Ethiopia’s long road to USI
The history of Ethiopia’s Universal Salt Iodization (USI) program is closely linked to the dramatic changes in the nation’s salt industry and supply. As a signatory to the World Summit for Children in 1990, the Government of Ethiopia banned the production and sale of non-iodized salt in 1996. At the time almost all edible salt in Ethiopia was produced in large, industrial-scale plants on the Red Sea, and progress towards USI was rapid, with coverage of iodized salt reaching 80% just two years later (1). But when Eritrea seceded, the Red Sea salt supply was lost to the Ethiopian market. As imports replaced domestic supply, scarcity was common, and the price of salt rose dramatically. To ease pressure on supply, the ban on the sale of non-iodized salt was lifted, and by 2005 iodized salt coverage dropped to 4.2% (2), with dramatic consequences (Figure 1). The 2005 National Iodine Deficiency Disorders (IDD) Survey revealed that the Ethiopian population was severely iodine deficient (2). Over 6 million (40%) children aged 6–12 years and four million (36%) women aged 15–49 years were affected by goiters, and the median urinary iodine concentration in children was low at 25 μg/L. The survey revealed not only low access to iodized salt but also very low awareness of the importance of iodized salt among women (around 10%).

**The long road to universal salt iodization**

Over the past 10 years, the domestic salt supply has been rebuilt. UNICEF, with contributions from the Bill and Melinda Gates Foundation and USAID, along with Micronutrient Initiative (MI), the Global Alliance for Improved Nutrition (GAIN), and other partners has been supporting the Government of Ethiopia and salt producers on this journey.

**Securing national supply**

The discovery of Lake Afdera in the 1990’s provided a consistent supply of salt to the nation. This large saline lake in the Afar Region provides good-quality salt which is technically simple to extract by solar evaporation. It holds sufficient salt to supply the expanding national demand for at least a thousand years.

Government incentives to encourage exploitation of Lake Afdera salt led to a rush of investment by both Afari and national entrepreneurs. As is often the case with natural resource bubbles, this ‘Salt Rush’ led to significant over-capacity, with around 400 producers providing about twice as much edible salt as the country needed (3). With over-capacity, boom turned to bust: competition was fierce, the prices plummeted, and the supply of salt became inconsistent. In response, the Afdera producers formed the Afar Salt Producers Mutual Support Association (ASPMSA) to better coordinate production and supply. To stabilize this new industry, ASPMSA enforced production quota and fixed the price of iodized salt to control the market. As a result, many of the efficiencies of free market competition vanished: there was little incentive for producers to expand their market share through investment in greater efficiency, variety, and improved product quality or value (such as iodization).

**Establishing national and regional structures**

As domestic salt production capacity was re-built, the Government prepared to re-establish USI, forming the National USI/IDD Control Technical Steering Committee in 2003. Although it was not officially launched until 2010, the committee has made significant breakthroughs. It developed national plans for resource mobilization, training salt producers to build capacity, and ensuring a supply of potassium iodate (KIO3). It also organized forums such as the National IDD day to better advocate to government, development partners, and the private sector.

**Ratifying salt legislation**

After many years of promotion and advocacy, the most significant step along this journey was the passing of a comprehensive salt regulation in February 2011. It mandated that all salt for human consumption in Ethiopia should be iodized. A government agency was assigned the responsibility of enforcing the legislation and of putting robust inspection and enforcement measures in place, while UNICEF, GAIN, and MI supported it with training, reagents and equipment.

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Defining and refining the National Salt Iodization Strategy

The original strategy was to build up on the iodization capacity at the larger packing and distribution facilities, mainly operated by members of the Ethiopian Salt Producers Association (ESPA) outside Afar. However, ESPA members were not Afaris, and the mostly Afari salt producers and land-owners around Lake Afdera opposed this move, perceiving it as biased towards large business interests from outside their region. Consequently, this project was abandoned. After further assessment, the USI/IDDC committee opted for a decentralized national strategy, which provided multiple producers with medium-scale iodization units at strategic locations. This strategy was supported by the partners, who proceeded to donate iodization mixers, procure and distribute KIO3, and train the salt producers at 22 iodization units. However, the ownership of these units was unclear and their access unequal among salt producers. As a result, the units were underutilized, poorly maintained, and fell into disrepair. Subsequently, an even more decentralized approach was adopted, with salt producers shifting towards manual spraying with knapsacks and manual mixing of the iodine additive.

Setting price incentives

Following lobbying by ASPMSA, the Ministry of Trade officially fixed the price of iodized salt at the point of production at 150 Ethiopian Birr (US$7.5) per 100 kg, and the price of un-iodized salt (for industry use) was set at 32% less. The wholesalers would collect the salt and pay ASPMSA, which would then distribute the funds to the salt producers (according to their quota) after deducting the cost of potassium iodate. Effectively, this removed the incentive for the producers to reduce their costs by not adding iodine.

Communicating and advocating

To help re-establish Ethiopia’s USI program, UNICEF supported the Federal MoH in a range of communication and advocacy activities targeting the government, producers, and consumers. A communication strategy using multiple media was developed to raise public awareness of iodized salt and the importance of its consumption. To support the launch of the mandatory regulations, the activities also focused on the supply-side audiences, including the government regulatory agency, salt producers, and traders.

Establishing a sustainable supply of KIO3

Initially, KIO3 was procured and donated by UNICEF, MI, and GAIN. But when the sustainability of this approach was called into question, a consensus was reached in 2012 to support the purchase of a one-year seed stock of KIO3 while working to establish a cost recovery mechanism. The scheme has been successful: the ministry is procuring and distributing KIO3 to salt producers with no additional funds from partners or donors. Additionally, the ASPMSA system of deducting the cost of KIO3 from the payment to producers supports the rolling funds for KIO3 and ensures that the additive reaches the producers.

Despite these efforts, less than half the salt is adequately iodized

These incentives have undoubtedly increased the awareness and strengthened the commitment to iodization among the salt producers. A national survey conducted in 2014 by Ethiopia’s Public Health Institute (EPHI) found that an impressive 95% of households were using iodized salt. However, only 43% of the salt contained more than 15 ppm of iodine (4). Such low coverage may be due to the traditional salt production process and manual iodization. Spraying KIO3 onto salt piles with knapsack sprayers may cause uneven iodine levels, and manual mixing does not achieve the required uniformity of iodine throughout the salt pile. In addition, raw salt with high levels of impurities, high moisture, or large crystal agglomerates may not be able to maintain the quantity and homogeneity of iodine. But these were not the only barriers to success. The developing salt production at Lake Afdera had to grapple with harsh climate, little infrastructure, inadequate access to water, power, and labour, as well as risks associated with being in the politi-
cally and ethnically sensitive triangle of Ethiopia, Eritrea, and Djibouti.

These difficulties notwithstanding, the Afar Salt Producers Share Company, a para-statal company in Aidera, was able to establish a large-scale facility to properly iodize coarse salt with a capacity of 6,000 tons per month, currently limited to 2,500 tons by the quota system.

The future: Central Iodization Facility

In recent years, in collaboration with development partners, Ethiopia has launched an ambitious project: a Central Iodization Facility (CIF). The CIF’s goal will be to offer a mechanized industrial process while establishing the scale of production and a business model necessary to address the full mix of technology, labor, legal, and other salt quality requirements. Placed between the many raw salt suppliers and the relatively few wholesalers in the value chain, the CIF’s activities will include purchasing raw salt, transporting it from producers to a centralized site, quality improvement of the salt, iodization and packaging of the salt, and engagement in downstream marketing with the distribution system.

A larger scale of production, along with a more comprehensive business model, will enable the CIF to achieve more cost-efficient integration of iodization technologies, more rigorous quality assurance, and other efficiencies of scale including a reasonable profit margin. The CIF will address each of the identified barriers to achieving USI in Ethiopia:

- Product quality, impurities, and associated iodine retention in the distribution chain (by introducing basic product improvements like washing, high-quality drying, and screening salt particles by size, to achieve the full Ethiopian National Standard);
- Quality issues of the manual iodization process (by introducing large-scale dosifiers and blenders along with better quality assurance procedures to achieve optimal iodization levels and homogeneity);
- Unequal access to technology (the CIF will be responsible for purchasing raw salt at a set price at the point of production at any location);
- Labor issues (by enabling on-site management and supervision along with hiring fewer but more highly qualified employees, who can be trained and retained for longer); and
- Legal environment (by creating a legal and registered business, which can be easily inspected for full compliance with regulations).

The details of this project remain to be negotiated with all stakeholders to reach a consensus on the implementation, ownership structure (including exploring the possibility of public-private ownership), financing of the CIF, its locality and design. Partners will continue to advocate for this solution. It is feasible for Ethiopia to reach universal salt iodization. However, further political commitment at the regional and federal levels, as well as closer collaboration between the public and private sector, is essential.

References

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