Five Year National Plan of Action to Achieve Optimal Iodine Nutrition in Nepal

2013- 2017

(Final Draft Document)

October 12, 2012

Abbreviations

2CL	Two Child Logo
AusAID	Australian Agency for International Development
BPKIHS	Bishweshwar Prasad Koirala Institute of Health Sciences
CHD	Child Health Division
DFID	Department for International Development
DFTQC	Department of Food Technology and Quality Control
DHO/DPHO	District Health Office/District Public Health Office
DoHS	Department of Health Services
GCEP	Goitre and Cretinism Eradication Project
GCP	Goitre Control Project
GMP	Good Manufacturing Practice
HKI	Helen Keller International
HHIS	Household Iodized Salt
ICCIDD	International Council for Control of Iodine Deficiency Disorder
IDD	Iodine Deficiency Disorder
IEC	Information Education and Communication
IMS	Internal Monitoring System
IOM	Institute of Medicine
JICA	Japan International Cooperation Agency
LQAS	Lot Quality Assurance System
MI	Micronutrient Initiative
MoAD	Ministry of Agriculture Development
MoCS	Ministry of Commerce and Supplies
MoHP	Ministry of Health and Population
NDHS	Nepal Demographic and Health Survey
NESOG:	Nepal Society of Obstetricians and Gynecologists
NFHP	Nepal Family Health Program
NFP	Nutrition Focal Person
NHTC	National Health Training Center
NIDDSS	Nepal Iodine Deficiency Disorder Status Survey
NLSS	Nepal Living Standards Survey
NMA	Nepal Medical Association
NMSS	Nepal Micronutrient Status Survey
NPC	National Planning Commission
NSISIDD	National Survey and Impact Study for Iodine Deficiency Disorders
NTAG	National Technical Assistance Group
NUTEC	Nutrition Technical Committee
PEM	Protein Energy Malnutrition
PPM	Part Per Million
SAC	School Aged Children
STC	Salt Trading Corporation
TUTH	Tribhuvan University, Teaching Hospital
UIE	Urinary Iodine Excretion
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USI	Universal Salt Iodization
VDC	Village Development Committee
VoW	Video on Wheel
WB	World Bank
WFP	World Food Program
WHO	World Health Organization

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I. Preface

A Five-year National Plan of Action for the Elimination of Iodine Deficiency Disorders (IDD) for the period between July, 1997 and June, 2002 was instrumental in initiating a new wave of IDD elimination efforts in the country. The Plan prioritized Universal Salt Iodization (USI) as the primary intervention to improve iodine status while reducing reliance on iodine supplementation, which had been in place earlier. The plan focused on creating the necessary infrastructure that could provide a foundation for sustaining achievements. This current document outlines an updated National Plan of Action for the five year period between 2013 and 2017, consolidating key successes, further strengthening critical program elements and incorporating lessons from other countries where USI programs are maturing. As current estimates of the proportion of households consuming adequately iodized salt, Nepal has increased to close to 80%, it is evident that the USI program is moving into a consolidation phase which requires new approaches to assure achievement not only of the elimination of iodine deficiency, but to assure an optimal iodine status for the population.

Based on experiences of the last two decades with the implementation of USI programs in countries throughout the world, five critical program components have been identified to assure sustainability, including: 1) securing political commitment; 2) forming partnerships and coalitions; 3) producing and ensuring availability of adequately iodized salt; 4) strengthening monitoring systems, and 5) maintaining continuous education and communication. This National Plan incorporates all five of the critical program components in order to strengthen the Nepal IDD Elimination Program.

As background, the plan provides a review of IDD Elimination efforts through 2011 analyses the current situation and outlines gaps in the existing program. The Plan emphasizes the need to improve political commitment and coordination, strengthen monitoring systems, phase out the persistent demand for loose salt for human consumption, while increasing the demand and market sales of packaged "two-child logo "iodized salt, and identify innovative and sustainable measures to provide iodized salt to remote regions of the country.

II. Introduction

"Iodine Deficiency Disorders' (IDD) refers to all of the adverse effects and consequences of iodine deficiency in a population that can be prevented by ensuring an adequate intake of iodine"[1]. Worldwide, IDD is the most common preventable cause of mental impairment. Estimates suggest that around 2 billion people around the world live in areas at risk of insufficient iodine intake and populations living in South Asia are among those most affected[2].

A deficiency of iodine leads to hypothyroidism, impaired mental and physical development in infants, children and adolescents, Goitre, impaired mental function and reduced productivity in adults[3]and an increased risk of spontaneous abortion, stillbirths, and congenital abnormalities in pregnancy[4].

The World Health Organization estimated in 2007 that 2 billion people around the world live in areas at risk of insufficient intake of iodine[5]. Universal Salt Iodization (USI) has been recognized as the most cost-effective and viable solution to prevent and eliminate IDD, with a productivity gain of $28 for each dollar invested[6]. The concept of USI gained momentum during the World Summit on Children in 1990, where the leaders of most nations of the world pledged to universally iodize all salt, and to virtually eliminate IDD by the end of the millennium[7].The concept of USI was also officially endorsed by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) in 1994 as a sustainable strategy to ensure elimination of IDD[8].

By 2000, 90 countries had salt iodization programs in place, and the number rose to 120 by 2005. Recent statistics suggest that 37 countries have attained the target of at least 90

[1]United Nations Children's Fund. Sustainable Elimination of Iodine Deficiency.2008

[2]Zimmermann MB, JoostePL,Pandav CS. Iodine Deficiency Disorders.Lancet.2008;372:1251-62

[3]United Nations Children's Fund. Iodine Deficiency Disorders and Universal Salt Iodization: South Asia Priorities.2002

[4]World Health Organisation.Micronutrient Deficiencies.2012.

[5] De Benoist B, McLean E, Anderson M, Rogers L.Iodine Deficiency in 2007:Global progress since 2003.Food Nutr Bull.2008;29(3):195-202.

[6]World Bank, Enriching Lives: Overcoming vitamin and mineral malnutrition in developing countries, World Bank.,Washington,D.C.,1994

[7]United Nations Children's Fund. Iodine Deficiency Disorders and Universal Salt Iodization: South Asia Priorities.2002

[8]United Nations Children's Fund. Universal Salt Iodization in central and eastern Europe and the commonwealth of independent states: Experiences, achievements and lessons learned during the decade 2000-2009.

per cent households using adequately iodized salt[9], while 72 per cent of all households in developing countries are now consuming adequately iodized salt[10].In spite of these achievements, as of 2007, some 38 million newborns remained unprotected from the long-term consequences of iodine deficiency and in 36 countries, less than half of all households consume iodized salt[11]. Furthermore, important socioeconomic and geographic variations exist in iodized salt coverage, and analysis by UNICEF has shown that iodized salt coverage was more common in urban areas than in rural areas, while it was significantly higher amongst the wealthiest 20 per cent of all households than poorest households[12].

Iodine deficiency has long been known to be a significant public health problem in Nepal. The first countrywide survey of goitre, conducted in the mid-1960s, found it to be endemic not only in the Hill and Mountain Districts but also in the densely populated Southern Terai areas. Since then, several other surveys have confirmed the seriousness of the IDD problem in the country. Recognizing this, the Government has implemented an intensive national program to assure the elimination of IDD, primarily through the universal iodization of all edible salt to meet physiological requirements for iodine, and the country is currently on track to achieve the Universal Salt Iodization (USI) goal of at least 90% households consuming adequately iodized salt.

Nepal has made significant progress in its USI program, as evidenced by the fact that the household coverage of adequately iodized salt has increased from 55.2% in 1998[13] to 80% in 2011[14]. Despite such progress for the country as a whole, there are still some regional disparities, with coverage of iodized salt much lower in the Far-west, Mid-west and Eastern Rural Hills[15] than in other parts of the country, which suggests that focused efforts are required to assure that the entire country is protected from IDD.

[9]UNICEF.Childinfo:monitoring the situation of children and women. Jan 2012. Available at: http//www.childinfor.org/idd_status.html.
[10]UNICEF. Tracking Progress on Child and Maternal Nutrition:A survival and development priority. UNICEF 2009.
[11]UNICEF. Progress for Children: A world Fit for children statistical review. Dec 2007.
[12]UNICEF global databases 2011, from Multiple Indicator Cluster Surveys, Demographic and Health Surveys and other national surveys
[13]Nepal Survey and Impact Study for Iodine deficiency Disorder and Availability of Iodized salt in Nepal
[14] Nepal Demographic and Health Survey,2011
[15] Nepal Living Standards Survey-III,2011

The Nepal Government has given high priority to achieve the USI goal by 2015. This revised National Plan of Action outlines specific strategies and actions to be taken in the five year period between 2013 and 2017 to further improve the IDD program and assure that program efforts are sustained over the long term. The IDD program will be an integral part of national efforts to accelerate towards the World Fit for Children goal in micronutrient malnutrition, and will be embedded in new structures being developed to coordinate and support broad mutli-sectoral programming to address the underlying causes of chronic under nutrition.

III. Background: History of IDD elimination efforts in Nepal

The beginning of national efforts to eliminate iodine deficiency in Nepal was in 1965 at which time a survey on the prevalence of Goitre was conducted. The survey results indicated that the Total Goitre Rate was as high as 55% in children above 13 years[16]. Based on those data, the Nepal Government introduced a National IDD Control Program (NIDDCP) with the support of the Indian Government.

The NIDDICP consisted of two distinct projects, which were established in the 1970s including:

a. Goitre Control Project (GCP) under the MoCS and
b. Goitre and Cretinism Eradication project under the Ministry of Health and Population

The NIDDCP was the first major large-scale nutrition program in Nepal. A brief overview of each of the two projects under the NIDDCP is provided below.

a. Goitre Control Project under Ministry of Commerce and Supplies (MoCS)

The Goitre Control Project (GCP) was established under Ministry of Commerce and Supplies and implemented through STC in 1973 with the support of the Indian Government. STC had the primary responsibility to coordinate and manage all salt iodization activities. For the past forty years, the GCP/STC has continued play the

[16]Ministry of Health, Endemic Goitre in Nepal, WHO/SEA/26,1967

principle role in the importation, distribution and quality control of iodized salt throughout the country. The GCP now falls under the Ministry of Commerce and Supplies which provides oversight of all key activities, including those implemented through the STC.

b. Goitre and Cretinism Eradication Project (GCEP) under the Ministry of Health

Following the first years of the GCP/STC, the Government of Nepal initiated a complementary Goitre and Cretinism Eradication Project (GCEP) in 1979 with the technical and coordination support from UNICEF. The GCEP was the outcome of a nutrition workshop held in Pokhara in 1978, which declared that more intensive efforts were required to address iodine deficiency, particularly in remote regions of the country, and remained in place through 1998.

The GCEP targeted 40 Mountain and Hill Districts with iodized oil injections between 1983 and1993. These injections were administered once every five years to all women and children. In 1993, the GCEP was integrated within the Nutrition Section of the Child Health Division/Department of Health Services in the Ministry of Health and iodine capsules, administered orally, were delivered each year through the existing network of the Primary Health care system, mobilizing Village Health Workers in 45 remote Mountain Districts, and continued through 1998.

c. Post Supplementation Initiatives

As the road network expanded and iodized salt became increasingly available even in remote areas, there was a gradual reduction in areas targeted for supplementation and in 1998; iodine supplementation was completely phased out. Efforts were intensified to make iodized salt universally accessible and to increase the demand and consumption of adequately iodized refined or crushed packed salt. Since that time, USI has been the sole policy to eliminate IDD in the country.

IV. Nepal USI Program

a. Salt Situation Analysis

Virtually all salt in the country is imported from India, with a small volume entering from Tibet. Nepal imports approximately 190,000 MT of salt from India each year. The salt market in Nepal is controlled by the Salt Trading Corporation (STC) and public-private partnership model in which the Government has 11.68% ownership stake. The salt trade is governed by the Ministry of Commerce and Supply, while the importation and distribution of adequately iodized salt is regulated by the Export and Import (Control) Act, 1957 as published in Nepal Gazette part 5, section 57, and number 6 on 21st May, 2007.

There are basically three types of iodized salt available in Nepal.

1. *Refined, free flowing (Fine crystals, white, re-crystallized vacuum salt)*this includes Ayo Brand and all brands which have the Two-Child logo (2CL)
2. *Refined crushed* (A natural sea salt, washed clean, crushed with small/medium grains) which can be further divided in single crushed Tej and Bhanu Brand and double crushed Shakti Brand
3. *Phoda salt, crystallized granular salt*(Large 2mm+ sea salt grains commonly containing dirt)that includes include Indian Phoda, Tibetan salt, and mid-size granular salt

Figure 1: Two-child logo used in Nepal

The Government of Nepal has implemented a widespread social marketing campaign oriented around the promotion of a Two Child Logo which is used on salt packets to indicate salt has adequate iodine level, and also helps consumers distinguish from salt which may not be adequately iodized, e.g. does not have the logo. The sale of this salt, and its contribution to the total iodized salt market, has increased consistently over the past several years (see Table 1).

Table 1: Market sales of Two Child Logo salt and loose salt (in MT)

Fiscal Year→ **Type of salt**	2007/08	2008/09	2009/10
Packet Salt with 2Cl Logo	607,560	734,760	832,100
Loose	896,970	793,280	717,990
Total	1,504,530	1,528,040	1,550,090
% of Packet Salt (2 CL)	40.38	48.08	53.7

Source: STC, 2011

Requests for iodized salt are made through the Nepal Ministry of Commerce and Supplies to the Indian Salt Commissioners Office in India which is then responsible to facilitate procurement and transport. After the decision has been made regarding purchasing salt from India, an Expression of Interest is published in the Indian National daily. Within the allocated time, sealed quotations are obtained from the interested parties and the most eligible supplier is awarded based on the lowest bid.

Thereafter, the salt is loaded to come to Nepal only after the Salt Commissioner of the Government of India issues an Export Worthy Certificate following confirmation of the iodine content and the quality of salt. The salt is imported in sacks of 50 Kg from India, and STC has a total storage capacity for over 175,000 MT of salt in a network of warehouses in the country.

There are five distinct entry points for salt entering into Nepal is as follows

1. Dhangadi
2. Nepalgunj

3. Siddharthanagar (Bhairahawa)
4. Birgunj
5. Biratnagar

At the point of entry into the country, the quality of salt is assured based on an established monitoring protocol based on Lot Quality Assurance System (LQAS) sampling. This is done through both internal monitoring by the STC, with some external verification carried out by the Department of Food Technology and Quality Control (DFTQC) of the Ministry of Agriculture Development as per the directive of the Food Act, 1967. The external monitoring is conducted in close collaboration with the Customs Office of the Government of Nepal.

Beyond the main STC salt imported from India, a very small amount of non-iodized salt enters the country through traditional salt caravans along the northern border from Tibet. The STC has explored methods to assure that this salt is subjected to iodization, with varying degrees of success. The use of barter is still common amongst the traders using the caravan. Every year, Tibetan salt is bartered against barley, wheat, buckwheat during the period between December and January. As of 1998, some 6 MT per annum of salt used produced in Mustang District[17] which currently does not exist.

b. Salt Trading Corporation: an introduction

Salt Trading Corporation (STC) has been the sole importer and distributer of iodized salt throughout the country for the past 49 years. It was established under a public private partnership on 12 September, 1963, and currently has some 379 employees.

The basic responsibilities of STC related to salt trade includes management of supplies of adequately iodized salt throughout the country. It is involved in sale and distribution of iodized salt at an affordable price throughout the country, as well as the distribution of salt at subsidized rates to 22 remote and inaccessible districts through the GCP.

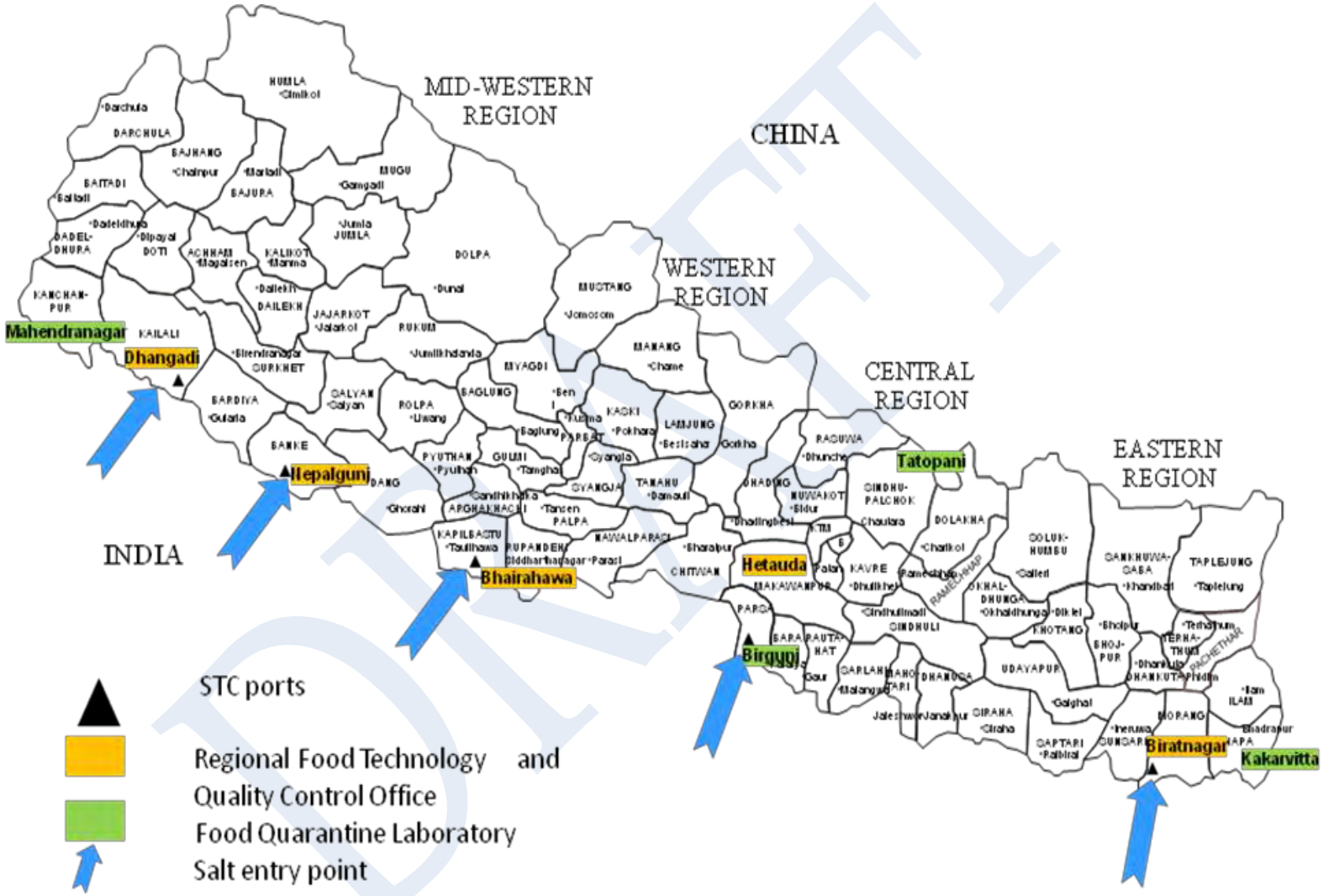
[17]Nepal Iodine Deficiency Disorder Status Survey (NIDDS), 2005. MoHP, MI and New Era.

An Executive Committee/Board is the ultimate decision making body for the STC. It includes 9 members with representation from the Ministry of Commerce and Supplies (MoCS), National Trading Limited and 7 members elected from the General assembly.

The Salt Trading Corporation has 24 offices including Central, Zonal, Section and Sub section Depot offices, 22 offices in remote and inaccessible districts ,91 contact offices, 6000 dealers and 315 chain shops.

STC salt warehouses are situated in 14 locations of the country with a total storage capacity of 178,100 MT; it also has 11 re-iodization plants and 13 laboratories to measure the iodine content in salt.

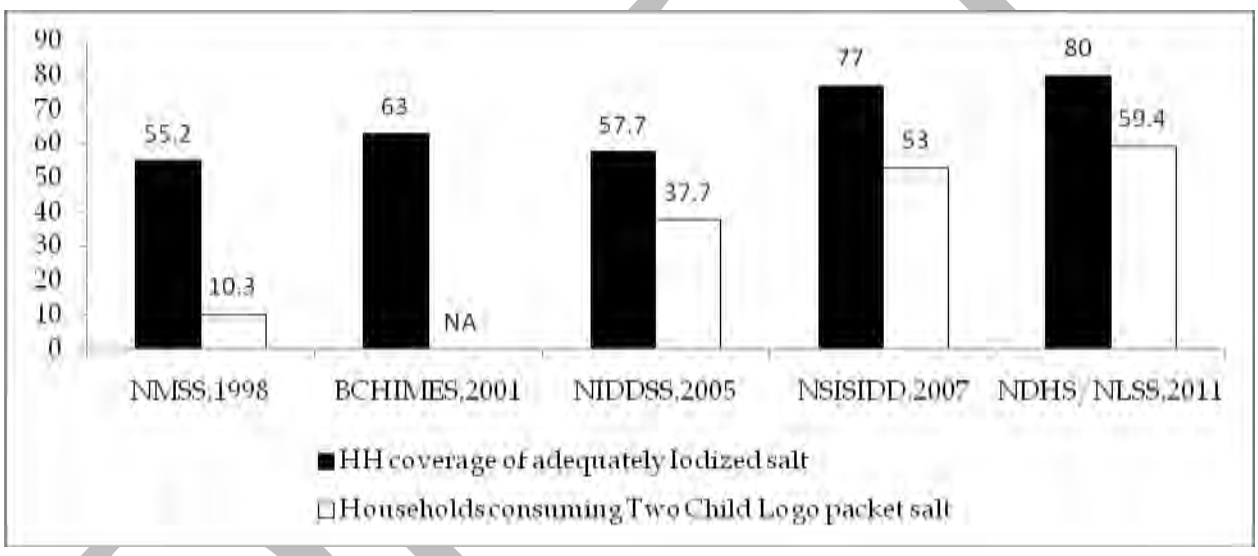
Figure 2: Routes of salt entry and STC ports



c. Iodized salt coverage at the household level

There has been a positive trend both in the proportion of households using adequately iodized salt (from 55.2%[18] to 80%[19] between 1998 and 2011), as well as in the proportion of households using 2CL salt (from 10.3% in 1998 to 37.7% in 2005 and 59.4% in 2011).In spite of this overall progress at the national level, there is a disparity by rural-urban location, as the coverage of households consuming adequately iodized salt is considerably higher in urban areas (94 percent) than in rural areas (78 percent).

Figure 3: Household Coverage of adequately iodized salt and 2CL salt in percentage (1998 to 2011)



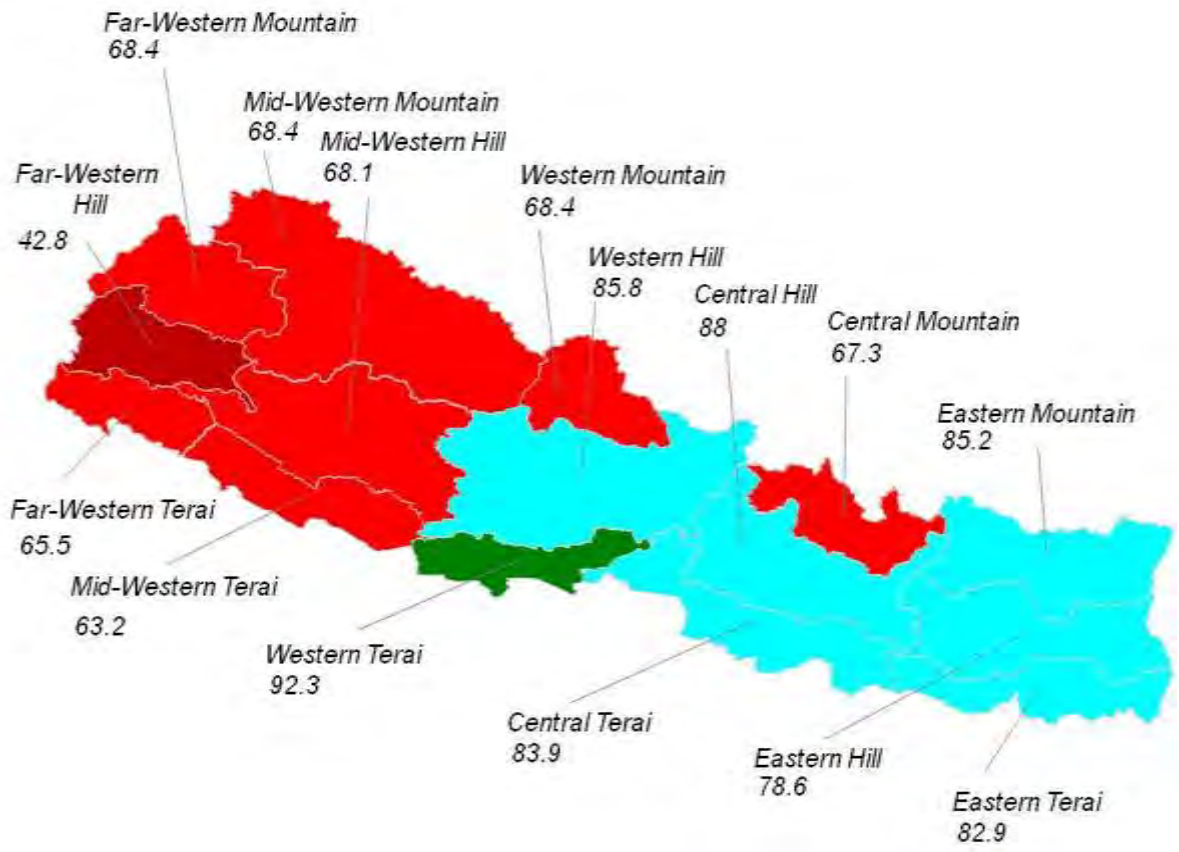
There are also important geographic disparities. The proportion of households using adequately iodized salt is higher in the Terai region (81 percent) than in the Mountain region (73 percent). Amongst the Development Regions, the Eastern, Central and Western regions have coverage of households using adequately iodized salt (82 percent, 84 percent, and 88 percent, respectively). In the Far Western Hills, the coverage of households using adequately iodized salt was lower than any other eco-development

[18]Nepal Micronutrient Status Survey 1998: Summary report

[19]Nepal Iodine Deficiency Disorder Status Survey (NIDDS), 2005. MoHP, MI and New Era.

strata with only 43 percent, which stands in contrast to the Western Terai, where coverage was highest with 92 percent of households using adequately iodized salt.

Figure 4: Proportion of households consuming adequately iodized salt



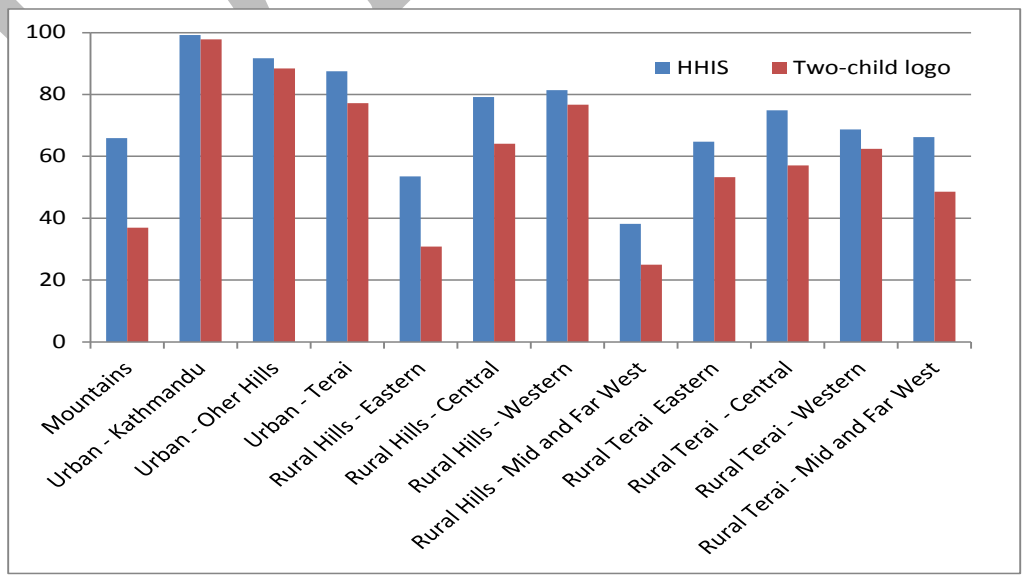
Source: NDHS, 2011

Table 2: Trends in Coverage of Adequately Iodized Salt and Two-Child Logo Salt (1998 and 2011).

		HHIS Coverage			Coverage of TCL salt	
		1998	2005	2011 DHS	2005	2010 NLSS
Eco-Zone	Terai	43.9	52.8	81.4	33.3	59.4
	Hills	55.5	61.2	79.7	42.3	62.7
	Mountain	62.2	68.3	72.6	34.5	36.9
Location	Urban	81.8	82.9	94.4	76.1	86.3
	Rural	51.9	53.0	77.7	30.5	52.3
National		**55.2**	**57.7**	**80.0**	**37.7**	**59.4**

The results of the 2010 NLSS and 2011 NDHS clearly show that areas where there is high coverage of adequately iodized salt are areas with good penetration and demand for TCL packet salt (Figure 4). This indicates that TCL packet salt is largely responsible for the increased coverage of adequately iodized salt, and as such, a focus of the next Plan will be to accelerate efforts to increase both the supply and demand for this type of salt from consumers.

Figure 5: Coverage Adequately Iodized Salt and Two-Child Logo Salt by Eco Development Region

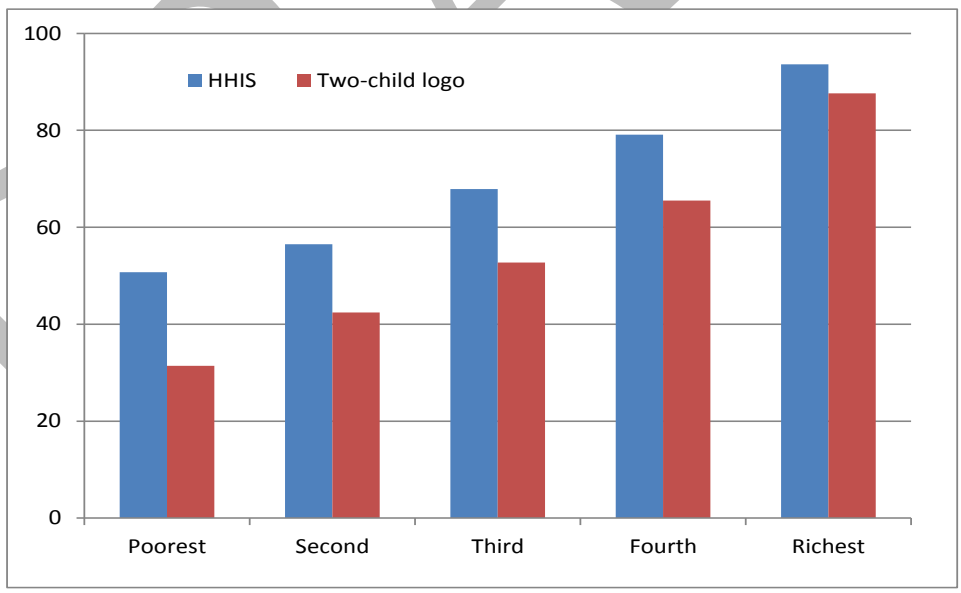


Source: NLSS, 2011

The recent surveys to track the progress of the USI program revealed that there are important variations in HHIS coverage and 2CL coverage by location and wealth, which have important programmatic implications.

The coverage of both adequately iodized salt and 2CL salt in the Mountains, Eastern Rural Hills and Midwest and Farwest Hills was considerably lower than other regions and the national average (Figure 5). Beyond the geographic variations, there were clear differences in the coverage by wealth. The data actually reinforces a relationship first seen in 2005, where the poorest segments of the population are least likely to use 2CL salt (almost three times less likely) than those in the wealthiest quintile. It is important to understand whether the underlying reasons for this are due to cultural preference for non-refined or non-packaged salt, price, or access.

Figure 6: Coverage Adequately Iodized Salt and Two-Child Logo Salt by Wealth Quintile



Source:NLSS, 2011

d. Iodine Status in Nepal

Over the past fifteen years, there have been three national surveys conducted on IDD status through the measurement of Urinary Iodine Excretion (UIE) among school aged children to complement data on household coverage of iodized salt.

The first comprehensive micronutrient status survey was conducted between December 1997 to May 1998 and provided estimates of the distribution and severity of micronutrient malnutrition in the country, including the prevalence of IDD. The survey was the first time; clinical indicators were employed to assess the status of micronutrient malnutrition. In 2005, the Nepal Iodine Deficiency Disorders Status Survey was conducted with the overall objective of assessing the progress made towards elimination of IDD. In 2007, yet another national level survey was held, the National Survey and Impact Study for Iodine deficiency Disorder (IDD) and Availability of Iodized Salt in Nepal, although nor are more recent data on iodine status available.

For all the three national surveys, UIE was the primary indicator used to assess the iodine status and the prevalence of IDD. The median UIE of Nepal has been consistently increasing from 143µg/l in 1998[20]to 188µg/l in 2005[21]and most recently to 202.8 µg/l in 2007[22] (See Figure 1). In the National Survey in 1998[1,] 13.6% of all School Aged Children (SAC) had UIE values below 50µg/l, a figure which has since declined to 9.5%in 2005[2]. The 1998 survey revealed that 35.1% SAC had UIE values below 100 µg/l, while the percentage below this cut-off has since declined to 27.4% in 2005[2]and 19.4% in 2007[3]. These values indicate considerable improvement in the iodine status and progress towards the elimination of IDD in the country.

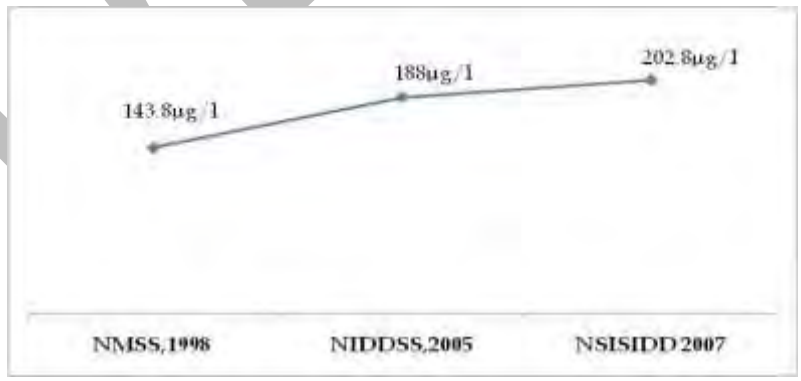
There are also important regional disparities in iodine status noted from these different surveys. There has been a dramatic increase in the median UIE level in the Terai region from 108 µg/l to 182.7 µg/l between 1998[20]and 2005[21] , and in 2007, some82 percent of

[20] Nepal Micronutrient Status Survey 1998: Summary report
[21]Nepal Iodine Deficiency Disorder Status Survey (NIDDS), 2005. MoHP, MI and New Era.
[22]National Survey and Impact Study for Iodine Deficiency Disorders (IDD) and Availability of Iodized salt in Nepal 2007. MoHP, GoI and Alliance Nepal.

SAC in the Terai had UIE values above 100 µg/l [22]. In the Mountain region, there has been a decline in the median UIE level between 1998 and 2005 from 196.6 µg/l[19] to 164.6 µg/l[20], although the level in 2005 still indicates adequate iodine nutrition. It is also noteworthy that in the National Survey of 2007 the Mountain region had the smallest percentage of SAC with UIE values above 100 µg/l, and the Central Mountain area had the lowest percentage, with only 53.7 percent of the SAC with UIE values above 100 µg/l[22].

The iodine status has consistently found to be higher among urban residents than those living in rural areas.. Among those in urban areas, there has been marked increase from 259 µg/l[23]to 361 µg/l [24]between 1998 and 2005 which could indicate excessive iodine intake amongst this segment of the population. In 2007, as many as 64.7 percent[25] of the urban based SAC had UIE values of 200 µg/l or above. Another issue of concern is that in the 2005 National Survey, the median UIE value amongst SAC in households consuming the Ayo and Shakti brands of 2CL salt was as high as 366 µg/l and 332 µg/l, respectively,[24] while in the 2007 survey, the median UIE amongst those using 2CL salt was 235 µg/l[25] which is higher than the recommended levels. These findings are important and suggest that as the program continues to mature, there may be a need to undertake more robust studies of iodine intake, the possible contribution of iodine through iodized salt in processed foods, and based on these data; revise salt iodization standards to assure optimal iodine nutrition.

Figure 7: Trends in the Median UIE (µg/l) between 1998 and 2007



[23] Nepal Micronutrient Status Survey 1998: Summary report
[24]Nepal Iodine Deficiency Disorder Status Survey (NIDDS), 2005. MoHP, MI and New Era.
[25]National Survey and Impact Study for Iodine Deficiency Disorders (IDD) and Availability of Iodized salt in Nepal 2007. MoHP, GoI and Alliance Nepal.

Perhaps, most importantly is the association between iodine status and the iodine intake through iodized salt. A simple analysis of the median UIE by iodine content in HHIS (from 2005), as seen in Table 4 below, shows that children from households with no iodine in their salt have a median UIE of 71.0 ug/L, while children from households with low iodine have UIE of 131 ug/L and children whose household salt was considered adequate (> 15 ppm), had a median UIE of 252 ug/L[26]. This observation indicates several important points. First, it emphasizes the need for more robust monitoring of the quality of iodized salt and a review of the current standards. Second, for more intensive monitoring of iodized salt upon importation to take place, the current Food act needs to be reviewed and any shortcomings rectified and improved to address the salt related regulatory issues.

Table 3: Association between Iodine Content in HHIS and Iodine Status

Iodine content in HHIS	Median UIE (ug/L)
0 ppm	71.0
< 15 ppm	131.0
> 15 ppm	252.0

Source: NIDDSS, 2005

[26] NIDDSS, MoHP, New Era, MI (2005), Table 5.1, Page 38

V. Review of the previous plan –National Plan of Action for the Elimination of Iodine Deficiency Disorders in Nepal. July, 1997- June, 2002

The first Five-year National Plan of Action for the Elimination of Iodine Deficiency Disorders was formulated in 1997. The key priority actions emphasized in the plan included:

a. Legislation formulation to sustain and secure the USI program
b. Nationwide social awareness campaign
c. Development and implementation of internal quality assurance system
d. External verification system to monitor the internal monitoring system
e. Periodic surveys to track the progress of the program
f. Increase the availability of the adequately iodized salt throughout the country.

Each of these key components is reviewed below with some of the key achievements outlined and potential scope for modification in the proposed plan.

a. Legislation formulation to sustain and secure the USI program

A major achievement was the establishment of a legal framework in 1998 to support various aspects of iodized salt, including its production, iodization and trade. The Iodized Salt Act (Production, Sale and distribution), 2055 (1998) was formed in order to:

> *"make provision for the production, import, supply, sale, distribution of iodized salt in a proper quantity and for mixing iodine with salt in order to prevent and eradicate extensive and serious effect s caused to public health from iodine deficiency"*

The MoHP forwarded the iodized salt regulation and technical guidelines for the Cabinet's approval. However due to lack of consensus among the stakeholders the salt legislation did not come into effect. As of now the Food act, 1967 deals with iodized salt standards and ensure adequate iodization levels.

b. Nationwide Social Awareness Campaign

One of the major objectives of the last Action Plan was for the Government to launch a social marketing campaign targeting multiple key stakeholders, from policy makers to salt traders and retailers and consumers. The campaign initially focused on promoting iodized salt and the 2CL brand of iodized packet salt through electronic and print media. Since 2000, the campaign expanded to include community promotion activities using Video on Wheels program, along with the media promotion. The program then further extended to unreached markets through the involvement of community based organizations, ensuring the dissemination of messages about the 2CL logo in order to create demand, along with sufficient supply of the salt.

As a result of these communication efforts, the level of awareness of the population on the importance of iodized salt has increased from 19 per cent in 1998 (NMSS, 1998) to 83 per cent in 2007 (NSISIDD, 2007).

Data from more recent national surveys (NDHS 2011 and NLSS 2011) suggests that the Nepal Government should focus its social marketing campaign in the Far Western Hills, where consumption of adequately iodized salt was relatively low. The social marketing campaign was successful in rapidly increasing the level of awareness of the importance of iodized salt and was successful in drastically increasing the use of the two child logo salt in all program districts.

Furthermore advocacy activities have led to high level political commitment for IDD elimination. In 2011, the National Planning Commission placed promotion of adequately iodized salt as a key priority action in the Multi-Sectoral Nutrition Plan. The Government of Nepal celebrates the month of February as ”Iodine Month” under the initiative of the Ministry of Health and Population. The basic objective of the Iodine Month is to conduct an array of awareness raising programs across all the 75 districts with the support of District Health/Public Health Office, offices of STC and International and National Non-Government Organizations. However national media plan on IDD is yet to be included in National Health Information, Education and Communication Center’s regular program.

c. Development and implementation of internal quality assurance system

The success of the social marketing and promotion of 2CL salt, as above, was due in part to the fact that all salt carrying this logo contained adequate iodine. The use of this logo has only been allowed on salt that has been verified to contain adequate iodine in accordance with the Food Act 1967, in which the iodine content in salt is 50ppm at production and 30 ppm at retail level.

This verification has been assured through an internal monitoring system developed and implemented by the STC. Salt testing (by Rapid Test Kit) is performed at the point of importation, dispatch. Prior to repacking into 1 kg packs, random samples are collected and quantitative titration is undertaken in accordance with established guidelines. If test results show less than 50 ppm iodine, re-iodization is carried out. A monthly report of this Internal Monitoring System (IMS) is provided to the Child Health Division and UNICEF.

As part of the monitoring system, data on imports, stock availability, volume re-iodized, and salt volumes dispatched from salt warehouses are tracked on a monthly basis (by different types of salt). Currently, all salt warehouses have internal monitoring system in place.

d. External verification system to monitor the internal monitoring system

An external monitoring system is also in place to validate the Internal Monitoring data. The DFTQC as well as Nutrition section of the Child Health Division is involved in the external verification. UNICEF has supported capacity building of this important Government function which has resulted in the Government being able to maintain external verification through the Child Health Division. Since 2001 CHD has been maintaining external verification database of salt iodization, sales and distribution. The process has been institutionalized and the Government also contributes financially to conduct external verification.

There have been external monitoring visits from Child Health Division to different STC warehouses, although it has not been undertaken on routine basis. The re-iodization

reports from the warehouses/re-iodization plants are periodically reviewed. There is a need for refresher training to STC staff to improve the internal monitoring and re-iodization process within STC, especially to avoid cases of excess iodization of salt.

e. Periodic surveys to track the progress of the program

Several surveys have been conducted as envisioned by the plan for a "*nationwide IDD prevalence survey to gain an impression on the current status of Iodine deficiency and to identify high risk areas. The prevalence survey should provide an update on the current status of IDD…*"The Nepal Micronutrient Status Survey1998, was followed by Nepal Iodine Deficiency Disorder Status Survey (NIDDS) 2005, National Survey and Impact Study for Iodine Deficiency Disorders (IDD) and Availability of Iodized salt in Nepal 2007, Nepal Living Standard Survey-III 2011 and Nepal Demographic and Health Survey 2011, which have helped track the progress of the USI program and its impact on iodine status.

f. Increase the Availability of adequately Iodized Salt throughout the country

The country has made huge strides in this challenge, as evidence suggests that the percentage of households consuming adequately Iodized Salt has increased from 55.2% in 1998 (NMSS, 1998) to 80% in 2011 (NDHS, 2011). Surveys have also revealed that there has been an increase in the percentage of households consuming packed salt with the "Two Child Logo "from 37.7% in 2005 (NIDDSS 2005) to 59.4% in 2011 (NLSS, 2011).

The plan of action also stated that "*necessary measures will be taken to ensure an equitable distribution of subsidized salt throughout the remote district…*" and in accordance with this, the Government has continued to support and provide a transportation subsidy for 2CL iodized salt distribution with a fixed quota to 22 declared remote and inaccessible districts among the 75 districts of Nepal. There is an urgency to review the subsidy policy including revisiting the districts incorporated under the current policy for the inaccessible districts that has not been able to meet the supply needs of the two child logo salt.

VI. Current Status and Key Features of the Universal Salt Iodization Program (USI) in Nepal

Given the tremendous progress against each of the major components which formed that basis of the last five year National IDD Plan of Action, it is possible to examine the current status and structure of the Nepal USI Program. The review below is guided by the ten program sustainability indicators recommended by the WHO, UNICEF and the ICCIDD.[27]

1. *An effective, functional national body (council or committee) responsible to the government for the national program for the elimination of IDD (this council should be multidisciplinary, involving the relevant fields of nutrition, medicine, education, the salt industry, the media, and consumers, with a chairman appointed by the Minister of Health*

   The formation of national body was included as part of the Provision of Iodized Salt Act, 2055 (1998). In this, an Iodine Deficiency Disorders Prevention Committee (IDDPC) would be chaired by the Secretary of the Ministry of Health and Population and represented by all the relevant stakeholders. However, this body is not functional. Instead, the USI Program is effectively managed by a High Level Monitoring Committee under the Joint Secretary of the Ministry of Commerce and Supplies, which issues necessary direction, monitoring and supervision regarding accessibility of salt, salt trade, price and quality of salt.

   There is a separate Committee, the "Goitre Control Program Management Committee (CGPMP) "under the Goitre Control Project which is responsible for handling issues related to the 22 remote and inaccessible districts established as per the decision of the Council of Ministers on 2nd March, 2000 and 26th April, 2001.This Committee was initially established to manage implementation of the Goitre Control Project funded by the Government of India, but is more concerned with management of the subsidy scheme than with broad multi-sectoral activities..

[27] WHO/UNICEF/ICCIDD Guidelines for Program Managers (2007)

To further support to overall Government implementation of USI activities, a new technical advisory committee has recently been formed, known as the Nutrition Technical Advisory Committee (NUTEC) within the Ministry of Health and Population. The overall aim of the NUTEC is to provide advisory support and guidance on nutrition related matters to CHD. It is represented by all key stakeholders facilitating sectoral coordination.

Under the NUTEC, a Sub-Committee on Iodine Deficiency Disorders has been formed, and acts as an advocacy forum for IDD related issues and provides technical support to the MoHP on IDD related issues. The IDD Sub–Committee is represented by the Child Health Division, the Department of Food Technology and Quality Control (DFTQC), the Salt Trading Corporation (STC), the Micronutrient Initiative, UNICEF and other organizations working for the elimination of Iodine Deficiency Disorders in Nepal.

In general, there are some function bodies and committees in place for coordination, but they can be streamlined and harmonized with roles further clarified.

2. *Evidence of political commitment to universal salt iodization and the elimination of IDD*

Political commitment to create an enabling environment for the implementation of the USI program has been quite strong. The Government of Nepal continues to provide ongoing support for the distribution of iodized salt in the 22 remote districts at subsidized prices, which includes the provision of some 90 million Nepalese Rupees yearly, which is often supplemented by financial support from the Government of India. The Government provides budgetary support for the celebration of Iodine month in February every year. Finally, as part of the National Multi-Sectoral Nutrition Plan proposed by the National Planning Commission budget support for USI is clearly allocated for a number of key activities.

While there is still need to formalize the regulatory and legislative framework for USI in the country, there are clear signs that there is high level political commitment within the Government towards the sustainable elimination of IDD.

3. *Appointment of a responsible executive officer for the IDD elimination program*

A focal officer to supervise and monitor the IDD control program has been appointed and is placed at the Child Health Division and also serves as a member of NUTEC.

There is a focal point within the Government responsible for IDD. However, there is scope to have a higher level coordinating function which could assure leadership and accountability across all key sectors and partners involved with the USI Program.

4. *Enactment of legislation and supportive regulations on universal salt iodization*

In order to regulate the USI program, an Iodized Salt Act (Production, Sale and distribution) Act, 2055 (1998) was approved by the Parliament on 15 January, 1999. This Act provides the technical and legal framework for the production, import, supply, sale, and distribution of iodized salt in order to improve iodine intake and eliminate iodine deficiency. Although the Iodized Salt Act was formulated in 1998, it is not functional. The salt act has provisions relating to

- Production, import, supply, sell and distribution of iodized salt
- Prohibition on import, purchase and sale of iodine free salt.
- Provision of IDD Prevention Committee
- Certification of standards and approval of label
- Appointment of inspectors
- Duties of the health institutions for the promotion of iodized salt
- Punishments for offense

In the absence of a functional Iodized Salt Act, regulation of various aspects of the USI program have been regularized through other existing laws such as

- Food Act, 1967 providing the standards for Iodized salt
- Export Import Control Act, 1956 for import and distribution of iodized salt throughout the country
- Essential Commodities Control (Authorization) Act, 1961 for to authorize for harsh control, from time to time as per necessity, on the distribution, sale or trade of food items and goods and commodities which are essential for daily consumption, use and feeding to maintain comfort of the general people in the society. The act has listed salt under the list of essential commodities.

Since the laws governing to salt regulation is in different sectors, challenge ahead is how to harmonize these laws and act in coordinated way.

A framework for legislation is in place, yet has not become operational. While remedial legal mechanisms have been used to regulate the USI program, there is a need for review the Iodized Salt Act, make adjustments in line with the current program and formalize it so that it can be effectively implemented and enforced.

5. *Commitment to assessment and reassessment of progress in the elimination of IDD, with access to laboratories able to provide accurate data on salt and urinary iodine*

Since 1997, five large-scale nationally representative surveys have been conducted to track the progress of the IDD program in the country. The first was conducted in 1998, followed by a second in 2005, then in 2007 and most recently 2011. Most recently, coverage of household iodized salt was assessed in two different surveys, the Nepal Demographic and Health Survey (NDHS) and Nepal Living Standards Survey (NLLS) in 2011.

There have been multiple surveys to track the progress and impact of the USI program, with data on both HHIS coverage and iodine status available to inform programming.

6. *A program of public education and social mobilization on the importance of IDD and the consumption of iodized salt*

The Government has implemented an Iodized Salt Social Marketing Campaign as an integral part of the USI program since 1998. The campaign focused on promotion of the importance of iodine nutrition and iodized salt, with a particular focus on increasing the demand and household consumption of Two Child Logo (2CL) iodized packet salt.

Social marketing and promotional activities have been systematically planned and have been successful in increasing the level of awareness of the importance of iodized salt. The campaign was successful in increasing the household use of the 2CL salt in the Terai from 10.2 percent[28] in 1998 to 59.4 percent[29] in 2011; while household use of adequately iodized salt in the region increased significantly; from 52[30] per cent in 2005 to 83[31] per cent by 2011.

7. *Regular data on salt iodine at the factory, retail and household levels*

Regular data on iodine content in salt at the production level is obtained through the Internal Monitoring System which is maintained by the Salt Trading Corporation and at the retail level by the DFTQC. Meanwhile, CHD has been carrying external verification. The salt iodine content at the household level has been obtained from the national and sub national surveys. But there is still a need to encourage sub national surveys on IDD to better inform future decision making. Besides, HMIS/DoHS need to encourage collecting information on iodine supply in the form of iodized salt at household level through annual service tracking survey.

There is a robust and ongoing monitoring of the salt iodization program at different points of the value chain from production to consumption, although protocols for sampling and follow-up action can be improved.

28 Nepal Micronutrient Status Survey (NMSS), 1998.
29 Nepal Living Standard Survey III, 2011.
30 Nepal Iodine Deficiency Disorder Status Survey, 2005
31 Nepal Demographic Health Survey, 2011

8. *Cooperation from the salt industry in maintenance of quality control*

A monitoring system exists which incorporates both external and internal monitoring activities. STC carries out internal monitoring via various forms and formats based on Lot Quality Assurance Sampling (LQAS) methods. The information of the internal monitoring is also shared with the Child Health Division and UNICEF. When salt arrives in the point of importation, STC collects samples and tests using Rapid Test Kit in their warehouse nearby point of importation. Similarly, Custom office also collects sample and sends it to DFTQC regional laboratory or Food Quarantine Laboratory for testing. However, iodized salt sample collection from railway wagon by custom office and sending it to DFTQC is not mandatory by law in Nepal. The Department of Food Technology and Quality Control, a Government Regulatory body, ensures quality of iodized salt through existing food legislation. All imported iodized salt is checked at the custom points by Food Quarantine Laboratories of the Department of Food Technology and Quality Control.

There are protocols in place for external monitoring of iodized salt, primarily at the point of importation from India, but this is based on the use of rapid test kits and semi-quantitative measurements and cannot accurately assess the iodine content of salt

9. *Database for recording of results or regular monitoring procedures*

A database of regular monitoring mechanism is maintained by the STC through a computerized system. It is made available to CHD regularly.

A database is in place.

10. *Regular laboratory data on urinary iodine in school-aged children, with appropriate sampling for higher risk areas;*

While urinary iodine has been measured as part of national surveys, the most recent data are only from 2005 and are not available on a routine basis, nor available for stratification at the sub-national level, largely due to lack of regular functioning of laboratories for UIE analysis. Therefore strengthening laboratory facility at central and regional level would be needed to obtain regular data.

Limited data on UIE are available, but not to the extent required to inform program adjustments, such as revision of the iodine standard.

Table 4: Summary of IDD program Indicators (ICCIDD, WHO and UNICEF)

S. N	Programmatic Indicators	Nepal's Status	Evidence
1	An effective functional national body	Partially achieved	High level monitoring committee under the MoCS exits, it monitors quality, supply and price of salt
2	Evidence of political commitment	Almost achieved	Continued support for distribution of iodized salt in remote districts at subsidized prices with support from development partners
3	Appointment of responsible executive officer	Achieved	A focal officer in CHD has been appointed
4	Enactment of legislation and supportive regulations on USI	Partially achieved	There are several laws governing the IDD program in Nepal. They are 1. Iodized Salt Act, 1999 (Not functional) 2. Food Act and regulation (Quality Control) 3. Export Import Control Act, 1956 (MoCS) 4. Essential Commodities Control (Authorization) Act, 1961 (Authority given to STC using the provisions of this act)
5	Commitment to assessment and reassessment of progress in the elimination of IDD with access to laboratories to provide accurate data on salt and urinary iodine	Achieved	National Survey reports
6	A program of public education and social mobilization on the importance of IDD and the consumption of Iodized salt	Achieved	Implementation of Iodized salt social marketing campaign
7	Regular data on salt iodine at the factory, retail and household levels	Achieved	IMS of STC and DFTQC report
8	Cooperation from the salt industry in maintenance of quality control	Achieved	STC coordinates with the all monitoring agencies
9	A database for recording of results or regular monitoring procedures	Achieved	STC database
10	Regular laboratory data on urinary iodine in school-aged children with appropriate sampling for higher risk areas	Partially achieved	UIE measurement has been taken in national survey of 2005.

VII. Rationale of the Plan of Action to Achieve Optimal Iodine Nutrition in Nepal 2013-2017

Since 1973, Nepal has made significant strides towards the achievement of the USI goal and available statistics suggests that Nepal is at the crossroads of attaining the goal and assuring optimal iodine status of the population. The country is deeply committed to curb micronutrient deficiencies, which is reflected in the achievement of the World Summit for Children's Goals for Vitamin A Deficiency and Iron Deficiency Anemia. Now with the additional achievement of the USI goal, Nepal will be one of only a small number of developing nations to have successfully addressed all three major micronutrient deficiencies.[32]. With this Plan for next five years, the country will towards consolidating its achievements made and redouble efforts towards achieving and sustaining USI by 2015. As the Plan develops, it is important to consider where adjustments to the status quo are warranted and where there are priority areas that require strengthening.

The overall iodine status of the population was assessed most recently in 2005, and with a median UIE of 188.0 ug/L was already categorized as 'optimal' based on the WHO classification. The iodine status in each of the three ecological zones and both urban and rural areas was also considered to be sufficient. This, in spite of the fact that the coverage of households with adequately iodized salt had not reached 90%, which requires a more in-depth analysis. However, while these data are encouraging, when UIE data are stratified on the basis of the iodine content of household salt (HHIS), or when HHIS coverage data are analyzed by wealth, important gaps are identified, and these enable a greater focus of resources and attention as the program moves forward.

Although attainment of the USI goal will be one of the major objectives for the IDD program, recent surveys have also hinted of a possible risk of excessive iodine intake. The median UIE in SAC was found to be 361µg/L in urban areas in 2005[33], while34.7 per cent of the SAC in urban areas had UIE values above 300 µg/L in 2007[34]. The Plan will review the level of iodization at the production, retail and household level, and

[32]The United Nations. The Millennium Development Goals(MDGs).2007

consider what additional monitoring data may be required to inform and guide the program.

The next five year National Plan will need to provide additional measures to increase program performance in the lowest coverage areas and/or remote and inaccessible areas and among the marginalized and under privileged segments of the population. The Plan will look to sustaining the achievement attained in the Terai belt through active involvement, partnership and greater ownership of the District Health/Public Health offices, Salt Trading Corporation and other national and international agencies. The Plan will be instrumental in extending the best practices of the social marketing/mobilization efforts in the Terai belt to other regions of the country on and focus efforts to increasing the demand and reach of the TCL packet salt. Finally, experiences from countries around the world suggest that sustainability is a challenging issue for USI programs. The Nepal National Plan will help address the programmatic and structural issues related to sustaining the IDD program in the country.

VIII. Specific Challenge Areas

There are five specific challenge areas which guide the National Plan of Action. The activities that will be implemented in order to address and remove these particular challenges are described below:

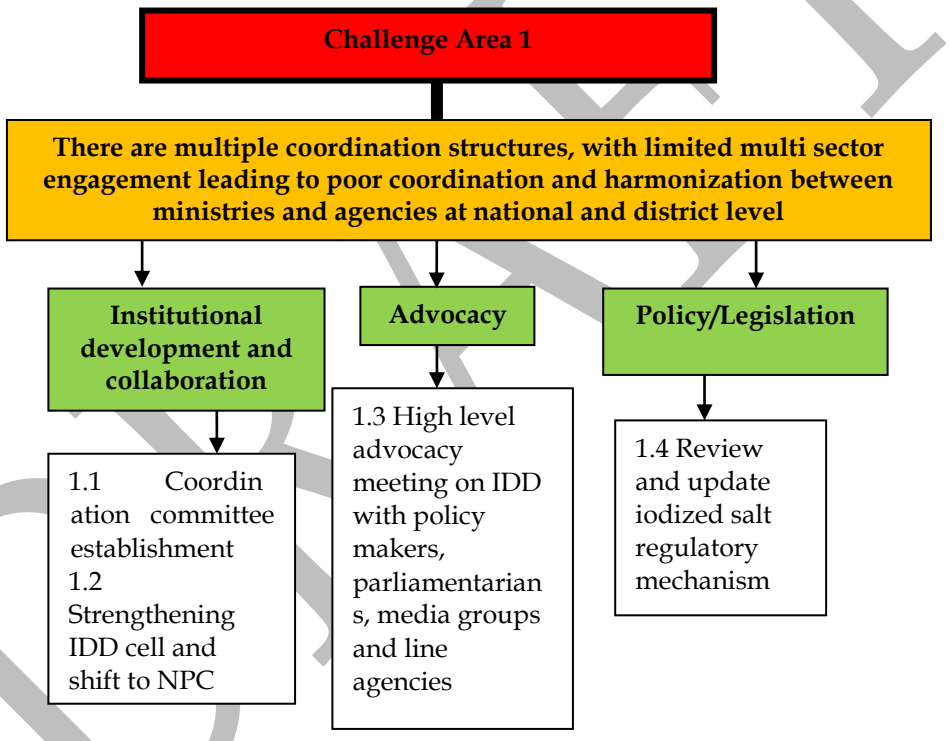
1) There are multiple coordination structures, with limited multi-sector engagement leading to poor collaboration and harmonization between Ministries and Agencies at national and district level
2) There is low coverage of adequately iodized salt in some areas of the country, particularly in hard-to-reach areas and amongst socially isolated communities
3) There is poor understand and awareness amongst consumers, retailers and salt traders about iodine and the importance and availability of packed iodized salt (Two Child Logo).
4) There is poor retention and losses of iodine in large crystal salt that does not provide adequate iodine at the point of consumption

5) As the program matures, salt consumption and general food consumption patterns change, the contribution of iodine from iodized salt to the population is not known

IX. Activities to Overcome Challenge areas

Challenge Area 1: *There are multiple coordination structures, with limited multi-sector engagement leading to poor collaboration and harmonization between Ministries and Agencies at national and district level*

Figure 8: Challenge tree of challenge area 1



Strong commitment of the political leadership of the country is of utmost importance for sustainable elimination of IDD in the country. However, such commitments need to be reinforced and updated through regular advocacy. Therefore the following three program components will be strengthened to attain the objective:

- Institutional Development and Collaboration
- Advocacy
- Policy/ Legislation

- Institutional development and collaboration

A collaborative effort of all Government partners, together with the effective support of the private sector (Indian producers and suppliers), salt traders and development partners is critical to assure effective USI implementation. The collective efforts of all stakeholders will ensure harmonization of the efforts, development of ownership towards IDD program and prevention of duplication. Hence, strong collaborative structures and modes of communication need to be in place

Activity 1.1 Coordination committee establishment

Under the Iodized Salt Act (Production, Sale and distribution) Act, 2055 (1998), a Iodine Deficiency Disorder Prevention Committee (IDDPC) was formed. This committee was supposed to be responsible for overall policies for the elimination of IDD in Nepal, including the approval of licenses for salt business, import and monitoring of salt distributed in the country. However, this Committee has never been functional, and several alternative structures have been established, but a higher level coordination is needed. The current Plan calls for the National Planning Commission to utilize the existing coordination structure in place to support the design and implementation of the multi-sectoral nutrition program to support all USI program activities (see Figure 8). Under the Steering Committee for Food Security and Nutrition, a special IDD working group will be formed that will take on the overall responsibility and coordination of the program and serve as the NIDDCC. As much as possible, the coordination on USI should be integrated and linked to other nutrition programs and initiatives so that it is not a stand-alone vertical effort.

Figure 9: Proposed model for National IDD Coordinating Committee (IDDPC) under the National Planning Commission

Activity 1.2. Strengthening IDD cell and shift to NPC

The primary responsibility for technical matters related to IDD is handled by the IDD Cell, currently in the Child Health Division, but this also need to shift to the National Planning Commission and be strengthened in order to handle enhanced responsibility. This Cell will coordinate various activities of the USI Program, including an annual review the situation based on available data, serve as the Secretariat of the NIDDCC and manage a database with all updated program data. A website will also be launched to disseminate information to the general public regarding efforts towards sustainable elimination of IDD in the country. The website will be managed by the IDD cell. The IDD Cell will need to be equipped with additional support staff to handle the responsibilities.

- Advocacy

Activity 1.3. High level advocacy meeting on IDD with policy makers, parliamentarians, media groups and line agencies

High level advocacy meetings will be organized under the initiation of National IDD Coordination Committee at the central level to sensitize key stakeholders on the importance of attaining the USI goals and efforts for prevention and sustainable elimination of IDD through the use of iodized salt and obtain their support for the IDD Elimination Program. Sensitize parliamentarians, policy makers, government officers, development partners, Non-government organizations, Community Based Organizations, journalists and key army and police officers etc on IDD issues to extend relevant support at political and administrative level.

At the District level Nutrition and Food Security Steering Committee under the chairmanship of Chairman of District Development Committee will be responsible for advocacy activities at the district level in districts besides the ones incorporated under the subsidy policy. The members of the committee will be as defined by the Multi-sectoral Nutrition Plan.

- Policy Legislation

The Iodized Salt (Production, Sales and Distribution) Act was enacted in 1999 has been non functional due to lack of consensus among stakeholders. Therefore strengthening available legislation is fundamental to the Nepal's USI/IDD future.

In Nepal, food legislation is in place which states the salt iodization standards. Under this, there are two standards: common salt and iodized salt. With respect to iodized salt, the standard indicates a minimum level of 50 ppm iodine at production and 30 ppm at retail level. Based on this, the DFTQC is responsible for external monitoring at both the point of importation and along the distribution chain. A standard for common salt

(which doesn't include iodization) also exists under regulations of the Food Act, and has created loopholes in the program. Therefore, it is important to make salt iodization mandatory by removing the standard for common salt from the Food Act and all relevant regulations. Once this takes place, only iodized salt standard will be allowed to be imported and distributed for edible consumption.

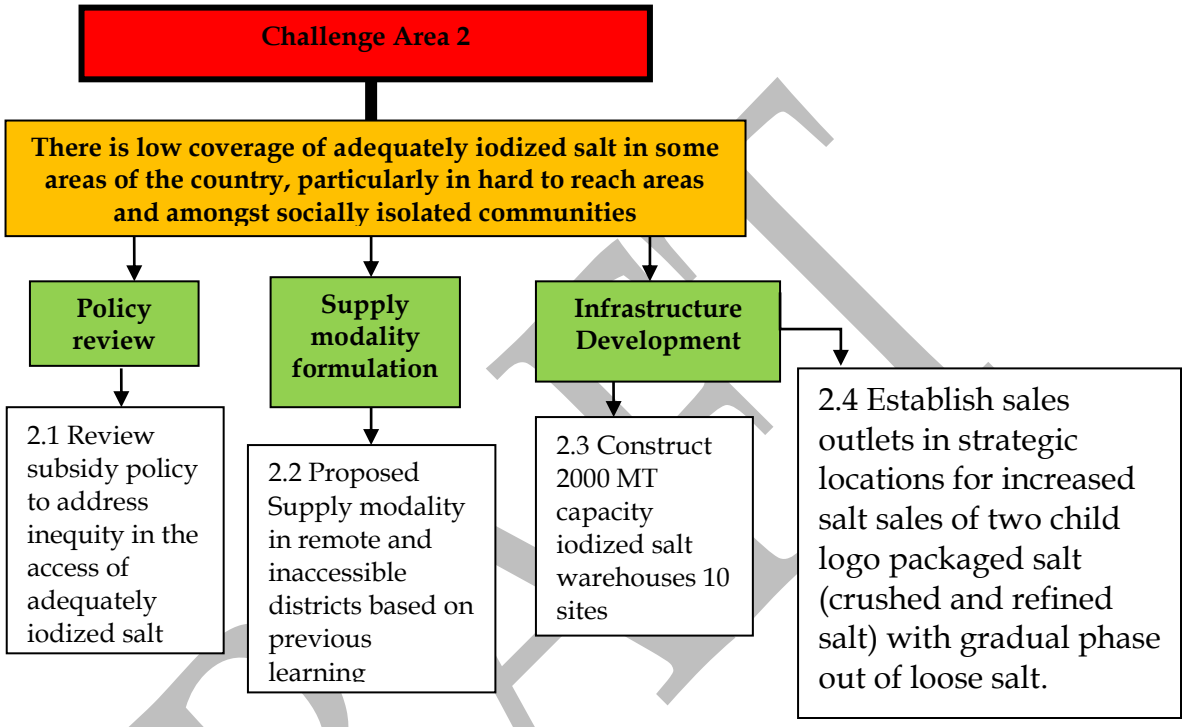
In order to expedite the process of regulating iodized salt, the IDD Coordination Committee will advocate to all pertinent policy makers as well as parliamentarians for reviewing the Iodized Salt (Production, Sales and Distribution) Act 2055(1998), make adjustments in line with current program and formalize it so that it can be effectively implemented and enforced in consensus with key sectors (MoHP, MoAD, MoCS, MoF/ MoFA, MoHA , Office of Financial Comptroller and Office of Auditor General of Nepal).

Activity 1.4. Review and update iodized salt regulatory mechanism

The IDD Cell with the Technical Assistance of the IDD working group will formulate an updated salt regulation. The revised salt regulation will be presented to the National IDD Coordination Committee for feedback, and subsequently will recommend the revised salt regulation to the Ministry of Health and Population for endorsement by the Cabinet. The salt regulation will incorporate all issues related to iodized salt, its distribution, certification standards and quality assurance mechanism. One issue that may be of interest will be to request/recommend that all salt used in animal feed be iodized salt (DFTQC).

Challenge Area2: *There is low coverage of adequately iodized salt in some areas of the country, particularly in hard-to-reach areas and amongst socially isolated communities*

Figure 10: Challenge tree of challenge area 2



The Government has been providing a transportation subsidy for 2CL iodized salt distribution with a fixed quota. However, the allocation of the subsidy is based on criteria for classifying remote and inaccessible districts were developed in the 1990s. However, since that time, the situation has evolved and there is a need to review the classification criteria and revise the selection of Districts to be targeted for the subsidy.

Activity 2.1 Review subsidy policy to address inequity in the access of adequately iodized salt

The NIDDCC, with the technical assistance of the IDD Cell will formulate a new series of recommendations to the Government based on new criteria, in order to reduce the number of Districts to receive salt at a subsidized price. It is anticipated that a reduced number of remote and inaccessible districts will assist program managers in Government to focus resources more effectively. Beyond the actual number of Districts

to be targeted, there is also need to review and revise the supply and distribution modality of subsidized salt in remote and inaccessible areas. The current allocation is based on a per capita salt consumption estimate of 6 kg/person/year which is quite high, so adjustments may be in order to 3.5-4.0 kg/person/year.

Activity 2.2 Proposed Supply Modality in remote and inaccessible districts based on previous learning

The current mechanism for distributing subsidized iodized salt has been to provide it only to District Headquarters, from where individual beneficiaries are expected to receive the salt and then transport to their respective villages. However, this has been ineffective and inefficient, especially for those who live far from the District Headquarters, and an alternative delivery model is required. The Plan will explore the feasibility of identifying strategic locations as well as supply modalities for the distribution of subsided salt in each target District.

One possible model to be tested to improve the delivery of subsidized salt would be to increase the number of facilities through which to distribute salt to target beneficiaries, as outlined below:

1. 3-5 strategic locations will be selected for the distribution of subsided salt. The strategic locations will be decided based on consultation with the District based stakeholders under the initiative of the Chief District Officer.
2. The strategic locations should be such that they cover an entire range of beneficiaries with the specific focus on residents of geographically and socially isolated communities. They will be placed at major markets as well as local feeder markets. The strategic locations will be in addition to the District headquarters
3. Locally operational Cooperatives, Credit and Savings groups, clubs etc which have demonstrable coverage in the area of concern will be given the responsibility of selling and distributing subsidized salt.
4. A meeting will be organized under the initiation of the Chief District Officer to decide on the retail price, which could differ based on the strategic locations. The

final retail price will absorb the transportation cost and appropriate profit margin to the distributor.

5. The mechanism and cost of the subsidized salt will be formally endorsed through the authorized letter of the Chief District Officer citing the final retail price, the mode of transport to particular strategic location, profit margin of the authorized distributor.
6. The authorized distributor should display the authorized retail price in its outlet on a board which will approved by the District Administration Office.
7. District level IDD elimination committees under the framework of District level Food and Nutrition Plan (DLFNP) will be establish with representation from local political parties, District Development Committee (DDC), District Health Office, District Agriculture and Livestock office, DFTQC Office, members of Civil Society Organization, the authorized salt distributor, Salt Trading Corporation Limited (STC), Local media agencies and security agency. The committee will periodically review the quantity of salt dispatched from the district headquarter and other supply channel (Depot) under the supervision and direction of the Chief District Officer in order to provide strategic guidance and local solution to ensure community has reach to adequately iodized salt with two child logo.

A quarterly review of the salt supply status will be held in a meeting of all concerned stakeholders under the chairmanship of the Chief District Officer. During the meeting the salt distributors will present the details of salt supply, including financial documents.

Another critical aspect of this work will be to develop robust methods to estimate the budgetary requirements and support from the Government for remote and inaccessible Districts targeted for the salt subsidy. This Plan includes the results of a valid effort to calculate the salt requirements for the remote and inaccessible Districts, but further refinements and calculations will be required once the final number of Districts and their location is determined *(Details present in annex)*

To support the subsidy, STC receives some financial assistance from the Government of India (GOI). The grant assistance is earmarked for four specific tasks: Iodization subsidy, packing subsidy, transport subsidy and advocacy subsidy. A sum of Three Crore Nepalese rupees have been received in support from the Government of India during the FY 2009/10.

Activity 2.3 Construct 2000 MT capacity iodized salt warehouses 10 sites

Ten additional warehouses, each with an average capacity of 2000 MT will be constructed with specific focus on ensuring accessibility to adequately iodized salt to remote and inaccessible regions. The reason for new warehouses at different location is to increase access to iodized salt in the remote hill and mountain areas where often road blockage is a problem. The prospective sites are as follows

1) Humla
2) Jumla
3) Mugu
4) Dolpa

Salt warehouse with re-iodization plant. Of the four districts, Jumla will be designated a strategic point for supply to other three Districts. Currently, a re-iodization plant exists in Hilsa of HumlaDistrict but is not operational.

5) Solukhumbu
6) Bajhang
7) Bajura
8) Achham
9) Kalikot
10) Sankhuwashabha

Salt warehouse only without re-iodization plant

- Gradual phase out of Loose salt

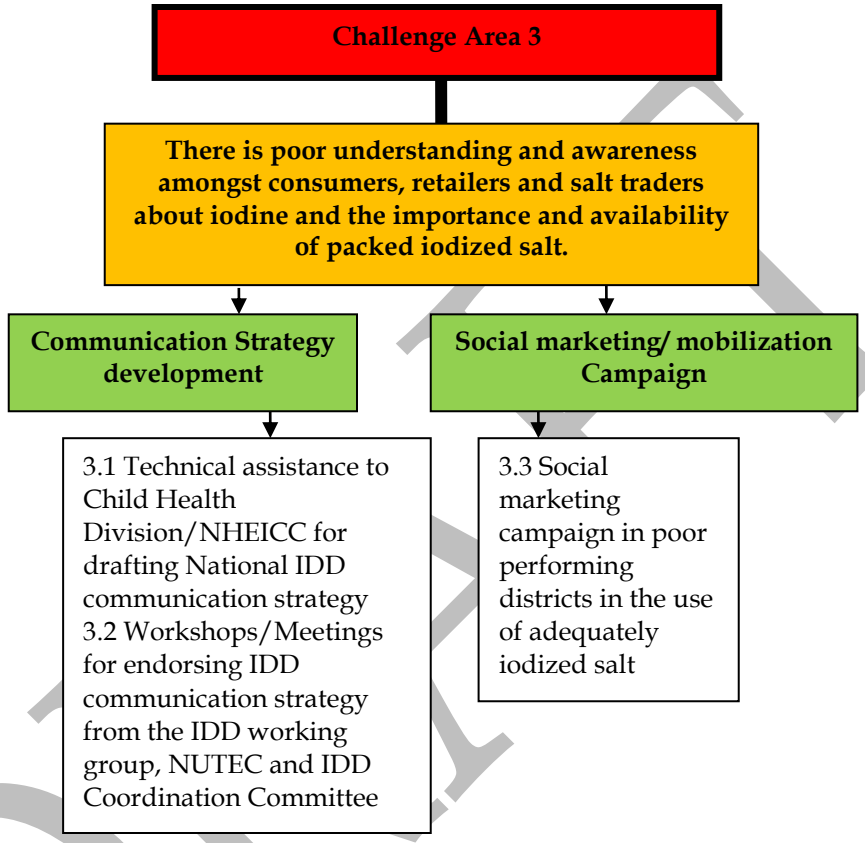
Activity 2.4. :Increased salt sales of two child logo packaged salt (crushed and refined salt) with gradual phase out of loose salt.

The retention of adequate iodine levels in salt is only possible with appropriate mixing during production and packaging for distribution. While both crushed and refined salt allows uniform mixture of iodine in salt, larger crystal salt is much more difficult to achieve homogenous mixing. In addition, both crushed and refined iodized salt can be packed in higher quality polyethylene bags of smaller quantity, leading to better retention. A major objective of this Plan will be to increase the market share of packaged refined iodized salt from 53.7% in 2009/10[35] to 75% by the end of 2014 and 95% by 2017.This will be realized both by reducing the supply of loose large crystal salt, while also encouraging and promoting demand for refined iodized packed salt (this will complement the activities of Challenge area 3).

[35] STC,2011

Challenge area 3: *There is poor understand and awareness amongst consumers, retailers and salt traders about iodine and the importance and availability of packed iodized salt (Two Child Logo)*

Figure 11: Challenge tree of challenge area 3



A critical component of the USI program is to disseminate concrete and specific messages about the importance of iodized salt and of iodine deficiency. The following sets of activities will be pursued in order to attain the objective

1. Communication Strategy
2. Social Marketing/Mobilization Campaign

- Communication Strategy

Activity 3.1 Technical Assistance to Child Health Division/ NHEICC for drafting National IDD communication strategy

A comprehensive Advocacy and Communication strategy for the sustainable elimination of IDD will be developed with the technical assistance of Child Health Division, National Health Education, Information and Communication Centre (NHEICC) in close coordination and consultation with STC and other relevant stakeholders. The NHEICC acts as a specialized body of the Ministry of Health and Population enabling the Ministry to have an integrated approach which brings together key messages on different health issues to guide the implementation of advocacy, community mobilization, Behavior Change Communication (BCC) and program promotion activities.

Given the progress that has been achieved in the program, it may be appropriate to develop the communication strategy for two distinct phases; a maintenance phase and an acceleration phase. In this, those districts which have been able to achieve high coverage of 2CL salt may not require the intensive communications, so messages may be tailored to meet the specific needs of the program and assure that demand remains high. The more intensive communications will be required in areas yet to achieve high coverage and should be prioritized to develop and implement targeted messages to key stakeholders, as below.

The Advocacy and Communication strategy will be formulated to reach out to key stakeholders along the salt value chain including policy makers, salt importers and traders, food producers, retailers and consumers. However, the strategy will be focused on some key messages with concrete outcomes expected.

Activity 3.2: Workshop/ Meetings for endorsing IDD communication strategy from the IDD working group, NUTEC and IDD Coordination Committee

An initial workshop will be conducted under the coordination of NUTEC/IDD Working Group to discuss on the contents/areas to be covered by the Advocacy and Communication strategy. The workshop will be represented by concerned Government agencies, Development Partners and private sector agencies, including representatives of the media. After the first draft of the strategy is available, a second workshop will be conducted which will aim to reach endorsement. The basic objective of workshop will be to provide the platform for the stakeholders to share their views on the subject matter and hence develop a sense a collective ownership among all the relevant stakeholders.

- Social Marketing/ Mobilization Campaign

Activity 3.3: Social Marketing Campaign in the poor performing districts in the use of adequately iodized salt

The Social marketing campaign launched between 1998 and 2011 was highly successful with regard to increasing the number of households demanding and consuming Two Child logo iodized packed salt, as well as increasing awareness among consumers on the importance of consuming adequately iodized salt. To further extend these achievements, the social marketing/mobilization campaign will focus its activities in the Hills and Mountains of Far West and Mid-West, as these were the areas with the lowest coverage of 2CL in the most recent national surveys. The campaign activities will focus on social mobilization, awareness and behavior change communication, public private partnership building and program monitoring.

1. **Social Mobilization**

   Mobilization of Community Based agencies/groups, Interactive discussions and coordination meetings with local stakeholders including health workers, retailers, dealers, Government Line agencies, CBOs etc. Social mobilizers from

existing network at local level will be mobilized in interpersonal communication (IPC) for promoting adequately iodized salt.

2. **Awareness/BCC**

Video on Wheels, IEC material distribution, classes for advocacy on IDD at schools and community, Iodine Test Demonstration, display of IEC materials in local fair, sporting events etc.

3. **Private Public Parntership:**

Nowadays, there is good penetration of local print media and FM station, covering large audience. Beside business, these media are offering their certain portion of time to create social awareness under private public partnership basis. Opportunity will be taken to promote IDD message through these mass media in the most backward and disadvantage districts where access and availability of iodized salt with two child logo is low due to low level of awareness among the local political parties, influential people and community itself.

4. **Monitoring**

Sales tracking, Salt supply status assessment, Surveys, Supervision through Government line agencies.

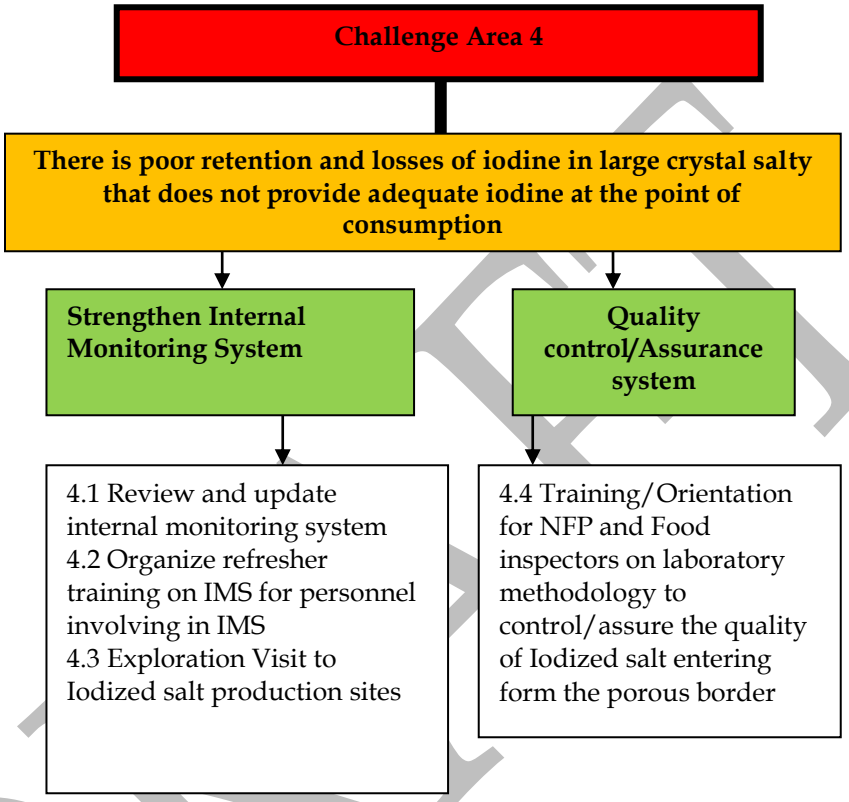
District level planning and orientation meetings will be conducted to provide an overview of the intensification efforts, importance of consuming two child logo iodized packet salt and plan on the approaches and modalities of intensification efforts. The planning and orientation meeting will look to sensitizing the representatives of the government agencies, International Non Government Organization, Non government organizations, Community Based Organizations, Politicians, Journalist, retailers/dealers and Salt trading Corporation

There will be rigorous monitoring of the social marketing/mobilization activities in key target Districts to track overall progress, as well as ensure the availability of two child logo iodized packet salt in rural villages and marginalized and disadvantaged communities.

The achievements in the adequately iodized salt in the southern terai will be maintained through continuous monitoring of the situation through District Health/ Public Health Offices in the region. The District Level Food and Nutrition Steering Committee established in sothern terai districts will biannually review the situation and provide suggestive action to maintain the achievement. Whenever required, support to the District Health/ Public Health Office will be provided to maintain awareness level in the southern terai. Special care will be taken to ensure the core groups formed in the region remain functional to promote the use of adequately iodized salt with two child logo. All the action to promote adequately iodized salt with two child logo will be taken through the established mechanism in the district. Joint monitoring visits of key stakeholders to southern terai districts will assist to periodically evaluate the progress in the use of iodized salt with two child logo in the districts.

Challenge area 4.*There is poor retention and losses of iodine in large crystal salt that does not provide adequate iodine at the point of consumption*

Figure 12: Challenge tree of challenge area 4



As the program matures, it will be important to shift the focus of the QA/QC activities away from only assuring that salt has been iodized to determine whether salt is adequately iodized. This means that it will be important to have more robust quality control data which captures the actual iodine content in salt, assuring that a minimum level is met while also declaring that a maximum is not exceeded. There will be a focus on quality control of large crystal salt, and greater scrutiny on the types of salt which are known to have poorer retention of iodine levels as a way to compliment the broad objective of reducing to nil the demand and supply of large crystal iodized salt in the country.

- Strengthened Internal Monitoring System (IMS)

Activity 4.1 Review and Update Internal Monitoring System (IMS)

There is an existing internal monitoring system in place, implemented by the STC, to assure that all iodized salt imported is adequately iodized and meets standards. Monthly reports of the IMS are provided to the Child Health Division and UNICEF, while the Child Health Division does external verification of IMS. Over the next five years, there is scope to further improve the IMS, including sampling protocols, forms and formats, and to refine the software being used. An external consultant will be hired to update the IMS.

Activity 4.2 Organize Refresher trainings on internal monitoring system for personnel involving in the internal monitoring system (IMS)

STC's technical staff who are involved with the routine implement implementation and management of IMS will be provided with refresher training each year, according to a schedule developed by the IDD cell and with the endorsement of the NIDDCC.

Activity 4.3 Exploration visit to the iodized salt production sites

For the technical staff who are involved in re-iodization and in internal monitoring of iodized salt, a visit will be arranged to the primary salt production sites in India. It will help to internalize the importance and the practices undertaken by other salt producers, and a review of best practices in place by factories of varying capacity (medium and large-scale production). The visit will also help enhance knowledge on iodization practices and ongoing internal monitoring protocols in place. The visits will be planned by the IDD cell in consultation with STC and will be sent for approval to the NIDDCC.

- Quality Control/ Assurance System

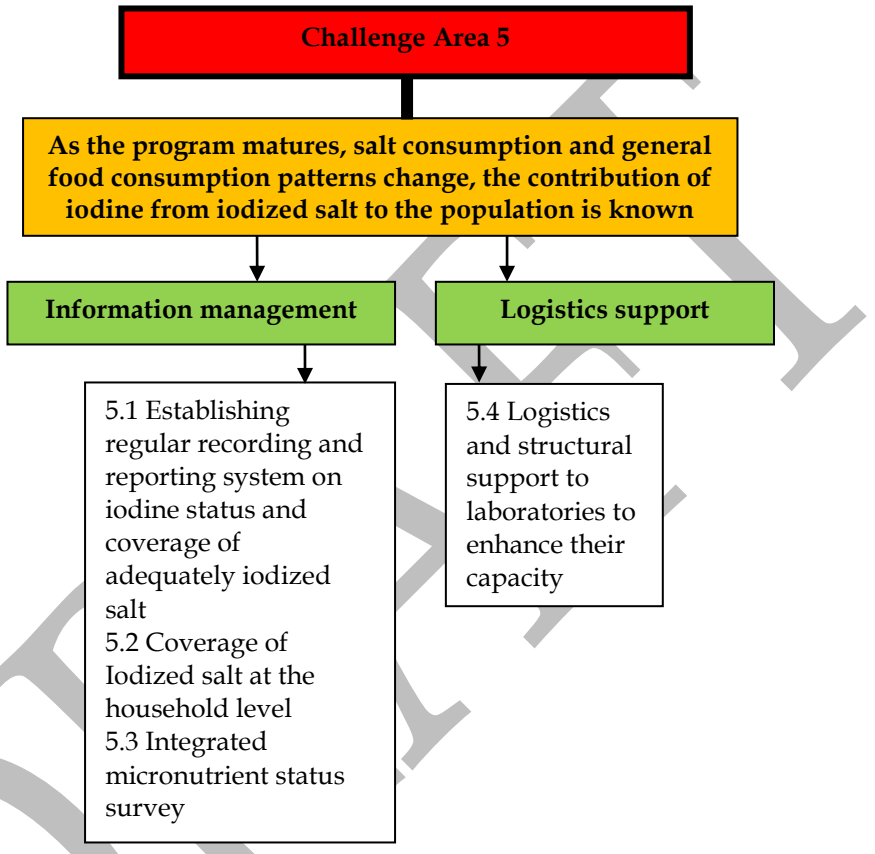
Activity 4.4 Training/ Orientation for Nutrition Focal Person (NFP) and Food Inspectors on laboratory methodology to control/ assure the quality of iodized salt entering from the porous border.

Separate trainings will be held for Nutrition Focal Persons and Food Inspectors (at the National, Regional and District level). The NFPs will be oriented on issues and current activities related to IDD elimination in Nepal and the importance of consuming adequately iodized salt. These trainings will be undertaken by the Regional Health Training Centre. Training will be provided to Food Inspectors at the Regional level on technical issues of salt iodization, including salt iodization standards and monitoring through the Regional Food Technology and Quality Control Office. The Department of Food Technology and Quality Control is the national authority vested with the responsibility for food control in Nepal. The Department has Food Inspectors working to monitor the safety and quality of food products. The training will cover the Food Inspectors role in external monitoring, both with respect to measurement and enforcement.

The DFTQC has its organization at regional level, and in twenty Terai districts. There is a Food Quarantine laboratory at four major custom points. They are responsible for monitoring local markets and the production from local food industry. Food Inspectors will be informed about the illegal infiltration of salt through the porous Indian boarder. Strengthening Nutrition Focal Officers in this area and DFTQC food inspectors will help to control the problem.

<u>Challenge area 5.</u> ***As the program matures, salt consumption and general food consumption patterns change, the contribution of iodine from iodized salt to the population is not known***

Figure 13: Challege tree of challenge area 5



Data on iodine status will need to be linked clearly to the total iodine intake, and where necessary, these data should be used to guide programmatic adjustments which may include reducing the standard for the iodine content in salt. It will also be of interest to examine all sources of iodine in the diet, as the assumption that all iodine consumed in from households salt my no longer be appropriate as dietary patterns change and an increased contribution to the household diet is from processed foods, many of which contain salt (and possibly iodized salt).

Activity 5.1 Establishing regular recording and reporting system on iodine status and coverage of adequately iodized salt

A mechanism for regular recording and reporting of data on iodized salt coverage and data on iodine status to the NIDDCC will be developed. The IDD Cell will be involved with this work and take on the overall responsibility.

Recording and reporting formats will be developed under the initiation of the IDD Cell for Nutrition Focal Points of the low coverage Districts and/or in Districts where intensified social marketing efforts have been launched. Key program indicators on the penetration and use of 2CL salt will be tracked through both quantitative and qualitative data. Training will be provided to NFPs of the respective Districts on the recording and reporting of data and their implications for program implementation.

In meantime, indicators on the USI program currently included in the existing health information system (HMIS) of the Government need to be better used. For example, in the ANC register, there is a variable which records whether adequately iodized salt is being consumed by expectant mothers. These data can be important for local communication and promotional activities.

- Updated Data on Iodized Salt Coverage, Iodine intake and Iodine Status

Activity 5.2. Coverage of Iodized Salt at the household level

The key performance indicator for the National USI Program will continue to be the coverage of households using adequately iodized salt. These data will be obtained through national and sub national surveys during the course of the five year period and also through the HMIS Annual Service Tracking Survey. The program will be opportunistic by adding IDD modules on to existing sample survey frames. It will be important to generate data on HHIS coverage amongst sub-groups to track progress in overall coverage and in the demand for 2CL salt, and to identify where there may be low coverage and a need to intensified programmatic input. In addition, as dietary patterns change, it may be important to assess the potential contribution of iodine from iodized salt in processed foods. This may not require a large-scale survey, but rather an inventory of food producers and qualitative studies of the penetration and use of these products. It is important to understand the total iodine intake and the extent to which

there may be sources of iodine contributing to the diet other than household iodized salt. The record of all survey carried out at the national sub national survey will be kept for reference in IDD cell.

Activity 5.3 Integrated Micronutrient Coverage Survey

An Integrated Micronutrient Status survey will be conducted at the beginning of the Plan to assess the current situation of micronutrient deficiencies including IDD as well focus on UIE and food consumption patterns. A second Integrated Micronutrient Status survey will be conducted towards the end of the Plan in order to provide follow up estimates of the achievement and impact.

Activity 5.4: Logistic and structural support to the laboratories to enhance their capacity

Logistics support will be provided to Laboratory facilities of the government as well as laboratories under various universities and medical and research institutions across the country for the UIE measurement and salt analysis. The support will also focus on capacity building of the human resource involved in UIE measurement and salt analysis.

X. Logical Framework and Action plan for the control of Iodine Deficiency Disorder

Challenge Area 1: *There are multiple coordination structures, with limited multi-sector engagement leading to poor collaboration and harmonization between Ministries and Agencies at national, regional and district level*				
Activity	Indicator/Milestone	Timeline	Key Agency responsible	Budget Code
1.1. National-level Coordination committee establishment	✓ National IDD coordination Committee (IDD Technical Working Group) under NPC established and functional	2013	NPC	1.1
1.2. Strengthening IDD cell and shift to NPC	✓ IDD cell under National IDD Coordination Committee established and functional ✓ Endorsement document of NIDDCC	2013	NIDDCC	1.2
1.3. High level advocacy meeting on IDD with policy makers, parliamentarians, media groups and line agencies	✓ National and districts level stakeholders advocated and coordinated ✓ Meeting minutes and reports of advocacy meetings	2013-2017	NIDDCC and District Nutrition and Food Security Coordination Committee	1.3
1.4 Review and update iodized salt regulatory mechanism	✓ Regulation governing salt formulated ✓ Endorsement document	2013-2014	NIDDCC, IDD cell and DFTQC	1.4

Challenge Area 2: *There is low coverage of adequately iodized salt in some areas of the country, particularly in hard-to-reach areas and amongst socially isolated communities*				
Activity	Indicator/Milestone	Timeline	Key Agency responsible	Budget Code
2.1 Review subsidy policy to address inequity in the access of adequately iodized salt	✓ Subsidy policy reviewed ✓ Endorsement document	2013-2014	NIDDCC	2.1
2.2 Proposed Supply Modality in remote and inaccessible districts based on previous learning	✓ Feasibility study conducted ✓ Endorsement document of NIDDCC	2013	NIDDCC	2.2
2.3 Construct 2000 MT capacity iodized salt warehouses 10 sites	✓ 10 warehouses built	2013-2017	NIDDCC ,MoCS	2.3
2.4 Increased salt sales of two child logo packaged salt (crushed and refined salt) with gradual phase out of loose salt.	✓ Increased share of market salt sells of packaged salt to 95% by the end of 2017.	2013-2017	MoCS/STC and NIDDCC	2.4

Challenge Area 3: *There is poor understand and awareness amongst consumers, retailers and salt traders about iodine and the importance and availability of packed iodized salt (Two Child Logo*).				
Activity	Indicator/Milestone	Timeline	Key Agency responsible	Budget Code
3.1 Technical Assistance to Child Health Division/ NHEICC for drafting National IDD communication strategy	✓ Strategy document developed and endorsed ✓ Endorsement document	2013	NHEICC, CHD,NIDDCC	3.1
3.2: Workshop/ Meetings for endorsing IDD communication strategy from the IDD working group, NUTEC and IDD Coordination Committee	✓ Conduction of workshop ✓ Workshop minutes	2013	NHEICC, CHD	3.2
3.3: Social Marketing Campaign in the poor performing districts in the use of adequately iodized salt	✓ Social marketing Campaign launched ✓ Campaign reports	2013-2017	NIDDCC	3.3

***Challenge Area 4**: There is poor retention and losses of iodine in large crystal salt that does not provide adequate iodine at the point of consumption*				
Activity	Indicator/Milestone	Timeline	Key Agency responsible	Budget Code
4.1 Review and Update Internal Monitoring System (IMS)	✓ IMS forms and formats reviewed ✓ Updated IMS forms used	2013	IDD cell, STC	4.1
4.2 Organize Refresher trainings on internal monitoring system for personnel involving in the internal monitoring system (IMS)	✓ Refresher Training conducted ✓ Training reports	2013-2017	IDD cell, STC	4.2
4.3 Exploration visit to the iodized salt production sites	✓ Exploration visit to salt production sites carried out ✓ Travel documents, itinerary	2013-2017	IDD cell,STC	4.3
4.4 Training/ Orientation for Nutrition Focal Person (NFP) and Food Inspectors on laboratory methodology to control/ assure the quality of iodized salt entering from the porous border.	✓ Training program conducted ✓ Training reports	2013-2017	IDD cell, DFTQC,CHD ,Regional Health Training Centre	4.4

Challenge Area 5: *As the program matures, salt consumption and general food consumption patterns change, the contribution of iodine from iodized salt to the population is not known*				
Activity	Indicator/Milestone	Timeline	Key Agency responsible	Budget Code
5.1 Establishing regular recording and reporting system on iodine status and coverage of adequately iodized salt	✓ Regular recording and reporting system established ✓ Developed forms and formats	2013	IDD cell	5.1
5.2 Coverage of Iodized Salt at the household level	✓ Data on coverage of iodized salt maintained	2013-2017	IDD cell/ HMIS	5.2
5.3 Integrated Micronutrient Coverage Survey	✓ Nepal Micronutrient status Survey conducted in 2013 and 2017	2013 and 2017	NIDDCC/IDD cell	5.3
5.4 Logistic and structural support to the laboratories to enhance their capacity	✓ Required Logistics made available ✓ List of logistics supported and related documents	2013-2017	IDD cell	5.4

XI. Annex

Annex 1: Iodized salt subsidized districts

1. All the VDCs of the following 13 districts

S.N	Districts	S.N	Districts
1	Solukhumbu	8	Jumla
2	Manang	9	Kalikot
3	Mustang	10	Jajarkot
4	Rukum	11	Bajura
5	Dolpa	12	Bajhang
6	Mugu	13	Darchula
7	Humla		

2. Particular VDCs of the following 9 districts

S.N	Districts	List of VDCs	S.N	Districts	List of VDCs
1	Taplegunj	Olangunchung	5	Gorkha	Lho
		Papung			Samagau
		Yamphudin			Prok
		Lelep			Bihi
		Ikhabu			Chunchet
		Tapethok			Chekampar
2.	Sankhuwasabha	Pawakhola			Sirdhibas
		Hatiya			Uiya
		Chepuwa			Kerauja
		Kimathanka			Kasigau
		Sisuwa			Manbu
		Bala			Laprak
		Makalu			Gumda
		Mangtewa			Lapu
		Yaphu	6	Rolpa	Kureli
		Tamku			Thawang
		Pathibhara			Virul
		Num			Rangkot
		Diding			Pachawang
3.	Dolkha	Bigu			Rank
		Alampu			Pakhapani
		Gaurishankar			Wot
		Lamabagar			Talawang
4.	Rasuwa	Thuman			Pang
		Timure			Gartigaun
		Lamtang			Korchawang
		Chilime			Rangshi
		Bridim			Jinawang
		Gatlang			Iriwang
		Haku			Dhawang
		Golgunj			

S.N	Districts	List of VDCs	S.N	Districts	List of VDCs
7	Accham	Kalekanda	8	Sindhupalchok	Gumba
		Tadigara			Fulpingkati
		Pulletala			Tatopani
		Sutar	9	Dhading	Lapa
		Santada			Tipling
		Warla			
		Bhatakatiya			
		Batulasain			
		Budakot			
		Duni			
		Patalkot			
		Devisthan			
		Siddeshwar			
		Dhudhurkot			
		Rishidaha			
		Kuskot			
		Thati			
		Bidewashini			
		Babala			
		Khodashadevi			
		Mastamandu			
		Nandegada			
		Nawathana			
		Hatikot			

Source:The following list of districts and VDC is as per the notice published in Nepal Gazette Section 56, part 3 on 11thFebruary, 2007.

Annex 2: Estimation of the subsidy amount from 2013 to 2017 for 22 subsidized districts

Note:

- The quantity required in MT is calculated based on the following formula

$$Quantity\ required\ in\ MT = \frac{Population\ of\ the\ respective\ year \times 6}{1000}$$

- The estimated amount in Nepalese Rupees is calculated based on the following formula

$$Amount\ estimated = Quantity\ required\ in\ MT \times Transportation\ cost\ per\ MT$$

- The population of each corresponding with base year as 2011 onwards has been estimated based on the average annual population growth rate during the last 10 years which is 1.40 per cent[36]. The following formula has been used to estimate the population
- The population of Nepal, 2011 is based on population census, 2011 and that of the VDC with regards to partially subsidized districts from **District Development Profile of Nepal, 2010/11**.

$$Population\ projection = (population\ of\ the\ previous\ year \times .0140) + Population\ of\ previous\ year)$$

- Transportation cost/MT has been estimated to increase gradually based on the inflation rate of Nepal 2010/2011, which is 9.6 per cent[37]. The following formula has been used to estimate the price increase

$$Transportation\ cost = Cost\ of\ the\ previous\ year \times .096 + cost\ of\ the\ previous\ year$$

[36]Central Bureau of Statistics.Preliminary Results of National Population Census 2011. September,2011.
[37] Nepal Rastra Bank. Monetary Policy for Fiscal Year 2011/2012.July,2011

Estimated subsidy amount for 2013

S.N	Districts	Population projected, 2013	Quantity required in MT	Transportation cost/MT	Amount estimated (in NRS)
1	Solukhumbu	109783	658.70	17237	11,354,226.34
2	Manang	6711	40.27	29646	1,193,732.55
3	Mustang	14188	85.13	11652	991,899.38
4	Rukum	216824	1300.94	4012	5,219,465.24
5	Jajarkot	177431	1064.58	6066	6,457,915.57
6	Dolpa	34273	205.64	49850	10,251,107.02
	Dolpa,Tinje	20564	123.38	50932	6,284,114.95
7	Jumla	80490	482.94	8697	4,200,048.40
	Jumla,Narakot	23134	138.81	9910	1,375,576.46
8	Kalikot	145613	873.68	4781	4,176,917.82
9	Mugu	45138	270.83	30030	8,133,037.93
	Mugu,Shreekot	8534	51.20	32433	1,660,695.94
	Mugu,Sorukot	6820	40.92	48049	1,966,157.29
10	HumlaSimikot	31120	186.72	124626	23,270,501.93
	HumlaHilsa to district Headquater	19449	116.70	40625	4,740,795.01
	Humla ,Shreenagar	7694	46.16	36036	1,663,586.04
	Humla,sarkegad	5827	34.96	72073	2,519,722.60
11	Bajura	48634	291.80	10451	3,049,500.17
	Bajura,Kolti	30194	181.16	24625	4,461,151.01
12	Bajhang	201811	1210.87	6499	7,868,916.65
13	Darchaula	137227	823.36	6583	5,419,921.09
14	Taplejung (6VDCs)	10217	61.30	9622	589,842.52
15	Sankhuwasabha (13 VDCs)	39518	237.11	4625	1,096,540.27
16	Dolakha (4 VDCs)	8329	49.98	5405	270,146.54
17	Sindhupalchok(3 VDCs)	13740	82.44	4565	376,301.40
18	Rasuwa (8 VDCs)	11961	71.77	6126	439,653.13
19	Dhading (2 VDCs)	8100	48.60	2042	99,246.04
20	Gorkha (14 VDCs)	52205	313.23	28529	8,936,031.84
21	Rolpa (16 VDCs)	84539	507.24	4144	2,102,084.25
22	Achham(24 VDCs)	96281	577.69	4565	2,636,925.79
Grand Total		**1,696,349.63**	**10178.10**		**132,805,761.20**

Estimated subsidy amount for 2014

S.N	Districts	Population projected, 2014	Quantity required in MT	Transportation cost/MT	Amount estimated (in NRS)
1	Solukhumbu	111319	667.92	18892	12,618,451.32
2	Manang	6805	40.83	32492	1,326,647.51
3	Mustang	14387	86.32	12770	1,102,341.42
4	Rukum	219859	1319.16	4397	5,800,621.38
5	Jajarkot	179915	1079.49	6648	7,176,965.72
6	Dolpa	34753	208.52	54636	11,392,506.29
	Dolpa,Tinje	20852	125.11	55821	6,983,813.45
7	Jumla	81617	489.70	9532	4,667,698.59
	Jumla,Narakot	23458	140.75	10861	1,528,738.65
8	Kalikot	147652	885.91	5240	4,641,992.56
9	Mugu	45770	274.62	32913	9,038,602.90
	Mugu,Shreekot	8654	51.92	35546	1,845,604.47
	Mugu,Sorukot	6916	41.49	52661	2,185,077.10
10	HumlaSimikot	31556	189.34	136590	25,861,532.69
	HumlaHilsa to district Headquater	19722	118.33	44525	5,268,654.09
	Humla ,Shreenagar	7802	46.81	39496	1,848,816.37
	Humla,sarkegad	5908	35.45	78992	2,800,278.60
11	Bajura	49315	295.89	11454	3,389,043.72
	Bajura,Kolti	30617	183.70	26989	4,957,873.41
12	Bajhang	204637	1227.82	7122	8,745,073.31
13	Darchaula	139148	834.89	7215	6,023,396.79
14	Taplejung (6VDCs)	10360	62.16	10545	655,517.94
15	Sankhuwasabha (13 VDCs)	40071	240.43	5069	1,218,633.45
16	Dolakha (4 VDCs)	8446	50.68	5924	300,225.74
17	Sindhupalchok(3 VDCs)	13932	83.59	5003	418,200.30
18	Rasuwa (8 VDCs)	12128	72.77	6714	488,605.87
19	Dhading (2 VDCs)	8214	49.28	2238	110,296.49
20	Gorkha (14 VDCs)	52935	317.61	31268	9,931,005.37
21	Rolpa (16 VDCs)	85723	514.34	4542	2,336,138.72
22	Achham(24 VDCs)	97629	585.78	5003	2,930,531.66
Grand Total		**1,720,098.53**	**10320.59**		**147,592,885.87**

Estimated subsidy amount for 2015

S.N	Districts	Population projected, 2015	Quantity required in MT	Transportation cost/MT	Amount estimated (in NRS)
1	Solukhumbu	112878	677.27	20706	14,023,440.17
2	Manang	6900	41.40	35611	1,474,361.75
3	Mustang	14588	87.53	13996	1,225,080.52
4	Rukum	222937	1337.62	4819	6,446,485.76
5	Jajarkot	182433	1094.60	7287	7,976,077.79
6	Dolpa	35239	211.44	59881	12,660,993.50
	Dolpa,Tinje	21144	126.86	61180	7,761,419.17
7	Jumla	82760	496.56	10447	5,187,418.82
	Jumla,Narakot	23787	142.72	11904	1,698,954.52
8	Kalikot	149719	898.31	5743	5,158,850.58
9	Mugu	46411	278.46	36073	10,044,997.10
	Mugu,Shreekot	8775	52.65	38959	2,051,101.46
	Mugu,Sorukot	7012	42.07	57717	2,428,372.33
10	HumlaSimikot	31998	191.99	149703	28,741,059.19
	HumlaHilsa to district Headquater	19998	119.99	48800	5,855,287.11
	Humla ,Shreenagar	7911	47.47	43288	2,054,670.98
	Humla,sarkegad	5991	35.95	86575	3,112,072.82
11	Bajura	50005	300.03	12553	3,766,393.40
	Bajura,Kolti	31045	186.27	29580	5,509,902.86
12	Bajhang	207501	1245.01	7806	9,718,784.75
13	Darchaula	141096	846.58	7907	6,694,065.88
14	Taplejung (6VDCs)	10505	63.03	11558	728,505.93
15	Sankhuwasabha (13 VDCs)	40632	243.79	5555	1,354,320.97
16	Dolakha (4 VDCs)	8564	51.39	6493	333,654.07
17	Sindhupalchok(3 VDCs)	14127	84.76	5483	464,764.40
18	Rasuwa (8 VDCs)	12298	73.79	7359	543,009.20
19	Dhading (2 VDCs)	8329	49.97	2453	122,577.34
20	Gorkha (14 VDCs)	53677	322.06	34269	11,036,763.24
21	Rolpa (16 VDCs)	86923	521.54	4978	2,596,253.75
22	Achham(24 VDCs)	98996	593.98	5483	3,256,828.77
Grand Total		**1,744,179.91**	**10465.08**		**164,026,468.15**

Estimated subsidy amount for 2016

S.N	Districts	Population projected, 2017	Quantity required in MT	Transportation cost/MT	Amount estimated (in NRS)
1	Solukhumbu	114458	686.75	22694	15,584,866.09
2	Manang	6997	41.98	39030	1,638,523.08
3	Mustang	14792	88.75	15340	1,361,485.89
4	Rukum	226059	1356.35	5282	7,164,263.27
5	Jajarkot	184988	1109.93	7986	8,864,166.19
6	Dolpa	35733	214.40	65630	14,070,719.17
	Dolpa,Tinje	21440	128.64	67053	8,625,606.63
7	Jumla	83918	503.51	11450	5,765,006.79
	Jumla,Narakot	24120	144.72	13047	1,888,122.91
8	Kalikot	151815	910.89	6294	5,733,257.64
9	Mugu	47060	282.36	39536	11,163,447.26
	Mugu,Shreekot	8897	53.38	42699	2,279,479.30
	Mugu,Sorukot	7110	42.66	63258	2,698,757.02
10	HumlaSimikot	32446	194.68	164074	31,941,203.69
	HumlaHilsa to district Headquater	20278	121.67	53484	6,507,238.20
	Humla ,Shreenagar	8022	48.13	47443	2,283,446.26
	Humla,sarkegad	6075	36.45	94886	3,458,583.45
11	Bajura	50705	304.23	13759	4,185,758.71
	Bajura,Kolti	31480	188.88	32420	6,123,397.49
12	Bajhang	210407	1262.44	8556	10,800,913.12
13	Darchaula	143072	858.43	8666	7,439,409.95
14	Taplejung (6VDCs)	10652	63.91	12667	809,620.70
15	Sankhuwasabha (13 VDCs)	41201	247.20	6089	1,505,116.48
16	Dolakha (4 VDCs)	8684	52.11	7116	370,804.45
17	Sindhupalchok(3 VDCs)	14325	85.95	6009	516,513.12
18	Rasuwa (8 VDCs)	12470	74.82	8065	603,470.02
19	Dhading (2 VDCs)	8445	50.67	2688	136,225.59
20	Gorkha (14 VDCs)	54428	326.57	37559	12,265,640.60
21	Rolpa (16 VDCs)	88140	528.84	5456	2,885,331.03
22	Achham(24 VDCs)	100382	602.29	6009	3,619,457.12
Grand Total		**1,768,598.43**	**10611.59**		**182,289,831.22**

Estimated subsidy amount for 2017

S.N	Districts	Population projected, 2017	Quantity required in MT	Transportation cost/MT	Amount estimated(in NRS)
1	Solukhumbu	116,060.68	696.36	24,872.26	17,320,147.42
2	Manang	7,094.82	42.57	42,776.82	1,820,962.80
3	Mustang	14,999.45	90.00	16,812.61	1,513,079.18
4	Rukum	229,223.43	1,375.34	5,789.08	7,961,961.00
5	Jajarkot	187,577.37	1,125.46	8,752.96	9,851,137.91
6	Dolpa	36,232.82	217.40	71,930.23	15,637,409.32
	Dolpa,Tinje	21,739.91	130.44	73,490.16	9,586,016.18
7	Jumla	85,093.27	510.56	12,548.79	6,406,905.70
	Jumla,Narakot	24,457.40	146.74	14,299.38	2,098,354.07
8	Kalikot	153,940.30	923.64	6,898.37	6,371,621.48
9	Mugu	47,719.10	286.31	43,331.46	12,406,430.13
	Mugu,Shreekot	9,022.06	54.13	46,797.98	2,533,285.64
	Mugu,Sorukot	7,210.04	43.26	69,330.34	2,999,247.42
10	Humla Simikot	32,900.09	197.40	179,825.56	35,497,665.07
	Humla Hilsa to district Headquater	20,561.61	123.37	58,618.80	7,231,780.13
	Humla ,Shreenagar	8,133.99	48.80	51,997.75	2,537,694.31
	Humla,sarkegad	6,160.00	36.96	103,995.51	3,843,675.97
11	Bajura	51,414.89	308.49	15,079.35	4,651,817.83
	Bajura,Kolti	31,920.71	191.52	35,531.80	6,805,201.06
12	Bajhang	213,352.21	1,280.11	9,376.93	12,003,529.99
13	Darchaula	145,074.76	870.45	9,498.26	8,267,743.61
14	Taplejung	10,801.47	64.81	13,883.40	899,767.10
15	Sankhuwasabha	41,777.58	250.67	6,673.05	1,672,702.17
16	Dolakha	8,805.75	52.83	7,799.66	412,091.31
17	Sindhupalchok	14,525.52	87.15	6,586.38	574,023.76
18	Rasuwa	12,645.02	75.87	8,839.62	670,662.79
19	Dhading	8,563.35	51.38	2,946.54	151,393.49
20	Gorkha	55,190.02	331.14	41,164.89	13,631,346.09
21	Rolpa	89,373.85	536.24	5,979.74	3,206,595.32
22	Achham	101,787.34	610.72	6,586.38	4,022,461.95
Grand Total		**1,793,358.81**	**10,760.15**		**202,586,710.19**

Annex 3:

Contributors in the Five Year National Plan of Action on Iodine Deficiency Disorder, 2013-2017 during the IDD Workshop on 17 August, 2012

1. Mr. Atma Ram Pandey,NPC
2. Dr. GR Loani,DoHS
3. Dr. Taranath Pokhrel,CHD
4. Mr. Raj Kumar Pokhrel,CHD, Nutrition Section
5. Mr. Parshuram Shrestha,CHD
6. Mr. Komal Acharya, MoHP
7. Mr. Ganesh Dawadi,DFTQC
8. Mr. Hari Lamsal, Ministry of Education
9. Mr. Pramod Koirala, DFTQC
10. Mr. Mahendra Prakash Sharma,CHD
11. Mr. Kunj Joshi,NHEICC
12. Mr. Dilla Ram Panthi,NPC
13. Mr. Hari Prasad Bhadari,MoCS
14. Mr. Nuta Raj Pokhrel,MoCS
15. Ms. Urmila Shrestha, STC
16. Dr. Jonathan Gorstein,UNICEF
17. Prof. Madhu Dixit Devkota, Institute of Medicine
18. Mr. Hari Koirala,USAID
19. Mr. MR Maharjan,MI
20. Mr. Sarad Ranjit,UNICEF
21. Mr. Naveen Paudyal,UNICEF
22. Dr. Uma Koirala, Nepal Nutrition Foundation
23. Mr. Kumar Raj Bhandari,STC
24. Mr. Prem Lal Maharjan, Nepal Consumer Forum
25. Mr. Rishi Raj Gautam, Consumer Forum
26. Mr. Gagan Gurung,Save the children
27. Mr. Rajat SJB Rana,maxPro
28. Mr. Sichan Shretha,maxPro
29. Ms. Raihita Pachhai,UNICEF/CHD
30. Mr. Sumit Karna, Suahara/CHD
31. Mr. Krishna Kumar Shakya,STC
32. Mr. Manoj Thapa, NCF
33. Mr. Tuleshwar Prasad Shah,STC
34. Mr. Niraj Shrestha,maxPro
35. Mr. Bhakta Bahadur Shrestha,CDF
36. Mr. Sukhadev Neupane,Quality Counts

Annex 4:

Government Counterparts and Key Informants who were consulted from 14 August, 2012 to 16 August, 2012 during the during drafting of the plan

1. Mr. Atma Ram Pandey,NPC
2. Dr. Padam Bahadur Chand,MoHP
3. Dr. Taranath Pokhrel, CHD
4. Mr. Raj Kumar Pokhrel,CHD
5. Mr. Hari Prasad Bhandari,MoCS
6. Mr. Nuta Raj Pokhrel, MoCS
7. Mr. Deepak Subedi,MoCS
8. Ms. Jiwan Prava Lama,DFTQC
9. Mr. MR Maharjan,MI
10. Ms.Urmila Shrestha,STC
11. Mr. Naveen Paudyal,UNICEF
12. Mr. Rajat SJB Rana,maxPro
13. Mr. Praduimna Dahal, UNICEF
14. Mr. Kumar Rajbhandari,STC
15. Mr. Tuleshwar Prasad Shah,STC
16. Mr. Krishna Kumar Shakya,STC