Accelerating salt iodization in Angola
Introduction
Globally, salt iodization has increased in the past two decades, which has reduced the prevalence and burden of iodine deficiency and IDD (1). Much progress has been made in Africa, but the region is lagging behind: in 2013, of the 10 countries with the highest number of iodine deficient school-children in the world, seven were in Africa: Ethiopia, Sudan, Algeria, Angola, Mozambique, Ghana, and Morocco (2).

Based on very limited available data, iodine deficiency may be a serious public health problem in Angola, with an estimated 520,000 Angolan infants (or approximately 60% of all infants according to the 2014 Census) at risk of being born iodine deficient (3). However, there has not been a comprehensive and recent assessment of iodine status in children and women, nor of the iodine content of table salt at the production sites or in the households.

To address this information gap, the IGN, together with GroundWork, conducted a situation analysis (4) of Angola's salt iodization program in July 2016. The project was done in cooperation with UNICEF and relevant Angolan Government Ministries, and it compiled available data related to salt iodization and iodine nutrition in Angola with a view to making research and programmatic recommendations. Following the situation analysis, Angola's Ministry of Fisheries (the Ministry primarily responsible for iodized salt) conducted a three-day workshop on salt production and salt iodization in September 2016.

Salt production in Angola
The Angolan salt industry currently counts 20 salt producers, located in 6 coastal provinces (Benguela, Namibe, Kwanza Sul, Bengo, Luanda, and Zaire). Of these, three can be classified as large producers (with an output >5,000 ton per year) and the remainder as medium-size producers (1,000–5,000 ton per year) based on 2015 data. According to 2014 domestic production figures, only six of the 20 companies account for >90% of all domestic salt production destined for human or animal consumption. Domestic salt production is complemented by salt imports, which have been estimated at around 40% of Angola’s total salt market. Salt is added directly at the table, and it’s consumed in processed foods and as part of salted fish.

Coverage with iodized salt and iodine status of the Angolan population
National surveys in 2001 (MICS) (7) and 2007 (National Nutrition Survey) (8) have measured the presence of iodine in salt using rapid test kits. The results from these surveys show that the coverage of iodized salt has improved, and around 80% of salt in Angola contains some iodine. However, there have been no quantitative assessments of the iodine levels in salt. In addition to these nationally-representative surveys, the Technical Committee has conducted annual assessments in selected provinces by taking convenience salt samples from markets, churches, and households, and testing for iodine using rapid test kits.

Iodine status of the population in Angola has been surveyed only once, in 2006. It showed that nearly all school-age (6–10 year-old) children in Bié province had urinary iodine concentrations below 100 µg/L, with a population median UIC of 29 µg/L, which corresponds to moderate iodine deficiency (9). But in five of the 24 schools selected to participate in the study, the median UIC was even lower (<20 µg/L) indicating the possibility of a severe deficiency. By comparison, moderate iodine deficiency (20–49 µg/L) was reported in 17 schools and mild iodine deficiency (50–99 µg/L) in two schools.

Situation analysis conclusions and recommendations
To assess the performance of Angola’s salt iodization program, the IGN and GroundWork used assessment tools from the WHO/UNICEF/ICCIDD salt iodization monitoring guide, the GAIN/UNICEF salt iodization partnership sustainability framework, and the UNICEF NutriDash sustainability index. These three tools illustrate that the strongest component of Angola's salt iodization program is the legislation and iodization standards. By contrast, national coordination and communication efforts are established but could be improved, while the programs’ quality assurance/control and evaluation components are in the greatest need of improvement.

Iodized salt legislation in Angola
Angola’s salt iodization program began in 1996, with Decree 24/96 (5). It specified that salt should be iodized using potassium iodate (KIO3), and it stipulated that the iodine content in salt should be regularly monitored. The Decree also outlined the packaging and storage requirements to prevent the degradation of iodine, and stipulated that salt for export should be iodized at levels defined by the importing country. This Decree did not, however, make the iodization of salt mandatory and did not define the iodization levels or range to be used.

In 1997, the Ministry of Fisheries’ Dispatch (Despacho) 7-B/97 established the multi-sectoral salt iodization Technical Committee, defined its mandate, and named the governmental ministries and other members of the committee (6).

In 2006, the Angolan standards agency (Instituto Angolano de Normalização e Qualidade) established the quality standards related to iodized salt. It stated that all salt for human consumption should be iodized, and that iodized salt should contain 25–55 ppm iodine in the form of potassium iodate (KIO3).

In 2008, Decree 79/08 for the first time mandated that all salt (imported and domestically produced) for human and animal consumption in Angola be iodized, and it prohibited the sale of non-iodized salt in the country. Salt used for oil extraction is not required to be iodized, and non-iodized salt can be sold for this purpose. The decree also established a system for fining non-compliant salt producers, and noted that salt should be iodized according to the standards established by the Ministries of Fisheries, Health, and Industry and Commerce.
Specific recommendations of the situation analysis include:

1. **Strengthen the enabling environment**
   - Enhance coordination of the Technical Committee to ensure clear roles and responsibilities of all stakeholders;
   - Ensure that key ministries (e.g. Fisheries, Health, Commerce, and Industry) incorporate salt iodization into annual budget to ensure sufficient funding for promotion, monitoring, and evaluation activities.

2. **Extend support to the salt industry**
   - Use a phased approach to providing technical support to salt producers, whereby technical support and monitoring are initially targeted at the six largest producers, followed by efforts at the remaining producers.
   - Engage a salt consultant to train and assist producers to improve the quantity and quality of their iodized salt.

3. **Strengthen routine USI monitoring systems**
   - Revive salt iodine laboratories in Angola.
   - Shift from use of rapid test kits to quantitative methods (titration) for routine monitoring of the iodine content of salt.
   - Quantitatively measure iodine concentration of imported salt as part of regulatory monitoring efforts.

4. **Generate evidence to inform the national USI program**
   - Conduct a national study examining the household coverage of adequately iodized salt, all potential sources of iodine in the diet (such as salted fish), and the iodine status in vulnerable population groups as primary indicators.
   - Investigate the consumption of salted fish since iodized salt is used in the salting process.

5. **Enhance advocacy and communications for development**
   - Routinely sensitize producers and the general public to the importance of salt iodization.

**2016 Salt Sector Meeting and International IDD Prevention Day**

On 12–14 September 2016, Angola’s Ministry of Fisheries, National Department of Salt Production and Iodization, convened the second Salt Sector forum (entitled Sector Saliniero: Uma aposta para a diversificação da economia Angolana) in Namibe Province. The forum was attended by national salt producers, government agencies, and international agencies, and as part of the forum, stakeholders from participating agencies presented their efforts to increase production and improve the quality of salt.

In-depth training on how to improve the quality of salt (e.g. reduce moisture content) and improve the iodization process was also given to producers.

Following this forum, Angola held an event in Luanda on 19 October 2016 for the International IDD Prevention Day. At this event, various government ministries and national stakeholders gathered to raise awareness of the consequences of iodine deficiency and the importance of salt iodization.

**Summary**

Over the past decade, Angola has made continuous efforts to enhance its salt iodization program, and according to the existing survey and monitoring data, the majority of salt in Angola is iodized (although the adequacy of iodization levels cannot be confirmed).

To build upon and sustain recent advances in the salt iodization program and expand the supply and coverage of adequately iodized salt, efforts are needed to review and strengthen the iodized salt supply chain and generate updated evidence on the status of iodine nutrition in the population. Through these efforts, Angola can further grow its domestic salt iodization industry and achieve optimal iodine nutrition.

**References**