



SOLUTIONS AND MOBILITY INDEX – Great South Region MADAGASCAR

JUNE 2024
ROUND 1

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Madagascar's Great South region remains in a state of chronic drought, which has been exacerbated by climate change in recent years. As a result, and despite the interventions in the region, ongoing migration of various populations to other parts of Madagascar presents unique challenges for the region.

The Antandroy people, who occupy most of the Great South of Madagascar, continue to migrate north and west to find better living opportunities because of the extreme conditions caused by the drought. This situation has been worsened by the arrival of the El-Niño climate event, which affected the entire Androy region.

As a result of DTM's efforts in the Great South of Madagascar in 2018, 2022 and 2023, IOM has been able to collect valuable information from around 90,000 IDPs across a sample of 20 communes. IOM, with the financial support of UNDP (as part of the 'ECHO-SAP'/EWS', project on the operationalization of their early warning system), has now deployed the Solutions and Mobility Index in four districts of Madagascar's Grand South, comprising Antanimora Atsimo, Ambovombe-Androy and Tsihombe in the Androy region, and the district of Ampanihy Ouest in the Atsimo Andrefana region.

These are the areas most affected by drought, which is equally the main source of instability in the Great South of Madagascar, as no durable solution has yet been found.

This report presents the results of data collection for one round of the SMI survey carried out in the Great South of Madagascar.

1. METHODOLOGY

The Solutions and Mobility Index (SMI) combines 43 key indicators in order to evaluate the level of stability in the targeted localities. These indicators cover four essential thematic areas of stability:

- The means of subsistence and baseline access to services,
- Social cohesion,
- Safety and security,
- Resilience to environmental hazards and the capacity to adapt to crisis.

These indicators are grouped together to form sub-scores that allow for the comparison of localities by theme (see *Appendix I for more information on how the indicators are grouped and calculated*). Through the synthesis of these indicators, the SMI identifies domains that are conducive to maintaining sustainable solutions or increasing overall stability. Three 'anchor questions' on the perception of stability within the community are used to validate the correlation between the stability score and the sentiments of the community at large. These questions concern the community's current perception of the situation, their perceived stability, and their future intentions.

To calculate a locality's stability score, the SMI uses a logistic regression analysis that compares the 43 key indicators with the responses to the three anchor questions. This approach estimates the relationship between these variables, generating a probability of stability (from 0 to 100) for each locality. This method offers a better understanding of the domains requiring sustainable solutions to improve overall stability and addresses safety concerns in contexts of internal displacement. It is important to note that the logistic regression data included both the Grand Sud and Menabe regions, in order to obtain estimates from a larger sample. However, the two reports were published separately.

1.1 Data collection

The SMI comprises data collected via interviews with key informants at the local level in **230 'fokontany' hosting displaced populations in the Great South (Antanimora Atsimo, Ambovombe-Androy, Tsihombe, Ampanihy Ouest districts)**. The data collection sites were selected on the basis of previous DTM studies (and studies already carried out in the arrival areas) where displaced persons were located.

Several key informants were interviewed in each locality, allowing IOM to cross-validate the information gathered. Key informants included mayors, fokontany chiefs, humanitarian workers and other community representatives. The key informant method has the advantage of quickly collecting information on many localities, but it is limited in that it is only an estimated representation of the views of an entire community. In addition, the results of the SMI represent a snapshot of the conditions at a given time and may therefore vary from one cycle to the next or change suddenly given the current context.

Table 1. Evaluated Localities

ANTANOMORA ATSIMO	5 COMMUNES	25 FOKONTANY
AMBOVOMBE- ANDROY	13 COMMUNES	65 FOKONTANY
TSIHOMBE	9 COMMUNES	45 FOKONTANY
AMPANIHY OUEST	19 COMMUNES	95 FOKONTANY

2. KEY RESULTS

The Solutions and Mobility Index (SMI) aims to inform programmatic interventions that can improve local stability and facilitate the sustainable reintegration of displaced populations into their communities of origin, whilst preventing future forced displacement. In the context of Madagascar's Great South, it has been deployed to understand the parameters that primarily influence the stability of the localities assessed, with a view to preventing future displacements. To strengthen overall stability in the region, the government and its partners should work closely to address specific localities with specialized interventions/solutions based on the results of the different SMI indicators, particularly with regard to the security of people and property, services, livelihoods and the strengthening of the population's resilience to extreme drought. The summary of results below is derived from data at the commune level. However, 'Table 2' presents the results obtained from district-level data.



Diverse stability level

The analysis revealed a significant diversity of stability levels amongst the region's localities. Some communes, such as Tsihombe and Ambovombe, have high levels of stability, whilst others, such as Ambohimalaza, Marovato Befeno and Analamary, have much lower levels.



The evaluated localities in the two regions are not perceived to be generally safe

The levels of security in the localities assessed across the two regions of the Great South are generally similar, with low scores on average (18). The districts of Ambovombe-Androy and Antanimora Atsimo have the lowest scores (16 and 11) due to the prevalence of theft of personal belongings and livestock.



Strong association between access to services, social cohesion, and perception of stability

Higher levels of social cohesion and access to services are generally associated with increased perceptions of stability. The localities where key informants said people felt safest were, on average, the localities with the highest scores pertaining to access to services and social cohesion.



Most people in the Great South feel that their localities lack stability

Ninety-nine per cent (99%) of key informants in the areas evaluated stated that their localities were unstable and that the inhabitants would like to leave for various reasons.

Stability score



Overall, the stability index scores across the localities in the Great South are low, with an average score of 21.35. Almost all the communes in these two regions had an average score of less than 50.

The districts of Tsihombe and Ampanihy Ouest have the highest stability indices

The district of Tsihombe, in the Ambovombe-Androy region, has the highest average stability score (26.17) of all the districts assessed in the two regions. The Ampanihy Ouest district, in the Atsimo Andrefana region, equally scored above the overall average (21.71).



Low resilience to crises

Resilience to natural disasters and climate change is a challenge in the region. Across localities, resilience scores are very low, with the Antanimora Atsimo and Ambovombe-Androy districts having the lowest score (26.53 out of 100 and 34.53 out of 100 respectively). The districts of Tsihombe and Ampanihy Ouest were slightly higher, scoring 45.44 and 53.57 respectively.



Table 2. Solutions and Mobility Index scores and sub-scores by districts.

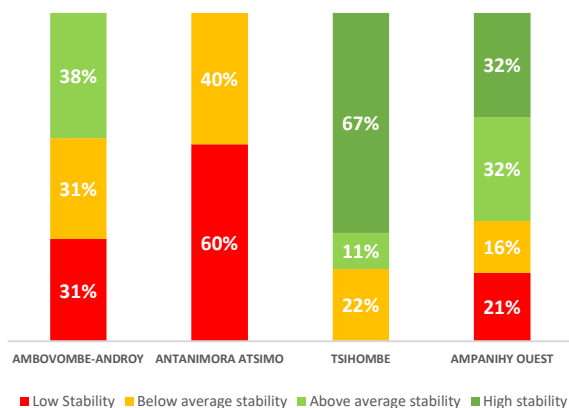
Districts	Stability Score	Security Score	Social Cohesion Score	Services Score	Resilience Score
AMBOVOMBE-ANDROY	19.81	16.03	22.06	16.41	34.53
ANTANIMORA ATSIMO	15.34	11.05	15.52	18.97	26.53
TSIHOMBE	26.17	23.67	20.43	23.89	45.44
AMPANIHY OUEST	21.71	17.49	11.85	21.45	53.57

3. STABILITY SCORES OVERVIEW

Interpreting the Solutions and Mobility Index: The SIM is a comparative measurement; therefore, scores should only be interpreted in relation to each other. Therefore, it is essential to look at the distribution of stability scores across the whole evaluation in order to understand the relative position of a single score. Thus, to better understand the data, the analyses on this page are derived from average stability scores at the commune level. In the calculations below, **the median stability score for the region is 21.37**. The threshold for the first quartile (25% of localities with the lowest score) is **18.39**, and the threshold for the third quartile (25% of localities with the highest score) is **24.39**. According to this distribution, localities with a score above **24.39** are classified as very stable, or more stable than 75 per cent of the localities assessed in the region.

3.1 Stability Scores by District

Figure 1. Distribution of stability scores (by quartile)



The categories were determined by quartile. For example, localities in the 'low' category were among the lowest 25 per cent of localities in the region. Whereas 'high' localities scored in the top 25 per cent of localities.

* Percentages may not add up to 100 due to rounding errors.

A number of trends can be understood through the quartile analysis of the SMI scores. The newly created district of Antanimora Atsimo, is of particular note, with fokontany being classified as either low or below average stability. The districts of Ampanihy Ouest and Tsihombe have the highest scores, with up to 32 per cent and 67 per cent of fokontany in the high stability quartile.

3.2 Sub-Indices Scores by District

An analysis of the sub-index stability scores (or sub-scores) in each district provides significant insights into locality dynamics.

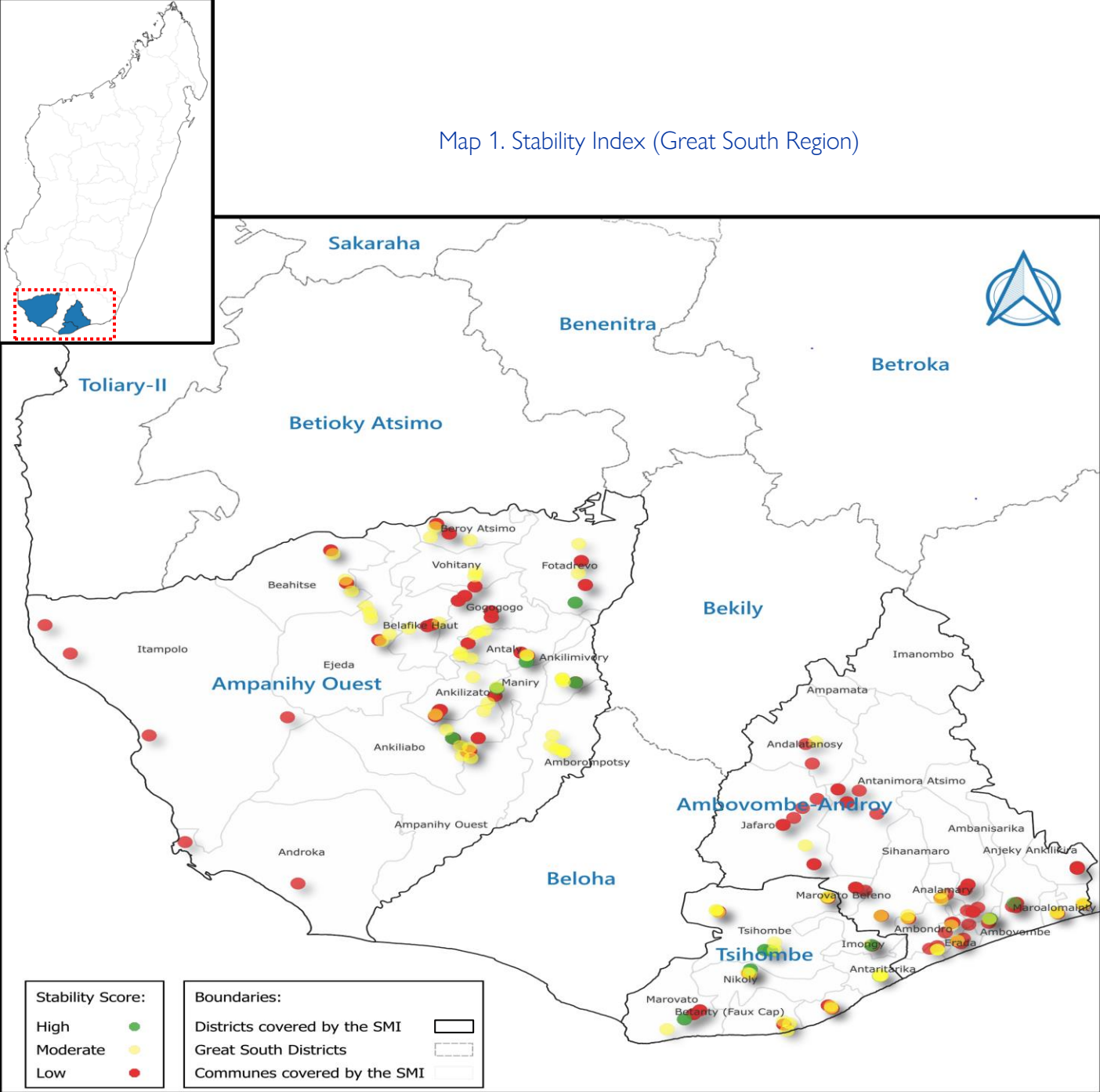
Stability scores for the fokontany in the districts of Ampanihy Ouest and Tsihombe are above average (21.35). However, the districts of Ambovombe-Androy and Antanimora Atsimo have stability scores below average (18.81 and 15.34 respectively), which is equally reflected in the low services sub-score. Security scores across the 4 districts are vary greatly (from 11.05 to 23.67), whilst social cohesion is highest in the districts of Ambovombe-Androy and Tsihombe.

Scores for basic services and livelihoods are, in general, low, with an average of 20.23 out of 100 for the 4 districts. The districts of Tsihombe and Ampanihy Ouest are perceived to be more resilient to drought due to the mitigation and adaptation programmes already implemented by humanitarian agencies.

Table 3. Average stability scores and sub-scores for the Great South (by district, by commune)

Districts/Communes	Stability Score	Security Score	Social Cohesion Score	Services Score	Resilience Score
AMBOVOMBE-ANDROY	19.81	16.03	22.06	16.41	34.53
AMBANISARIKA	22.33	17.08	22.49	23.51	33.17
AMBAZOA	18.42	16.24	31.72	5.71	31.42
AMBOHIMALAZA	17.10	2.08	27.28	9.24	43.55
AMBONAIVO	16.31	13.74	12.97	19.27	33.56
AMBONDRO	20.09	18.27	31.18	22.83	27.59
AMBOVOMBE	22.69	29.75	22.04	23.49	27.23
ANALAMARY	21.50	16.55	21.26	10.58	40.03
ANJEKY ANKILIKIRA	16.79	3.89	23.82	14.38	31.06
ERADA	15.35	12.58	11.59	13.00	30.23
MAROALOMAINTY	19.50	17.45	15.10	19.00	26.87
MAROALOPOTY	23.04	42.47	11.05	6.71	51.06
SIHANAMARO	20.80	5.34	23.05	7.78	39.58
TSIMANANADA	23.59	13.00	33.21	37.79	33.56
ANTANIMORA ATSIMO	15.34	11.05	15.52	18.97	26.53
ANDALATANOSY	19.00	20.65	14.44	18.77	40.20
ANDRAGNANIVO	18.48	17.73	11.57	27.07	29.78
ANTANIMORA ATSIMO	16.67	12.92	13.08	29.92	17.19
JAFARO	9.94	1.31	12.51	6.51	26.46
MAROVATO BEFENO	12.64	2.62	26.02	12.60	19.00
TSIHOMBE	26.17	23.67	20.43	23.89	45.44
ANJAMPALY	20.38	21.40	17.95	4.72	41.33
ANKILIVALO	18.39	21.63	16.30	12.56	25.85
ANTARITARIKA	33.47	42.26	30.82	30.12	32.25
BEHAZOMANGA	24.11	21.52	18.61	31.84	46.07
BETANTY (FAUX CAP)	24.51	7.62	34.82	22.95	42.84
IMONGY	28.48	27.40	18.37	34.94	53.71
MAROVATO	24.39	21.61	17.69	26.72	41.09
NIKOLY	32.77	23.94	22.41	35.11	72.75
TSIHOMBE	28.99	25.64	6.88	16.08	53.08
AMPANIHY OUEST	21.71	17.49	11.85	21.45	53.57
AGNAVOHA	19.56	15.05	4.71	18.27	57.88
AMBOROMPOTSY	28.90	13.96	23.83	21.50	83.30
AMPANIHY CENTRE	22.94	17.87	19.11	7.62	69.77
ANDROIMPANA	9.86	3.92	3.91	14.34	23.88
ANDROKA	12.86	5.47	5.30	10.82	40.37
ANKILIABO	25.92	33.59	21.66	22.07	48.27
ANKILIMIVORY	27.45	20.56	23.59	23.19	68.09
ANKILIZATO	15.03	8.86	5.90	12.03	47.86
ANTALY	27.85	20.51	11.35	40.80	61.69
BEAHITSE	20.86	10.09	8.50	40.56	44.05
BEARA	23.65	40.01	5.06	13.27	51.42
BELAFIKE HAUT	22.66	21.94	8.86	24.74	56.39
BEROY SUD	22.33	5.43	20.81	16.56	52.11
EJEDA	21.25	19.50	7.05	24.85	53.15
FOTADREVO	25.74	29.30	27.78	21.71	47.30
GOGOGOGO	19.17	14.77	7.49	28.28	41.62
ITAMPOLO	15.01	16.39	4.38	6.52	37.66
MANIRY	29.37	20.24	6.22	34.27	76.30
VOHITANY	22.15	14.88	9.60	26.16	56.72

Map 1. Stability Index (Great South Region)



This map is for illustration purposes only. IOM expresses no opinion concerning the legal status of any country, territory, city or area, or of its authorities, or concerning its frontiers or boundaries.

4. ANALYSIS OF INDICATORS

4.1 Analysis of principal indicators influencing stability between localities

The Solutions and Mobility Index uses a logistic regression to understand the impact of each stability indicator. The indicators with the greatest weight have the greatest influence on determining the score. By exploring these key indicators, it is possible to identify the factors that have the most impact on stability in a given locality (for a more detailed overview of what each indicator measures, see the appendices). This analysis provides insight into possible programmatic and policy responses that could be implemented in target communities to improve their relative stability.

The **livelihoods and basic services** indicators are the most influential in the dataset for the Great South. Six of the top eight indicators are: access to water, ownership of agricultural land and fishing areas, access to local markets, access to health services, ownership of identity and civil status documents, and judicial services. This indicates that programmes focusing on the relevant livelihoods and basic services indicators could greatly improve the stability of the areas evaluated.

Indicators relating to safety and security and social cohesion constitute the second most influential group of indicators: incidents of theft of personal effects (including livestock), mutual aid and cooperation between the population in the event of a problem are amongst the top eight. Regarding resilience, drought mitigation is equally seen as a priority, particularly around the indicator 'adoption of agroecological crops/practices'.

4.2 Principal Indicators in the Great South

Table 3. Most influential indicators in the Solutions and Mobility Index in the Great South

	SOCIAL COHESION	SECURITY	SERVICES	RESILIENCE
Great South (Androy and Atsimo Andrefana)				
1			Access to water	
2			Means of subsistence	
3		Community preoccupation with security		
4			Access to healthcare	
5			Public services	
6			Local Markets	
7	Participation in community activities and mutual aid			
8			Adaptation to natural disasters/crisis	

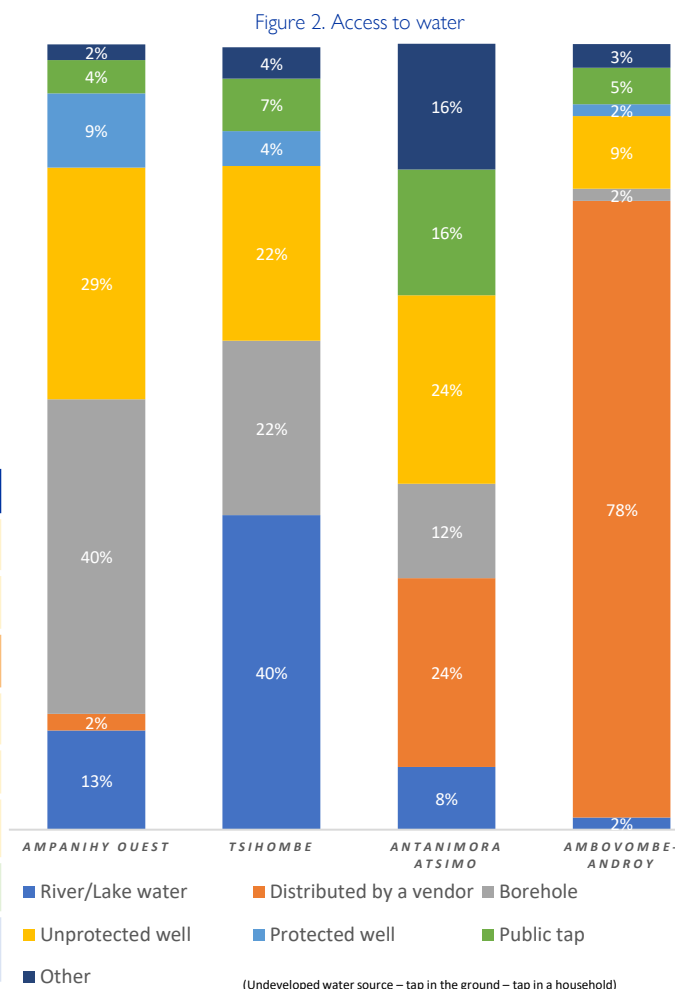
4.3 Analysis of the 8 key SMI indicators

1. Access to water

According to key informants, access to water is a defining factor in determining the level of stability in the Great South of Madagascar. Historically, this parameter has always been a serious concern and remains largely unresolved to date. This is mainly due to low rainfall in the area and the intensification of drought across the region.

Overall, access to public water sources is low, despite efforts to drill boreholes and dig protected wells, with both solutions reaching up to 40% of the population in the Ampanihy Ouest and Tsihombe districts. However, the majority of the populations there live more than 500 metres from a water source. The situation in the Ambovombe-Androy district is critical, with 78 per cent of the population accessing water from water vendors.

* Percentages may not add up to 100 due to rounding errors.



4.3 Analysis of the 8 key SMI indicators (cont'd)

2. Means of subsistence

The majority of the population in the localities of the four districts are in possession of arable land, however, the difficulty has been finding suitable crops to grow in the extreme climate of the Great South. Equally, the ongoing effects of climate change have been intensified by the El-Niño weather event or 'Tiomena', which has destroyed October's annual harvests in recent years. To date, no solution has been found, which has led to the infamous 'kere' famine, causing large parts of the population to leave the Great South for better living opportunities in other regions of Madagascar.

Only coastal communities have access to fishing zones. 67 per cent of these communities occupy the entire fishing area due to a lack of overall resources.

Over 80 per cent of the population's economic activities, including agriculture, livestock breeding, and commerce, have been greatly affected by climatic phenomena over the past two years. This is primarily reflected in the deteriorating health of children in the evaluated localities, with 99 per cent having at least one child suffering from malnutrition.

3. Security concerns

In the Great South, there are longstanding security concerns around the theft of livestock by the 'malaso' and other ethnic groups in the region, as owning cattle has long been synonymous with wealth.

Equally, the number of zebu has fallen due to their exportation to larger towns for consumption. Although this has reduced the theft of zebu, extreme poverty seems to have increased the theft of personal items in the localities.

However, the presence of security forces in the localities means that this situation is stable and even decreasing in some areas according to key informants.

4. Access to healthcare

Only 37 per cent of the fokontany have health and medical facilities. The Tsihombe district has the highest level of access to healthcare (64%). However, this district is not representative given its smaller size (Tsihombe consists of nine communes all relatively close to each other).

Of the existing healthcare facilities, 85 per cent are open and functional, comprising 66 per cent in the Tsihombe district, 92 per cent in the Ambovombe-Androy district and 100 per cent in the Antanimora Atsimo and Ampanihy Ouest districts.

For the fokontany that do not have healthcare facilities, 79 per cent said that they receive treatment in the health centres of nearby localities, 17 per cent receive treatment in a distant fokontany, and 4 per cent still use traditional care.

Figure 3. Possession of arable land

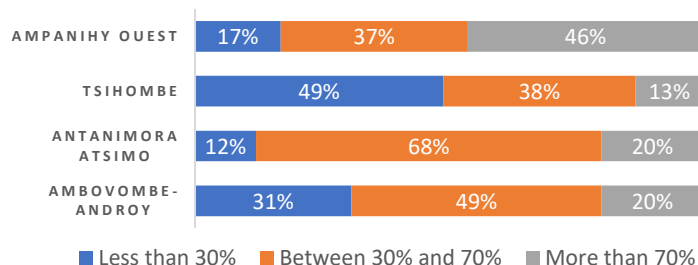


Figure 4. Fishing zone access

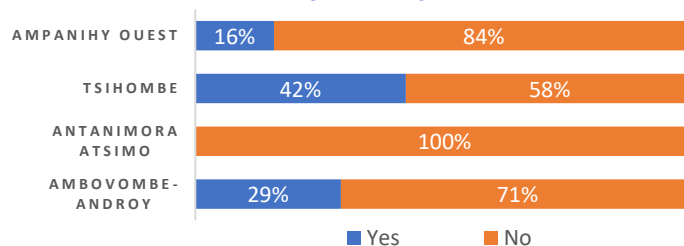


Figure 5. Incidents of theft (personal items and/or livestock)

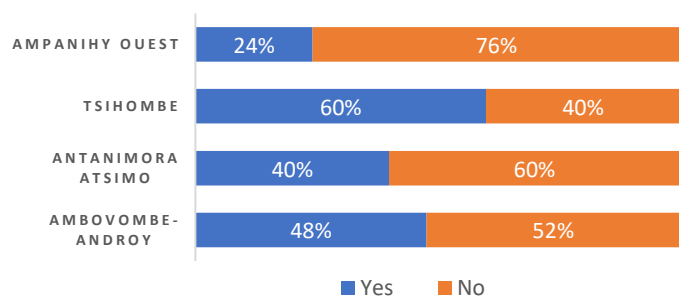
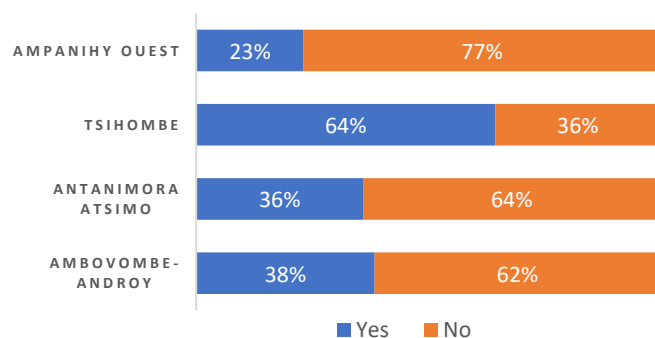


Figure 6. Presence of health and medical centre(s)



4.3 Analysis of the 8 key SMI indicators (cont'd)

5. Public services (civil, legal)

Public services in the evaluated localities are mainly focused on civil registry and legal services.

Eighty-two per cent of fokontany stated that they had access to state services, but only 63 per cent were satisfied with the services offered by the public administration. This may have been due to a lack of adequate staff and equipment to cover the needs of the population, which is currently estimated at 910,000 (according to the latest RGPH3 census carried out by INSTAT in 2018).

With regard to accessing legal services, 125 fokontany, or 54 per cent of localities, have declared that they have adequate access. However, 91 per cent of localities still use traditional methods of conflict resolution, such as the 'dina'. Local authorities, such as the fokontany chiefs and the mayor, often play the role of conciliator in conflict resolution. To ensure the harmony of their communities, they often try to resolve disputes amicably. Unfortunately, binding legal courts are only available in certain district capitals.

6. Access to local markets

In Madagascar, markets are often organized at the commune level, where each commune in the same district is entitled to one market day a week, without overlap. This provides the opportunity for inter-trade between communes, with goods ranging from necessities to livestock. On average, 72 per cent of the key informants said that there was a market within an acceptable distance (around 5 kilometres). Only fokontany that are further away have problems obtaining supplies from the local markets.

However, supply from the district capitals are limited due to distance. Although more than 70 per cent of the markets across the 4 districts are open and operational, available items tend to be scarce.

7. Social cohesion

Overall, social cohesion is good across the four districts; this is due, in part, to the cultural importance of cohesion in the Great South. The prevalence of confrontation has been reported to be extremely low in the previous 6-month period.

The level of participation in community activities, such as meetings organised by the fokontany chief, is moderate to high. There almost no disputes reported between IDPs, returnees and the respective host communities. Seventy per cent of key informants in the fokontany stated that returnees, IDPs, vulnerable people, and the host community have equitable access to services and resources, so marginalisation was low.

Figure 7. Possession of identity and/or legal documents (marriage license, birth certificate, national identity card, ...)

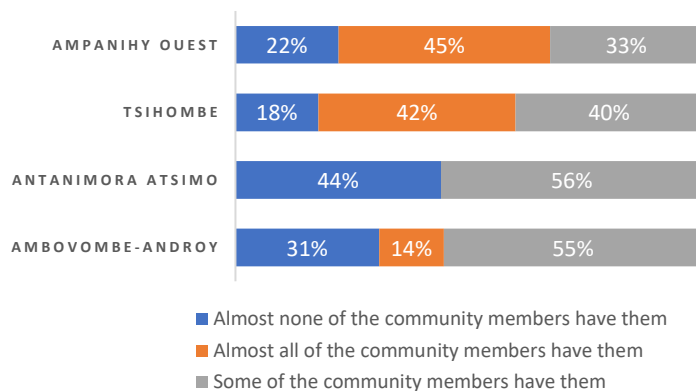


Figure 8. Presence of a market near to inhabitants

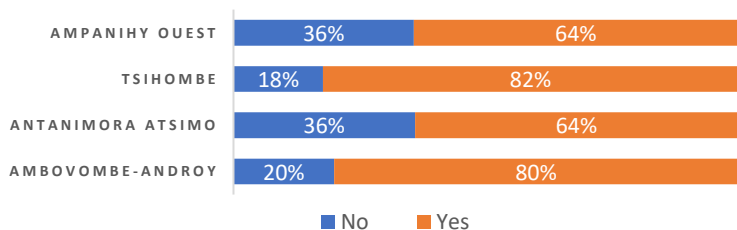


Figure 9. Availability of goods at the market

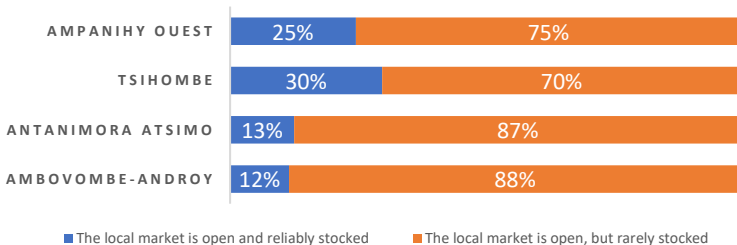
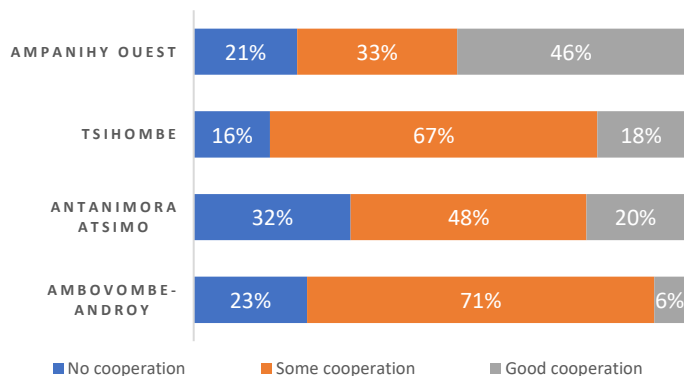


Figure 10. Social cohesion/cooperation when problems arise in the community



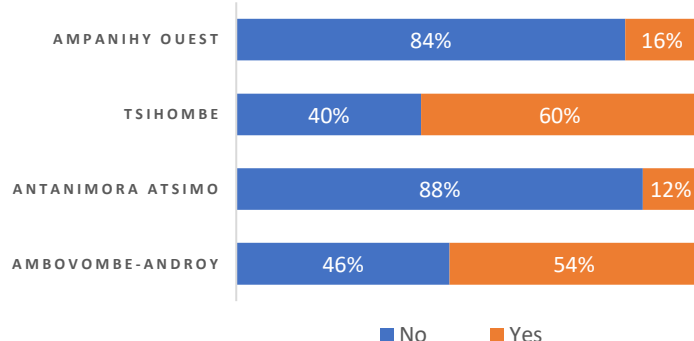
4.3 Analysis of the 8 key SMI indicators (cont'd)

8. Resilience to natural disasters

Chronic drought is the most prevalent natural disaster affecting the Great South, even though the region has been affected by (moderate) cyclones in recent years.

Although agroecological cultivation is key to mitigating drought, only 35 per cent of localities implement suitable practices, which further exacerbates the challenges faced by the populations in this region. Some districts, such as Ambovombe-Androy and Tsihombe, are increasingly adopting these methods with the help of various humanitarian workers in the area. Moving forward, additional interventions are essential in the Ampanihy Ouest and Antanimora Atsimo districts.

Figure 11. Adoption of agroecological cultivation methods



4.4 Analysis of 'Anchor Questions'

The first part of the questionnaire concerned key informants' perceptions of stability in the localities evaluated. These 'anchor questions' were not used in the calculations of the Solutions and Mobility Index but served to validate the results of the SMI against self-reported perceptions within the community. The following graphs depict the responses of the key informants who were interviewed during the evaluation.

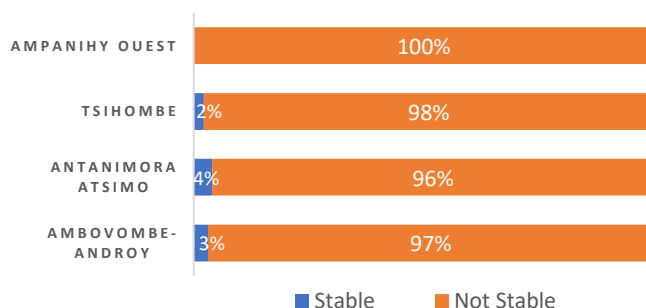
Stability Sentiment

Do the inhabitants of the locality feel stable?

According to key informants, the large majority of inhabitants in Ampanihy Ouest expressed a very high sense of instability and insecurity, based primarily on daily living conditions, means of subsistence, access to basic services, and access to water.

In the remaining three districts, only a minority of localities expressed a feeling of stability, including one fokontany in the Tsihombe district and one in the Antanimora Atsimo district, and two fokontany in the Ambovombe-Androy district.

Figure 12. Stability sentiment by district



Future Intentions

Do inhabitants believe that they should leave in the near future because of insecurity in their current locality?

The following 3 parameters were used to determine the future intentions of populations in the assessed localities: improvement in access to basic services (education, health, water, arable land and fishing zones, local markets and PPN, etc.), improvement of the security situation, and improvement of resilience to drought. Access to basic services was the most influential factor in people's future intentions (to leave), as ninety-seven per cent of localities stated that they intended to depart if they did not see improvement in this domain.

The majority of inhabitants in the 4 districts intended to leave their current location, and only the key informants in two fokontany in the commune of Betanty (Faux cap), in the Tsihombe district, intended to stay. Inhabitants generally migrate north in groups and travel by car. However, there are those who head west and travel from town to town on foot. In general, it is the men who leave first to find work and then send money back to help their families, whilst some who find better opportunities return to retrieve their families.

Perception Change

Are people more hopeful about the stability of their communities, compared to the previous six months?

The analysis highlighted significant changes in people's perceptions, compared to the previous six months, across all four districts of the Great South. With regard to security, 75 per cent of fokontany were optimistic about its evolution compared to the last six months.

Only 10 per cent of fokontany were optimistic regarding the evolution of drought-induced food shortages. The most optimistic district was Ampanihy Ouest (17%), despite, historically, being a district severely affected by acute malnutrition. The average across the 4 districts was 92 per cent (of fokontany negatively perceiving the evolution of this parameter).

Capacity to adapt

Does your locality have the resources and necessary plans to adapt effectively to crisis?

Analysis of the data collected from key informants (by district) on the existence of measures to increase community resilience to natural disasters through coping mechanisms reveals heterogeneity in the perception of natural disaster management plans.

The district of Tsihombe had a relatively high 'yes' response rate (62%) compared to the other three districts in the Great South. This is due to the existence of humanitarian agencies, including 'CRS', who have tried to specifically address concerns in this domain, in the area.

Figure 13. Future intentions by district

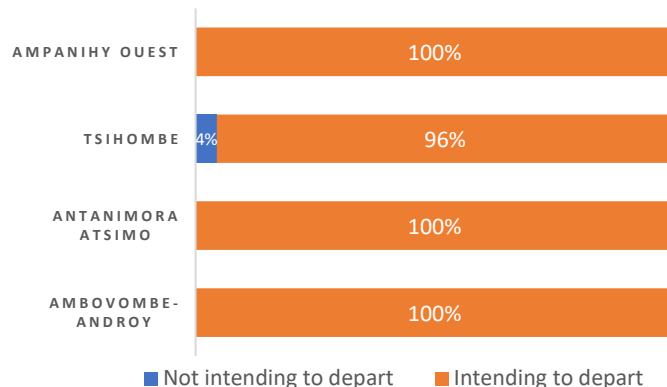


Figure 14. Change in perception of food scarcity due to drought, in the last six months

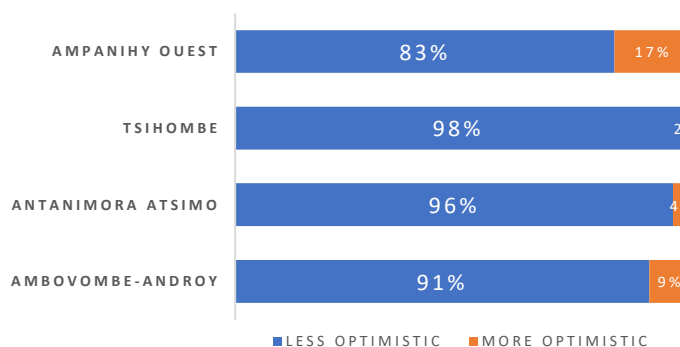
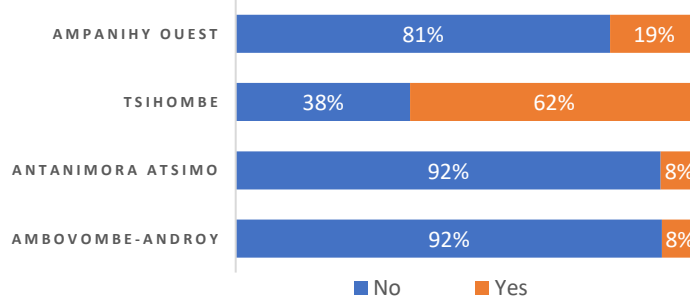


Figure 15. Existence of measures to increase community resilience to disasters through adaptive mechanisms



5. CLUSTER ANALYSIS

5.1 Cluster Generation

Grouping similar localities into clusters can help uncover distinctive patterns in geographic regions, which better facilitate the implementation of targeted humanitarian programmes. This analysis uses machine learning to group the clusters and identify underlying patterns in the regions (see the appendices for more details on cluster generation). High stability clusters can help to identify 'pockets of stability' at a less granular level than the individual locality evaluations, affording more feasible programmatic interventions. The map on page 13 shows the localities assessed in the Great South of Madagascar, divided into two groups. Each colour represents a group of localities with similar responses to the Solutions and Mobility Index survey. The table below provides a breakdown of the average SMI scores and sub-scores for each of these groups.

Cluster 0 – Low SMI, resilience, safety, services, and cohesion scores

Cluster 0 is characterized by a low SMI score (19), indicating generally low stability in the localities in this cluster. It is also characterized by low scores for services, safety, cohesion, and resilience.

These localities are characterized by low scores for all indicators, whether in terms of resilience to natural disasters, community security, basic services, or social cohesion. 148 fokontany in the Great South, or 64% of the localities assessed, belong to this group. All proposed interventions in these domains are needed to improve the situation so that these localities have better stability moving forward. The districts with the most fokontany in Cluster 0 are Ambovombe-Androy, Antanimora Atsimo and Tsihombe.

Cluster 1 – Moderate SMI and resilience scores

Cluster 1 shows indicators of moderate stability (24) and resilience scores (63).

These generally comprise the fokontany in the Ampanihy Ouest district and the Tsihombe district, where humanitarian agencies have already been present and have improved their resilience to chronic drought. Although interventions relating to this theme are no longer a priority, the scores for the remaining conditions are similar to those in Cluster 0. There are common problems across the Great South, including low basic service scores, mediocre security scores and, arguably, fragile social cohesion scores.

The K-Means clustering model (used for this analysis) enables distinct trends to be identified among localities based on multiple indicators. Clusters demonstrate unique characteristics, highlighting the need for differentiated approaches to strengthen stability, social cohesion, services and resilience in different areas. The results provide a basis for targeted interventions and policy formulation aimed at improving living conditions and stability in the Great South of Madagascar.

Figure 16. Breakdown of localities by district and cluster

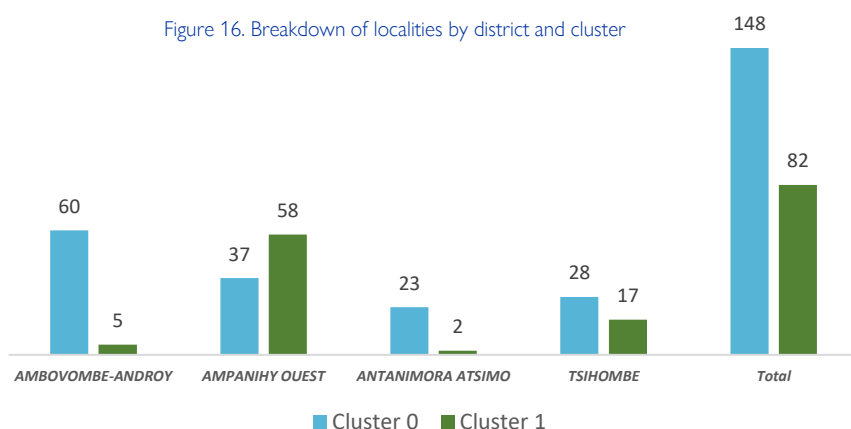
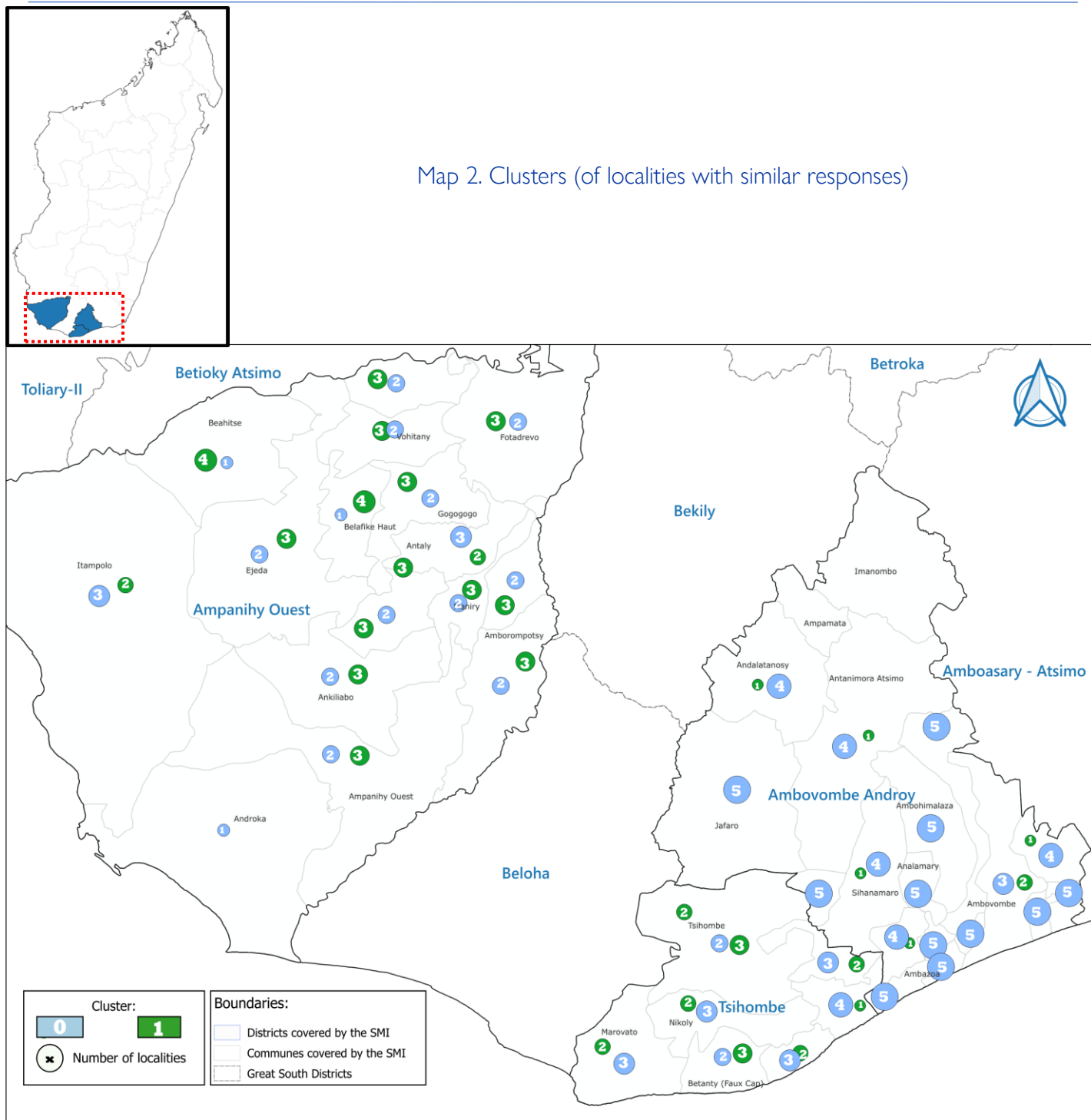


Table 4. Average SMI and sub-score by cluster

	SMI Score	Services Sub-score	Security Sub-score	Social Cohesion Sub-score	Resilience Sub-score	Number of Localities
Cluster 0: Low SMI, resilience, safety, services, cohesion scores	19.82	18.48	20.45	18.23	32.93	148
Cluster 1: Moderate SMI and resilience scores	24.13	23.40	12.43	14.25	63.03	82
Average	21.97	20.94	16.44	16.24	47.98	115

Map 2. Clusters (of localities with similar responses)



This map is for illustration purposes only. IOM expresses no opinion concerning the legal status of any country, territory, city or area, or of its authorities, or concerning its frontiers or boundaries.

6. CONCLUSION

The analysis of the first round of the Solutions and Mobility Index (SMI) study carried out in 230 fokontany in 4 districts of Madagascar's Great South revealed that a number of key indicators have a direct impact on the perception of stability in locations with a long history of mass migration due to chronic drought.

The **8 most influential indicators of perceptions of stability**, in order of impact, were: **access to water, access to livelihood, security concerns, access to healthcare, public services, access to local markets, participation in community activities and mutual aid, and adaptation/resilience to natural disasters.**

The results of this study showed that Madagascar's Great South is highly unstable and that future populations will continue to leave the region in search of better opportunities in other regions of the island. Targeted adaptations and interventions in this region will help to improve long-term stability and reduce further migration.

6.1 Recommendations

The analysis presented in this report provides a better understanding of the main indicators influencing stability dynamics in the Great South region, as well as the possible programmatic and policy responses needed in the target communities.

- Adapting programmes according to the stability of the locality:** It is important to prioritize rapid humanitarian interventions in less stable areas and implement longer-term sustainable development initiatives in more stable ones.
- Targeted and diversified stabilization initiatives:** Given the heterogeneity of the results of the SMI, it is recommended that peace-building resources be concentrated on districts such as Antanimora Atsimo and Ambovombe-Androy where stability is precarious. Equally, efforts should be maintained in more stable areas such as Tsihombe to ensure that the gains already made are sustained.
- Standardized intervention strategies:** The low score on access to services requires a more standardized and rigorous approach across all four districts. Priority should be given to improving access to water, livelihoods, health services, education and markets.
- Clustering similar localities:** For localities such as Ambovombe-Androy and Antanimora Atsimo in Cluster 0, all programmes to strengthen stability are recommended. However, in Tsihombe and Ampanihy Ouest in Cluster 1, there should be a focus on improving basic services, security, and social cohesion.
- Improving security as a lever for stability:** It is essential to strengthen security in areas where insecurity is perceived to be high. By increasing the number of security forces in the region, optimizing responses to incidents and encouraging closer cooperation within local communities, it is possible to strengthen the perception of stability amongst residents.

7. APPENDIX I

A. Selecting localities

A selection of localities affected by displacement, mainly due to chronic drought and the El-Niño weather event, were chosen in the Great South of Madagascar. The selection of districts was based on previous DTM studies undertaken 2 years prior, as part of CERF funding, and if a district had also had an intervention zone for the 'ECHO-SAP'/EWS project with UNDP. DTM tried to reach all the communes in each district. A sample of 5 fokontany per commune, with the most IDPs present (according to the respective mayor), were surveyed, followed by further data collection in each fokontany. The fokontany is the lowest administrative level in Madagascar, so the fokontany with the most IDPs were selected to better reflect the situation in each commune as closely as possible. In all, 230 fokontany in the Atsimo Andrefana and Ambovombe-Androy areas were sampled.

B. Calculating the Solutions and Mobility Index (SMI)

The calculation of the Solutions and Mobility Index begins with the design of the survey: this tool has been developed with substantial input from experts in community stabilization and humanitarian development, and peace programming. It comprises a set of questions assessing conditions in a given locality that were determined to be (1) potential indicators of stability and (2) classified according to their implications for stability. The questions were divided into five categories: anchoring issues (perceptions of stability), safety and security, social cohesion, access to basic services, and disaster resilience.

Before calculating the SMI, the responses were ordinaly ranked from best to worst case scenario. To calculate the index, logistic regression analysis was used for each question on perception. By consolidating the scores for each question, the overall SMI score for each fokontany is obtained.

C. Calculating sub-indices

In addition to the SMI score, four separate sub-indices (with sub-scores) were generated using variables from each of the survey's four themes: Safety, Social Cohesion, Services, and Disaster Resilience. The sub-scores of the indices were calculated separately by taking the average of the questions related to each theme and then normalizing them between 0 and 100. The sub-scores make it easier to identify localities that may require specific attention in one of these areas.

D. Logistic regression

Logistic regression is a statistical technique commonly used to explore the relationships between a binary dependent variable (Y) and a set of independent or explanatory variables (X_1, X_2, \dots, X_n). It is used to model the probability of the dependent variable 'Y' taking a certain value as a function of the values of the explanatory variables (X_1, X_2, \dots, X_n). Logistic regression can be used to analyse the impact of each explanatory variable on the dependent variable and to predict the values of the dependent variable as a function of the values of the explanatory variables.

In the context of the SMI, a logistic regression is used to analyse the relationships between the explanatory variables (for example, safety indicators, social cohesion indicators, and basic services indicators) and the dependent variable (a specific perception question).

E. Cluster generation

To facilitate the analysis of groups of locations, clusters are created using the K-Means machine learning algorithm, weighted by geographical distance. K-Means is used to identify groups of locations that are the most similar amongst all the data provided. This data includes the first five dimensions of the principal component analysis results generated when calculating the SMI, as well as the geographical distance between the latitude and longitude points of each location. Thus, the clustering data included both the Grand Sud and Menabe regions. However, the two reports are published separately.

F. Limitations

Some localities that were not accessible during the data collection period were not evaluated for security or logistical reasons. This may have introduced a bias; data from some of the least secure localities were excluded from the analysis. This limits the generalizability of the results of the SMI in extremely unsafe locations.

It is important to note that the SMI is based on informants' perceptions of stability and reports of conditions in their locality and does not purport to provide an objective measure of this complex subject. Key informants are not randomly selected and may have different views from their neighbours on the stability of their locality.

In addition, the data for the logistic regression included both the Grand Sud and Menabe regions, in order to obtain estimates from a larger sample. However, the two reports were published separately.

8. APPENDIX II: Survey Indicators

ANCHOR QUESTIONS: STABILITY PERCEPTION

These key indicators were used to measure the perception of stability in each fokontany. The key indicators were then tested against each of the thematic indicators below in order to identify which ones had the greatest influence on perceptions of stability.

Sense of stability in the locality

Does the community feel safe and stable or dangerous and unstable?

Ability to continue living in the locality

Do residents feel they have to leave within the next six months?

Changes in perception over the last 6 months

Do people feel more or less optimistic about the state of the community than they did six months ago?

SECTION 1: MEANS OF SUBSISTENCE AND SERVICES

Access to, and quality of, shelter

Proportion of the community with access to shelter and accommodation

Primary education

Access to primary education and availability of schools in the locality or neighbouring villages

Healthcare and medical services

Access to an operational health centre in the locality or neighbouring village

Local markets

If markets are open and stocked

Electricity

Access to, and reliability of, electricity in the locality

Drinking water

Access to drinking water nearby and availability in the locality throughout the year

Arable land and fishing zones

Extent of fishing areas and farmland used in the locality

Presence of public sector employees

Whether public sector employees are present and how the public services operate

Internet and information communication technology

Access to, and reliability of, Internet and telephone services

SECTION 2: SOCIAL COHESION

Illegal occupation of a house, land, or property

Land, housing or property occupied illegally (without the permission of the family, neighbours, or local authorities)

Theft of personal articles

Theft of personal effects reported in the locality in the last 6 months

Theft of livestock

Livestock theft reported in the locality in the last 6 months

Daily life

Whether residents are able to carry out basic activities without worry (going to the market, letting children play outside, access to street or market vendors, etc.)

Support from the community

Likelihood of cooperation between neighbours in the event of problems (such as water or food supplies) in the locality

Tension in the community

Incidents or clashes involving two groups (religious, ethnic, herders/farmers, displaced/returnees/host communities) in the locality

Equality of access to services

Local people have equal access to basic services and resources, regardless of their age, gender or group (ethnic group, clan, displacement status)

Identity Documents

Level of possession of, or access to, identity documents in the locality

Participation in public affairs

Level of participation in public affairs (cooperative, association, civil society organization, etc.)

SECTION 3: SECURITY AND SAFETY

Recent security incidents

If there have been any serious security incidents in the last few months

Security Incidents – Resources

Trends in the number of security incidents linked to resource-related tensions (livestock theft, land disputes, etc.) over the last three months

Delinquency

Trends in the number of minor offences (theft, pickpocketing, vandalism, public intoxication, etc.) over the last year

Community preoccupation with security

How concerned are residents about their safety (abductions, crime, etc.)

Presence of security forces

Presence of local security forces

Freedom of movement

Freedom of movement of residents (to markets, to their homes, to work, to farms, etc.) in the locality

Legal recourse

If residents have access to legal recourse to resolve disputes

SECTION 4: DAMAGE CAUSED BY NATURAL DISASTERS (VIOLENT WINDS, LANDSLIDES, FLOODS, ETC.) AND LEVEL OF ADAPTATION AND MITIGATION

Frequency of crisis/disaster

Frequency and type of disaster in the last 2 years in the locality

Means of subsistence and economic activities

Resilience of livelihoods and economic activities to disasters

Shelter/WASH

Resilience of WASH structures and shelters to disasters

Health

Resilience of health infrastructure to disasters

Organization of and relationship to the community

Existence of, and participation in, a local disaster risk reduction mechanism

Information and communication

Knowledge of community sources of information on disaster preparedness and response awareness in your village in the last 2 years

Land vulnerabilities

Proportion of land potentially affected by disasters

Preparedness for climate hazards

Existence of local policies to prepare for day-to-day climate hazards

Capacity to adapt

Existence of measures in place to increase community resilience to disasters through mechanisms of adaptation/mitigation

Dependence on natural resources

Level of availability and dependence on natural resources (land, wood, water, etc.)

Environmental/Public Health

Waste management resources and disaster resilience

SOLUTIONS AND MOBILITY INDEX

– Great South Region –

MADAGASCAR

REPORT
OCTOBER 2024



GLOBAL DATA INSTITUTE
DISPLACEMENT
TRACKING MATRIX

Working group on fragility, solutions and mobility, IOM

The Solutions and Mobility Index is part of a body of work being developed by IOM country teams in Iraq, Somalia, the Lake Chad Basin, Madagascar and elsewhere, to improve the strategic planning and implementation of transition and recovery programmes. The Fragility, Solutions and Mobility Working Group seeks to provide a range of technical and strategic guidance and tools, including the drafting of a methodological framework to enable a malleable, context-specific but standardized approach to the measurement of fragility in new and emerging operations. The aim is to establish a global minimum standard, led by IOM, for the responsible collection and management of data to measure and understand indicators of fragility and stability through the deployment of analytical models in contexts of displacement and conflict.

The work of IOM's Transition and Recovery Division (TRD) and Displacement Tracking Matrix (DTM) in this area allows for new and unique approaches to consolidate and aggregate existing methods, in order to achieve more robust results and better tailor programmes in fragile contexts. This approach provides a basis from which evidence can be adapted and contextualized to support the strategic planning and implementation of transition and recovery programmes. Based on the principles of responsible data management, appropriate evidence can identify key drivers of fragility, solutions and mobility at community level, and help to determine how these drivers affect the overall state of the physical location and local community, and how they change over time.

IOM Madagascar

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