



# Annual Report 2021







# Leading global action to eliminate brain damage due to iodine deficiency



# Contents

## About IGN

- 4 Message from our Executive Director
- 6 IGN's core team
- 10 Facts about iodine deficiency

## Our work

- 12 Global iodine status
- 16 IGN's work in regions and countries in 2021
- 18 IGN's activities in 2022
- 30 A look into our work: Morocco

32 A look into our work: Andean Communications

34 A look into our work: Sudan

36 Iodized salt in processed foods

39 IGN's research work in 2021

## Data and innovation

43 IGN and data

## Our partners and supporters

46 A big year for nutrition

48 Looking at the past to inform the future

49 Working with a ground-breaking charity

50 IGN and the Micronutrient Forum

## Our team

- 53 The IGN team
- 54 Regional coordinators
- 55 IGN's Board of Directors

## Financial statements

## Message from our Executive Director



Werner Schultink  
Executive Director

A handwritten signature in blue ink, appearing to read 'W. Schultink', written over a white background.

Last year, IGN's 2020 annual report recognized the global success of salt iodization, but also called for stronger vigilance and emphasized the need to continuously monitor the iodine nutrition situation and to take corrective action where necessary.

Looking back on that report and reflecting on our work over the past year reinforces our conviction that important determinants of a sustained adequate iodine nutrition program include national ownership of salt iodization efforts, integration within a national nutrition policy and broader food fortification frameworks, as well as within initiatives to reduce salt intake. These perspectives continued to guide our work over the past year.

In 2021, IGN collaborated with organizations such as the United States Agency for international Development (USAID), the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the Bill & Melinda Gates Foundation (BMGF), Kiwanis International, the Micronutrient Forum (MNF), the Global Alliance for Improved Nutrition (GAIN) and the Food Fortification Initiative (FFI) to increase awareness about the potential of expansion of food fortification to reduce or mitigate undernutrition and its broader impact on learning,

income earning, health, development, and wellbeing. IGN's perspective on salt iodization efforts over the past decades across the world can provide valuable lessons to the renewed efforts now being made to reach yet more vulnerable populations with fortified foods.

IGN worked with national partners, supported by UNICEF and Kiwanis, to monitor and analyze the strengths and weaknesses of national programs and take the first steps towards improvements in more than 40 countries. The information that we gathered this year has shown that in some countries, knowledge about salt iodization seems to be forgotten; in others, management and monitoring systems have become dysfunctional. We learned that in some regions, inter-country trade is of great importance in achieving optimal iodine intake. On the positive side we also found that in many countries, salt iodization continues to be highly effective and import and quality assurance systems perform as they were meant to do.



In 2021, we continued to struggle with the fact that data on population iodine status, as well as national iodization efforts, are either lacking or outdated. Changing food consumption patterns lead to a reduced iodine intake from table salt, but opportunities to improve iodine intake from processed foods exist, although they are as yet insufficiently identified and under-utilized. Last year, IGN began work on simplifying assessment of population iodine status and salt iodization efforts, with a focus on assisting those who are accountable for national policy decisions and guidance, providing new opportunities for data collection and program action.

So, as we continue to make progress, and re-double efforts for vulnerable populations in countries such as Papua New Guinea, Sudan and Madagascar, we must not be lulled into thinking that once good quality iodized salt is available for all households, the fight against iodine deficiency is over and that we can walk away.

We have seen that countries can slide back, and that substantial population groups in a continent such as Europe are at risk of iodine deficiency. While no-one can ever guarantee complete sustainability, putting optimal monitoring, control and management systems in place and continuing to raise awareness and knowledge will build program resilience and longevity in the years ahead.





## IGN's core team

Small, strong, resilient and versatile – the work of IGN's core team and the people who do it

IGN provides oversight, insight, momentum and leadership to global efforts to achieve adequate iodine nutrition for all, primarily through the process of Universal Salt Iodization (USI). IGN maintains a small core staff and a team of regional and national coordinators who work with national counterparts to develop action plans for program strengthening. This team is complemented by a roster of experts who help us to tackle specific technical issues.

At IGN's heart is a group of people who, due to COVID-19, have not met personally as a team and have overcome the difficulties of the last couple of years via Zoom. The Executive Director is supported by three Senior Advisors: Robin Houston, Arnold Timmer and Joyce Greene, together with Finance and Administration Manager Jude Louis, and with operational support provided by Mathilde Maurel. We thought you'd like to learn a little more about their work and what motivates them.



**Executive Director Werner Schultink** joined IGN in January 2021, following his retirement from UNICEF and a career of more than 35 years in development, nutrition and humanitarian response, 21 of them at UNICEF. He is based in Ottawa, Canada. His role is to chart the organization's direction, control its operations, and ensure financial sustainability through fundraising. Here's what he says about his work and his reasons for joining IGN.

“ I was very happy with the opportunity to work with IGN, further strengthening and expanding one of the biggest nutrition and public health success stories of the past decades, to which I had also contributed while working with UNICEF and German government development agency GTZ. The positive impact of an almost universal fortification of salt with iodine on school performance and learning capacity alone has been tremendous. It is of great importance that this situation is maintained, and that there is no slipping back. Creating optimal conditions for both continuity and further expansion of this unique experience of global iodization of salt is challenging and motivating. It is a real pleasure to work with a highly professional, experienced and motivated team of colleagues from all over the world, and to provide leadership and oversight, under guidance of our Board, over the work of IGN.



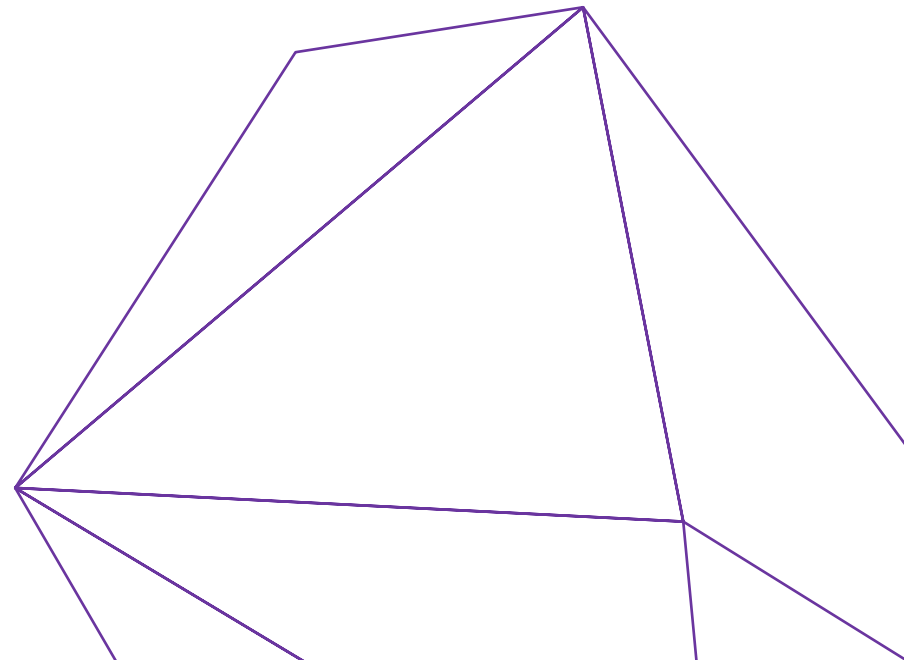


**Senior Advisor Robin Houston MD MPH** has the longest history with IGN and has over 30 years' experience with IDD/USI programs. He is based in Bozeman, Montana. He describes his work for IGN:

“ I have been a Senior Advisor to IGN for a number of years, following a career in international public health. My interest in nutrition began with work on a UNICEF funded effort to address micronutrient malnutrition. This program, based at the US Centers for Disease Control (CDC) and Emory University, provided training for national counterparts working on nutrition, and began with helping to establish salt iodization programs.

My role as Senior Advisor is to provide technical input for a variety of IGN efforts, including those focused on strengthening monitoring and addressing data gaps, and on ensuring the progress made with USI efforts is sustained. In the past year, I have focused on two areas of concern. First, processed foods using iodized salt contribute to iodine intake, but that contribution is not often well understood. IGN developed a guide to improve understanding of this contribution, thus putting use of household salt in perspective.

In addition, I am working on improving monitoring systems to address outdated or incomplete data on impact and improving the understanding of program elements and whether they are strong enough to sustain the progress made. It is exciting to work on a mature fortification effort, recognizing the remarkable global progress made in addressing iodine deficiency. The challenge now is to ensure that this success is sustained, and thus this work on assessing program elements is important in understanding what might make a program vulnerable.







**Senior Advisor Arnold Timmer** joined IGN in 2019, after a career of 30 years as a public health nutritionist in several United Nations agencies and non-governmental organizations. He is based in Geneva, Switzerland. In 2021, Arnold focused on technical and operational support for the implementation of project activities in Africa, Asia, Western and Eastern Europe and Central Asia. In addition, Arnold helped shape the strategic direction in the use of iodized salt in processed foods. Here's what he says about his work:

“ I was introduced to iodine nutrition in 1989 in Ethiopia where I was confronted with young children and women with large goitres and was shocked by the devastating effects iodine deficiency has on them. For children, apart from impaired cognitive and physical development, their voices were affected and they could hardly utter a sound, they were stigmatized by others and could not participate in school and community life. High risk surgeries for the extreme cases were the only solutions to guarantee some quality of life. Later with UNICEF in Eastern Europe and Central Asia my focus was on advocating for salt iodization and helping to design programs to implement this crucial intervention. I would challenge high level decision makers, asking what they would do if their child were affected by this preventable deficiency – that often made them think. In Western Europe, I was surprised to see how iodine deficiency can re-emerge, and how data on the severity of the problem often does not reach decision makers. We need to continue to advocate and show the evidence.

I later extended my focus to food systems and healthy diets. This gave me a fresh way of looking at iodine programs and how to improve them. I try to bring this perspective to long-established IDD programs around the world and improve their design, helping program managers focus on the bottlenecks and providing ideas on how to better position iodine nutrition within the wide range of public health priorities countries have to grapple with. My specific aim is to bring new ideas that can ensure iodine intake in a more equitable way.

**Finance and Administration Manager Jude Louis** joined IGN at the beginning of 2020. He oversees all accounting and administrative tasks including financial reporting, budgeting, and compliance, and supports the core team and other IGN colleagues across various regions in project financial management, grant administration and general administration matters. He is based in Ottawa, Canada.

“ I am personally passionate about making the world a better place by helping people affected by crisis, conflicts, disasters, and diseases. Being part of the IGN team is a great opportunity for me to contribute to the prevention of iodine disorders among children around the world.



**Senior Advisor Joyce Greene** began her career as a national news reporter in Ireland, but after moving to the US in the late 1980s has spent much of her career working on advocacy around nutrition as well as on fundraising, working at UNICEF and later at GAIN. She is based in West Cork, Ireland. She joined IGN in 2020 and is responsible for global advocacy at IGN, as well as partnerships, communications and fundraising.

“ Working as part of a small team in a lean organization has its challenges and pressures, but we are rewarded by the fact that what we do is absorbing, meaningful and impactful. We value our relationships and partnerships with organizations such as UNICEF, the Bill & Melinda Gates Foundation, and the World Health Organization.

I'm especially uplifted and inspired by the contributions of people around the world to our organization and our work through platforms such as The Life You Can Save and Canada Helps and am driven by the trust they place in us. Beyond the core group, our Regional Coordinators and team of experts never fail to motivate me through their ideas, innovation and collaboration.



**Mathilde Maurel** takes care of operational matters for IGN, navigating the complex worlds of grant reporting and data analysis as well as project budgeting. A nutritionist by profession, she joined IGN in mid-2020 after graduating with a Master's degree in nutrition and food science. She is based in Toulouse, France.

“ After working on fortified products, especially iodized salt, during my internship in Mauritania, I developed a real interest in the fight against micronutrient deficiencies for which prevention can make a big difference. I was delighted to be able to join the team that has continued the work following the study I did in Mauritania and thus be able to participate in the realization of actions to improve the situation. I am very enthusiastic about the idea of being part of such projects that can have a considerable impact on improving the lives of people and children.

As a junior on the team, I am grateful for the opportunity to work with experienced, dedicated and altruistic colleagues from all over the world, who are truly inspiring to me.



## Facts about iodine deficiency



The human body needs constant, small amounts of iodine in the diet for metabolism and brain development. Normal diets in most countries do not contain enough iodine.



The health of all population groups can be affected by iodine deficiency, especially pregnant women and children.



Adding tiny amounts of iodine to salt for human and animal consumption can address the problem. It is simple and very inexpensive – just US\$1 a year for a lifetime of protection – and has been carried out in most countries around the world for the past three decades.



Insufficient intake results in iodine deficiency, the world's largest cause of preventable mental impairment, and it's a problem in both rich and poor countries.



Insufficient iodine intake during pregnancy can lead to lasting brain damage that reduces a child's IQ by 8 to 10 points and up to 13.5 points in case of severe deficiency, with marked impact on children's learning ability and school performance.



But over years, less attention has been paid to the problem, and in some countries, progress is being eroded, endangering the brain development of children and impacting their ability to contribute to the social and economic prosperity of their countries and communities.



# Our work





# Global iodine status

Nationally representative cross-sectional studies measure urinary iodine concentration (UIC) in populations. UIC reflects the total iodine intake from all dietary sources. The overall iodine intake in countries is classified as sufficient, deficient, or excessive based on the median UIC.

IGN compiles data on UIC obtained in studies conducted throughout the world to monitor the global iodine status and the impact of salt iodization programs. The IGN Scorecard presents the most recent UIC data in school-age children as a proxy for the general population for 194 WHO Member States.

The global iodine status is summarized yearly, based on data from UIC studies conducted over the past 15 years. Cross-sectional UIC studies have been conducted in 141 out of 194 countries in the past 15 years (2007-2021): in 126 countries (89%), the studies were nationally representative.

In 2021, data has become available from ten new nationally representative surveys conducted in Albania, Belgium, Canada, Ghana, Guatemala, Japan, Pakistan, Poland, Seychelles, and the United Kingdom. Recent data is lacking from 53 countries. The majority are island countries with small populations, but recent data is also lacking in several African countries.

## Countries with adequate iodine nutrition

The iodine intake in the general population is assessed as being adequate in 111 countries around the world in 2021. The number of countries with adequate iodine intake has nearly doubled over the past 20 years, reflecting the effectiveness of the successful implementation of salt iodization worldwide.

Nine out of ten countries with new nationally representative studies confirmed overall iodine sufficiency, with no or only minor fluctuation since the last national study. In the Seychelles, iodine status was assessed for the first time and adequate iodine intake was reported.

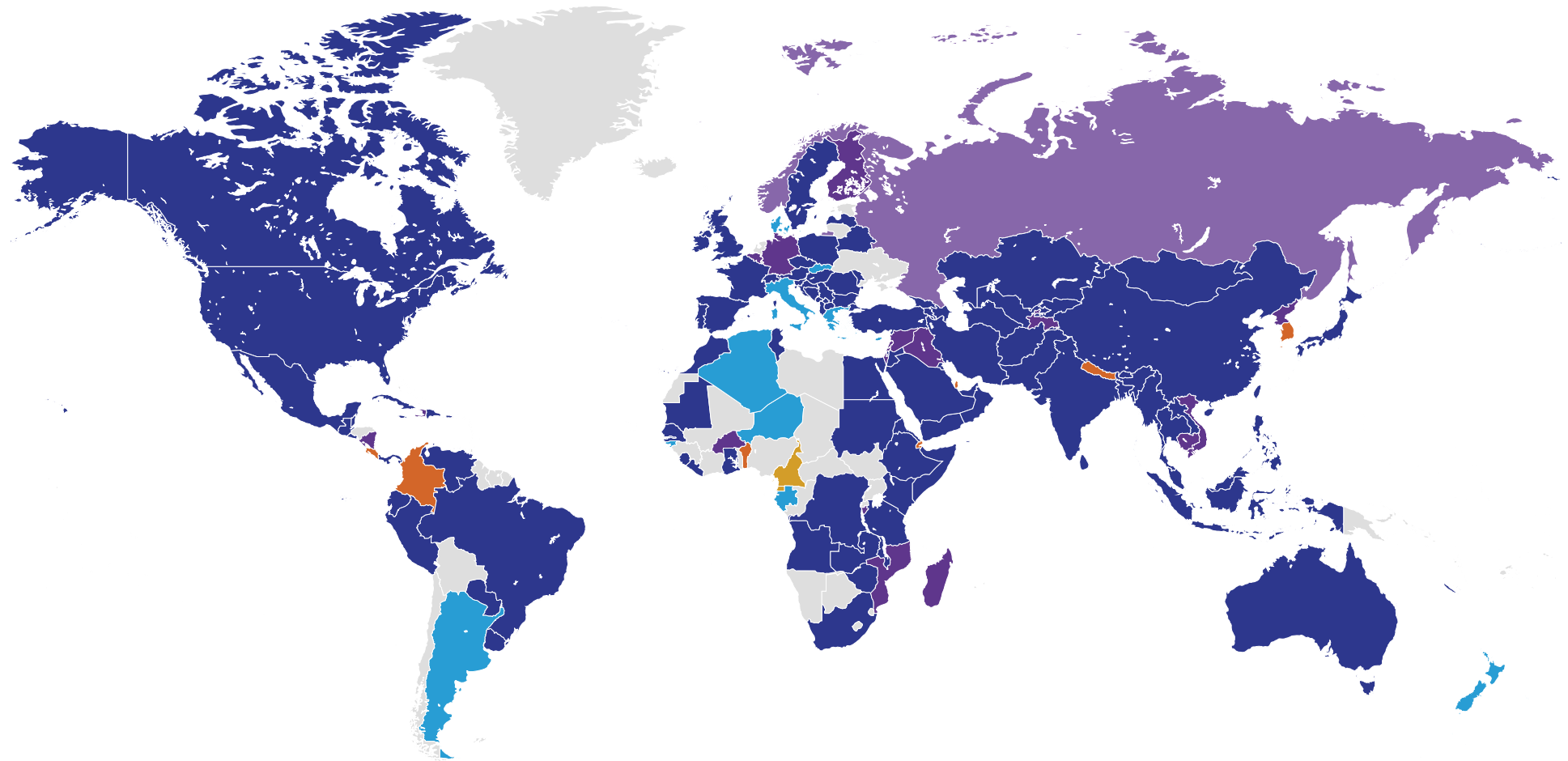
Compared to the global review in 2020, the total number of countries with reported adequate iodine intake decreased from 118 to 111 in 2021. However, this decline is not necessarily a reflection of an actual global deterioration, rather because the studies in 11 countries have become older than 15 years and were not included in the current summary.

## Countries that are iodine deficient

In 2020, globally, 19 countries (out of 141 countries with data) still have insufficient iodine in their diets. Iodine deficiency remains in all regions worldwide and affects populations at all stages of economic development. Iodized salt is produced or imported in all iodine-deficient countries, but factors such as low coverage among households, inadequate quality, and low use of iodized salt in processed foods have hindered the adequate improvement of iodine status.

Several countries have low nationwide coverage and large regional variations in iodine status, e.g. Sudan, Burkina Faso, Bangladesh, Afghanistan and Russia.

Iodine intake is also low in Israel as well as in several countries in Europe (Norway, Germany and Finland). New data from Belgium suggests insufficient intakes in adults, as indicated by a median UIC just below the threshold. This is not unique to Belgium. The iodine intake in many European countries fluctuates around borderline adequacy.



Legend	Insufficient	Adequate	Excessive
National data	● 17	● 101	● 8
Sub-national data	● 2	● 10	● 3
No data	● 53		

Estimated iodine nutrition in 194 WHO Member States in 2021 based on national median UIC in school-age children obtained from studies conducted between 2007 - 2021.

a) Median UIC <100 µg/L; b) Median UIC 100-299 µg/L; c) Median UIC ≥300 µg/L; d) Number of countries. UIC, Urinary iodine concentration





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## Countries with excessive iodine intake

Worldwide, 11 countries have documented excessive iodine in their diets. Excess iodine intakes in populations can result from diets that are naturally high in iodine and/or groundwater. In situations where the iodine intake is excessive, salt iodization level should be reduced to bring down the population iodine intake.

## Disparities in iodine intake among vulnerable population groups

Despite overall adequate intakes in 111 countries worldwide, there may still be gaps in the salt iodization program and it is possible that certain segments of the population may not meet the dietary iodine requirements. If resources allow, UIC studies may be targeted to a specific population group, geographic region, lower socioeconomic status, with varying diets and/or salt sources to provide supporting data for focused program improvements.







## IGN's work in regions and countries in 2021

IGN has a dedicated and experienced team of Regional Coordinators around the world, complemented by National Coordinators who work with us on a voluntary basis.

With a small core team operating virtually and a network of technical experts, we work with key partners such as UNICEF and WHO to improve iodine status worldwide.

Our principal strategy for identifying gaps, weaknesses and opportunities in regional efforts and national programs is our regional roadmapping. The process facilitates the creation of a five-year, evidence-based strategic direction for annual country and regional activities. The graphic below outlines the status of these roadmaps.

Our work with regions and countries in 2021 fell into four broad areas:

- Recognizing the importance of regional trading, regulations and institutionalized cooperation

- Strengthening national ownership, funding and partnerships towards sustained optimal iodine intake
- Identifying approaches for countries that are still iodine-deficient
- Exploring the role of processed foods in improving iodine nutrition.

Activities in more than 40 countries led to:

- Improved iodine status (e.g. Madagascar)
- Improved regulation (e.g. Bangladesh, Russia)
- Continued evidence-based advocacy on program implementation (e.g. China, India)
- New country analysis and action plans (e.g. Burkina Faso, Angola, Togo, Chad, Pakistan, Bhutan, Sudan)
- Improved knowledge on the contribution of processed foods to iodine intake in 15 countries in Southeast Asia, Latin America and West Africa (e.g. Thailand, Indonesia, Philippines)

- Preparation to support a highly deficient population group in a remote area of Papua New Guinea
- Improved knowledge on the situation of vulnerable Andean populations
- Effective regional coordination mechanism in Eastern and Southern Africa.

IGN worked closely with countries with inadequate status, including Burkina Faso, Burundi, Mali, Mozambique, South Sudan, Lebanon, Cambodia, Vietnam, Haiti, Nicaragua, Russia, Tajikistan and Ukraine.

The following pages provide a regional breakdown of activities.



## Roadmapping 2021: Landscape analysis

Desk review, stakeholder interviews	Landscape analysis	Challenges and solutions	Roadmaps and action plans	Program support
Region?	What is included?	Status landscape?	Outcome?	Implementation, status, next steps
Eastern and Southern Africa	Regional and 16 (out of 23) countries	Complete	Regional roadmap, country action plans, country support and regional secretariat	Strengthen regional coordination and provide technical support
South Asia	Regional and 8 (out of 8) countries	Complete	Dissemination in 6 countries, 8 country reports and regional report	Adoption of plans and support for countries
West and Central Africa	Regional & 10 (out of 24) countries	Complete	Regional advocacy agenda 7 country action plans, 11 desk reviews and 22 summary reports	Tailored support for other countries
Eastern Europe and Central Asia	Regional & 17 countries	Complete	Regional agenda, 17 desk reviews and 3 guidance notes	Solidify regional implications and support countries
South America	5 Andean countries (out of 12 countries)	Complete	Subregional advocacy and country situation desk reviews	Complete roadmap in 4 countries, support Andean countries and extend landscape to other countries

## IGN's activities in 2022

Funding for IGN's regional activities comes from a number of sources. In 2021, UNICEF, with support from USAID, funded a large part of IGN's activities in Eastern and Southern Africa, Western and Central Africa, Eastern Europe and Central Asia, South Asia, and South East Asia and Pacific. Additional regional activities were supported with funding from GiveWell and The Life You Can Save.



## Eastern and Southern Africa



### Situation

Data on the iodine status of population is adequate in 16 countries and insufficient in five – Angola, Burundi, Madagascar, Mozambique and South Sudan. However, for eight countries, the data is older than ten years, while data for Comoros is not available.



### Progress in 2021

Technical support targeted high-burden countries with insufficient iodine intake – Angola, Madagascar, Mozambique and South Sudan.

A regional coordination mechanism established in 2020 continues to strengthen cooperation and collaboration among universal salt iodization partners. The 14 member organizations identified countries requiring special support and issues necessitating a regional approach. Advocacy was strengthened through engagement with regional partners, supported through regional newsletters and policy briefs.

Templates – a landscape analysis and a regional scorecard – were developed to strengthen program monitoring and tracking by providing a standard method for review of USI/IDD programs which allows comparison between the countries.



### What's next

In 2022, the East, Central and Southern Africa Health Community (ECSA-HC) will chair three coordination meetings to further strengthen regional coordination and ownership, and under the leadership of IGN Regional Coordinator Festo Kavishe, a mid-term review of the regional roadmap initiative will be conducted. IGN will also provide targeted technical support to Madagascar and South Sudan, countries with insufficient iodine intake; and to countries which are major suppliers of salt: Botswana, Kenya, Namibia, Tanzania & South Africa. In Mozambique, IGN will provide technical support to a supply and value chain analysis to improve quality iodization of salt, while development quality assurance and compliance mechanisms will be supported in Namibia.





## Western and Central Africa



### Situation

15 countries have adequate iodine status, three have excessive iodine status and four countries have insufficient iodine status. Data for 14 countries is over 10 years old, six countries have data that is 5-10 years old, and two countries have no data. In this region, the salt producing countries are Senegal and Ghana, while salt also comes from Brazil and Namibia for processing in Nigeria and Cameroon.



### Progress in 2021

Five countries – Ghana, Mali, Chad, Mauritania and Togo – received technical assistance. seven countries updated their national plans, while 11 conducted country landscape analyses. A total of 22 country summaries are now available, presenting a comprehensive picture of program status in the region. The analyses show that the situation in many countries had not been reviewed for several years, and the need for updating of strategies and management systems became apparent.

Processed food mapping was carried out in four countries. Pulling together this information provided an in-depth view of the universal salt iodization (USI) program across the region, raising awareness of the interconnectivity of salt iodization between salt producing and salt importing countries and increasing country level engagement in USI.



### What's next

In 2022, Regional Coordinator Amal Tucker Brown is planning a study of the cross border trade and supply of iodized salt and to explore innovative mechanisms to track salt along the supply chain. She will organize a regional workshop on universal salt iodization with key stakeholders. Technical support will be provided to the government of Ghana around implementation of existing legislation on the use of iodized salt in processed foods and to Senegal and Burkina Faso on refining their action plan for USI.

## Middle East and North Africa



### Situation

Coverage of iodized salt is below 70% in eight countries, among them Sudan, Syria, Libya, Iraq, and Yemen. A further four countries have coverage of below 80%, while seven countries have high coverage but also excessive iodine intake.



### Progress in 2021

An assessment of Sudan's salt industry on the feasibility of increasing production and availability of quality iodized salt took place in the midst of political unrest, supporting the development of a roadmap and action plan towards the sustainable production of quality iodized salt. (See feature story on page 34). In Egypt, a three-day workshop organized by the Ministry of Health, the Salt Industry Union and the National Institute of Nutrition with IGN, WFP, WHO and UNICEF determined the need for a national landscape review in 2022.



### What's next

In 2022, IGN's Regional Coordinator, Izzeldin Hussein in collaboration with UNICEF and WHO will oversee compilation of landscape analyses for 17 countries, including more in-depth analyses in Iraq, Lebanon and Sudan. He will also support development of Egypt's landscape review, and the strengthening of IGN collaboration with WHO's office in the region.





## Eastern Europe and Central Asia



### Situation

An IGN review of the USI program in 17 countries for the period 2010-2020 showed that 11 countries were successful in maintaining adequate iodine status among the general population in complementarity with salt reduction activities, achieved through universal use of adequately iodized household salt and by the food and bakery industry. A further three countries (Albania, Moldova and Kyrgyzstan) have adequate iodine status but the use of adequately iodized salt is relatively low due to a weak regulatory environment. In Tajikistan, Ukraine, and Uzbekistan iodine status is inadequate, in particular among vulnerable populations. The root causes of this situation vary according to country. In Ukraine, compliance with salt legislation is voluntary, resulting in low coverage of adequately iodized salt at household level. In Tajikistan and Uzbekistan, the quality control and assurance are weak, resulting in low quality of salt generated by small producers.



### Progress in 2021

To support the findings of the program review outlined before, IGN has produced three guidance notes to help advocate and address issues identified, including a progress update with recommendations for country program managers on roadmaps, a regional supplement to the guidance on salt in processed foods, and on sustaining USI in the context of COVID-19. Two joint IGN-UNICEF technical webinars were conducted to disseminate findings and guidance notes among stakeholders. With support from UNICEF and IGN National Coordinators, implementation of the progress update recommendations began in Moldova, Ukraine, Georgia, Armenia and Uzbekistan.



### What's next

The impact of the war on salt iodization in the region over the coming year has yet to be established, but at time of writing, the major salt producer in Ukraine had stopped production. In 2022, Regional Coordinator Gregory Gerasimov will promote use of the IGN Processed Food Guidance in selected countries in the region. The aim is to assess the contribution of processed foods to iodine intake and the potential effects of a salt reduction strategy on the iodine status various population groups. Following the Moldavian Ministry of Health's request for technical assistance, IGN will contribute to the implementation of a new salt regulation on mandatory use of iodized salt in the bakery industry.



## South Asia



### Situation

The region's eight countries have adequate iodine status at national level, but pockets of deficiency remain among some vulnerable populations and in specific geographic regions. Salt iodization levels are generally high, except for Afghanistan, Bangladesh and Pakistan.



### Progress in 2021

Landscape analyses have been produced for all countries in the region and countries are moving towards action plans, with country meetings held in Sri Lanka, Bangladesh, Afghanistan, Pakistan and Bhutan. An overall regional landscape analysis report has also been completed, along with a review of trade standards for processed foods containing salt across South Asian countries. A regional webinar on sustaining universal salt iodization in compatibility with salt reduction health initiatives attracted 485 participants from over 30 countries. In Pakistan, a seminar with stakeholders including the public and private sectors drew attention to the situation on iodine deficiency and identified solutions to eliminate iodine deficiency. Research in ante-natal clinics in Sri Lanka was initiated to determine urinary iodine status among pregnant women through routine surveillance, in order to identify an easy and cost-effective system to monitor iodine status of pregnant women.



### What's next

In 2022, IGN Regional Coordinator Renuka Jayatissa, in partnership with UNICEF, plans to facilitate improved dialogue between the ministries of health and trade as well as the public and private sectors. IGN will also explore innovative monitoring options, including integration into food control systems, exploring the use of different surveillance methods to assess iodine status, and promote use of the Global Fortification Data Exchange dashboards by program managers at national, sub-national and regional level. IGN will continue to promote the use of iodized salt in processed foods and to engage on salt reduction strategies.





## South East Asia and Pacific



### Situation

The iodine status of children is adequate in many countries and territories (13 of 31 in the region, with 80% of total population). However, it is inadequate among pregnant women in nine countries and territories (20% of total population), and in Australia and New Zealand, sub-national data indicate the same. 14 countries and territories have iodine intake data from 2016 or older, while 11 have no data. The issue of iodine deficiency has been relegated as other health issues such as COVID-19, obesity and stunting take priority. Salt iodization is not perceived or implemented as part of national food fortification or nutrition strategies.



### Progress in 2021

While salt iodization is the universal strategy for elimination of iodine deficiency, there are still some parts of the world it does not reach. IGN and the Ministry of Health supported delivery of iodine capsules to remote communities in Papua New Guinea and took the opportunity to determine how much iodized salt is available in the market and households.

Consumption of processed food is growing around the world, and IGN's guidance on assessing the use of iodized salt in processed foods was used to complete reviews in Indonesia, Philippines and Thailand and to make recommendations to strengthen regulatory monitoring of industry practices. IGN also collaborated with ASEAN to create guidelines/minimum standards on mandatory food fortification of staples. Technical assistance was provided in Malaysia, Timor Leste, Vietnam and Myanmar.



### What's next

In 2022, IGN Regional Coordinator Edward Otico will advocate for strengthening the salt iodization program as well as for regulation and enforcement of iodized salt in processed foods in Indonesia, Philippines and Vietnam. In Cambodia, creation of a strategic plan will kick-start efforts to revitalize salt iodization efforts. Sentinel surveys of iodine status in school-age children are planned for eight Pacific countries.

## East Asia and China



### Situation

Data from the 2020 National IDD monitoring survey in China showed overall adequate iodine status of children and pregnant women, but an analysis in six provinces shows that coverage of household salt fell below 90%, perhaps partially due to people's health concerns about excess iodine and excessive salt intake.



### Progress in 2021

To address these concerns, IGN Coordinator Qian Ming published an article in the Asia Pacific Journal of Clinical Nutrition: "Whether iodized salt consumption increases thyroid cancer incidence" (by Li T, Qian M), which aimed at improving understanding about IDD and iodized salt among the medical community. IGN surveyed more than 9,500 families and 6,000 students on the use of iodized/non iodized salt. Results show that more than two thirds of families (69%) use only iodized salt, only one in ten consumes only non-iodized salt, while 21% use a mix of both. The purpose of the survey was to raise awareness of the importance of iodized salt among medical students and observe household trends in iodized salt intake. IGN supported the government's work on creating new standards for iodine levels in salt.



### What's next

In 2022, IGN Regional Coordinator Qian Ming will continue to monitor the progress of IDD control, with a focus on Western China, Tibet and Xinjiang. He will also continue to promote understanding about the relationship between iodized salt and thyroid diseases among stakeholders, especially medical doctors and scientists.







## South America



### Situation

Information from iodine studies (UIC) in pregnant women in the region show good levels nationwide, but local studies suggest that some groups of pregnant women are probably at risk of IDD. In addition, the COVID-19 pandemic forced countries to focus scarce resources on the emergency, and activities to control iodine deficiency were delayed and downsized. A local analysis in the Salta region of Argentina shows a decrease in adequate salt iodization levels among small producers, pointing to the need to revitalize and strengthen monitoring.



### Progress in 2021

While Ecuador reaffirmed its commitment to IDD prevention through salt iodization and requested technical support from IGN, in general iodine deficiency prevention and monitoring have become a relegated field in the regional health agenda. IGN research in two regions in Peru showed that people there are unaware of the importance of adequate iodine nutrition for the pregnant women and the brain development of infants and young children, and even decision makers and health personnel see it as a lesser concern. Yet a recent analysis in Peru of dietary iodine sources in early childhood suggests insufficient intake in children under 36 months, especially between 6-11 months of age. A pilot mass communication strategy in Cusco targeted rural households and those affected by poverty, segments most at risk of iodine deficiency. The campaign also addressed the overconsumption of salt. The slogan “A pinch of salt, but iodized salt, the salt of life”, was broadcast on radio and shared on social media.



### What's next

In 2022 IGN's Regional Coordinator Ana Maria Higa will focus on technical assistance to the regional government in Cusco to improve use of iodized salt as well as to Salta to promote the issue of iodized salt in the bread industry. Overall, work will continue on roadmaps and action plans, and technical support will be provided to Paraguay and Argentina, with further possible support via UNICEF for Guyana and to strengthen monitoring on small producers in Salta, Argentina and in Venezuela. IGN will also promote the use of the Global Fortification Data Exchange dashboards by program managers at national, sub-national and regional level.

# Central America and Caribbean



## Progress in 2021

Progress in the region was hampered by COVID-19 and unrest in Haiti, but work continued. A secondary data analysis of household consumption and expenditure surveys in Guatemala and Panama (2014 and 2018) showed that household salt rather than processed foods remains the major source of sodium availability in the diet, especially among the poorest, emphasizing the importance of salt iodization for IDD prevention. Training on salt production monitoring and use took place in Guatemala with the main objective of providing specific knowledge on issues of regulatory monitoring for food fortification with micronutrients, based on the Food Fortification Guidelines and Guidance for Monitoring salt fortification/UNICEF, in collaboration with the Institute of Nutrition of Central America and Panama (INCAP), and Guatemala's National Fortification Commission (CONAFOR) created a comprehensive website resource on the fortification and consumption of fortified foods.

The information is not only useful in Guatemala but is shared throughout the region. Workshops for National Fortification Commission members and Ministry of Health personnel enhanced the value of the website resource.



## What's next

In 2022, IGN will work on three main objectives – updating data and research, improving competencies and human resources, and communications and advocacy. To support these objectives, through collaboration with INCAP, a regional review of the status of salt iodization program will be conducted, together with an analysis of regulations and standards, and a study of variation of iodine levels in salt processing will be done. In addition, IGN, with INCAP, will continue working with the salt sector to create evidence-based information on quality control guidance to the Ministry of Health in external monitoring; and will continue fortification advocacy efforts with CONAFOR and the Regional Commission of Micronutrients and Fortified Foods (CORMAF), including production of three short informational videos.



## North America



### Situation

Canada and the United States remain iodine sufficient. However, mild iodine deficiency has re-emerged among pregnant women in the US over the last decade. No national data are currently available regarding the iodine status of pregnant women in Canada. In Canada salt iodization was mandated in the 1940s, but in the US salt iodization has always been voluntary. In both countries, commercially processed foods typically use non-iodized salt, and iodized salt consumption is relatively low. Dairy foods are likely the primary source of iodine nutrition in both countries, which is of concern because not all of the population ingests dairy foods regularly, and the iodine content of milk is not monitored or well regulated. Awareness of the importance of iodine nutrition is lacking among both healthcare providers and the public.



### Progress in 2021

IGN participated in activities around the 25th anniversary of the U.S. National Institutes of Health Office of Dietary Supplements (ODS), showcasing contributions to landmark scientific achievements in dietary supplement research. ODS has worked with the U.S. Dept. of Agriculture (USDA), and the U.S. FDA to develop databases of the iodine content of foods and dietary supplements. Characterizing the iodine content of the U.S. food supply was a key recommendation emerging from NIH-sponsored iodine workshops. For the ongoing 2020-2021 National Health and Nutrition examination cycle, the National Center for Health Sciences is collecting information on household usage of iodized salt and other types of salt, total individual dietary intake of iodine from foods and supplements, exposure to iodine uptake inhibitors, and thyroid status as indicated by clinical laboratory measurements.

Iodine status of children, adolescents, and women of childbearing age were assessed using urinary iodine concentrations (UIC) from duplicate spot samples collected in the Canadian Health Measures Survey, 2016-2017.<sup>1</sup>



### What's next

In 2022 IGN's Regional Coordinator Elizabeth Pearce will continue to raise public awareness on the importance of iodine through a campaign on the centennial of US salt iodization in 2023 with Kiwanis and the American Thyroid Association, as well as through a campaign on the role of iodine in child brain development with the National Dairy Council. A planned study of repeated UIC measurements across multiple US pregnancy cohorts will create a better understanding of which pregnant US women may be at risk of low iodine intakes.

<sup>1</sup> Bertinato J, Qiao C, L'Abbé MR. J Nutr. 2021;151(12):3710-3717



## Western and Central Europe



### Situation

According to research conducted by the EUthyroid consortium and funded by Horizon Europe, Europe is largely an iodine-deficient continent. Iodine deficiency during pregnancy and breastfeeding is widespread, and estimates suggest that up to half of newborns are exposed to iodine deficiency.



### Progress in 2021

IGN has been working with the European Commission to raise awareness among policy makers, including a meeting with the Commission's Directorate General for Health and Food Safety in January and is also working with the World Health Organization to draw attention to the problem among Europe's member states.



### What's next

IGN's Regional Coordinator Rodrigo Moreno-Reyes is planning a meeting in Brussels in September to raise awareness of the issue in Europe. In addition to well-recognized experts on iodine nutrition, the participation of representatives of ministries of health of several European countries and a representative of WHO Europe is expected. The meeting will be an excellent occasion not only to raise awareness of iodine nutrition in Europe but also to assess research needs in the field for the coming years.

IGN will also participate in an international conference hosted by the World Iodine Association on iodine in food systems and health in November. IGN is a partner in the EUthyroid consortium seeking funding for further research on effective strategies to promote awareness of the problem, especially among young people. Finally, at the initiative and with the support of IGN and Kiwanis International, a WHO report on iodine nutrition, the first specifically addressing the situation in Europe is in progress.





## A look into our work: Morocco

### Finding a win-win solution for salt iodization in Morocco

Morocco's population overall has adequate iodine status. Yet more than one in five school-aged children, as well as one in three women of childbearing age have insufficient levels of iodine, and some regions are more prone to overall deficiency.

However, only 7% of households consume adequately iodized salt, and one in four households consume only non-iodized salt. To ensure universal coverage of adequately iodized salt, Morocco's Ministry of Health reached out in 2019 to IGN and UNICEF to revitalize the USI program.

Working closely with the Ministry, IGN and UNICEF conducted studies to understand the specific roadblocks and identify solutions. Workshops and meetings helped improve understanding of the constraints from a stakeholder perspective. Several issues emerged:

- While iodization of table salt has been mandatory since 1995, the processed food sector is not obliged to use iodized salt, which lessens the incentive for large producers to separately produce iodized salt for household use

- The government's Office National de Sécurité Sanitaire des Produits Alimentaires (ONSSA) uses much of its monitoring resources to inspect "dangerous foods" for consumers and iodized salt is not prioritized
- Household salt processing therefore falls to the smaller processors, with a total of 50 different salt brands on the market. Most of these processors are resource-poor and operate in the informal sector, where ONSSA does not have the mandate to monitor them
- All salt packaging in Morocco has the iodized salt logo, irrespective of iodine presence and level
- Catering establishments and sales outlets are not under ONSSA control and can therefore procure non-iodized salt.

IGN and UNICEF advocated for the engagement of these stakeholders in the USI program, leading to creation of a roadmap to implement the new USI strategy, and accelerate the elimination of iodine deficiency disorders in Morocco.





First, IGN global guidance to model the contribution of iodized salt in industrially processed foods was used in Morocco, identifying the crucial role of iodized salt in processed foods in meeting the iodine needs of the population, particularly pregnant women. Institutional catering contractors were identified as one of the major procurers of salt, with most institutional catering establishments government-led, such as schools, universities, hospitals, creches, orphanages.

With the buy-in of the processed food sector, the next step was to advocate with policy makers to include iodized salt in processed foods. New legislation is in process and is due to be approved in 2022. The new law mandates the purchase of iodized salt for food processing from accredited suppliers. The catering sector has also committed to the new strategy. This in turn will provide an incentive to reinforce the salt supply chain, with improved packaging, processing and control of iodized salt. Local salt will also become fit for export, creating sustainable incomes for local producers.

Full engagement of key stakeholders at all stages were vital in the engagement and development of the roadmap and the new strategy. Strong situational analysis, targeted studies and sharing of global best practices were essential in identifying context specific programmatic actions. Good progress has been made in the implementation of the roadmap in 2021 at the national level, while in 2022 focus will be at sub national level in the south of Morocco, where most of the country's salt is produced and in regions where iodine deficiency remains endemic.

## A look into our work: Andean communications

### Placing iodine nutrition to the forefront in Andean countries

By the end of the twentieth century, Andean countries had made great progress in improving the iodine status of children. Salt iodization was mandatory in countries across the region, while awareness campaigns and strong monitoring increased the consumption of iodized salt. Five countries were declared free of iodine deficiency more than two decades ago. But unfortunately, this success has led to the perception that IDD is a problem that has been solved and a thing of the past. But there are disparities in access to iodized salt, often among the most vulnerable populations.

To identify paths to progress, IGN's Regional Coordinator for South America, Ana Maria Higa, initiated a study to understand current perceptions and to develop a communications plan to address them. While complicated by the political situation and the pandemic, interviews with experts and specialists from five of the seven Andean countries yielded valuable information and support for a renewed communication strategy.

The study found that with time, knowledge about the importance of iodine nutrition has dwindled. While the solution is within the means of every household, the general population is unaware of the impact of iodine deficiency on pregnant women and the brain development of infants and young children. Among decision makers and even health personnel, the perception is that salt iodization is an outdated issue and less of a public health concern, especially in the light of other priorities such as the COVID-19 pandemic. This has resulted in less program funding and the weakening of communications and monitoring efforts.

In parallel, countries are working to reduce salt intake for health reasons, so communicating around the prevention of iodine deficiency through salt iodization needs to dovetail with new messaging around reduced salt consumption.

### Assessing the problem

The study looked at ways to promote household use of iodized salt or consuming iodized salt through processed foods, reinstating the issue in the public health agenda and in the interest, understanding and good nutritional practices of the population.

As the problem of deficiency is concentrated in rural and remote areas, the study chose to prioritize local campaigns. Additionally, the strategy explored the need to reinforce the communication skills of key health personnel in promoting good practices.

The communication plan was tested in two regions of Peru, Ucayali and Cusco, where the slogan "Iodized Salt, the Salt of Life" from the previous campaign that took place 20 years ago is still remembered. The proposed new slogan "Poca Sal, pero Sal Yodada. La Sal de la Vida" "Less Salt, but make sure it is Iodized Salt, The Salt of Life" and messages highlighting the benefits and advantages of iodized salt were incorporated in print and radio material, as radio is widely used in these rural areas.

These materials were then tested with key audiences in the two regions. Interviews and focus group discussions were held with both health professionals and pregnant and lactating women as well as mothers of children below three years of age.



## Findings

For all participants – both health professionals and the women taking part, iodized salt was a new topic, and one they knew little about, which concerned them. Health professionals confirmed that the COVID-19 epidemic was a top priority which meant other health problems were neglected. They emphasized the usefulness of the information materials that were presented, and their interest in promoting it on social networks. They felt a video could also be produced targeted for the population and for journalists or "influencers" or for training.

Women taking part in the testing found that using iodized salt is very easy to do because it is eaten every day, and it is cheap. One participant mentioned "I think it's nice and good that we now know all of this, but they don't tell us any of this at the doctor's office. It would be good to do so". A nursing student was very interested and said this information will help her in her future career. A health promoter mentioned that these materials should be part of training, helping to create a demand for iodized salt.

Finally, two videos were produced: one for the general public to ensure they buy iodized salt and reduce quantities used, and one for authorities, salt producers and traders, explaining the roles and responsibilities of each. This will raise awareness and make sure vulnerable populations are protected from IDD. It is hoped that these can be used in countries across the region over the coming year. As the videos use animation, there may also be opportunities in other regions facing similar issues.

"It's very important for our region to reactivate communications strategies", says IGN Regional Coordinator Ana Maria Higa. "There's a general perception that iodine deficiency is no longer a problem, but the risk of backsliding in the Andean region could affect pregnant women and children under three." Over the coming year, they hope to engage with consumer organizations and advocate with individual countries to make sure that iodine deficiency is neither a relegated nor an outdated issue.



The animated video advises consumers to choose iodized salt.



The video places iodized salt in the context of child development and seeks to unite the community on the issue



## A look into our work: Sudan

### An assessment in Sudan leads to a prolonged stay for the IGN team

Surveys from more than 15 years ago indicate that IDD is a severe public health problem in Sudan, where more than 20% of school age children have goiter, a clear signal of chronic iodine deficiency. There is no reason to think that the situation has improved and, for some time, IGN's Middle East and North Africa Regional Coordinator Izzeldin Hussein had wanted to review options to upgrade salt production in Sudan to ensure the country produces enough adequately iodized salt for its 42 million population. But COVID-19 had made it difficult to travel there.

On 16 October 2021, he and a team of experts felt they could make the trip and travelled to Sudan to spend a few days working with the Ministries of Health and Industry, the governor of the salt-producing Red Sea State, as well as salt producer and consumer associations, to assess the problem and identify possible solutions. Just after their arrival, political unrest broke out in Khartoum and prevented them from returning home until the end of the year.





Despite the disruption, the team began assessing the salt iodization situation in Sudan. Demand for salt for human consumption in Sudan is met in two ways, through large scale producers who sell refined salt in supermarkets, and by small-scale cottage producers who produce the bulk (around 60%) of the country's salt and sell it informally in local markets. Outdated technology for salt production and refinement, inadequate infrastructure for iodizing salt, and insufficient monitoring of small producers has led to availability of large quantities of cheaper non-iodized and unrefined salt. The supply of potassium iodate, used for the iodization of salt, is not financially sustainable, and heavy levies and taxes negatively impact the profitability of the sector. There are no penalties for non-compliance with regulations and demand from communities for iodized salt is low. The problem was exacerbated due to COVID-19 lockdowns, with the already limited production of iodized salt decreasing by almost a third.

An urgent initial recommendation of the analysis was that a baseline study must be conducted to have updated understanding of the IDD prevalence, geographic distribution, and the availability, knowledge about and attitudes to iodized salt. The report lays out thoughtful options for short-term iodization by small producers, and for increasing capacity by the larger companies. In the longer-term, ideas such as aggregation of salt production and installation of better infrastructure such as roads, power, water, and transportation to modernize production and transform the supply chain can be explored in more detail.

Much work remains to be done to increase the availability of adequately iodized salt in Sudan, but Izzeldin is hopeful there will be progress:

“ It turned out to be a difficult time for us, but we learned a lot and believe that we have a solid foundation for the future. We look forward to working with all of the stakeholders to move salt iodization forward in Sudan.



## Iodized salt in processed foods

### Improving understanding of the contribution of processed foods to iodine nutrition

Universal Salt iodization (USI), which intends that all salt for human and animal consumption be iodized, has been the global strategy for elimination of iodine deficiency for some three decades.

Until a few decades ago, consumption of iodized salt mostly happened in the home when added during cooking or at the table. But increasingly, because of changing lifestyles due to industrialization, urbanization and a host of other factors, people are consuming more processed foods such as bread and bakery products, noodles, and broth or bouillon cubes.

For many people, consumption of salt through processed foods has been increasing. Originally, salt iodization programs practically focused on salt used in households, and little was known about which processed foods used iodized salt, or whether producers knew or understood why using iodized salt was important. Household coverage in many countries was only modest while populations showed adequate iodine intake – likely from processed foods made with iodized salt.

IGN sought to learn more for two reasons – firstly, because processed foods have the potential to provide iodine in areas where household salt is not, or is poorly iodized; and secondly, because people who consume little household salt and consume more processed foods are vulnerable to iodine deficiency. Indeed, several countries rely on the mandatory use of iodized salt in widely used processed foods or locally prepared foods, such as bread, to ensure optimal iodine nutrition. Use of iodized salt in processed foods can help stabilize iodine intake in populations who are consuming more processed foods and using less table salt.

As a first step, IGN developed program guidance for countries who wished to assess the contribution of iodized salt in processed foods to population iodine intake, and whether action is needed to achieve or sustain this. In 2021, with support from UNICEF, GiveWell and The Life You Can Save, IGN helped countries in Africa (Morocco, Senegal, Cameroon, Burkina Faso, Nigeria, Ivory Coast and Ghana), South America (Peru, Panama and Guatemala) and South East Asia (Myanmar) to assess their situation, while ongoing activities were reviewed in the Philippines, Indonesia and Thailand.



## Roadmapping 2021: Processed foods

Desk review, stakeholder interviews	Landscape analysis	Challenges and solutions	Roadmaps and action plans	Program support
Region?	What is included?	Status landscape?	Outcome?	Implementation, status, next steps
Eastern and Southern Africa	1 out of 23 countries	Complete	1 processed food assessment report	More in-depth data collection for national action plan
West and Central Africa	6 out of 24 countries	Complete	6 processed food assessment reports	Support enforcement of iodized salt in processed food in Ghana
Middle East and North Africa	1 out of 18 countries	Complete	1 processed food assessment report	Develop action plan to ensure use of iodized salt in all processed foods
Eastern Europe and Central Asia	2 out of 17 countries	Complete	2 processed food assessment reports	Promote the use of IGN processed foods program guidance
South Asia	Regional trade and brief scoping in 8 out of 8 countries	Complete	1 processed food assessment report	In-depth mapping in 5 out of 8 countries; development of action plans
South East Asia	4 out of 8 countries	Complete	4 processed food assessment reports	Assessment of contribution of processed foods to salt and iodine intake in 2 countries
South America	3 out of 12 countries	Complete	3 processed food assessment reports	Review of data in 2 countries and dissemination of IGN processed foods program guidance



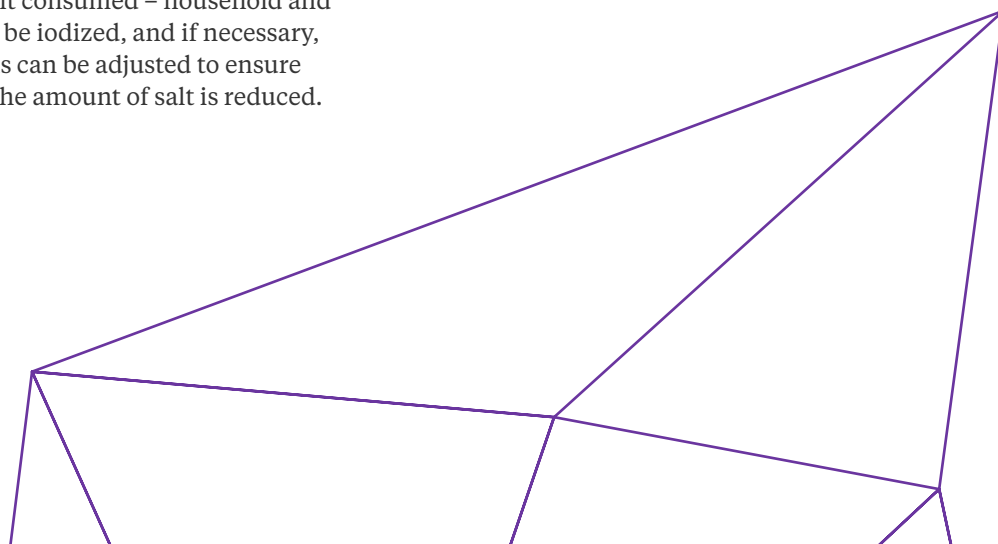
After three years of this work, IGN has observed some overall trends:

- **Opportunity:** Key salt containing foods were identified. For example, in West Africa these are bouillon cubes, bread, instant noodles and fish products. In countries where household salt coverage is sub-optimal such as Ghana (69%), or Senegal (65%), processed foods have the potential to contribute to iodine status. Similar findings have been observed in other countries and regions.
- **Food production:** Food producers use high quality salt, which can be iodized easily and can become a meaningful source of iodine in areas where coverage of household iodized salt is low.
- **Legislation:** Laws in many countries do not specifically mention the mandatory use of iodized salt in processed food production, creating ambiguity around the issue. Countries whose legislation mandates iodized salt use, or have established programs to do so, often lack external monitoring, and producers are sometimes unaware that such legislation exists.

- **Advocacy:** Some producers voluntarily use iodized salt, but others fear that doing so may affect product taste and are unaware of the benefits of iodine for themselves and their communities.
- **Policy:** There is a need for engagement between policy makers and the food industry, with policy makers emphasizing the role producers can play in improving population iodine status.

The World Health Organization (WHO) is urging countries to limit salt intake to reduce blood pressure, risk of cardiovascular disease, stroke and heart attack. IGN works with WHO to ensure that efforts to reduce salt intake do not result in a corresponding decrease in population iodine status. Our joint objective is to ensure that all salt consumed – household and food grade - should be iodized, and if necessary, salt iodization levels can be adjusted to ensure adequate iodine if the amount of salt is reduced.

IGN is in support of policies and plans for a safe, affordable, nutritious diet, including a reduced consumption of unhealthy foods and snacks. Our work, which considers local context and aligns with national policies, does show that using iodized salt in production of widely consumed foods such as bread, or universally used condiments such as bouillon, can play an important role where access to iodized salt is low.



## IGN's research work in 2021

**Dr. Maria Andersson**  
Zurich University Children's Hospital

The foundation for IGN's vision of a world with optimal iodine nutrition is based on solid scientific evidence. Our activities are guided by current research knowledge and our goal is to identify and address scientific questions to increase the effectiveness of iodine programs. IGN has a large network of scientists around the world and supports research addressing questions arising in iodine programs.

### Assessment of iodine intake and status

For some years, IGN has supported research aimed at improving definitions of optimal iodine nutrition in children, women of reproductive age and pregnant women. Iodine status is assessed in cross-sectional studies by measuring urinary iodine concentration (UIC) in spot urine samples. This field-friendly biomarker effectively identifies gaps in salt iodization programs, but a few uncertainties in its applications have been identified.

*Defining the median UIC threshold in children, women and pregnant women using thyroglobulin*

In recent years, many countries observed discrepancy in the interpretation of UIC between population groups, possibly due to inconsistencies of the criteria for the median UIC used to define iodine adequacy. To address this gap, IGN supported several international cross-sectional multicenter studies measuring UIC along with dried blood spot thyroglobulin in school age children, women and pregnant women. The studies were conducted in populations exposed to a wide range of iodine intakes, from moderate iodine deficiency to excessive iodine intakes. All studies used uniform methodologies, sample collection procedures and laboratory method. This allowed data from single studies to be pooled into larger data sets of individual participant data, providing stronger evidence for policy guidelines. Pooled data analysis of cross-sectional multicenter studies are currently being conducted with the aim to define the median UIC thresholds indicating iodine sufficiency in pregnant women, women and school-age children by using the thyroid specific protein thyroglobulin.

*Estimating habitual iodine intake and prevalence of inadequate iodine intake from UIC*

A population median UIC below the recommended threshold indicates overall iodine status, but does not quantify the prevalence of inadequate or excessive iodine intake. An analysis of data obtained in 6,017 school-age children from 15 study sites and 3,154 women from 9 sites worldwide evaluated new methods to estimate the iodine intake from spot UIC by accounting for bioavailability, hydration status and within-person variability from a repeat spot urine sample. The prevalence of inadequate and excessive iodine intake was calculated from the habitual iodine intake distribution. The study shows a strong correlation between the conventional reporting of median UIC and new estimates of the prevalence of inadequate iodine over a broad range of iodine intakes. This new method may be applied in UIC studies as a complementary measure to the median UIC and may be particularly useful to quantify the prevalence of iodine deficiency in deficient populations.

### *Calculating how many study participants should collect a repeat urine sample in UIC studies aiming to estimate the habitual iodine intake*

The day-to-day variability in dietary iodine intake is typically high. To estimate the habitual iodine intake from UIC in cross-sectional studies and estimate the prevalence of inadequate intake, a repeat urine sample must be collected in a subgroup of the study population. The second sample is used to quantify and account for the within-person variability of the iodine intake. A study using data collected in women from Switzerland, South Africa and Tanzania evaluated in how many study participants a second urine sample should be collected in UIC studies aiming to estimate the habitual iodine intake and prevalence of inadequacy.

### *Seasonal effects on UIC in women of reproductive age<sup>2</sup>*

Hot climate conditions may reduce urine volume, thus leading to overestimations of UIC and thereby masking inadequate iodine intake. The effects of season on UICs were investigated in women in an observational study conducted in Tanzania and South Africa, two populations exposed to high-temperature climates. The findings showed that spot UIC may slightly overestimate the iodine intake in hot temperatures due to concentrated urine. In such cases, methods to adjust UIC for

hydration status can be used. The study also showed local seasonal differences in iodine intakes, which may occur in some populations.

### *Influence of temperature and humidity on the stability of dried blood spot thyroglobulin*

Thyroglobulin is a thyroid specific protein that can be measured in the blood and be used as an additional marker for iodine status. To avoid venipuncture and cold chain in field studies, blood may be collected using dried blood spots (DBS). Recent data suggest that DBS cards exposed to hot and/or humid climates during collection, drying and storage may affect the stability of thyroglobulin and reduce the concentration. A stability study of thyroglobulin measured on DBS was conducted using samples collected in Swiss adults and investigated the impact of temperature and humidity during the drying period. The results suggest degradation of thyroglobulin when DBS cards are exposed to humidity.

### **Variability of the iodine content in salt**

In the absence of UIC data, salt surveys are used as a proxy for population iodine intakes. However, the salt iodine content obtained in household surveys that include coarse, fine and/or refined salts may vary and be neither representative of salt

iodization program performance nor adequately predict population iodine exposure, causing a lack of clarity on iodine intakes in populations relying principally on iodized salt to assure intakes.

A study is currently being conducted in Tanzania to investigate the reason for the variability in salt iodine content. The study will assess if the variability in salt iodine content is introduced at salt processing and fortification, during the survey, or at the analytical level. The aim of this study is to improve the quality and interpretation of data collected from household salt surveys and provide recommendations to strengthen the QA and QC practices for the iodization of different types of salt.

### **Collaboration and funding**

IGN supported research activities have been conducted in collaboration with local study teams representing almost all regions of the world, coordinated by ETH Zurich, Switzerland.

The COVID-19 pandemic paused or slowed down some of the field studies, but all studies are now resumed and/or are being wrapped up.

The research projects have been funded by UNICEF/USAID. The longstanding support made it possible to address key programmatic research gaps in a sequential and uniform way.

## New publications

All research projects will be published in scientific journals and translated into program guidance.

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<sup>2</sup> Arns-Glaser L, Zandberg L, Assey VD, Baumgartner J, Abdala F, Galetti V, Dary O, Zimmermann MB, Andersson M. Seasonal effects on urinary iodine concentration in women of reproductive age: An observational study in Tanzania and South Africa. *Am J Clin Nutr*. 2022 Jan 11;115(1):298-309. doi: 10.1093/ajcn/nqab327. [Epub: 28 October 2021].







# Data and innovation



## IGN and data

### Working to create sustainable fortification programs through improved data

As IGN keeps watch over the global effort to eliminate IDD through universal salt iodization, it is clear that the work of ensuring adequate iodine nutrition for all is not yet done. Therefore, IGN continues to support countries that remain deficient. There are also countries where iodine status of the population as a whole is adequate, but where substantial inequalities exist between population sub-groups, leaving some parts of the population deficient, and this is also a concern which we try to address. The availability of good data is essential for the sake of selection of effective strategies and approaches, the right targeting and management choices.

Several data issues have arisen that require new solutions. One of these issues is the need for stronger monitoring systems that provide regular, more complete information so program managers have a comprehensive view of their program, its potential vulnerabilities and impact. IGN is focusing on two aspects of this problem – new and simpler data collection methods, and improved indicators that assess the strength of programs.



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Antenatal care clinic in Cusco, Peru

### Using data to support the work of national nutrition program managers

While surveys remain the optimal way to assess the impact of USI programs, they are costly and as a result haven't been routinely done in many countries, leaving them with outdated data that only provides a national estimate. Some countries have other data suggesting that there is inequity – either between lower and higher wealth quintiles, or between certain geographic regions. So, do we need to conduct these national surveys as frequently as recommended before, and do we need large sample sizes, or can we use simpler and cheaper methods to gauge the iodine status in a country?

IGN is working on a sentinel surveillance approach using existing facilities for data collection and directing these efforts based on existing information on iodized salt production, quality and distribution. This approach is based on the FORTIMAS model for tracking the population coverage and impact of flour fortification programs developed by Smarter Futures, a partnership for grain fortification in Africa. We hope that this approach, applied to salt iodization, can provide annual data inexpensively, fill in data gaps, and guide program priorities.

Sentinel data collection sites, such as antenatal care clinics or schools, can periodically provide basic coverage information, information on use of processed foods (that use iodized salt) and even data on median urinary iodine concentration (mUIC) to verify that the program is working well. This model will be tested in a variety of countries in 2022-2023.

A second component to improving monitoring is understanding how well programs are working – not based on impact, but rather on the strength of the various program elements, such as legislation or advocacy efforts. IGN is defining a list of program elements and a series of indicators that should assess their strength and vulnerability, using already available data as much as possible. For example, with the success

of USI, many countries are no longer seeing iodine deficiency as a priority and the issue is fading from health and nutrition agendas, so we are developing indicators to assess the level of awareness of the issue and the strength of advocacy efforts. Indicators are also being developed to assess the strength and quality of program elements such as legislation/regulation, program management and coordination, and salt production and distribution allowing program managers to more easily develop their annual workplans to prioritize activities to address these vulnerabilities.

Over the past year, supported by the Bill & Melinda Gates Foundation (BMGF), we have worked with the Global Alliance for Improved Nutrition (GAIN) and the Flour Fortification Initiative (FFI), our partners in the Global Fortification Data Exchange (GFDx), to design such a data and monitoring tool aimed to enhance effectiveness and future sustainability. This global database will allow national data to be in one place, making analysis and review easier.

### A new partnership with WHO on global data

WHO is upgrading and expanding its global Vitamin and Mineral Nutrition Information System (VMNIS), which was established following a request by the World Health Assembly to strengthen surveillance of micronutrient deficiencies at the global level. One component of VMNIS is the Micronutrients Database that compiles national, within-country regional and first-administrative level data on vitamin and mineral nutritional status of populations in Member States.

This database is used to monitor micronutrient status around the globe, provide global estimates of the burden of micronutrient deficiencies, and calculate trends in micronutrient deficiencies over time, and has recently expanded to become a more comprehensive surveillance system that includes most indicators of micronutrient status being used worldwide today.

IGN has served as the main source of iodine status data while WHO has been upgrading their systems, and in 2021, with the support of Founders Pledge, IGN began to collaborate with WHO to update the Micronutrients Database with data on iodine. This update will allow the preparation of a joint peer-reviewed publication on the global iodine status of school age children, non-pregnant women of

reproductive age and pregnant women in 2022, as well as a WHO report on the iodine status situation in Europe to be released in late 2022 or early 2023. Efforts will also be made to include this data within the next edition of the Global Nutrition Report to have greater visibility of the global iodine situation.



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Health interventions in schools, like this vaccination program in Nepal, could be a source of information for salt iodization programs.



# Our partners and supporters





## A big year for nutrition

Partnerships in 2021 brought new visibility to IGN and to salt iodization

### Food fortification

The United Nations Food Systems Summit (UNFSS) in September 2021 and the N4G (Nutrition for Growth) summit in December of that year brought renewed attention to the issue of providing safe, affordable nutritious diets through food fortification. IGN participated in several events and panels that drew attention to salt iodization as a major public health success and shared experiences to inform the broader fortification agenda.

A side event of the N4G held by UNICEF, BMGF and the United States Agency for International Development (USAID) drew the world's attention to unleashing the full power of large-scale food fortification and called for renewed commitment to what they described as "a massively-overlooked intervention in our efforts to end preventable diseases and death." The introductory video shown at the event highlighted the importance of iodizing salt as the first fortification effort, beginning more than a hundred years ago. IGN hopes that new funding for fortification efforts will benefit efforts to improve iodine nutrition as part of the broader fortification agenda.

As part of the UNFSS, IGN's Executive Director, Werner Schultink, joined representatives of the Micronutrient Forum, UNICEF and GAIN, along with government representatives from Kenya and Ethiopia, to call attention to the right to a nutritious diet and the importance of food fortification, biofortification, and supplementation in achieving healthy diverse diets that are rich in micronutrients (see story on page 50).

A third key event for us was a technical convening organized by UNICEF, USAID and IGN on November 16, 2021 to review three decades of progress on iodine nutrition, celebrating its success and sharing experiences, good practices and lessons from approaches applied in implementing salt iodization programs. A further objective was to stimulate dialogue and to build consensus on programmatic challenges, and to this end, it was agreed that this global convening would be followed by a series of thematic workshops that would further ensure sustainability and improve the status of salt iodization programmes around the world.

“ The events in 2021 drew attention to the enormous potential of food fortification to improve nutrition and overall development of vulnerable population groups. We hope that through these partnership events much needed recognition was created that the highly successful experience with salt iodization needs continued review and relatively small, but sustained, inputs in order to have a world where iodine deficiency is eliminated in continuity.

Werner Schultink  
IGN Executive Director

### Partnerships

As well as the partnerships outlined above, IGN is working through the Global Fortification Data Exchange (GFDx) with partners GAIN and FFI, with BMGF support, to find new ways of gathering data. A partnership with WHO on data, supported by Founders Pledge, began in 2021. Working with WHO and Kiwanis in Europe, this partnership will present iodine data to Europe in a WHO publication in late 2022 or early 2023.

With a consortium of partners that include the World Iodine Association, Thyroid Federation International and several leading researchers, a €3 million grant proposal to the EU's Horizon project has been submitted to look at ways of raising awareness of the problem of iodine deficiency in Europe, with IGN playing a key role in dissemination efforts if the proposal is funded.

With Kiwanis International, we continue to support work in countries to improve iodine status and eliminate roadblocks to progress.

Our major collaboration with UNICEF, funded by USAID, strengthened universal salt iodization, improved global knowledge about iodine deficiency, and provided technical guidance and support to the sustainability of iodine programs in regions and countries around the world. The program cooperation agreement covered activities from 2018 to August 2021. The activities under this partnership globally and across five regions are detailed in our regional round-up. New agreements with UNICEF funding are now in place with several regions and countries.

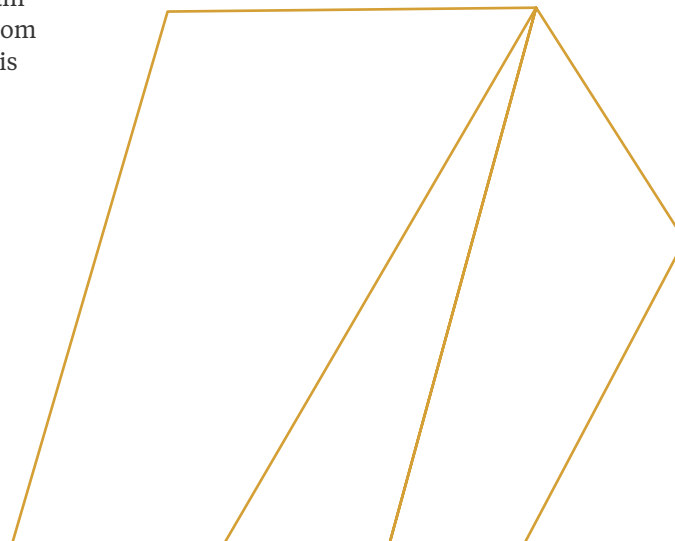
## Fundraising

In addition to the support outlined above, IGN continued to receive support from individuals through platforms such as GiveWell and The Life You Can Save (see story on page 49). An initiative by philanthropist and philosopher Peter Singer to donate part of his winnings from his \$1 million Berggruen humanitarian award to TLYCS charities through a vote from supporters drew a good response from IGN supporters – we didn't win the prize but we were happy with the response and thank all of those who voted for us.

IGN would like to thank all who made it possible for us to do what we do:

- The Bill & Melinda Gates Foundation
- The Centre for Effective Altruism
- Founders Pledge
- The Giselle Foundation
- The Hadley Family Foundation
- Kiwanis International
- MaxMind
- The Open Philanthropy Project
- The Ottawa Community Foundations  
Sam Ludmer Fund
- UNICEF
- USAID

A big thank you to our donors through the following platforms: Benevity, CanadaHelps, Charitable Impact, Every, GiveWell, The Life You Can Save, and those who contributed directly to IGN.



## Looking at the past to inform the future

### A UNICEF, USAID and IGN technical convening on three decades of progress on salt iodization

Iodine deficiency is the most common cause of preventable brain damage worldwide. Due to a unique partnership between governments, civil society and the private sector to iodize salt, the number of iodine deficient countries dropped from 113 in 1993 to just 19 in 2017. The investment that many organizations made in ending this global threat has resulted in hundreds of millions of children being protected against iodine deficiency, creating better futures for them, for future generations, and for the countries in which they live.

Iodizing salt is safe, simple, and highly cost-effective, but after three decades, iodine deficiency is still prevalent in numerous regions, including countries with otherwise well-advanced general governance and health systems – many countries in Europe, for example.

Knowledge about the importance of iodine nutrition among senior decision-makers has declined or is inadequate, and public understanding has diminished or disappeared. The gatekeepers – decision makers, program managers and the private sector – have become complacent. This means that in some countries, not all salt is iodized and iodine deficiency disorders are still prevalent. In others, iodine nutrition has worsened, placing population groups at risk. Policy, regulatory frameworks, monitoring and quality control are weak in many countries.

Programs were initially set up with a specific focus on eliminating iodine deficiency. There is a need to ensure USI sustainability, and review iodine programs in the context of a changing global environment, with many competing priorities for implementing countries, and to embed salt iodization in existing regional and national plans, management, and operational structures.

To this end, UNICEF, USAID and IGN convened a global meeting in November 2021 to review global progress and celebrate success, consolidate and share experiences, good practices and lessons, and to stimulate dialogue and build consensus on effective programmatic approaches and strategies to achieve continuity.

Speakers from UNICEF, USAID, IGN, WHO and from Ghana, Pakistan and Latin America brought unique perspectives to the meeting, highlighting issues such as lack of recent data, the need for better program management structures, quality and supply chain problems, cross-border trade difficulties and waning awareness of the impact of iodine deficiency on populations.

The meeting concluded with agreement on the importance of adapting programming to specific national contexts, and of prioritizing actions that leverage available resources and create national ownership to ensure sustainability. The need to ensure a strong regulatory environment, and to look at the potential of industrially processed foods to iodize salt, must also take place in the context of global salt reduction strategies. Importantly, appropriate and robust data is vital in designing and managing sustainable programs. Participants agreed on a series of thematic workshops to be held in 2022 to further ensure sustainability by working together to tackle these issues.

## Working with a ground-breaking charity

### IGN's partnership with The Life You Can Save



**Bilal Siddiqi**  
Director of Research and Growth  
The Life You Can Save

In 2009, philosopher Peter Singer wrote a ground-breaking book called *The Life You Can Save: Acting Now to End World Poverty*, in which he argued that if an individual can help people, without exceptional cost to themselves, then it's wrong not to do so.

The philosophy behind the book sprang from a paper he published in 1972 presenting a question: You're on your way to an important meeting and see a child drowning in a pond. Do you save the child, at the risk of ruining your suit? For most people, the answer was clearly yes. But when you apply the same argument to people living in poverty in distant places, the choice becomes less clear for many.

The book helped transform the concept of giving, speaking to those who want to change the world and showing them how they could do so by giving effectively – donating to charities that had a proven record of impact.

In 2013, Charlie Bresler, then president of the major US retail chain The Men's Wearhouse, stepped down from his job and became the Executive Director of The Life You Can Save, working with Peter Singer to build the organization that exists today – a global platform that helps people to choose evidence-based charities and to understand the impact their contribution can have.

IGN is proud to be one of the organizations recommended by The Life You Can Save to its donors around the world. We are inspired by those who give what they can every month or every year to our work. We spoke to Bilal Siddiqi, the organization's Director of Research & Growth and Research & Business Intelligence Manager,

Katie Stanford, about their mission in curating charity recommendations.

"IGN's work is extremely cost-effective, so recommending IGN matches our goal to promote high impact, cost-effective giving," says Katie. Bilal adds that The Life You Can Save values multiple approaches towards change, including those who, like IGN, seek to effect policy change at national and global level. "It's appropriate to value organizations in different ways – such as IGN's lean trim model of doing innovative things in a transparent way and doing them effectively."

The Life You Can Save is currently working to expand its list of recommended charities, moving into the climate change space and further into the nutrition arena beyond its work with IGN.

"The importance of TLYCS to an organization such as IGN is enormous," says IGN Executive Director Werner Schultink. "The fact that funding from The Life You Can Save to IGN isn't tied to specific countries or projects gives us the freedom and flexibility to quickly step in and move the needle to achieve real change that otherwise wouldn't have happened. That protects children's brain development, helping them to grow and thrive, learn better, and live better lives. A big thanks to all those who contribute to us through The Life You Can Save."



## IGN and the Micronutrient Forum

Iodine is a micronutrient, one of several essential vitamins and minerals that we need in small amounts for our growth, development, health, well-being and even survival

Micronutrient deficiencies – most commonly iron, vitamin A and iodine – can be prevented through several interventions – nutrition education to stimulate the consumption of a nutritious diet where possible, fortification and biofortification of foods with essential micronutrients, and vitamin and mineral supplements where needed. Salt iodization is one of these interventions, protecting the brain development of hundreds of millions of children around the world.

At the heart of the work to prevent deficiencies in these essential vitamins and minerals is the Micronutrient Forum, which acts as a backbone organization by supporting partners and fostering alignment and collective action on micronutrient-relevant issues for all aspects of health, development and disease prevention – a similar but broader role to IGN's work on advocacy, convening, tracking and knowledge management on national and global iodine nutrition and salt iodization.







It's therefore no coincidence that Saskia Osendarp, Executive Director of the Micronutrient Forum, serves on IGN's Board of Directors. Sharing her impressions of IGN from a Board member's perspective, she notes: "I'm impressed by IGN as an action-oriented organization with a strong presence in regions and countries. I see the organization raising interest in iodine deficiency but also in the broader cause of micronutrient deficiency, translating the success story of iodized salt for non-traditional donors and funders. It's something all of us can learn from."

This advocacy role is one that the two organizations take on together. "There are so many opportunities for us to work together at the global level. The story of iodine deficiency, and the public health success in tackling the problem, is the tip of the spear in terms of global micronutrient advocacy efforts", says Micronutrient Forum's Director of Advocacy and Communications, Tanuja Rastogi.

Successful advocacy collaborations to date have included the release of a [joint statement on the power of micronutrients](#) by a number of key organizations working to improve micronutrient nutrition. The commitment is supported by 28 organizations and 160 individuals in 50 countries around the world. The two organizations also worked with GAIN, Nutrition International, the Bill & Melinda Gates Foundation,

UNICEF and others on advocacy for the UN Food Fortification and Nutrition for Growth Summits last year, with a focus on food fortification as one tool to address widespread malnutrition in low and middle-income countries.

"There are many overlapping areas where we need to be working together", says Saskia. Among the mutual topics of interest is an inadequate and underinvested micronutrient data system, most notably the issue of data gaps and how to address them. The Forum hosts the [Micronutrient Data Innovation Alliance \(DinA\)](#), a coalition of diverse partners from the LSFF, global development, and micronutrient data communities, including from the public and private sectors, who will apply their expertise and experience to this problem.

In addition, with future plans to engage more with national policymakers, the Forum hopes to work yet more closely with IGN. "IGN will be the first port of call and a critical partner in creating networks at country level", says Tanuja. IGN looks forward to this continued collaboration.



# Our team





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## The IGN team

In 2021 IGN welcomed a new Regional Coordinator and a new Board member. Edward Otico joined IGN as Regional Coordinator for the South East Asia and Pacific region. Daniel Levac has returned to the Board as Secretary.

Due to the COVID-19 situation the board and Management Council meetings were held virtually. In May 2021, the board reviewed success in road mapping, support to regional activities, communication and fundraising, while identifying the need to re-energize advocacy and partnerships. In October, the Board received updates on programming and fundraising.

The Management Council meeting took place in October 2021 and reviewed regional progress. Participants agreed on the effectiveness of the ongoing work of developing landscape analyses and action plans for countries and regions. A discussion on programmatic opportunities looked at issues such as processed food, alignment with salt reduction efforts, placing a focus on equity, and the need for different data collection and monitoring methods in the light of changing global priorities.

Here's a full listing of the management council team.

### Executive Director

**Werner Schultink**

*Canada*

### Senior Advisors

**Robin Houston**

Technical assistance, strategy, fundraising  
*USA*

**Arnold Timmer**

Technical assistance, program strategy  
*Switzerland*

**Joyce Greene**

Global advocacy, fundraising, communications  
*Ireland*

### Manager, Finance and Administration

**Jude Louis**

*Canada*



## Regional coordinators

### North America

**Elizabeth N. Pearce**  
*USA*

### Central America and Caribbean

**Ivette Sandino**  
*Nicaragua*

### South America

**Ana Maria Higa Yamashiro**  
*Peru*

### Western and Central Europe

**Rodrigo Moreno-Reyes**  
*Belgium*

### Eastern Europe and Central Asia

**Gregory Gerasimov**  
*USA*

### Middle East and North Africa

**Izzeldin Hussein**  
*Oman*

### Eastern and Southern Africa

**Festo Kavishe**  
*Tanzania*

### South Asia

**Renuka Jayatissa**  
*Sri Lanka*

### China and East Asia

**Ming Qian**  
*China*

### South East Asia and Pacific (new)

**Edward Otico**  
*Philippines*

A public nutrition project manager for more than 12 years in the field of salt iodization, he has worked for UNICEF, GAIN and IGN. Before that, Edward accumulated more than ten years' experience in marketing and business planning.

### West and Central Africa

**Amal Tucker Brown**  
*Morocco*

# IGN's Board of Directors

## Chair

**Michael B. Zimmermann**  
ETH Zürich  
Zürich, Switzerland

## Treasurer

**Sophia Weber**  
Montfort Hospital  
Ottawa, Canada

## Secretary (new)

**Daniel Levac**  
Ottawa, Canada

Daniel is a professional accountant with 38 years' experience in healthcare, academia, government and public accounting. Daniel helped set up IGN in Canada in 2000 and served as its accountant, then Treasurer and Secretary until 2017. He re-joined the IGN Board in 2021.

## Board of Directors

**Maria Andersson**  
Zurich University Children's Hospital  
Zürich, Switzerland

**Rishi Kansagra**  
Purebond Ltd  
Nigeria

**Srinivasan Krishnamachari**  
St. John's Medical College  
Bangalore, India

**Mary L'Abbe**  
University of Toronto  
Toronto, Canada

**Mu Li**  
University of Sydney  
Sydney, Australia

**Peng Liu**  
CDC, China  
Harbin, China

**Penjani Mkambula**  
GAIN  
London, England

**Sergio Moreno**  
AMISAC  
Mexico City, Mexico

**Saskia Osendarp**  
Micronutrient Forum  
Wageningen, Netherlands

**Cria Perrine**  
US CDC  
Atlanta, USA

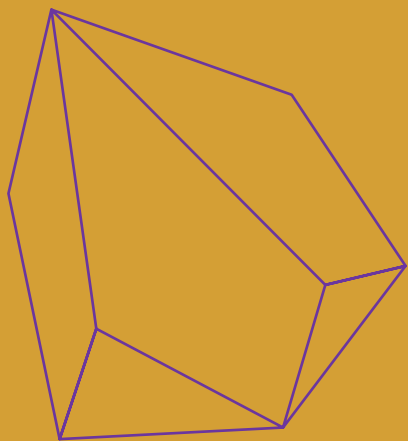
**Rumishael Shoo**  
Tanzania

**Stan D. Soderstrom**  
Kiwanis  
Indianapolis, IN, USA

**Vilma Tyler (observer)**  
UNICEF  
New York, USA

## Finance Committee of the Board

**Sophia Weber (Chair)**  
**Michael Zimmermann**  
**Maria Andersson**  
**Daniel Levac**  
**Stan Soderstrom**  
**Jan Werner Schultink**  
**Jude Louis**



# Financial statements

For the year ended December 31, 2021

Financial statements for the year ended  
December 31, 2021 are available on the [IGN website](#)









Annual Report **2021**

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