Wheat to Bread Facility Mapping and Functionality Overview

October 2024 | Northeast Syria

Context & Rationale

Syria remains one of the world's most complex humanitarian crises, significantly affecting the production and supply of its staple food, bread. The combined and ongoing effects of the crisis have impacted wheat production, milling, and bread availability, posing a serious threat to food security and the overall well-being of the population. In addition to reduced wheat production, vital food security infrastructure—including bakeries, mills, and silos—has suffered extensive damage since the conflict began, and wheat-to-bread facilities have increasingly been deliberately targeted by airstrikes in Northeast Syria (NES) since October 2023. Furthermore, supply chain disruptions, high levels of inflation and rising costs, and shortages have all presented acute challenges for wheat-to-bread market actors in securing adequate quantities of key inputs. Due to these combined factors, humanitarian actors have been supporting the wheat-to-bread supply chain through the rehabilitation of infrastructure and provision of key inputs to ensure bread is available in communities throughout NES.

This Situation Overview builds on previous studies carried out by iMMAP and was co-designed with the NES Food Security and Livelihoods Working Group. It primarily aims to assess the number, operational status, and production levels of key wheat-to-bread facilities (i.e. bakeries, mills, and silos), as well as identify key challenges they are facing. The findings of this report and the corresponding datasets are intended to inform prioritization and planning decision-making by humanitarian actors active in bread and bakery support programming in Northeast Syria.

Methodology Overview

This assessment utilized Key Informant Interviews (KIIs) at the sub-district level as the primary data collection method. Enumerators based in NES conducted interviews with one KI for each facility, either in person or remotely (via phone). KIs were selected based on their specific knowledge of the facilities. Data was collected between October 20 and November 3, 2024, using three distinct tools tailored for bakeries, mills, and silos. Unless otherwise stated, all indicators refer to the situation prior to the data collection period.

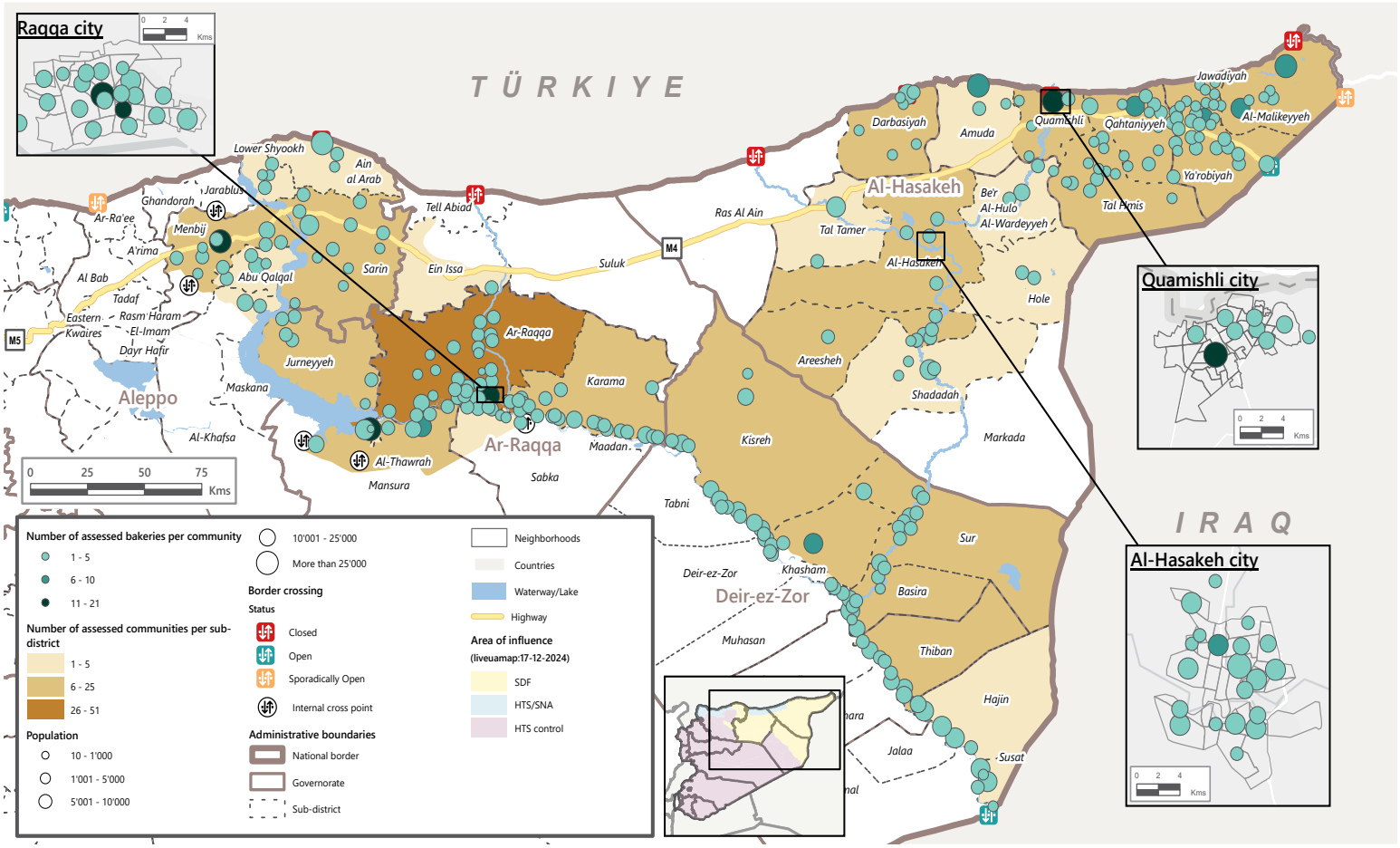
Key Messages

- Operational challenges in bread production: **Most assessed bakeries, silos, and mills are operational but require urgent machinery upgrades and additional input support to improve efficiency, extend working hours, and meet supply demands effectively.** Additionally, many KIs receiving support from local authorities noted that these supplies such as flour, wheat, and fuel are insufficient and of poor quality, further restricting production. **These challenges have been compounded by a series of conflict escalations in NES since October 2023 that have seen wheat to bread facilities deliberately targeted by airstrikes.**

- **Declining wheat yields:** 82% of wheat farmers in NES reported lower yields in 2023-2024, mainly due to financial and market barriers in accessing key inputs. **This decline risks reducing bread availability, increasing prices, and worsening food insecurity in NES over the next year, as many wheat farmers may be compelled to scale back cultivation or halt wheat production entirely.**

- **Bread production output in relation to population needs**: At the regional level, the combined output of assessed bakeries is sufficient to meet overall population needs. **However, a significant production gap was recorded in Aleppo and Deir-ez-Zor governorates.** Furthermore, 69% of KIs reported that bakery production is insufficient to meet bread demand, highlighting uneven distribution and fragile or disrupted supply chains.

Bakeries geographical coverage map



Weekly bread production

Full Capacity: **15643.86 MT**

Actual: **8046.4 MT**

Expections of change in production capacity over next 3 months

Yes	12%
No	47%
Don't know	41%

Type of production change by KIs that answered yes

Bakeries key findings

- In total, 606 bakeries across 35 sub-districts and four governates were assessed. **Of these, 122 bakeries were non-operational, 361 were fully operational, and 123 partially operational.** The vast majority of bakeries produce regular subsidized bread (96% in Aleppo, 95% in Deir-ez-Zor, 95% in Hasakah, and 86.5% in Raqqa.
- Based on current bread production reported across all assessed bakeries, at the regional level, **weekly production (8047 MT) comfortably exceeds the daily bread needs of the population (6063 MT)**, however, this is uneven across governates, **with a gap of 696 MT and 323 MT of bread reported in Aleppo and Deir-ez-Zor governates respectively.**
- The primary reasons reported for limited functionality of assessed bakeries **was the inability to access production inputs (such as flour, fuel, yeast, and labor), along with a lack of access to support and high operational costs.** These issues were frequently highlighted by KIs, who emphasized the need for a more reliable flour supply and repairs for machinery and equipment, as most bakeries were operating with old and worn-out resources.
- **The most commonly reported source of flour for assessed bakeries was locally produced flour,** with the majority coming from Self administration (SA), followed by wheat traders and NGOs. In contrast, bakeries that used imported flour primarily sourced it from Turkey.
- Most KIs reported that the majority of supported bakeries receive flour and yeast as primary forms of support from local authorities, followed by salt and bags. **However, many highlighted concerns regarding the low quality of these supplies.**

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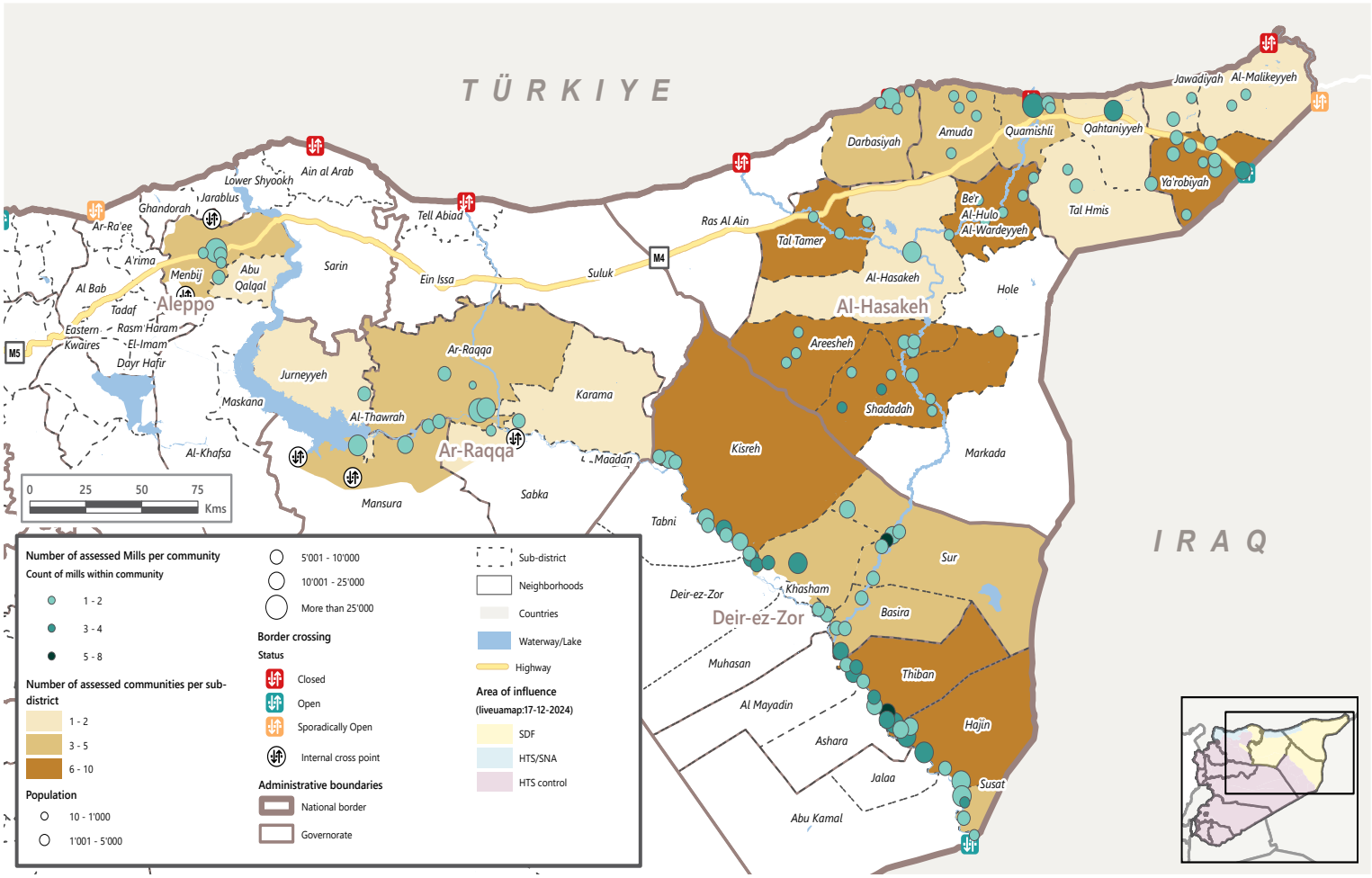
Mills geographical coverage map



Mills key findings

- In total, 194 mills were assessed across 29 sub-districts in four governorates of NES. **Of these mills, 49 were non-operational, 69 were fully operational, and 76 were partially functional.**
- Unlike other governates, **the majority of assessed mills in Hasakah governate, which also had by far the highest number of mills (73), were either non-operational (30%) or only partially operational (32%).**
- Among the mills assessed in NES, **181 were privately owned, with profits going directly to the owners, while the number of publicly owned mills was relatively low.** The management structure of the mills also varied, with the most common being an independent management system operated by the individual owner, accounting for 87% of the assessed mills. This was followed by mills managed by the Self-Administration at 7%, with the remaining mills falling under other management structures.
- **The main reasons reported for limited functionality for assessed mills were shortages of fuel and electricity,** along with demand in the area not necessitating full capacity. These issues were mentioned by 47% of KIs, who emphasized the need for more fuel support and maintenance for engines and machinery.
- The most commonly reported sources of wheat grain for each mill facility were the Self-Administration (56%), followed by wheat trader (38%), and directly from farmers (28%). **Notably, KIs reported that wheat grains are always available 69% of the time, while 31% indicated that they are only fairly available at the time of data collection.**

Maximum and current weekly production

Maximum weekly produciton:	17,499 MT
Current weekly production:	13,475.2 MT

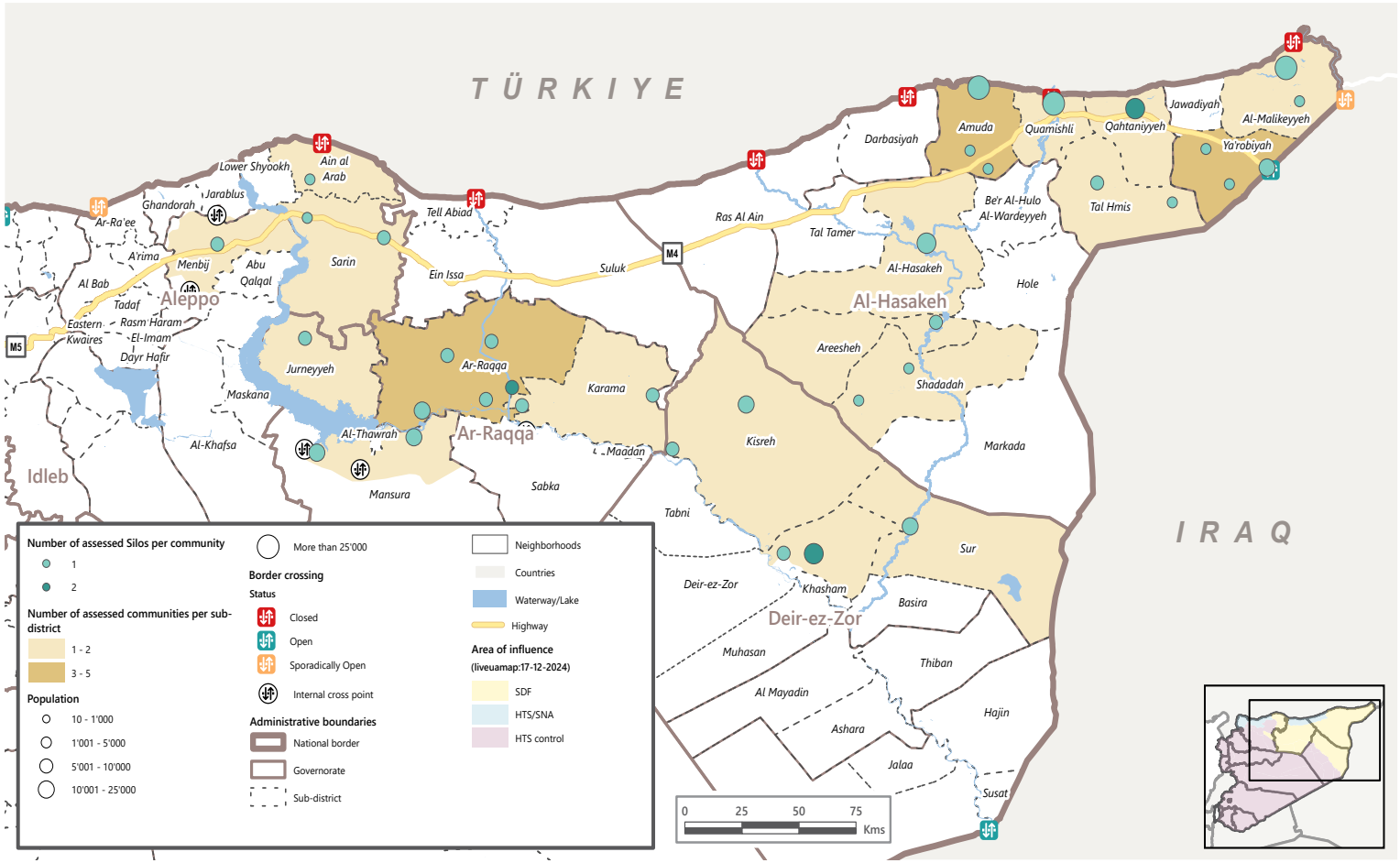
Ability to increase production if needed

Yes	81%
No	19%

Average number of supplied bakeries

Al-Hasakeh	29
Deir-ez-Zor	19
Ar-Raqqa	102

Silos geographical coverage map



Total silos storage capacity

Maximum capacity: **1,180,500 MT**

Ability to increase storage if needed

Yes	32%
No	68%

Wheat storage actors

SA	100%

Silos key findings

- In total, 38 silos were assessed across 19 sub-districts in four governorates of NES. Of these, **13 silos were non-operational, 21 were fully operational, and 4 were partially functional. Notably, 17 of these silos were located in Al-Hasakeh governorate.**
- **All assessed silos were publicly owned by the Self Administration,** illustrating the critical role local authorities in NES play in the wheat-to-bread supply chain.
- The primary reasons reported for limited functionality were the **need for rehabilitation of physical structures and non-functional machinery.** While these issues were also cited as reasons for closure, a notable distinction was observed in Deir-ez-Zor and Aleppo, where the use of silos as military bases was specifically mentioned as a reason for closure.
- **Many KIs mentioned fear of air attacks as a key concern due to the increase in targeting of wheat-to-bread facilities across the region since October 2023.** Highlighting these concerns, silos were struck by airstrikes in late October 2024 while data collection was taking place.

* Internal not published report.

NES bread needs and production gap analysis, October 2024

Sub-district		Total population*	Weekly bread needs of population in MT	Total weekly bread production in MT	Bread production gap in MT per week	Number of assessed bakeries	Number of supported bakeries***	Number of unsupported bakeries
Aleppo	Ain Al Arab	106,907	187	226	-39	4	0	3
	Abu Qalqal	63,980	112	196	-84	7	5	0
	Al-khafsa	98,461	172	77	95	3	3	0
	Lower Shyookh	23,769	42	112.5	-71	4	4	0
	Sarin	109,245	191	341	-150	12	8	4
	Menbej	318,821	558	1006	-448	26	23	1
Al-Hasakeh	Al-Hasakeh	333,988	584	785	-201	42	30	3
	Tal Tamer	58,209	102	130	-28	6	5	0
	Shadadah	79,674	139	135	4	5	5	0
	Be'r Al-Hulo Al-Wardeyyeh	24,947	44	98	-54	8	6	1
	Areesheh	44,758	78	121	-43	7	5	0
	Hole	51,011	89	53	36	4	4	0
	Quamishli	356,174	623	457	-166	36	26	0
	Tal Hmis	47,683	83	170	87	19	17	1
	Amuda	47,399	83	166	83	8	1	6
	Qahtaniyyeh	49,186	86	152	66	20	19	0
	Al-Malikeyyeh	107,944	189	261	72	20	10	8
	Jawadiyah	32,038	56	124	68	32	19	6
	Ya'robiyah	48,855	85	68	-17	15	9	2
	Darbasiyah	40,494	71	175	104	8	1	5

* Population estimates are based on July 2023, population task force.
** Syria HNO 2024
*** Only asked for operational bakeries.

NES bread needs and production gap analysis, October 2024

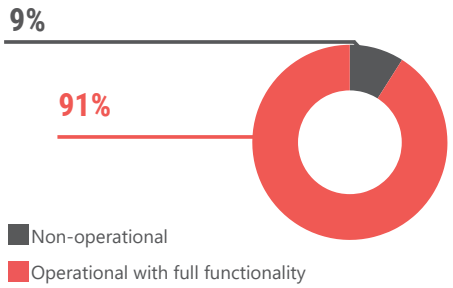
Sub-district		Total population*	Weekly bread needs of population in MT	Total weekly bread production in MT	Bread production gap in MT per week	Number of assessed bakeries	Number of supported bakeries***	Number of unsupported bakeries
Ar-Raqqa	Ar-Raqqa	398,478	697	1239	-542	109	67	15
	Sabka	28,639	50	76	-26	6	5	0
	Karama	82,815	145	227	-82	26	22	1
	Ein Issa	42,365	74	18	56	1	1	0
	Al-Thawrah	76,376	134	335	-201	19	17	1
	Mansura	57,436	101	176	-75	14	10	0
	Jurneyyeh	50,362	88	165	-77	8	7	0
Deir-ez-Zor	Deir-ez-Zor	287,676	503	74	429	19	8	0
	Kisreh	124,572	218	235	-17	31	21	3
	Basira	51,753	91	64	27	13	6	0
	Khasham	33,712	59	91	-32	11	9	0
	Sur	41,760	73	163	-90	18	14	0
	Hajin	104,568	183	151	32	17	14	0
	Susat	39,081	68	70	-2	11	10	0
	Thiban	48,406	85	110	-25	17	12	1

* Population estimates are based on July 2023, population task force.
** Syria HNO 2024
*** Only asked for operational bakeries.

Aleppo

Bakeries 56

Bakeries operational status



Permanent closure (if non-operational)

80% Yes
20% No

Reasons for closure

Authorities decision	60%
High operational cost	20%
Machines need maintenance	20%

Ownership

Publicly owned 55%
Privately owned 43%
Mixed ownership 2%

Availability

	Bread	Yeast	Local flour	Imported flour	Fuel
Always available	82%	94%	94%	82%	96%
Fairly/sometimes available	18%	6%	6%	18%	4%

Main source of flour for production

Local flour 96%

Self Administration (SA) 100%

Imported flour 8%

Imported from Turkey 100%

Bread production

96% | 4%

Regular unsubsidized bread | Regular subsidized bread

Average subsidized bread backage weight 1.09 kg

Average unsubsidized bread backage weight 1 kg

Support status

No 16%
Yes 84%

Type of Support

98% More fuel/electricity
95% Flour
51% Yeast

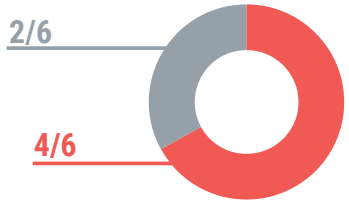
Support source

SA 100%

* On average

Mills 6

Mills operational status



Reasons for limited functionality

Shortage of wheat	1/2
High operational cost	1/2
Machines need maintenance	1/2
No financial liquidity	1/2

Ownership

Privately owned 100%

Weekly production

Maximum capacity* 291.7 MT
Current capacity* 259.2 MT

Source of wheat for production

100% SA

Management

4/6 Individual owner
1/6 SA
1/6 Private investor

Market Actors Supplied Through

5/6 Agricultural Development Company
1/6 Public traders

Stocking capacity

Wheat capacity 375 MT
Flour capacity 312.5 MT

Silos 4

Silos operational status

Reasons for closure

Used as a military base 1/1

Stored wheat type

Soft 4/4
Hard 4/4

Ownership

Publicly owned 4/4

Storage capacity*

Wheat 19,000 MT

Source of wheat

4/4 Directly from farmers
3/4 Wheat traders

Management

4/4 SA

Wheat origin

4/4 Locally produced

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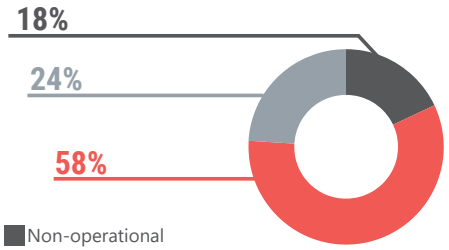
Al-Hasakeh

Bakeries 230

Bakeries operational status



Permanent closure (if non-operational)

56% Yes
44% No

Reasons for closure

Authorities decision	37%
High operational cost	39%
Machines need maintenance	29%

Ownership

Publicly owned 7%
Privately owned 92%
Mixed ownership 0%

Availability

	Bread	Yeast	Local flour	Imported flour	Fuel
Always available	47%	98%	45%	51%	59%
Fairly/sometimes available	52%	2%	51%	19%	41%
Not available	1%		4%	20%	

Main source of flour for production

Local flour 82%
97% SA
3% Traders in the same SD
1% NGO

Imported flour 22%
95% Imported from Turkey
10% Imported from Iraq

Bread production

Regular untsubsidized bread
Regular subsidized bread
Bread produced for organizations for free distribution

Average subsidized bread backage weight 1.4 kg
Average unsubsidized bread backage weight 1.2 kg

Support status

Yes 83%
No 17%

* On average

Support source

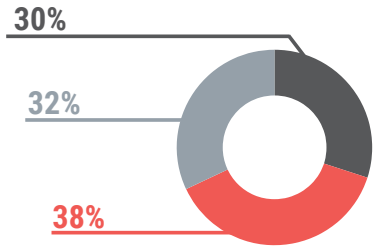
99% SA
5% NGOs

Type of Support

Flour	74% SA	100% NGOs
Yeast	26% SA	88% NGOs
More fuel/electricity	87% SA	

Mills 73

Mills operational status



Non-operational
Operational with full functionality
Operational with partial functionality

Reasons for limited functionality

Shortages in fuel /electricity	65%
High operational cost	57%
Machines need maintenance	43%
Demand in area does not require full capacity	26%

Ownership

Privately owned 95%
Publicly owned 5%

Weekly production

Maximum capacity* 134.8 MT
Current capacity* 97.2 MT

Main source of wheat for production

60% SA
30% Directly from farmers
30% Wheat traders

Management

90% The owner
6% SA
2% Private investor

Market Actors Supplied Through

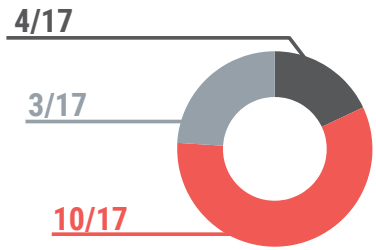
86% People (personal use)
10% Private traders
14% Bakeries

Stocking capacity

Wheat capacity 375.7 MT
Flour capacity 54.3 MT

Silos 17

Silos operational status



Non-operational
Operational with full functionality
Operational with partial functionality

Reasons for limited functionality

Needs building rehabilitation	67%
Machines need maintenance	33%
High operational cost	33%
No financial liquidity	33%

Ownership

Publicly owned 17/17

Source of wheat

17/17 Directly from farmers
6/17 SA

Stored wheat type

Soft 100%
Hard 100%

Management

16/17 SA
1/17 Private investor

Wheat origin

100% Locally produced

Storage capacity*

Wheat 65,846 MT

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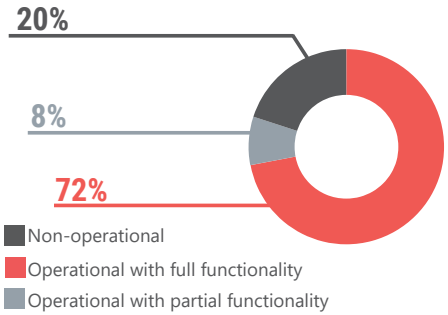
Ar-Raqqa

Bakeries 183

Bakeries operational status



Permanent closure (if non-operational)

68% Yes
32% No

Reasons for closure

Authorities decision	31%
Machines need maintenance	25%
No financial liquidity	22%

Ownership

Publicly owned 27%
Privately owned 63%
Mixed ownership 9%

Availability

	Bread	Yeast	Local flour	Imported flour	Fuel
Always available	58%	89%	65%	60%	86%
Fairly/sometimes available	41%	10%	34%	35%	14%
Not available	1%	1%	1%	5%	

Main source of flour for production

Local flour 85%
99% SA
1% Traders in the same SD

Imported flour 51%
100% Imported from Turkey
3% Imported from Iraq

Bread production

Average subsidized bread backage weight 1.08 kg
Average unsubsidized bread backage weight 1.01 kg

Support status

Yes	88%
No	12%

Support source

99% SA
2% NGOs

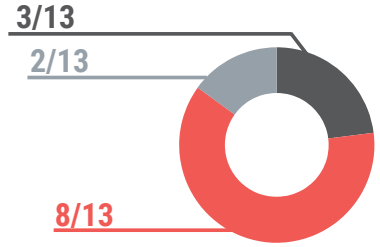
Type of Support

Flour	94% SA 100% NGOs
Yeast	33% SA 100% NGOs
More fuel/electricity	96% SA

* On average

Mills 13

Mills operational status



Reasons for limited functionality

High operational cost	2/2
Shortage of wheat	1/2
No financial liquidity	50%
Demand in area does not require full capacity	50%

Ownership

Privately owned 9/13
Publicly owned 4/13

Weekly production

Maximum capacity* 459.4 MT
Current capacity* 340.2 MT

Main source of wheat for production

9/13 SA
2/13 Directly from farmers
2/13 Wheat traders

Management

8/13 The owner
5/13 SA

Market Actors Supplied Through

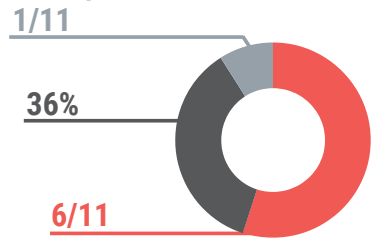
8/13 Bakeries
3/13 Public traders
1/13 Private traders

Stocking capacity

Wheat capacity 160.4 MT
Flour capacity 312 MT

Silos 11

Silos operational status



Reasons for limited functionality

Demand in area does not require full capacity	1/1

Ownership

Publicly owned 11/11

Main source of wheat

100% Directly from farmers
38% SA

Stored wheat type

Soft 11/11
Hard 10/11

Management

11/11 SA

Wheat origin

11/11 Locally produced

Storage capacity*

Wheat 19,357 MT

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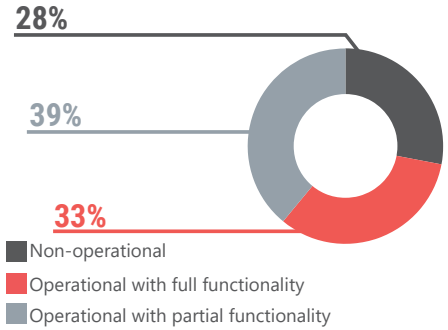
Deir-ez-Zor

Bakeries 137

Bakeries operational status



Permanent closure (if non-operational)

74% Yes
26% No

Reasons for closure

Authorities decision	74%
Machines need maintenance	15%
Inability to compete with supported bakeries	13%

Ownership

Publicly owned 8%
Privately owned 86%
Mixed ownership 6%

Availability

	Bread	Yeast	Local flour	Imported flour	Fuel
Always available	37%	99%	67%	62%	78%
Fairly/sometimes available	63%	10%	22%	33%	22%
Not available			9%	5%	

Main source of flour for production

Local flour 96%
100% SA

Imported flour 40%
74% Imported from Turkey
38% Imported from Iraq

Bread production

Regular untsubsidized bread
Regular subsidized bread

Average subsidized bread backage weight 1.08 kg
Average unsubsidized bread backage weight 0.9 kg

Support status

Yes 96%
No 4%

Support source

100% SA
1% NGOs

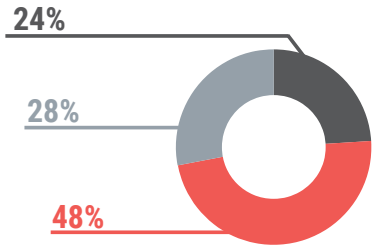
Type of Support

Flour	100% SA
Yeast	80% SA
More fuel/electricity	91% SA

* On average

Mills 102

Mills operational status



Non-operational
Operational with full functionality
Operational with partial functionality

Reasons for limited functionality

Demand in area does not require full capacity	59%
Shortages in fuel /electricity	43%
Machines need maintenance	22%
Shortage of wheat	20%

Ownership

Privately owned 95%
Publicly owned 4%

Main source of wheat for production

77% Wheat traders
46% Directly from farmers
23% SA

Weekly production

Maximum capacity* 60 MT
Current capacity* 46 MT

Management

90% The owner
8% Staff member
3% SA

Market Actors Supplied Through

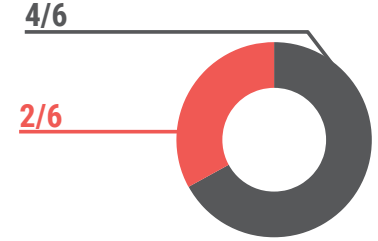
94% People (personal use)
14% Private traders
9% Bakeries

Stocking capacity

Wheat capacity 106 MT
Flour capacity 58.4 MT

Silos 6

Silos operational status



Non-operational
Operational with full functionality

Reasons for closure

Needs building rehabilitation	2/4
Bombing and shelling	3/4
Used as a military base	1/4

Ownership

Publicly owned 6/6

Source of wheat

6/6 Directly from farmers
3/6 Wheat traders

Stored wheat type

Soft 6/6
Hard 6/6

Management

6/6 SA

Wheat origin

6/6 Locally produced

Storage capacity*

Wheat 66,000 MT

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Enumerators and training

The data is collected by field staff who are well-acquainted with the conditions on the ground, ensuring a thorough understanding of the local context. Before initiating data collection, these staff members receive comprehensive training on the methodology and tools provided by REACH to ensure accuracy and consistency in the process. The data collection itself is conducted using the KOBO Collect mobile application, a robust tool that facilitates efficient and reliable data gathering in the field.

Data cleaning and analysis

After data collection, REACH compiles and cleans all data, standardizing prices, cross-checking outliers, and calculating the median cost of prices in each assessed location. Follow-ups are initiated with field teams to address data queries, including outliers, missing data, and incorrect entries.

Aggregation

The published data is presented at the sub-district, district, governorate, and regional levels. At each aggregation level, the median of all prices collected within the unit of analysis is calculated. For example, at the regional level, the median of all prices collected for a specific product in the entire region is calculated, while at the governorate level, the median of all prices collected in that governorate is calculated, and so forth. All price index and weight calculations utilize this method.

Challenges and limitations

- Price data reflects only the specific timeframe in which it was collected. Variations may occur between data collection rounds.
- With current coverage, data is mostly collected from accessible facilities, which may not be representative of rural areas.
- As the output is coverage-dependent, the data reflects only the conditions of the assessed facilities and may not be representative of all facilities within that sub-district.

About REACH

REACH Initiative facilitates the development of information tools and products that enhance the capacity of aid actors to make evidence-based decisions in emergency, recovery and development contexts. The methodologies used by REACH include primary data collection and in-depth analysis, and all activities are conducted through inter-agency aid coordination mechanisms. REACH is a joint initiative of IMPACT Initiatives, ACTED and the United Nations Institute for Training and Research - Operational Satellite Applications Programme (UNITAR-UNOSAT).