# IPC ATARI Report #2

# PILOTS FOR INCREASED COVERAGE AND FREQUENCY OF IPC CLASSIFICATIONS

**Acknowledgements**

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Key support was provided by Jerry Arguello, David Baltaxe from Unanimous AI, Scott Drimie, Barbara Fratulloro, Kudzai Kariri, Quraishia Merzouk Sergio Regi with strategic guidance from Jose Lopez and Sophie Chotard.

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# I. Introduction

The Covid-19 global pandemic exposed a vital and urgent need for global food security analysis systems to radically improve in two key ways:

1. the scale of global coverage needs to expand, to include any potential country facing food insecurity (i.e. not limited to countries that have recurrent or historic food insecurity), and

2. the frequency of food security updates and forecasts need to be regularized better than the current *ad-hoc* nature of IPC country updates, and should shift to a more frequent (quarterly) and consistent system for updating country and global food security forecasts.

Using the preliminary findings from the ATARI initiative (ATARI Report #1 Key opportunities for advanced technologies and artificial intelligence), and based on the expertise of the Global Support Unit, the Technical Advisory Group and its constituent working groups, the GSU embarked on exploring innovations to increase frequency and coverage of IPC analyses during from July to October 2020. Areas for innovation included (i) Tools, (ii) Procedures and (iii) Technologies with key innovations for each including:

A. Technologies
   - Artificial Swarm Intelligence (ASI) (see this link for an overview of ASI and the Unanimous AI platform)
   - Simplified Information Support System (ISS)

B. Analytical Procedures
   - Unit of Analyses
   - Time of Analyses
   - Swarm formation
   - Process for discovery, Debate and Decision

C. Tools
   - Dashboards
   - Summarization

All aspects of design and development of these pilots, can be found on the ATARI initiative microsite.

# II. Methods

## 1. Design

The pilots followed a process of identification and design of components to be tested, field testing, and lessons learning. Two rounds of pilots were planned in a consecutive manner to allow learning and adaptations between the rounds. The first prototypes were to be tested in Haiti and the second revised prototypes were to be tested in Southern Africa[1].

## 2. Country selection for field testing

Pilot countries were selected based on the 2020 analysis cycle, to coincide with AFI analysis underway (or just completed). Pilot exercises were scheduled to take place in Malawi and South Africa in October 2020. The South Africa pilot did not take place on schedule, however, due to delays in the data collection exercise, a necessary precondition to undertaking analyses. The South Africa pilots have been rescheduled for the first week of November 2020.

## 3. Research questions

In research terms, the pilots were designed around five key questions. These related to the validity of the ASI technology, explored how ASI compared to conventional IPC anayes, situated ASI classification in relation to other forecasting methods, and sought to synthesize participants' feedback on the overall ASI approach.

Each research question was accompanied by a specific verification method. The fundamental focus of the pilot was to test the ASI technology, which was the basis for Questions A, B, C. Question D was added to also assess how ASI behaved against other information systems. Participant feedback on all parameters being assessed was captured in Question E. Table 1 below summarizes the research questions and method for verification.

**Table 1: Pilot Research questions and method of verification**

| Question A | Question B | Question C | Question D | Question E |
|---|---|---|---|---|
| *Does a group reach similar classification results with traditional vetting and ASI?* | *Do two independent groups come to similar classification results using ASI?* | *Do two independent groups come to similar classification results with traditional vetting and ASI ?* | *How does ASI classification compare to other available forecasts?* | *What are participants' perceptions?* |

[1] The design document the pilots can be found here for Haiti and for Southern Africa here.

| | | | | |
|---|---|---|---|---|
| TWG v3 consensus & TWG Swarm | TWG Swarm & Global/Reg. Swarm | TWG v3 consensus & Global/Reg.Swarm | All Swarms & Other food security information | Feedback from participants and review |

## 4. Key Parameters

The pilots had as a key characteristic to test alternative approaches to generate a better understanding of potentials. Key conditions being tested included:

A. Two Swarms:
   - TWG Swarm: to leverage TWG led in-country expertise
   - Regional/Global Swarm: Global, Regional and country experts

B. Two Unit of analyses
   - Admin level 0 (national level),
   - Sub-national unit analyzed by the TWG Swarm

C. Two time frames:
   - Current
   - Projected

D. Two key outputs:
   - Population Estimates (Ph 3 and Ph4+)
   - Assumptions for most-likely scenario

E. Two versions of ISS and evidence presentation[2]
   - Typical following IPC v3.0
   - Simplified and streamlined innovations[3]

## 5. Swarm Formation

Prospective participant lists were drawn up for each location, based on IPC certification database as well as recommendations from IPC Regional teams, in-country TWGs, the IPC TAG and FSWG. All those who accepted the invitation and met the minimum IPC knowledge requirements were invited to attend.

Swarm members included government, UN, NGOs, academia, technical agencies, in-country TWG members, the IPC TAG and FSWG and independent experts. A total of 50 people (34 men, 16 women) participated in the Swarm exercises. The Haiti pilot included 26 people, 13 from the National TWG Swarm and 13 for the Regional Swarm. The Malawi pilot included 24 people for the Regional Swarm; no TWG Swarm was conducted for Malawi. A complete list of participants can be found in **Annex I**.

[2] To access Interactive ISS site go to: http://isstst.ipcinfo.org/za. To login, use: Username: Pilot. Password: ASIpilot1
[3] See examples of simplified and streamlined ISS and evidence presentation here

6. **ISS built**
   For each session, bespoke ISS sites were built for each location, presenting simplified data in a dashboard format. This proved to be an important innovation, with utility beyond the ASI pilots. Links to these ISS sites were shared with all participants in advance of the Swarm sessions.

7. **Discovery, Debate & Decision**
   The Swarm sessions were convened for three facilitated sessions over three days, including Onboarding, Swarming and Feedback. In total, Swarm participants engaged in the process for 10-14 hours per Swarm, including in-session time and self-directed study of the data.

8. **Feedback & Lessons Learning process**

   Feedback on the pilot process was drawn from a range of sources across the pilot period, including:
   A. Formal feedback sessions with Global and TWG Swarm participants
   B. Feedback forms distributed to all participants (>15 completed forms)
   C. Ad hoc written feedback received from participants
   D. Zoom session transcripts
   E. Slack real time backchannel discussions during sessions.
   F. Swarm session data filtered through Unanimous analytics.

# III. RESULTS

The results of the pilots are presented per the 5 research questions defined during the design phase. While the population estimation results are used to answer research questions A through C, comparison to other information systems is used to answer question D and the participants' feedback to answer question E.

1. **Question A, B and C: How does ASI compare to traditional vetting process**

The IPC populations estimates generated when using different technologies are described in table 2 and serve as the basis for answering these questions. For each question the answer is given succintely and also potential explanations are detailed when findings are inconclusive.

- **Question A: Did the same group reach similar classification results with IPC v3 and ASI consensus building approaches when using the same evidence and protocols?**

- **YES.** The Haiti TWG estimated populations for the same unit of analyses always within 5 percentage points when using traditional IPC v3.0 vetting and ASI. Similar estimations were noted for National and Sub-National levels.

**Question B: Did the two independent groups (TWG vs. Regional/Global) come to similar classification results when both used ASI consensus building?**

- **INCONCLUSIVE.** While TWG Haiti analysis and the Global/Regional Swarm estimated populations similarly at National Level (adm 0) using ASI, they did not at Subnational Level.

**Question C: Did the two independent groups come to similar classification using the traditional IPC v3 vetting process and ASI?**

- **INCONCLUSIVE.** While Haiti TWG and the Global/Regional Swarm estimated populations similarly at National Level (adm 0) using different tools (traditional vetting vs. ASI), the Malawi TWG and Global/Regional Swarm estimated differently. Both regional/global Swarms portrayed a more severe food security situation than TWG-led analyses.

**Table 2: Population estimates derived from IPC analysis exercises vs. ASI analysis**

**HAITI NATIONAL**

| Consensus building process | Current | | | Projected | | |
|---|---|---|---|---|---|---|
| | Phase 3 | Phase 4+ | P 3+ | Phase 3 | Phase 4+ | P 3+ |
| TWG Traditional Vetting | 33% | 10% | 43% | 33% | 13% | 46% |
| TWG Swarm ASI | 33% | 10% | 43% | 33% | 13% | 46% |
| Global Swarm ASI | 31-32% | 15-16% | 46-48% | 35-36% | 17-18% | 52-54% |

**MALAWI NATIONAL**

| Consensus building process | Current | | | Projected | | |
|---|---|---|---|---|---|---|
| | Phase 3 | Phase 4+ | P 3+ | Phase 3 | Phase 4+ | P 3+ |
| TWG Traditional Vetting | 10% | 0% | 10% | 15% | 0% | 15% |
| TWG Swarm ASI | | | | | | |
| Global Swarm ASI | 20% | 5% | 25% | 25% | 5% | 30% |

**HAITI SUB-NATIONAL**

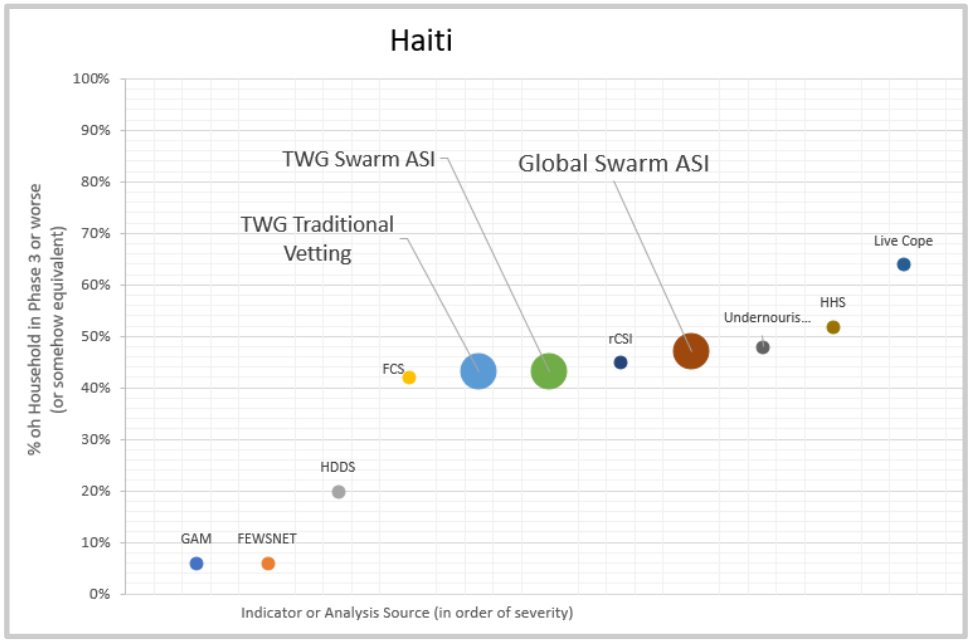
| Consensus building process | Current | | | Projected | | |
|---|---|---|---|---|---|---|
| | Phase 3 | Phase 4+ | P 3+ | Phase 3 | Phase 4+ | P 3+ |
| TWG Traditional Vetting | 35% | 15% | 50% | 40% | 15% | 55% |
| TWG Swarm ASI | 35-36% | 11-20% | 46-56% | 37-38% | 17-18% | 54-56% |
| Global Swarm ASI | 39-40% | 21-30% | 60-70% | 27-28% | 25-26% | 52-54% |

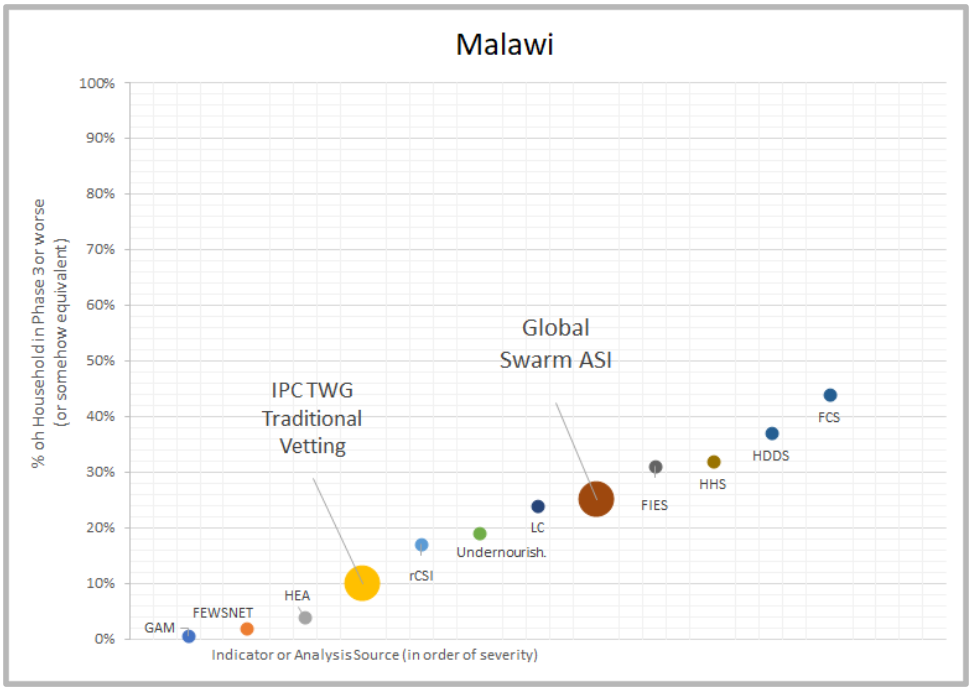
2. **Question D: How does ASI classification compare to other available classifications?**

**ASI classifications are consistent with, and within the overall range of other food insecurity classifications**. ASI classifications were compared to other available analyses (as well as indicators *not* used in the IPC ASI classifications), and findings are displayed in Graph 1. Consistent with the findings on question A through C, it is clear that classifications done by Swarms are similar to many of the direct outcome indicators, but both the indicators and the ASI classification, result in more severe classifications than FEWSNET in both countries.

**Graph 1: Comparative severity of indicators and analyses (in terms of % in Phase 3+ or equivalent)** [4]

[4] For FIES cut off used was % Severe;




### 3. Question E: What was the perception from participants?

**In general, participants identified potentially positive aspects of ASI, with some reservations.** While 12 out of 17 respondents agreed that that ASI tool is useful or highly useful, when asked about ASI's application for IPC, 7 out of 17 respondents said that ASI tools are useful or highly useful for IPC in particular. This shows that while there is a general agreement on the potentials of ASI for decision making, its use for IPC are less certain. Among its advantages, participants found the tool useful for

its ability to give equal voice to all, arrive at clear results, its quick and interactive nature, its utility for illustrating the trend in people's thinking, and the option to change opinion along the way. Doubts about its value included the suggestion that Swarming amounted to little more than 'voting', that there is a risk of delinking evidence from decisions, and that decision makers and national partners might be skeptical of technology and as such might not trust findings derived by Swarming.

**With some exceptions, participants expressed their appreciation for the anonymity and equality provided by Swarming.** Participants highlighted the fact that all participants had an equal voice, and were able to select the best answers without external influence from colleagues or the 'loudest voice in the room; this was seen as a distinct plus. Some participants felt that the ostensible value-add of anonymity was not necessarily that important and that because discussions are not anonymous, anonymous decision making was therefore of less consequence or utility.

**Participants consistently expressed the need to develop a process that allows for adequate discussions for building consensus.** Feedback highlighted the need for more time and evidence to be provided for the Swarms. More specifically, the distinction between '*building*' consensus and '*reaching*' consensus was underscored. While the ASI seems to be effective in 'reaching consensus', there is a need to allow for the discussions and debates necessary to build a common understanding of the situation; that is, building consensus. This was seen as one of the positive effects of the conventional multi-day exercises usually conducted by IPC, something that could be emulated better during Swarming. Among those responding to a Zoom poll during feedback sessions, 33 percent felt Swarm members could be expected to spend more than four hours involved in the exercise, and 53 percent felt that two to four hours would be necessary. Participants, notably FEWSNET colleagues, felt that, as with any IPC consensus building classifications, ASI based classifications should also allow for the minority report, as not all partners may be in agreement with the final consensus reached.

**Participants were highly engaged and motivated throughout the process and most members adequately completed preparatory work, but many felt that the value and consistency of group work is still a major advantage for complex analyses and consensus building.** In total 50 experts spent at least 10 hours in the exercise, demonstrating the high commitment of the members. From all members that responded to the on-line poll, 10 of 18 respondents said that they had spent one hour or more preparing for the Swarm, which, given the volume of information contained in the ISS site, seems a minimum reasonable commitment. While motivation and commitment was evident, participants cautioned against having the process dependent on self-motivated individual work, which may not be completed by all participants. Concerns were also raised over individual members' ability to analyse complex and often limited (and sometimes contradictory) data which underpins food security analysis and the value of group-based discussions in understanding these data.

**There were both positive and negative views on the potential and use of administrative level zero analysis.** In general, analysts prefer to conduct analyses at sub-national analyses although they acknowledge the high demands this would entail for analysts and data collection. Participants, especially for the Haiti Pilot, (which provided similar results for administrative level zero among all classifications), were more positive on the potentials of Admin 0 than the Malawi pilot participants,

(which resulted in different classifications). Those who found the administrative unit zero a viable unit for classification noted the straightforwardness of the macro-data and conclusions on big-picture contextual issues, the availability of standard national level evidence on contributing factors, and the evidence on outcomes that distribute the total population among Phases allowed a reasonable classification. Participants that raised concerns over the validity of classification highlighted the limited utility of the findings, and lack of livelihood analysis possible at that level, as well as the potential masking of acute food insecurity and overreliance on outcome indicators.

**Participants appreciated the changes in the Information Support System (ISS), which focused on presenting a minimum set of evidence in a simpler and more user-friendly fashion.** Participants that received two versions of the ISS strongly voiced their preference for the simplified version. They also appreciated the use of evidence dashboards, specifically mentioning the ability of multiple sources of evidence to be presented both for current and historical conditions following the IPC analytical framework. While most appreciated the simplicity of the evidence presented, some felt that they were not given enough evidence to support classification.

# IV. Conclusions and Recommendations

1. **The results from these pilots indicate that innovations to tools, procedures and technologies can contribute to increasing the global coverage and frequency of IPC. The IPC Partnership should continue to invest in prototyping the system, ensuring that it remains an efficient, rigorous approach that is responsive to users' needs.** The ATARI initiative has identified and prototyped a number of technologies that would enable a global forecasting system. These technologies and innovations allow for a rethinking of the typical role IPC plays in country-level, TWG led analysis; and its ability to inform global decision making which requires increased global coverage and higher/regular frequency of food security forecasts. Prototypes to meet key criteria for a scalable global forecasting system should consider key lessons learnt from the ASI pilot, including 1) the need to have tools to build consensus in a more efficient manner with a clear end-point 2) the need to simplify and standardize tools and processes for human-based analyses 3) the need to maximize the potential of technology for gathering, processing and sharing evidence in a clear standard manner, and 4) to ensure evidence-based rigour of IPC analyses.

2. **ASI technology is a promising approach for making IPC consensus building more efficient; additional piloting is necessary to validate value and define use for IPC.** Results are promising, and ASI should continue to be piloted, based on the lessons learnt in the previous pilots , so that the durable value of ASI for IPC can be more fully assessed. The *potential* value of ASI is clear: it allows participants to engage in an interactive process to find a common solution with a specific final outcome, in a timely manner, with tangible outcomes. Interpersing Swarm decision making with periods of debates should address concerns of

limited consensus 'building'. That said, it is acknowledged that the divergent findings for Malawi require that the applied viability of the tool be further assessed. The ATARI initiative should continue to research and pilot ASI and any other alternative options, including both artificial intelligence and human intelligence-driven. The next pilots should be based on improved processes and tools to 'build consensus', such as improved discussions and group work. Attempts to include processes that assess to what extent consensus was reached should also be considered.

3. **Time and space for discussions to set the stage and build consensus are key components of the overall Swarm process.** The example of standard IPC process, where analysts are grouped to discuss the evidence and agree on the classification is instructional, and can be used to guide the implementation of ASI. Well-facilitated debate of the evidence, including assessment of context and trends, is an indispensable part of IPC classification. Potential ways in which technology can improve debate- and the integration of debates in future pilots- should be more fully explored.

4. **Regional Swarms are a promising approach for scalable and timely analyses but other swarm formations could also work, maybe even better.** The positive results, both in terms of participation, classification results and participants' feedback, demonstrate that there is potential for Regional Swarms to meet regularly and provide updates to IPC forecasts. Further piloting of Regional Swarms should confirm that analyses done by regional and global swarms are accurate. If these generate consistent and credible findings, this may present a logistically efficient way forward for countries that do not have IPC Technical Working Groups. In countries where there is an existing well-functioning TWG, the efficiency of regional swarms may be less pronounced.

5. **Classification of countries at admin 0 is a potentially viable option for increased coverage and frequent analyses, but its validity needs to be confirmed.** Conducting classifications at admin level 0 showed significant advantages in terms of efficiency in terms of time and resources needed. Given the potential drastic increase in coverage that admin level 0 would allow , further pilots should assess the validity of these analyses while also confirming the classification of subnational areas for future hot-spotting or potential country application.

6. **ASI mirrors or magnifies the technical and process shortcomings that often result in less comparable findings and as such, these need to be addressed urgently.** Whether ASI is used or not, indicators' shortcomings and limited guidance for analysts on how to a) detangle acute food insecurity, chronic food insecurity and acute malnutrition and then b) forecast scenarios are challenges for any IPC analyst. It is possible that an explanation for the discrepancy seen in Malawi was due to these shortcomings rather than to the ASI technology

itself: that is, different groups contextualized outcomes indicators differently. This can be addressed at least in part by identifying key outstanding issues that need to be clarified, developing guidance for those and training analysts on that. the development of clear guidance and 'IPC refresher briefings' as part of the Swarm onboarding to ensure all Swarm members are approaching the analysis with similar understandings of how to apply IPC analytical protocols.

7. **The Swarm exercise requires investments and commitment from the GSU and partners.** From the GSU, an upfront investment of time and organization is required to identify the members, invite, and onboard properly. From participants, it requires a prior knowledge of IPC, and a commitment of time and effort, albeit less than a traditional IPC analysis. This can be addressed through establishing firm partner commitment to the Swarm processes such as integrating the activities into work plans, ensuring partner organization knowledge of the process, and endorsing the process. Furthermore, additional investments in technology to decrease the burden on humans is key to make the exercise lighter.

8. **Systematic and user-friendly presentation of evidence is key and offers significant potential to streamline IPC analysis and the ASI process.** Further pilots will explore identifying the best layout for the Information Support System, the content of the evidence dashboards, and ISS summary data. These should be linked to the development of data management technologies and analyses implemented by the ATARI Initiative.

9. **Implications learnt in these pilots may have potential applications for other IPC processes**, such as assessment of Famine Risk, country-led analyses, operation decision making, communication and others.

**Annex I**: Participants Lists
**Annex II**: Presentation: Swarm Insights Analysis

## ANNEX I - PARTICIPANTS LISTS

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**Annex II - Presentation: Swarm Insights Analysis**

A brief review of the data available in the SWARM insight platform: https://docs.google.com/presentation/d/15YVlRsHB2tP7oN62ymbucGSA6eY1AbNaxYRb4V7ii-c/edit?usp=sharing