our project will encourage policy makers to extend the Control of Iodine Deficiency Disorders (CIDD) project beyond the current 2016 deadline.

As a consequence of these developments, we project increases in household access to iodized salt in all participating countries. In Tanzania, we anticipate an increase of salt iodization to at least 60% by the end of 2013 from 47% at present. In Sudan, we expect at least 70% of households will access iodized salt in the midterm, up from only 9.3% now. The national IDD strategy currently being drafted in Ghana, with ICCIDD input, aims at

USI by 2018. Population urinary iodine concentration should increase and goitre rates decrease accordingly. In addition, our work in countries like Ghana and Sudan will have impact beyond their borders, since they have enough salt resources to cover national needs and export. Follow-up surveys would help evaluate these outcomes and contribute to assess progress towards sustainable IDD elimination.

c. Ultimate outcome

Activities related to the ICCIDD-CIDA project will contribute to sustainable elimination of IDD and reduction of related health problems, by creating an enabling environment for universal salt iodization among key stakeholders and the population at large.

3. Analysis of project performance

a. Relevance and importance

All participating countries share a common concern for IDD as a severe public health threat. All of them were in the process of launching or reinforcing USI and IDD control initiatives, but needed more technical resources and better coordination among key stakeholders. The ICCIDD-CIDA timely intervention bolstered these national initiatives by placing USI and IDD control higher in the policy agenda and building capacity among different stakeholders to monitor iodized salt production and supply. Promoting and sustaining USI in some countries, like Ghana and Sudan, will have regional impact, since they have enough salt resources to cover national needs and export.

b. Design

The ICCIDD-CIDA project was designed to identify needs and opportunities, exert maximum leverage across the policy chain, foster synergies among partners and stakeholders, and create momentum for USI and IDD control action. This emphasis was agreed with all partners and stakeholders. ICCIDD led the process as convener and broker of the necessary public, private, and civic sector partnerships. On the whole, we adhered to the original project design, with some fine-tuning as we adjusted to the realities on the ground. Our contributions to communication initiatives are a good example in this regard: in all five countries, we adapted our outputs to join and support coordinated communication initiatives looking to increase visibility, awareness, and knowledge of USI and IDD. This approach also accounts for several outputs not included in the grant agreement, which we discuss in detail in each country chapter. A good example is our contribution of new data from research to support policy making and track progress in salt quality in Ethiopia, Ghana, and Tanzania.

Immediate outcomes bear out the chosen strategy: We have helped put in place institutional and operational structures that should lead to short-to-medium term improvement in the baseline situation and to sustainable IDD control as the ultimate goal.

c. Sustainability and partnerships

We tried to ensure sustainability of project outcomes by forging closer alliances with strategic partners at national and regional levels. These partnerships are also the focal point for future collaborations.

By helping to establish and prop up national coalitions, we brought together key stakeholders around a common platform. These coalitions are already creating synergies and removing roadblocks. In some cases, they are taking the lead in much-needed initiatives: At the time of this report, ICCIDD and the national coalition in Sudan were developing a nation-wide USI/IDD advocacy and education effort.

This new coordination, overseeing, and policy steering framework is a positive indicator of sustainability. On the other hand, lack of adequate national and district budgets may undermine these efforts in the medium to long term. Over time, government and salt producers are the ultimate guarantors of sustainability. In particular, USI depends on further involving small- and medium-scale salt producers and addressing their concerns. Our work has made small but concrete contributions in this regard: ICCIDD supportive supervisions in Tanzania resulted in updating the 2003 salt producers list and engaging new small- and medium-scale producers in USI and IDD control.

ICCIDD established and shored up quality control and analysis systems and trained laboratory personnel from government, salt industry, and NGOs. However, additional steps need to be taken for consolidation. In most countries, food control departments are not yet conducting external quality monitoring. Measuring progress in salt quality is an outstanding issue across the board. ICCIDD produced salt quality assessment reports in Ethiopia and Tanzania; but all five countries need a survey of iodine level in salt, in order to establish a database and surveillance system.

d. Innovation

Overall, our brokerage and advocacy efforts were of unprecedented scope, as we involved state ministers, governors, industry, NGOs, general public, and academic institutions to address IDD/USI and to ensure sustainability. In Bangladesh and Sudan, for the first time, academic institutions were involved in a major way to influence policy and create a window for evidence-based policy making.

Although we have acknowledged that knapsack spray is an acceptable resource in the short-term, we have also supported the search of new market options for high-tech production of iodized salt. In Tanzania and Ethiopia, we have encouraged investment partnerships to build state-of-the art salt iodization factories with minimal cost for the government. There are auspicious developments in this regard: on June 8, 2013, six new iodization plants will be inaugurated in Somali region.

In some countries, we contributed new data to support policy making and track progress concerning USI and IDD control. In Ethiopia, we produced a quality assessment report on salt iodization with knapsack technology in major production sites. This study provides reliable baseline data to measure the impact of training on salt quality in the short term and to track progress towards USI in the mid-to-long term. In Ghana, our quantitative analysis of iodized salt added value to qualitative assessment done by UNICEF and thus provided a more accurate picture of iodized salt coverage. In Tanzania, we drafted a report on salt quality from samples taken during supportive supervision in 59 production sites.

e. Value for money

With relatively low levels of investment, the ICCIDD-CIDA project had strong immediate impact on the policy-making environment and created capacity for monitoring salt quality among key stakeholders, in some cases at regional level. In light of these results and expected intermediate outcomes, this was a very cost-effective intervention that will continue to have an influence in the mid-to-long term.

Although ICCIDD's role does not hinge on our ability to provide financial aid, funding availability has been crucial to address certain gaps and remove roadblocks in national programmes. In Tanzania and Ethiopia, we helped avert shortage of potassium iodate by supporting an existing reimbursable revolving fund in the former and facilitating the establishment of a new fund in the latter. Here, too, a modest financial injection from ICCIDD-CIDA had immediate impact on the production of iodized salt and contributed to assure a sustained supply of potassium iodate over the next few years.

4. Lessons learned

Though specific lessons are discussed in each country chapter, a few ones apply across the board:

1. Multi-stakeholder coalitions involving government, private sector, NGOs, public health institutions, and partner agencies can create synergies, remove roadblocks, greatly influence policy making, and ensure sustainability of IDD control efforts.
2. Active engagement with small, medium, and large salt manufacturers is essential to achieve USI. Private sector can augment the efforts of public agencies for better monitoring of salt iodization.
3. Low-cost technology –such as knapsack spray- is a key resource to kick-start salt iodization among small- and medium-scale salt producers in areas where good infrastructure is not available.
4. Consolidating and sustaining USI and IDD control capacities requires national budgets, beyond current support from international agencies.
5. Sustainable cost-recovery systems can ensure availability of potassium iodate at country level.

5. Policy recommendations and next steps

As with the previous section, policy recommendations are more specifically analyzed in country chapters. However, we can safely draw some overall conclusions:

1. There is a need to follow-up the ICCIDD-collaboration to further consolidate institutional frameworks, spearhead IDD control activities, and measure impact.
2. Enforcement agencies need more capacity to effectively monitor iodized salt quality at production, distribution, and retail levels.
3. Facilities at medical colleges and other academic institutions should be leveraged to better monitor IDD progress and carry out IDD control activities.
4. Salt producing sites need more frequent supportive supervision.
5. Local industries need new and better equipment to increase iodization capacity. Investment partnerships should be encouraged and supported to develop high-tech salt factories.
6. All participating countries need systematic education campaigns to increase IDD knowledge and awareness, and to help increase demand for iodized salt. Timely interventions in the media should address potential claims against consumption of iodized salt.
7. Follow-up surveys should measure impact of the ICCIDD-CIDA interventions on iodized salt coverage at production, retail and household levels, as well as IDD awareness among consumers and policy makers.
8. National governments, with support from development agencies, should monitor salt quality, household access to iodized salt, and population iodine status at regular intervals.

Country chapter: Bangladesh

1. Country summary and overall assessment

Iodine deficiency disorders (IDD) are the most common cause of preventable brain damage worldwide. According to the latest estimates, 1.88 billion people across the world have deficient iodine intake, of which 541 million resides in South-East Asia region. The population in Bangladesh is susceptible to IDD because of the unique geological composition of the land. The country is the site of the largest river delta in the world, comprising of three major rivers and another 250 smaller rivers that drain the Himalayan ranges and flow into the Bay of Bengal. Soil alluviation by these numerous rivers, together with heavy rainfall and annual flooding, constantly leaches iodine from soil and makes the country extremely vulnerable to iodine deficiency. The lack of iodine in soil makes the plant and animal products deficient in iodine, putting the entire population at risk of IDD. Universal salt iodization (USI) is the key strategy advocated by WHO/UNICEF/ICCIDD for IDD control.

The IDD control programme in Bangladesh started in 1977 with a trial of iodized oil injections. Use of iodized oil continued in 1981-82 and a national goitre prevalence survey was conducted in the same year. Upon realizing the grave consequences of IDD, the government passed an Iodine Deficiency Disease Prevention Act in 1989 and USI started in the country. In the same year, a Control of Iodine Deficiency Disorders (CIDD) project was established in Bangladesh's Small and Cottage Industries Corporation (BSCIC) under the Ministry of Industries. The CIDD is responsible for implementing activities to achieve USI and IDD control in Bangladesh.

Surveys to track progress towards sustainable elimination of IDD have been conducted regularly in Bangladesh; first in 1993, and subsequently in 1999 and 2004-05. The International Council for Control of Iodine Deficiency Disorders (ICCIDD) has been closely associated with activities related to IDD elimination in the country.

Bangladesh has made remarkable progress in sustainable elimination of IDD. According to a national survey in 2004-05, the total goitre rate came down to 6.2% from 50% in 1993, and the median urinary iodine was 162.5 µg/L, up from 53 µg/L in 1993. However, household coverage with iodized salt remained low at 51% and had declined since 1999.

USI is the key strategy for sustainable elimination of IDD in Bangladesh. The baseline situation required interventions for capacity building and advocacy among policy makers, academics and programme managers, to maintain the impetus for salt iodization and strengthen IDD control.

The expected immediate outcome of this project was to strengthen the IDD control programme through improved capacity for production and quality control of iodized salt; greater involvement of partners and key stakeholders in IDD elimination and USI activities; up-to-date information on IDD/USI situation in Bangladesh; and strengthened advocacy and information capacity among partners and key stakeholders

ICCIDD trained laboratory personnel working with CIDD and development partners to build capacity for better monitoring of iodized salt at production and consumption ends. We met with officials from government agencies, academic institutions, development partners, and salt manufacturers to sensitize them about the burden and impact of IDD and to create synergies between different agencies involved in USI and IDD control. We compiled IDD literature and prepared an IDD advocacy booklet [*See attached file: "Bangladesh Annex 2-booklet"*] to complement advocacy efforts with various stakeholders.

Our activities at different levels effectively strengthened the IDD control programme in Bangladesh. We compiled up-to-date IDD/USI information, produced a situation analysis, and made it available to all partners and stakeholders in the form of a booklet, and key literature in the form of a DVD. This provided greater ability to track progress towards USI. Through a series of meetings, we achieved greater partner and stakeholder involvement. As a main outcome of these meetings, government, industry, and

organizations of the civil society decided to form a national coalition for sustainable elimination of IDD in Bangladesh. The project sessions also facilitated greater exchange of knowledge and experiences and fostered integration of efforts among participants. Activities related to our project also strengthened advocacy and information capacity among partners and key stakeholders. At the conclusion of the ICCIDD-CIDA project, the partners were working out the terms of reference and budgeting mechanism to get the coalition up and running in the short term, which will provide greater coordination, overseeing, and policy-steering ability towards USI and IDD control in the country.

2. Operations: implementation

See attached file, "Bangladesh-Annex 1-Operations implementation", for a detailed discussion of outputs, outcomes, and activities.

3. Outcomes

a. Immediate outcomes

Activities under this project have strengthened the IDD control programme in Bangladesh. This required ICCIDD interventions at different levels. We compiled up-to-date information on IDD/USI, produced a situation analysis and made this information available to all partners and key stakeholders in the form of a booklet, and key literature in DVD format. This improved ability to track progress towards USI.

We achieved greater involvement from partners and key stakeholders through a series of advocacy, information, and networking meetings. As a result, all participants decided to form a national coalition for sustainable elimination of IDD in Bangladesh. These meetings also facilitated greater exchange of knowledge and experiences between partners and key stakeholders and fostered integration in their IDD prevention and control efforts. Activities related to project also strengthened advocacy and information capacity among partners and key stakeholders.

b. Intermediate outcomes

The creation of a national coalition will provide greater coordination, overseeing, and policy steering ability towards sustainable elimination of IDD in Bangladesh. Increased monitoring capacity in the CIDD project and other partners will improve effective monitoring of iodized salt production and supply in the short- to medium-term, and thus help achieve universal salt iodization. We expect strengthened and sustained advocacy will increase demand of adequately iodized salt among consumers. Activities related to our project should also encourage policy makers to extend the CIDD project beyond the current 2016 deadline. Follow-up surveys would help evaluate these outcomes and contribute to assess progress towards sustainable IDD elimination.

c. Ultimate Outcome

Activities related to the ICCIDD-CIDA project will contribute to sustainable elimination of IDD in Bangladesh by creating an enabling environment for universal salt iodization among key stakeholders and the population at large.

4. Analysis of project performance

a. Relevance and importance

Bangladesh has shown a decline in household coverage of adequately iodized salt from 1999 to 2004-05. The third phase of the CIDD project was launched in 2011 to achieve the sustainable elimination of IDD through improved availability of adequately iodized salt. The ICCIDD-CIDA intervention placed IDD elimination activities high in the policy atmosphere and to build capacity among different stakeholders for better monitoring of iodized salt production and supply.

b. Design

The ICCIDD-CIDA project was designed to exert maximum leverage across the policy chain, to foster synergies among partners and stakeholders, and to create momentum for USI and IDD control action. Throughout implementation, we adhered to the original project design. This allowed ICCIDD's South Asia office to have maximum interactions with relevant stakeholders and to build partnerships with development agencies and other national stakeholders for future activities.

c. Sustainability and partnerships

We have ensured sustainability of project outcomes by forging closer alliances with strategic partners including the CIDD Project. The establishment of a national coalition will bring together key stakeholders around a common platform and will synergize their activities. We also leveraged this project to enter in association with different partners for future collaborations.

d. Innovation

We tried certain innovations to reach out to larger audiences for advocacy purposes. For the first time, academic institutions were involved in a major way to ensure sustainability and continuity of efforts. We organized discussion sessions and presented scientific papers in academic conferences with attendance of academics and policy makers to influence the policy opinions and create a policy window.

e. Value for money

With relatively low levels of investment, the ICCIDD-CIDA project had strong immediate impact on the policy-making environment and created capacity for monitoring salt quality among key stakeholders. This was a cost-effective intervention that will contribute to prevention of brain damage among children in Bangladesh.

5. Lessons learned

1. Involving government agencies and academic institutions is an extremely important ingredient in planning an intervention to ensure sustainability of IDD control efforts in Bangladesh.
2. Active engagement with iodized salt manufacturers is essential to achieve USI.
3. Local sensitivities have to be taken into account while developing advocacy material.
4. A model of public-private partnership can be evolved where private sector can augment the efforts of public agencies like CIDD for better monitoring of salt iodization in the country.

6. Policy recommendations and next steps

1. There is a need to continue the CIDD project beyond the expected 2016 termination date to spearhead IDD control activities in the country.
2. Legislation should be amended to bring salt iodization level at production to not less than 30 PPM.
3. Enforcement agencies need greater capacity for effective monitoring of iodized salt quality at production and retail.
4. Facilities at medical colleges and other academic institutions should be leveraged for better monitoring of IDD situation and for carrying out IDD control activities.
5. Government should provide active support to institutionalize the national IDD coalition emerging from this project.
6. A follow-up national survey should measure impact of the ICCIDD-CIDA interventions on iodized salt coverage at production, retail and household levels, as well as IDD awareness among consumers and policy makers.
7. Progress towards sustainable elimination of IDD should be monitored at regular intervals.
8. There is a need to monitor the supply chain of iodized salt to achieve USI.

Country chapter: Ethiopia

1. Country summary and overall assessment

Ethiopia has one of the highest rates of iodine deficiency in Africa. From global perspective, the country ranks 6th among the 13 "make or break countries" that markedly contribute to global high IDD burden. Ethiopia achieved universal salt iodization (USI) as early as 1998; but the situation quickly deteriorated following the Ethio-Eriterian war of 1998-2000. Availability of iodized salt in the country was totally curtailed, with dire consequences: a 2005 survey revealed that only 4.2% of households had access to iodized salt. More than 80% of school-aged children had severe or moderate iodine deficiency. Goitre prevalence was 36% in school-aged children and 40% in their biological mothers. More than 50,000 abortions and still births have been estimated to occur every year to iodine deficiency disorders (IDD).

The Ethiopian government and international partners, such as UNICEF, GAIN, and MI have made efforts to iodate the salt from Afdera and Dobi, the two major salt producing sites. In March 2011, the government passed regulations requiring iodization of all salt for human consumption. More recently, the Ethiopia Food, Medicine, Health Care and Administration (FMHACA) was given mandate to enforce regulations and coordinate the national IDD control programme.

As an overall strategy, the ICCIDD-CIDA intervention took into account past experiences, as well as current opportunities and threats. We tried to build consensus with all partners and stakeholders to set up a structure that enables the country to achieve sustainable results. The ICCIDD team visited Ethiopia in August and September of 2012 with a number of planned activities, but quickly realized they needed to carry out a comprehensive situation analysis first. The ensuing report was a major achievement to determine the status and needs of the IDD/USI programme, and to track progress towards USI. Our analysis contributed to sensitize the government and other key stakeholders about the burden and impact of IDD in the country, and it helped to create synergies between different agencies involved in USI and IDD control.

All immediate outcomes of our activities will be of great importance to consolidate and sustain USI and IDD control in Ethiopia. ICCIDD's work contributed to establish and shore up the institutional and legal USI/IDD framework and secured commitment from all stakeholders. In particular, we engaged salt producers as guarantors of sustainability and we brokered an agreement between government and the salt industry. The government accepted the use of knapsack sprayers as a short-term gap measure to make sure iodized salt reaches the population, while salt producers committed to invest in better salt processing and iodization technology in the midterm. We also intervened to avoid the interruption of potassium iodate supply, which would have further hampered progress towards USI and encouraged the flow of non-iodized salt to the market. We did this by facilitating the establishment of a reimbursable revolving fund with contribution from the salt industry.

The ICCIDD team laid the foundations for a quality control and analysis system, trained laboratory personnel from government and the salt industry, and provided lab supplies. In particular, we carried out extensive training of salt producers and technicians in titration at factory level. We followed up with a quality assessment report on salt iodization using knapsacks in salt Afdera and Dobi. This study provides reliable baseline data to measure the impact of training on the quality of salt and to track progress in salt iodization in the midterm. On the communications front, we contributed funds and expertise to National IDD Week in March 2013, a country-wide advocacy effort by the federal government to increase demand of iodized salt.

2. Operations implementation

See attached file, "Ethiopia-Annex 1-Operations implementation", for a detailed discussion of outputs, outcomes, and activities.

3. Outcomes

a. Immediate outcomes

With CIDA-funded ICCIDD support, salt iodization gained momentum during 2012 and the first months of 2013. Our input as trusted technical advisors gave government and the salt industry confidence that they were doing the right thing despite some bottlenecks. Sustained ICCIDD brokerage efforts helped overcome misunderstandings between government and salt producers. This work contributed to avoid disruption of potassium iodate supply at a crucial juncture in 2012 and led to the establishment of a revolving reimbursable fund with contribution from the salt industry. At the time of this report, 22 tons of potassium iodate had been procured through this cost recovery system and plans we under way to secure another 12 tons.

Of great relevance to immediate and intermediate outcomes, ICCIDD carried out a comprehensive USI situation analysis, compiling up-to-date information and making it available to state health ministers and all partners and key stakeholders. This helped achieve greater ability to understand the seriousness of the problem and facilitated tracking progress towards USI. We strengthened USI/IDD involvement and advocacy capacity among partners and key stakeholders through a series of advocacy, information, and networking meetings. As a result, we achieved greater commitment from government and salt industry to iodize all salt for human consumption. On the government front, we made gains towards effective enforcement of laws banning production and sale of non-iodized salt for human consumption. FMHACA has assigned trained salt inspectors in 19 checkpoints across the country, including dry ports, to examine salt transported by truck. From a follow-up visit by ICCIDD's regional coordinator, we estimate that almost all salt from production sites in Afar and Somali regions are being iodized as of this report. This will be confirmed with hard evidence shortly: the government will set up surveillance sites in the second half of 2013 to measure salt quality and population iodine status.

The creation of a national task force representing business, government, development agencies, and other stakeholders is the direct outcome of ICCIDD advocacy and persistent request from UNICEF to health authorities. This body enables greater

coordination, policy steering ability, and exchange of resources and information. It also implies greater ability to coordinate provision of iodized salt to all Ethiopian Provinces. And it becomes a milestone on the road to sustainable USI and IDD control in the country.

ICCIDD also worked with the government to establish a reliable quality control system. We trained laboratory personnel from government and salt industry. In particular, we trained industry personnel for testing iodine at factory level using both standard titration and WYD Iodine checker. We also trained FMHACA trainers of provincial and regional staff. However, more efforts are needed from key players to consolidate a high-quality system. We followed up training with a quality assessment report on salt iodization using knapsacks in salt Afedera and Dobi. This study provides reliable baseline data to measure the impact of training on the quality of salt and to track progress in salt iodization in the midterm.

b. Intermediate outcomes

We expect immediate outcomes from the ICCIDD-CIDA project to have a strong impact on the medium-to-long term. Having established a multi-sectoral task force, installed salt iodization at all salt producing areas, activated enforcement of existing regulations, and laid the groundwork for a first-rate quality control system, we have provided the institutional and operational framework to reach the expected increase of salt iodization to at least 60% at the end of 2013 from 15% in 2010.

c. Ultimate outcome

Ethiopia is one of the countries with the lowest consumption of iodized salt consumption (5%) and the highest total goitre prevalence (36) in Africa. The ICCIDD-CIDA project will contribute to improve the current situation and reach the ultimate goal of sustainable IDD elimination by creating an enabling environment for USI among key stakeholders and the population at large.

4. Analysis of project performance

a. Relevance and importance

Severe iodine deficiency leads to some 50,000 abortions and still births yearly in Ethiopia. More than 39% of children 6-12 years and 36% of mothers 15-49 years suffer from goitre. When goitre prevalence exceeds 30% in a given area, cretinism may affect up to 5 to 15% of the population. Many more people are afflicted with less severe deficits that are not easy to measure.

The potential for an iodized salt solution is available: Ethiopia has local salt resources to cover the national salt needs and export. Nearly 1.2 million metric tons are produced every year for human consumption. The annual iodized salt requirement is only 350,000 metric tones; the rest can be exported to neighboring countries such as New Southern Sudan nation.

The ICCIDD-CIDA project has played a key role in strengthening multi-stakeholder partnerships; enforcing regulations requiring iodization of all salt for human consumption; improving capacity for monitoring iodized salt production and supply; and setting up an institutional and operational framework for making iodized salt more accessible and affordable to the population.

b. Design

The ICCIDD-CIDA project was designed to create momentum for strengthening USI and IDD control actions. This emphasis was agreed upon with all partners and stakeholders. ICCIDD led the process as broker of the necessary public, private, and civic sector partnerships. Immediate development results bear out the chosen strategy: greater commitment from salt producers and more collaboration between government and the private sector. This will help to build up a sustainable institutional and operational structure for salt surveillance at factory, distribution and consumption levels.

c. Innovation

We were able to reach out to larger audiences to spread the word about the IDD problem in Ethiopia. For the first time, state health ministers, academic institutions, and the general public were involved in a National IDD Week, a country-wide communication effort, including national and regional events, to raise awareness and increase household demand for iodized salt.

We have recognized that knapsack spray technology is an acceptable resource in the short term in Ethiopia. At the same time, most salt producers have agreed to iodize salt, something that had not happened in previous interventions. We can build up from this approach. Investors have seen the potential of iodized salt markets and have engaged in partnerships to build high–tech salt iodization factories with minimal cost for the government. The following investors are already working in salt crushing and refineries in Ethiopia: MA Amole salt processing factory; Hilina Enriched Food Processing factory; Yosis Iodized Salt Factory; and Alemu Iodized Salt Processing Enterprise Ltd. On June 8, 2013, six new iodization plants will be inaugurated in Somali region.

The only concern is that salt is sold as raw iodized salt. This raises a question whether Ethiopia should issue permits to supply non- iodized salt to known registered factories. This would avoid waste of iodate, since raw salt has to be washed, dried and/or crushed, thus losing iodine sprayed earlier in the process. Permits would allow producers to move non-iodized salt to distant factories without penalties.

d. Sustainability and partnerships

ICCIDD's work contributed to establish and shore up the long-term institutional and legal USI/IDD framework. We engaged salt producers as guarantors of sustainability and we brokered an agreement between government and the salt industry. The government accepted the use of knapsack sprayers as a short-term gap measure to make sure iodized salt reaches the population, while salt producers committed to invest in better salt processing and iodization technology in the midterm. We also facilitated the establishment of a reimbursable revolving fund with contribution from the salt industry:

At the time of this report, 22 tons of potassium iodate had been procured through this cost recovery system and plans were under way to secure another 12 tons. The government has also authorized salt producers to buy their own potassium iodate if they want to produce more. There is great interest among the industry, which will result in additional investments to sustain potassium availability.

e. Value for money

With relatively low levels of investment, the ICCIDD-CIDA project had strong immediate impact on the policy-making environment, created capacity for monitoring salt quality among salt industry and key stakeholders, and contributed to immediate application of legislation and regulations.

5. Lessons learned

1. Appropriate and affordable technology is a key resource to kick-start artisan salt iodization in areas with high temperature or where good infrastructure is not available.
2. Active engagement of salt producers is essential to make iodized salt available to consumers across the country.
3. Multi-stakeholder coalition involving government, private sector, public health institutions, and partner agencies greatly influences and ensures sustainability of IDD control efforts.
4. Lack of adequate national budget may undermine USI and IDD control efforts in the medium to long term.

6. Policy recommendations and next steps

1. Ethiopia urgently needs at least US$ 300,000 to help the industry produce more quality iodized salt (both raw and refined) and transport it to areas without coverage; to help create demand for iodized salt among consumers; to train inspectors; and to consolidate the reporting and quality control system.

2. Local industry needs to increase iodization capacity through new and better equipment.
3. A national survey should be carried out to measure availability of iodized salt and which areas need urgent intervention.
4. There is a need to strengthen IDD programme coordination.
5. National IDD programme managers should take full control of surveillance system.
6. More salt inspectors should be trained and more technicians should be assigned to checkpoints.
7. More frequent supportive supervisions should be carried out in salt producing sites to sustain quality of iodized salt.
8. Cost recovery system needs to be sustained to ensure availability of potassium iodate in all salt producing sites.

7. Communication recommendations

Country-wide communication and behaviour-change initiatives are strongly recommended in Ethiopia. A systematic education campaign would help create greater demand for iodized salt. Current communication and advocacy efforts are not yet reaching some of the most affected communities. In this context, we also recommend:

-Disseminating IDD success stories in workshops at national and sub-national level.

-Establishing school nutrition clubs with micronutrients programme as part of an integrated approach to IDD control.

-Working with agriculture and health district agents.

-Carrying out social marketing to promote production and consumption of iodized salt.

-Putting emphasis on goitronic effect in Ethiopia, particularly in cassava staple areas, and the preventive value of iodized salt.

Country chapter: Ghana

1. Country summary and overall assessment

Ghana launched a programme to eliminate IDD in the early nineties and became one of the first countries in Africa to come up with legislation on mandatory salt iodization in 1996. Despite this act of legislation, the program struggles to achieve the goal of universal salt iodization. The most recent data on the consumption of iodized salt at household level come from the 2011 national Multiple Indicator Cluster Survey (MICS), which evaluated the presence of iodine in salt using rapid test kit (RTK) qualitative analysis. The results indicated that 38% of salt consumed in households was adequately iodized. Additional quantitative (titrimetric) analysis provided by ICCIDD revealed that household availability of adequately iodized salt was even lower at 29%. Ghana is therefore far from reaching the goal of ensuring that at least 90% of households consume adequately iodized salt.

Despite low coverage of iodized salt, a 2010 national survey indicates that urinary iodine concentrations (UIC) among Ghanaian schoolchildren (a proxy for iodine status) may be in the adequate range. This should not be interpreted as a reason to lessen support towards at least 90% coverage of adequately iodized salt at household level. Despite a favourable national average, there may still be geographic regions in Ghana where schoolchildren have inadequate iodine status. Moreover, recent evidence indicates that UIC among schoolchildren are no longer considered a proxy of iodine status in the general population; this is especially true for pregnant women, who are the main target of IDD prevention efforts. Ghana also has great responsibility in ensuring that the salt it exports respects national and international regulations, and thus helps to protect the health of populations in West Africa and beyond.

In this context, ICCIDD supported the Ghana National Salt Iodization Programme to improve the testing and monitoring capacity. We also helped integrate knowledge and resources among partners and key stakeholders. Our support included defining a strategy to reactivate the national iodine laboratory at the University of Ghana, Legon. This

laboratory served as a regional center of excellence in the past, but had lost its functionality in recent years. The agreed upon goal was to set up a functional national laboratory with the ability to monitor coverage of adequately iodized salt (using titrimetric methods) and determine population iodine status (using urinary iodine concentrations), and thus evaluate the impact of the national IDD programme.
Although the ICCIDD-CIDA project provided essential training and equipment, full reactivation had not been achieved as of March 31, 2013. The main reason was the relocation of this lab to a new campus at the Noguchi Memorial Institute for Medical Research. The new location will be ideal for using the new equipment, but there have been delays to open the premises.
ICCIDD also assisted national and international partners working in Ghana. There is currently a fragmented approach to strengthen salt iodization. As a result, some stakeholders duplicate efforts while other crucial areas remain unaddressed. Government has to provide cohesion and coordination through Ghana Health Service and the Ministry of Industry and Trade. There are promising signs in that direction. Led by the Ministry of Trade and Industry, and with technical input from ICCIDD, partners and stakeholders are currently finalizing the 2013-2018 national strategy for achieving universal salt iodization. This strategy will inform the work of the multisectoral National Salt Iodization Committee. We expect that the new strategy will help coordinate efforts and make significant progress towards USI by 2018.

2. Operations implementation

See attached file, "Ghana-Annex 1-Operations implementation", for a detailed discussion of outputs, outcomes, and activities.

3. Outcomes

a. Immediate outcomes

The CIDA grant has allowed ICCIDD to address important gaps in the current landscape of salt iodization and IDD control in Ghana. ICCIDD laid the foundation to reestablish the national laboratory at the University of Ghana as the regional center of excellence to track population iodine status and for measuring salt quality at household, market, and production levels. This is a crucial result from our intervention, since there is currently no laboratory in that region that achieves internationally-recognized quality standards.

Other ICCIDD-CIDA activities have contributed to improve salt quality testing and monitoring capacity in Ghana. ICCIDD drafted a supplementary report for the national Multiple Indicator Cluster Survey (MICS), which resulted in more accurate evidence on salt iodization available to policy makers. As part of a GAIN-led initiative, ICCIDD and the consulting firm Intertek convened stakeholders to develop plans for a national quality assurance and control manual and related training materials. ICCIDD also provided valuable advocacy support to strengthen regulatory functions by the Food and Drugs Board.

b. Intermediate outcomes

The 2013-2018 national strategy for achieving USI, currently being drafted with ICCIDD input, will inform the work of the National Salt Iodization Committee. We expect this new strategy, a strengthened institutional framework, and increased capacity for quality assurance will help Ghana make significant progress towards USI by 2018. Ongoing multi-stakeholder advocacy and communication efforts will increase IDD/USI knowledge and awareness among the population, as well as household demand for adequately iodized salt. Follow-up surveys would help evaluate these outcomes and assess progress towards sustainable elimination of IDD.

c. Ultimate outcome

Activities related to the ICCIDD-CIDA project will contribute to sustainable elimination of IDD in Ghana by creating an enabling environment for universal salt iodization among key stakeholders and the population at large.

4. Analysis of project performance

a. Relevance and importance

Alongside Senegal, Ghana is one of the main salt producing countries in West Africa. It requires 84,000 tons of salt for its population of 24 million and it produces an additional 300,000 tons per year for export. The local salt industry has a key role to play in optimizing iodine intake, not only for the Ghanaian population, but also for the entire West Africa region. However, only 29.4% of salt consumed in Ghana is adequately iodized. It is also likely that substantial amounts of not adequately iodized salt continue to be shipped abroad. The ICCIDD-CIDA project proved to be of great relevance in this context, since it addressed critical roadblocks to USI and IDD control. Our interventions, together with other actions in progress, have contributed to improve the country's ability to monitor salt quality and overall USI/IDD progress.

b. Design

The ICCIDD-CIDA project was designed to address the resource gaps faced by the national laboratory and to enable regional and national USI/IDD control focal points to intervene in important policy discussions. Our efforts targeted the main government institutions (Ghana Health Service, Food and Drugs Board, and Ministry of Trade), development partners (GAIN, UNICEF, WFP, and WHO), and the Ghana National Salt Producers Association.

c. Sustainability and partnerships

All partners and stakeholders engaged through the ICCIDD-CIDA intervention are likely to play a crucial role in USI/IDD control for years to come. Influencing their decisions will ensure sustained progress towards IDD elimination. The 2013-2018 IDD strategy

will be of great importance to coordinate and shore up efforts towards USI. In the long term, government and salt producers are the ultimate guarantors of sustainability. In particular, USI depends on further involving small- and medium-scale salt producers and addressing their concerns.

d. Innovation

At the request of UNICEF, professor Asibey-Berko, from ICCIDD, drafted a supplementary survey report to the 2011-2012 Multiple Indicator Cluster Survey. Dr. Berko's quantitative analysis of iodine levels by titration added value to the rapid test kit qualitative assessment used in the MICS. Titration analysis revealed that that only 29% of salt available at household level is adequately iodized, which means that Ghana is still far from reaching the goal of ensuring that at least 90% of households consume adequately iodized salt.

e. Value for money

ICCIDD's leadership role in Ghana is not contingent on its ability to provide financial aid to the national salt iodization programme. However, in some instances, funding availability is crucial to address gaps and to "earn a seat" at the discussion table. In the light of immediate outcomes and expected mid-term results, the ICCIDD-CIDA strategy and contributions have been a highly cost-effective way to optimize iodine status in Ghana and West Africa.

5. Lessons learned

1. There is currently a fragmented approach to strengthen the national salt iodization programme in Ghana. As a result, some stakeholders duplicate programmatic efforts while other crucial areas remain unaddressed. The government of Ghana has to provide cohesion and coordination through Ghana Health Service and the Ministry of Industry and Trade. We expect the new national strategy will help facilitate such coordination.

2. Sustainable USI in Ghana depends on further involving small- and medium-scale salt producers and addressing their concerns.

3. Even though GAIN and UNICEF are prominent partners in the government's salt iodization efforts, ICCIDD has a crucial role to play as a respected, independent expert organization able to fill capacity and advocacy gaps.

6. Policy recommendations and next steps

Based on the outcomes of this project and lessons learned, we recommend ICCIDD and other development partners:

- Continue their advocacy efforts with the University of Ghana to complete the installation of the iodine laboratory at Noguchi Memorial Institute for Medical Research
- Support the government of Ghana to finalize the 2013-2018 USI national strategy and to implement a national communication strategy
- Ensure collection of regular data on the production of adequately iodized salt, household coverage of adequately iodized salt, and population iodine status.
- Support Ghana Health Service and the Ministry of Trade to take active leadership in the national IDD programme.
- Promote salt iodization as an important public health strategy in the media and safeguard against potential claims to the contrary.

Country chapter: Sudan

1. Country summary and overall assessment

Iodine deficiency disorders (IDD) constitute a severe public health problem in Sudan. They affect children and women throughout life. Each year 242,400 Sudanese children are born unprotected from potential damage due to iodine deficiency: 7,000 may become cretins (3%), 24,000 may suffer from severe mental retardation (10%), and 210,000 newborns may grow up with mild intellectual deficiency (87%). More than 2 out of 10 school age children have goitre. Overall goitre prevalence is around 22%, though it reaches 40% in some regions of the country, such as Kordofan and western Sudan.

The potential for an iodized salt solution is available: local salt resources are enough to cover the national needs and export. However, Sudan is one of the countries with least iodized salt consumption (9.3%) and lowest urinary iodine concentration (74%) in the world. USI legislation was only enacted in May 2012, with active ICCIDD-CIDA participation.

In the short term, the ICCIDD-CIDA project in Sudan aimed to launch the USI programme; to provide up-to-date information on USI and IDD; to shore up communication and advocacy capacities; to increase capacity for production and quality control of iodized salt; and to help enact new legislation banning the production of non-iodized salt. We also aimed to improve coverage of iodized salt by Sudanese households (now only 9.3%) and set up a reliable and autonomous quality control system as mid-term outcomes resulting from our interventions.

Working with national and international partners, such as WHO, UNICEF, the World Food Programme, and the Micronutrient Initiative (MI), ICCIDD led the launching of the long awaited USI programme in Sudan, trained laboratory personnel, and participated in drafting and enacting legislation to ban the production and sale of non iodized salt. We met with more than 15 state ministers from all governorates in Sudan, senior officials from central government agencies, UN agencies, NGOs, academic institutions,

development partners, and salt manufacturers, to sensitize them about the burden and impact of IDD in the country and to create synergies between different agencies involved in USI and IDD control. We also carried out training high-level workshops to ensure government interest in enforcing and sustaining salt iodization.

All immediate outcomes of ICCIDD-CIDA activities in Sudan will be of great importance to consolidate and sustain USI and IDD control initiatives. We produced a salt situation analysis report to track progress towards USI. This report was a major achievement to determine current IDD/USI status, identify needs and challenges, and launch the USI programne. It also provided the foundation to review existing legislation and draft a new national law banning the production of non-iodized salt. ICCIDD had strong direct input in this process, which led to the enactment of the proposed law in May 2012, an immediate outcome that exceeded our initial expectations.

ICCIDD also had an instrumental role in forming a national USI/IDD coalition. Through a series of advocacy meetings with government authorities, we initiated the process, wrote the terms of reference, and helped set up this national multi-sectoral body that now oversees the implementation of USI programme. At the time of this report, ICCIDD and the national coalition were developing a nation-wide USI/IDD advocacy and education effort. In addition, the Sudan government appointed an officer responsible for the IDD/USI programme. This new coordination, overseeing, and policy steering framework is a positive indicator of IDD control sustainability. However, lack of adequate national budget may undermine these efforts in the medium to long term. The role and participation of the private sector should be strengthened to increase and sustain household access to iodized salt.

The ICCIDD team established a quality control and analysis system and trained laboratory personnel from government, salt industry, and NGOs. We supplied reagents, glassware and pipettes to salt industry, and we trained industry personnel for titration at factory level. However, additional steps need to be taken for consolidation: Monitoring systems exist, but need further support. Food control departments are not yet conducting

external quality monitoring. The central government laboratory should provide continuing support and monitoring to labs at salt sites. It is still not possible to measure improvements in salt quality. Sudan needs a national survey of iodine level in salt, in order to establish a database and surveillance system.

Consolidating and sustaining USI and IDD control capacities in Sudan requires a national budget, beyond current support from international agencies such as UNICEF and WFP. In a promising development, the government has committed budgetary support for iodized salt monitoring.

2. Operations implementation

See attached file, "Sudan-Annex 1-Operations implementation", for a detailed discussion of outputs, outcomes, and activities.

3. Outcomes

a. Immediate outcomes

The ICCIDD–CIDA project was instrumental to launching the IDD/USI programme in Sudan, a much-delayed step that had turned into a real constraint to achieve any progress. This required ICCIDD to advocate heavily at all levels of policy making.

Of equal relevance to immediate and intermediate outcomes, ICCIDD carried out a comprehensive USI situation analysis, compiling up-to-date information and making it available to state ministers and all partners and key stakeholders. This helped achieve greater ability to understand the seriousness of the problem and facilitated tracking progress towards USI. It also provided the foundation to review existing legislation and draft a new law banning the production of non-iodized salt in Sudan. ICCIDD had strong direct input in this process, which led to the enactment of the proposed law in May 2012, an immediate outcome that exceeded our expectations at the onset of the ICCIDD-CIDA project.

We strengthened USI/IDD involvement and advocacy capacity among partners and key stakeholders through a series of advocacy, information, and networking meetings. As a result, we achieved greater commitment from government and salt industry to iodize all salt for human consumption. This advocacy effort helped consolidate support for the new law banning production and sale of non-iodized salt for human consumption.

The formation of a national coalition representing business, government, and other stakeholders was an outcome of persistent ICCIDD advocacy. This body enables greater coordination, policy steering ability, and exchange of resources and information. It is also a fundamental milestone in the road to sustainability.

ICCIDD also established a quality control system and trained laboratory personnel from government, salt industry, and NGOs. We supplied reagents, glassware and pipettes to salt industry, and we trained industry personnel for titration at factory level. However, additional steps are needed from government, private sector, and other partners to consolidate a sustainable high-quality system, as discussed in previous sections.

b. Intermediate outcomes

We expect immediate outcomes from the ICCIDD-CIDA project to have a strong impact on the medium-to-long term. The enactment of legislation, the establishment of a multi-sectoral coalition, and the first steps towards a first-rate quality monitoring and control system will provide the institutional and operational framework to reach the expected increase of salt iodization coverage to at least 70% from 9% at present.

c. Ultimate outcome

Sudan is one of the countries with the lowest iodized salt consumption (9.3%) and the highest total goitre prevalence (22%). It also shows low urinary iodine concentration (74%). Activities related to the ICCIDD-CIDA project will contribute to improve this situation and to reach the ultimate goal of sustainable IDD elimination, by creating an enabling environment for universal salt iodization among key stakeholders and the population at large.

4. Analysis of project performance

a. Relevance and importance

Iodine deficiency disorders (IDD) constitute a severe public health problem in Sudan. As discussed above, they affect children and women throughout life. The potential for an iodized salt solution is available: Sudan has local salt resources to cover the national needs and export. The ICCIDD-CIDA project played a key role in strengthening multi-stakeholder partnerships; launching an integral USI programme; banning the production of none iodized salt; improving capacity for monitoring iodized salt production and supply; and setting up an institutional and operational framework for making iodized salt more accessible and affordable to the population.

b. Design

The ICCIDD-CIDA project was designed to create momentum for USI launching and IDD control action. This emphasis was agreed upon with all partners and stakeholders. ICCIDD led the process as convener and broker of the necessary public, private, and civic sector partnerships. Immediate development results bear out the chosen strategy: We have helped build an institutional and operational structure that should lead to an improvement in the baseline situation, to USI in the midterm, and to sustainable IDD control as the ultimate goal.

c. Innovation

We were able to reach out to larger audiences to spread the word about the IDD problem in Sudan. For the first time, state ministers, governors, industry, NGOs, general public, and academic institutions were involved in a major way to address the IDD/USI problem, to ensure that iodized salt will be available across Sudan, and to ensure sustainability and continuity of efforts.

We organized several discussion sessions and we had presence in TV, radio talk shows, and newspapers. *[See attached file: "Sudan-Annex 2, SudanNow magazine clip" and*

project video film at http://www.nme.com/nme-video/youtube/id/yNmSxG2MCV4]. We also presented scientific papers in academic conferences at the International University of Africa, to widen participation, involve academic institutions, influence policy opinions, and share information with wider audiences.

d. Sustainability and partnerships

Intense ICCIDD advocacy contributed to gain traction towards a national coalition, which was set up and operational in December 2012. In addition, the Sudan government appointed an officer responsible for the IDD/USI programme. This new coordination, overseeing, and policy steering framework is a positive indicator of IDD control sustainability. However, lack of adequate national budget may undermine these efforts in the medium to long term. The role and participation of the private sector should be strengthened to increase and sustain household access to iodized salt.

e. Value for money

With relatively low levels of investment, the ICCIDD-CIDA project had strong immediate impact on the policy-making environment, created capacity for monitoring salt quality among salt industry and key stakeholders, and contributed to immediate application of legislation and regulations. This will contribute to accelerate the reduction of the IDD burden on public health and the national economy.

5. Lessons learned

5. Active engagement of salt producers in key to make iodized salt available to consumers across the country.
6. Multi-stakeholder coalition involving government, private sector, public health institutions, NGOs, and partner agencies greatly influences and ensures sustainability of IDD control efforts.
7. Lack of adequate national budget may undermine USI and IDD control efforts in the medium to long term.
8. Establishing revolving system to sustain the flow of potassium iodate ensures production and makes iodized salt available.

6. Policy recommendations and next steps

9. We see the urgent need of at least US$ 300,000 to help the industry produce more iodized salt and transport it to areas without coverage, help create demand for iodized salt among consumers, train inspectors, and establish reporting and quality control system.
10. Local industry needs to increase iodization capacity through new and better equipment.
11. A national survey should be carried out to determine which areas need urgent intervention.
12. A systematic education campaign would create greater demand for iodized salt.
13. Establish solid surveillance system for sustainability and enable national IDD managers to take full control of the programme.

Country chapter: Tanzania

1. Summary and overall assessment

Iodine deficiency is a severe public health problem in Tanzania. Based on goitre rates established from school surveys between 1980-1990, 41% of the population in mainland Tanzania (equivalent to 10 million people) are living in iodine deficient areas and therefore at risk of IDD. Moreover, 5 million people suffered from endemic goitre, 160,000 from cretinism, and 450,000 from cretinoidism (a condition with some but not all the full features of cretinism). In all, 5.61 million inhabitants (25% of the population, according to the 1988 census) suffered from IDD. Overall, 30% of perinatal mortality was related to iodine deficiency. In some areas of the southern highlands, goitre prevalence reached more than 90%.

Tanzania started a USI/IDD programme 20 years ago. The core message has been that people should only use iodized salt in their food. The World Health Organization (WHO) considers a population protected from iodine deficiency if at least 90% of households have access to adequately iodized salt (containing at least 15 parts per million of iodine at point of use). In Tanzania, salt iodization started in the early 1990s. A 1994 law banned non-iodized salt for consumption by livestock and humans. The law was reviewed in 2010, to include “all salt imported, produced, distributed, displayed, and sold for human or animal consumption.” It also states that all salt for human consumption must contain 40-80 parts per million (ppm) iodine at production and 25-70 ppm at point of sale.

Government surveys reveal that 80% of households had access to iodized salt over the past 10 years. However, only 47% have access to adequately iodated salt. Poor quality control at production sites is partly to blame. Artisan small-scale producers constitute a major challenge, since many reside in hard-to-reach areas and are unable to afford the high price of potassium iodate. Most of them are not registered, because they come in and out of the salt business, and that makes quality control all the more challenging. To makes matters worse, there is a lack of potassium iodate as a result of high prices in the global market.

In this context, ICCIDD worked with the Tanzania Food and Nutrition Centre (TFNC), which coordinates the IDD control programme countrywide, to address these bottlenecks. We helped to ensure potassium iodate availability by shoring up the exiting cost recovery system and brokering an agreement between government and salt producers. Our advocacy contributed to the decision made by the government of Tanzania to support salt producers in getting additional potassium iodate and to wave taxes on potassium iodate compound. This was a USI milestone that prevented further deterioration of the IDD situation. At the same time, the President of Tanzania took the lead in integrated nutrition and IDD initiatives, which has ramped up interest from key stakeholders.

One of the most important outcomes of our intervention was to create greater awareness and knowledge of salt iodization, testing, and monitoring across salt production sites in low performing regions. For this, we carried out supportive supervisions of small- and medium-scale salt producers through the Tanzania Food and Nutrition Centre (TFNC). We helped them evaluate performance and we built capacity for quality assurance, quality control, iodization procedures, and handling of iodized salt. Equally relevant as an outcome with mid-to-long term implications, we updated the 2003 register of salt producers and provided up-to-date data on salt quality for policy making and monitoring throughout the country.

ICCIDD worked with the government to establish a quality control and quality analysis system, and trained industry and satellite laboratory personnel from government. There are promising signs in this regard: some trained technicians in the public laboratories in the regions have already started to budget for chemicals, reagents, and other supplies in comprehensive council health plans (CCHP). However, more efforts are needed from government, private sector, and other partners to consolidate a sustainable high-quality assurance system and make sustained progress towards USI and IDD elimination.

2. Operations implementation

See attached file, "Tanzania-Annex 1-Operations implementation", for a detailed discussion of outputs, outcomes, and activities.

3. Outcomes

a. Immediate outcomes

ICCIDD-CIDA support in Tanzania has been instrumental to address USI and IDD with low household access to iodized salt and low population iodine intake. Prevalence of artisan small-scale salt producers, lack of potassium iodate, and weak enforcement of regulations characterize salt production in these regions. We addressed these constraints first by shoring up the existing cost recovery system to ensure availability of potassium iodate. In May 2013, Dr Jakaya Mrisho Kikwete, President of Tanzania, handed the new supply of potassium to the Tanzania Salt Producers Association. This event was a milestone towards USI.

Getting the President of Tanzania personally involved in nutrition and IDD initiatives ramped up interest from key stakeholders. During the May 2013 launch of Scaling-Up Nutrition and Food Fortification, the President handed over nutrition kits for members of the Parliamentary Social Committee to engage in health promotion in their respective regions. This was a symbol that nutrition activities will no longer be part of vertical programmes, but should rather be implemented at community level.

.

One of the most important outcomes of our intervention was to create greater awareness and knowledge of salt iodization, testing, and monitoring across salt production sites in low performing regions. For this, we carried out supportive supervisions of small- and medium-scale salt producers through the Tanzania Food and Nutrition Centre (TFNC). We helped them evaluate performance and we built capacity for quality assurance, quality control, iodization procedures, and handling of iodized salt. As a result of our advocacy during these visits, we achieved greater commitment from the salt industry to iodize all salt for human consumption. Equally important as an outcome with mid-to-long term implications, we updated the 2003 register of salt producers and provided up-to-date

data on salt quality for policy making and tracking throughout the country [*See attached file: Tanzania, Annex 2-Salt survey report]*.

Our work, together with other development partners such as UNICEF, also strengthened the institutional USI/IDD framework. We facilitated meetings of the National Council for the Control of IDD to review the national IDD programme and make recommendations. As an immediate result from high-level advocacy at the NCCIDD, Tanzania 's Prevention and Combating Corruption Bureau carried out a study to unveil any corruption in the potassium iodate distribution system. This outcome exceeded our expectations.

ICCIDD worked with the government to establish a quality control and quality analysis system and trained industry and satellite laboratory personnel from government. Some trained technicians in the public laboratories in the regions have already started to budget for chemicals, reagents, and other supplies in the comprehensive council health plans (CCHP). We also trained industry personnel for testing iodine at factory level using WYD iodine checker [*see attached file: Tanzania, Annex 4-photos from ICCIDD-CIDA activities*]. However, more efforts are needed from government, private sector, and other partners to consolidate a sustainable high-quality assurance system and solve the contradictions from the last decade, when 80% of household had access to iodized salt, but only 47% had adequately iodized salt.

b. Intermediate outcomes

We expect immediate outcomes from the ICCIDD-CIDA project to have a strong impact on the medium-to-long term. Improved capacity for quality assurance and control among small-scale salt producers; ensured availability of potassium iodate through a functional revolving fund; a strengthened institutional framework; and personal involvement and leadership from the President of Tanzania should all contribute to improve salt quality and to increase household access to adequately iodized salt from current 47% percent to at least 60%. Follow-up surveys could use baseline data on salt quality provided by ICCIDD-CIDA to measure impact of our work and track progress towards USI.

c. Ultimate outcome

Tanzania has done good progress towards USI, but is still lagging behind to achieve more than 90% household coverage with adequately iodized salt. As a result, one third of women of reproductive age are iodine deficient; the same happens to their children, who are also at risk of brain damage. Activities related to the ICCIDD-CIDA project will further contribute to improve the current situation and to reach the ultimate goal of sustainable IDD elimination in Tanzania.

4. Analysis of project performance

a. Relevance and importance

The 2010 Tanzania Demographic and Health Survey (TDHS) report showed that one-third of children born in the country are at high risk of iodine deficiency disorders that include mental retardation. Meta-analyses have shown that children born in iodine deficient areas will have 13.5 IQ points less than those born in iodine sufficient areas. This will lead to reduced school performance, reduced economic productivity, and low quality of life in adulthood. Overall, 30% of perinatal mortality has been linked to iodine deficiency.

The coming of the ICCIDD-CIDA project in Tanzania was at the right time: the TDHS 2010 results showed 13 low performing regions in terms of iodine intake in women of reproductive age, which required immediate remedy. Our support has played a key role in improving capacity for monitoring iodized salt at production and selling shops; renewing efforts to enforce regulations; strengthening multi-stakeholder partnerships; and setting up an institutional and operational framework for making iodized salt more accessible and affordable to the population. We also placed IDD high in the policy atmosphere: On May 16, the President of Tanzania led the launch of an integrated food fortification programme that includes salt iodization; on the occasion, he handed a new supply of potassium iodate, procured through a revived cost recovery system, to the Tanzania Salt

Producers Association (TASPA). This was a powerful sign of high-level partnership and engagement between the government and the private sector.

b. Design

The ICCIDD-CIDA project was designed to create momentum for USI and IDD control actions. This emphasis was agreed with all partners and stakeholders. ICCIDD facilitated the implementation of IDD activities, with great input from Tanzania Food and Nutrition Centre, which coordinates the IDD control programme countrywide. Our work aimed at solving bottlenecks that have kept household availability of iodized salt at 47%.

We have adhered to this design, while being flexible in terms of outputs and activities, according to circumstances on the ground. One such example is the use of project funds to support the launch of Scaling-up Nutrition and Food Fortification in Tanzania. This high-profile event involved the highest levels of government and will contribute to integrate often dispersed and overlapping nutrition programmes, including IDD control, with full government support.

c. Innovation

We have tried to be innovative to address the roots of the problem. Tanzania was among the first country to adopt knapsack spray technology as a first line in addressing iodine deficiency. More than 6,500 small scale salt producers are using this technology. We addressed this reality and made supportive supervisions to improve salt iodization and quality control at production. As a result of these visits to salt producing sites, we were able to provide up-to-date data on salt quality for decision making and salt monitoring.

d. Sustainability and partnerships

High-level advocacy led to an unprecedented partnership between government and the private sector. As a result, we have shored up the reimbursable potassium iodate fund and contributed to sustainable availability of iodized salt, not only for internal consumption, but also to be exported in the region, probably for another decade.

e. Value for money

With relatively low levels of investment, the ICCIDD-CIDA project has had immediate impact on the policy-making environment and has strengthened salt monitoring at production and selling points. We have also contributed to assure a sustained supply of potassium iodate for the next decade. In the midterm, this will contribute to accelerate the reduction of IDD burden and later on to the growth of the national economy.

5. Lessons learned

1. Tanzania has confirmed that knapsack spray technology is an appropriate and affordable technology, since it has maintained iodine intake in schoolchildren and women of reproductive age above 150mcg/L for the past ten years.
2. High-level policy makers have a key role in removing obstacles and creating a sustainable environment for USI and IDD control. One such example is the decision made by the government of Tanzania to support salt producers in getting additional potassium iodate and to wave taxes on potassium iodate compound. This is a historical event that prevented further deterioration of the IDD situation.
3. Inadequate budgeting of the national IDD control programme can undermine USI progress and IDD control in the medium-to- long term.

6. Policy recommendations and next steps

1. Enforcing salt regulations in mainland Tanzania and Zanzibar is a fundamental step to achieve universal salt iodization.
2. Inadequate quality control is a main cause of failure to achieve greater access to adequately iodized salt. This requires more efforts to step up salt monitoring at production and selling shops
3. Implement surveillance and follow-up surveys to measure the impact or ICCIDD-CIDA activities on iodized salt quality, IDD awareness, and household access.
4. Set up potassium iodate distribution mechanisms that will enable all salt producers to access supply easily at a recommended set price.

5. Implement a systematic social behaviour change communication (SBCC) campaign. This is also part of the SUN programme, which allows for integration and synergies.
6. Establish solid surveillance system and enable national IDD programme managers to take full control of it.
7. Strengthen the existing potassium iodate reimbursable revolving fund to ensure availability and flow of potassium iodate to all salt producing sites.

Web description

Iodine deficiency disorders (IDD) are the most common cause of preventable brain damage worldwide. Universal salt iodization is a safe and cost-effective measure to control this serious health threat. This grant supported the International Council for the Control of Iodine Deficiency Disorders (ICCIDD) to create an enabling environment for sustainable salt iodization in Bangladesh, Ethiopia, Ghana, Sudan, and Tanzania.
The ICCIDD-CIDA project had strong immediate impact. Working with local and international partners in each country, ICCIDD established and consolidated national programs and alliances between government, civil society, and the private sector. As a result of intense advocacy, training, and technical support, governments enacted or effectively enforced laws banning the production of non-iodized salt, while salt producers improved iodization with existing low-tech resources and began to invest in better production methods. In some countries, we helped set up or shore up potassium iodate cost recovery systems, thus averting shortages and assuring sustained availability over the next few years. Our partnership also improved local capacities for salt quality control by equipping and reactivating laboratories, training salt inspectors and lab staff, and providing new data to support policy making and track progress towards universal salt iodization.

Expected results

The expected intermediate outcomes of this project are increased levels of salt testing, improved quality of iodized salt, and increased percentage of households with access to iodized salt in Bangladesh, Ethiopia, Ghana, Sudan and Tanzania.