



SOLUTIONS AND MOBILITY INDEX – Menabe Region MADAGASCAR

JUNE 2024
ROUND 1

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Madagascar's Menabe region is ideal for agriculture and livestock farming, making it a popular destination for internally displaced people (IDPs) from the Great South region who are escaping the onset of chronic drought, which has been exacerbated by climate change in recent years.

The Bara and Sakalava peoples occupying this part of the island have long acted as host communities for IDPs from the Great South. This displacement has caused multiple problems in recent years, notably, the impact of migrant agricultural practice in the region's protected areas and tensions within the host communities themselves.

In response to this, IOM Madagascar has carried out an SMI (Stability and Mobility Index) assessment with the support of UNDP Madagascar, as part of the ECHO-SAP project on the operationalization of the early warning system (reinforced by previous projects), with a view to finding lasting and durable solutions to the arrival of migrants in the Menabe region.

This report presents the results of the SMI survey conducted in the Menabe region in the west and south-west of Madagascar.

1. METHODOLOGY

The Solutions and Mobility Index (SMI) combine 43 key indicators in order to evaluate the level of stability in 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 when faced with 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 the domains 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 perceptions 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 address 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 Solutions and Mobility Index comprises data collected via interviews with key informants at the local level in **62 'fokontany' in the Menabe region (Morondava and Belo sur Tsiribihina 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.

Figure 1. Number of evaluated fokontany by district

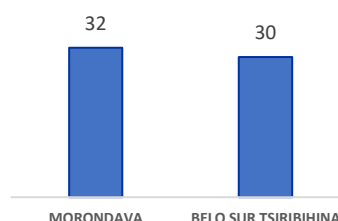


Table 1. Number of localities evaluated by district

MORONDAVA	6 COMMUNES	32 FOKONTANY
BELO SUR TSIRIBIHINA	6 COMMUNES	30 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 the Menabe region in the west and south-west of Madagascar, it has been deployed to understand the parameters that primarily influence the stability of the localities assessed, with a view to preventing future forced 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, as well as environmental protection. 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. Certain communes, such as Belo sur Tsiribihina and Amboalimena, have high levels of stability whilst others, such as Morondava and Marofandilia, have much lower levels.



The evaluated localities in the region are perceived to be generally safe

The level of security/safety is similar in the localities assessed across the two districts. In general, most localities are perceived as safe, although the district of Belo sur Tsiribihina has a higher-than-average safety score, with the communes of Belo sur Tsiribihina scoring 85.12 and Tsaraotana scoring 70.86. In the district of Morondava, the least safe communes were Bemanonga and Marofandilia.



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 Menabe feel that their localities are stable

Sixty-six per cent (66%) of key informants in the areas evaluated stated that their localities were stable, and the inhabitants do not want to depart. **Thirty-four per cent (34%)** of inhabitants in the region wanted to leave their fokontany.



Stability Score

Overall, the stability index scores are generally high for the Menabe region; the average score obtained was 37.27. The distribution of scores for the various localities in the two districts is more or less homogeneous.



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

Districts/communes	SMI score	Security score	Social cohesion score	Services score	Resilience score
BELO SUR TSIRIBIHINA	41.02	56.30	24.42	17.24	46.90
MORONDAVA	32.85	35.24	32.32	21.25	39.65

3. STABILITY SCORES OVERVIEW

Interpreting the Solutions and Mobility Index: The SMI is a comparative measurement; therefore, scores should only be interpreted in relation to each other. This means that 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 39.25**. The threshold for the first quartile (25% of localities with the lowest score) is **30.27**, and the threshold for the third quartile (25% of localities with the highest score) is **44.38**. According to this distribution, localities with a score above **44.38** 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

The district of Belo sur Tsiribihina showed consistent scores across the quartiles, indicating stability. In contrast, the Morondava district shows significant variation, with low stability scores in around 50 per cent of communes. This distribution of low stability scores highlights the considerable challenges moving forward.

Overall, these results underline the diversity of stability levels within each district and spotlight areas that are potentially vulnerable or more resilient to challenges relating to stability.

3.2 Sub-Score Indices by District

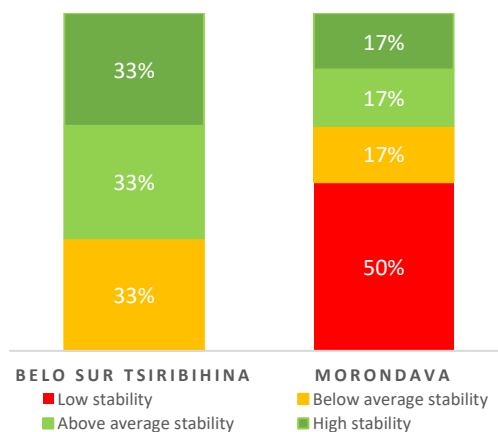
The analysis of the sub-index stability scores (or sub-scores) in each district offers significant insights into the dynamics of the localities evaluated. Belo sur Tsiribihina maintains relatively high stability with an average score of 41.02, reflecting higher scores relating to safety and disaster resilience but lower scores relating to baseline services and social cohesion. The district of Morondava was less stable, with an average score of 32.85; the communes of Marofandilia and Morondava had the lowest scores in the district.

The security and resilience sub-scores are relatively high on average, although certain communes have markedly lower scores. Social cohesion is a clear area for improvement. Alarmingly, services have some of the lowest scores for the region, with 17.24 for the district of Belo sur Tsiribihina and 21.25 for the district of Morondava.

This in-depth analysis of average scores and sub-scores makes it possible to identify specific trends in each district, which provides crucial guidance to future interventions aimed at strengthening stability in the region.

Specifically, these sub-scores can help to identify the strengths and weaknesses of each commune, enabling the local authorities to focus their efforts on improving stability, security, services and social cohesion in the localities assessed. Targeted interventions should be put in place to strengthen areas with lower scores, with a view to improving residents' quality of life and promoting the general well-being of the population.

Figure 2. Stability score distribution (by quartile)

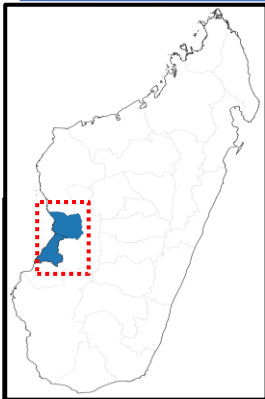


The categories were determined by quartile. For example, localities in the 'low' category were among the lowest 25 per cent of localities in the region. Whereas 'high' localities scored in the top 25 per cent of localities.

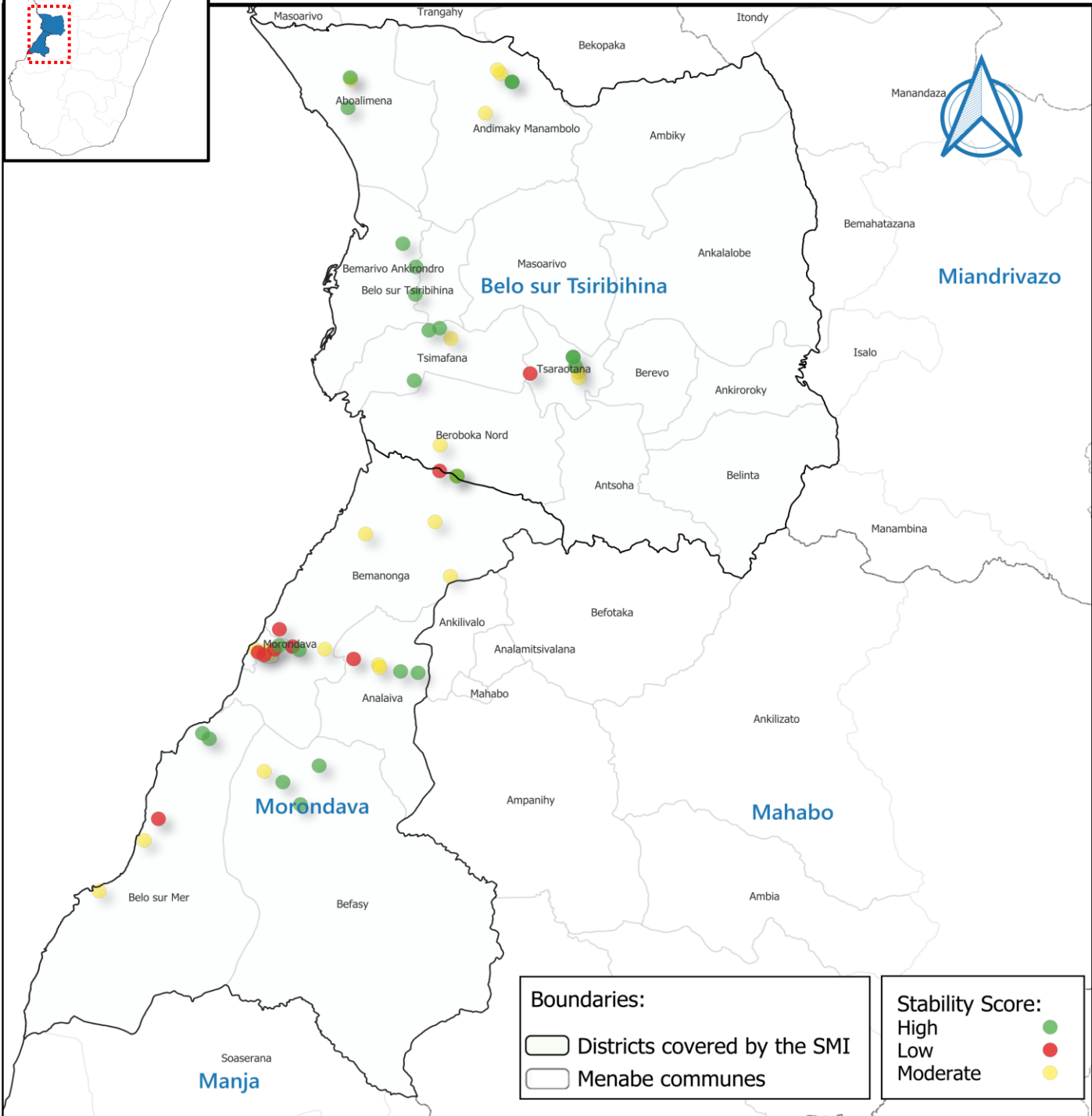
* Percentages may not add up to 100 due to rounding errors.

Table 3. Average stability scores and sub-scores for the Menabe region (by commune)

Districts/Communes	Stability score	Security score	Social cohesion score	Services score	Resilience score
BELO SUR TSIRIBIHINA	41.02	56.30	24.42	17.24	46.90
ABOALIMENA	47.07	67.24	21.17	22.77	43.17
ANDIMAKY MANAMBOLO	39.96	54.09	19.26	11.94	47.75
BELO SUR TSIRIBIHINA	52.84	85.12	41.65	6.31	38.27
BEROBOKA NORD	30.27	31.32	26.98	31.63	53.12
TSARAOTANA	39.29	70.86	10.15	15.74	46.97
TSMIAFANA	39.22	26.48	37.21	13.46	51.01
MORONDAVA	32.85	35.24	32.32	21.25	39.65
ANALAIVA	40.29	36.93	42.14	26.97	59.20
BEFASY	44.38	48.92	59.31	17.62	20.04
BELO SUR MER	31.74	45.00	18.26	15.52	35.06
BEMANONGA	30.03	25.45	14.34	30.11	51.56
CU MORONDAVA	26.42	28.61	24.65	32.65	30.21
MAROFANDILIA	25.77	25.88	39.59	3.48	44.65



Map 1. Stability Index (Menabe 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 could 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 relative indicators concerning means of subsistence, baseline services, safety and security, social cohesion and resilience are the most influential for the stability of the region. In order of importance (highest to lowest): *access to water, possession of arable land and access to fishing zones, incidence of theft (personal effects and/or livestock), access to healthcare, mutual aid and cooperation between the population in the event of a problem, access to local markets, adoption of agroecology, possession of identity and civil status documents, and access to judicial services.*

This suggests that programmes focusing on the most relevant indicators could have a greater positive impact on the stability of the region.

4.2 Principal Indicators in Menabe

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

	SOCIAL COHESION	SECURITY	SERVICES	RESILIENCE
Menabe (Morondava and Belo sur Tsiribihina)				
1				
2				
3				
4				
5				
6				
7				
8				

4.3 Analysis of the 8 key SMI indicators

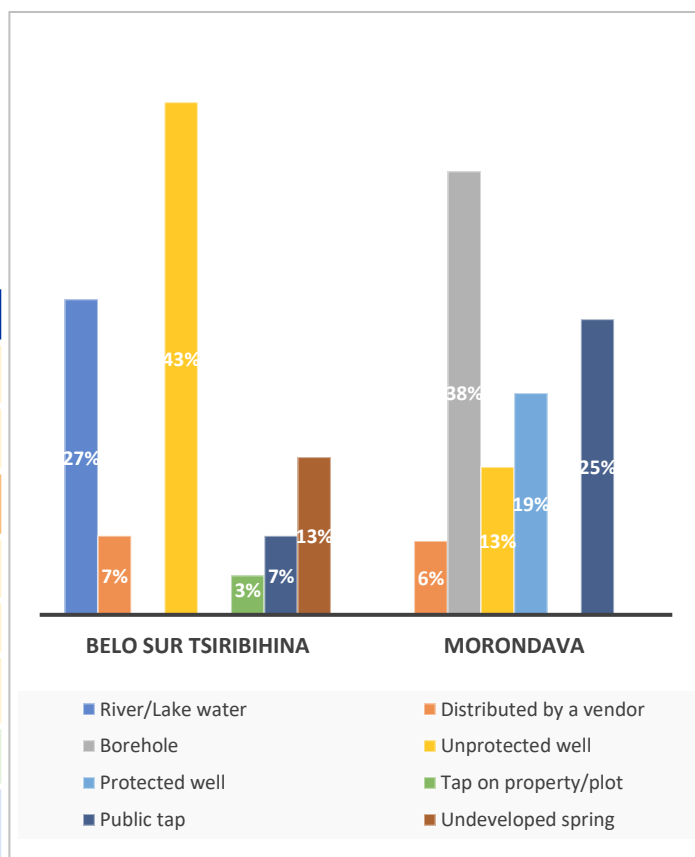
1. Access to water

According to the key informants, access to water is the primary factor influencing stability in the Menabe region. The west/south-west region is classified as one of the most arid on the main island and rainfall is rare. Equally, as a result of climate change, the region is beginning to encounter tropical cyclones.

In the Belo sur Tsiribihina district, the most common water sources are unprotected wells, with 43 per cent of localities using them habitually (often dug by the local population), and 27 per cent using water from rivers and lakes. Access to public drinking taps remains very low (7%). Around 38 per cent of the Morondava district is supplied by boreholes (drilled by humanitarian agencies) and 25 per cent via public taps due to their close proximity to the regional capital.

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

Figure 3. Access to water



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

2. Means of subsistence

The Menabe region is favourable to certain crops that are highly profitable, which is why it is the preferred destination for migrants from the Great South of Madagascar who are displaced due to the chronic drought.

The majority of the population in the region are farmers and own agricultural land, particularly in the Belo sur Tsiribihina district, where 67 per cent of the fokontany own more than 70 per cent of the arable land. This is also the district with the highest migrant presence, and only 7 per cent of localities, (2 fokontany) have declared that the displaced people do not have access to arable land. These fokontany are Lambokely in the commune of Beroboka Nord and Tsitakabasia in the commune of Tsimafana. In the Morondava district, the fokontany are located in an urban commune.

Almost 75 per cent of the fishing zones are accessible to localities on the coast and the banks of the Tsiribihina river, particularly in the district of Belo sur Tsiribihina.

3. Security concerns

In the Menabe region, there are longstanding security concerns around the theft of livestock, such as zebu, by the 'dahalo', especially in more remote areas.

Although the government has recently launched a security campaign with the national security forces, concerns still remain, with 73 per cent of incidents of theft being reported in the district of Belo sur Tsiribihina.

Over the last 6 months, 34 fokontany (55%) have reported more than 10 cases of livestock theft. However, the trend is declining due to the aforementioned security campaign.

4. Access to healthcare

Healthcare coverage is low in both districts, with only 32 per cent (on average) of fokontany having access to a health and medical care centre. In general, only fokontany in close proximity to the commune capital have access to healthcare facilities.

In line with the other indicators, the district of Belo sur Tsiribihina has the lowest access to healthcare, with 77 per cent of fokontany having little to no access.

An analysis of the data reveals that, over the last 6 months, 79 per cent of fokontany have had incidents involving people requiring medical care. To manage this, inhabitants have been obliged to travel to other fokontany for assistance (which can often involve travelling long distances).

Figure 4. Possession of arable land

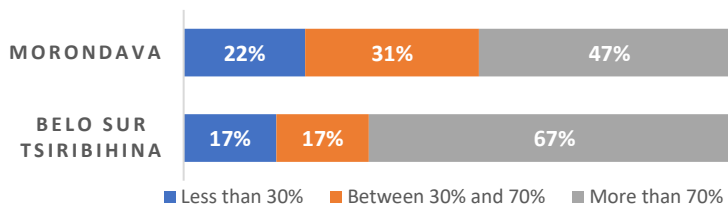


Figure 5. IDP and returnee access to arable land

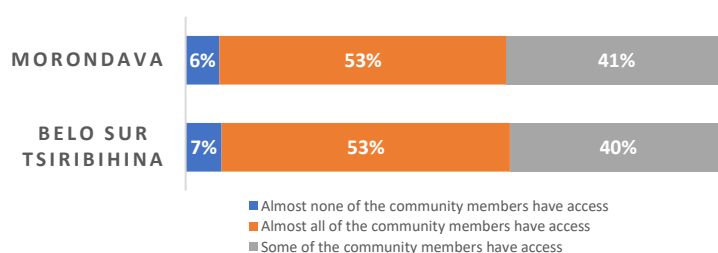


Figure 6. Incidents of theft (personal items and/or livestock)

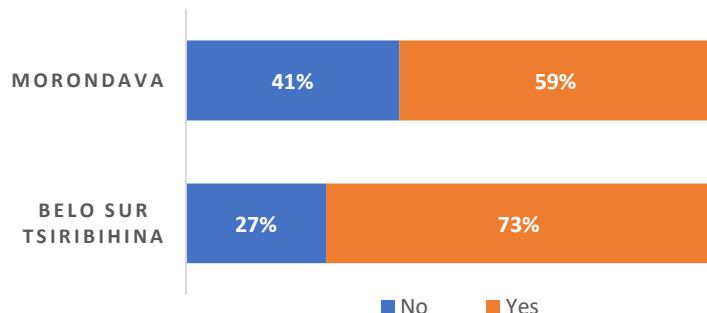
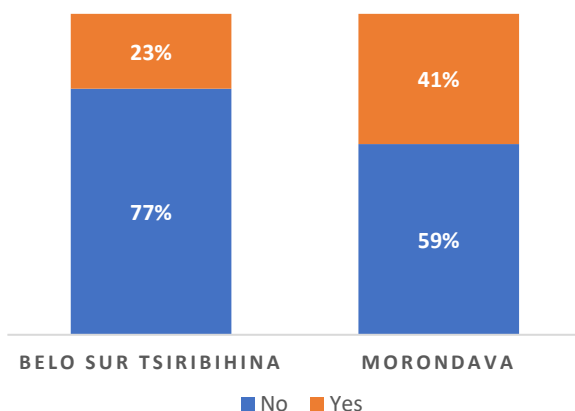


Figure 7. Presence of health and medical centres



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

5. Public services (civil, legal)

The Menabe region has relatively good public service coverage, with 84 per cent of fokontany having access to civil registry services. Despite this, only 44 per cent of fokontany in the Morondava district and 37 per cent in the Belo sur Tsiribihina district stated that all members of the community have identity and civil status documents. This may be due to the perceived lack of importance inhabitants in harsher rural areas attach to this documentation.

Judicial services are accessible to 50 per cent of the fokontany and are considered satisfactory by the people in these localities. The local consultation structure, known as a 'dinan' i Menabe' (or 'dina'), is in place in all localities where there is a lack of legal services. The dina has existed for some time among the Sakalava people of the Menabe and is considered effective in almost 89 per cent of localities.

6. Access to local markets

Markets have long been a place for the Malagasy people to gather and barter. This is the same for the Sakalava of the Menabe, and the markets are generally organized every day of the week for neighbouring localities.

Although markets do exist, they are located far from some of the fokontany evaluated, with people having to walk for hours to reach these weekly markets. Most of these markets are supplied reliably and stocked regularly. Overall, the biggest challenge for the Menabe region remains the distance of the markets from the localities situated in remote rural areas.

7. Social cohesion

The Menabe region is a consistent zone of arrival for IDPs from the Great South region. In some localities, these migrants do not have access to arable land, which can lead to tensions in the host communities; this is prevalent in 16 fokontany (26%), across the two districts.

This form of discrimination has been noted by key informants in relation to access to other baseline services, such as schools, markets, healthcare services, water, and firewood (20 fokontany, i.e. 32% of the fokontany in the two districts, with the Belo sur Tsiribihina district accounting for 80% of cases).

Figure 8. Possession of identity and/or legal documents (marriage license, birth certificate, national identity card, etc.)

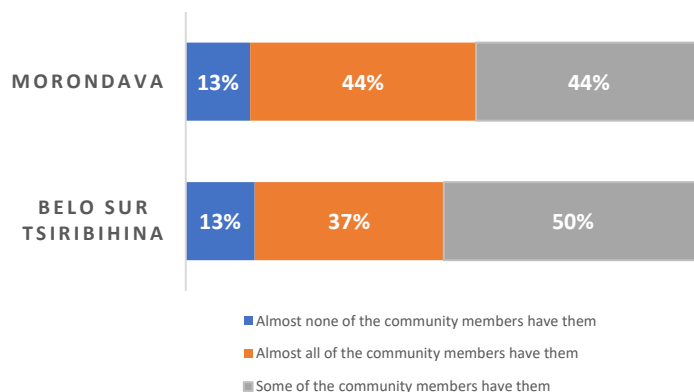


Figure 9. Presence of a market near/accessible to inhabitants

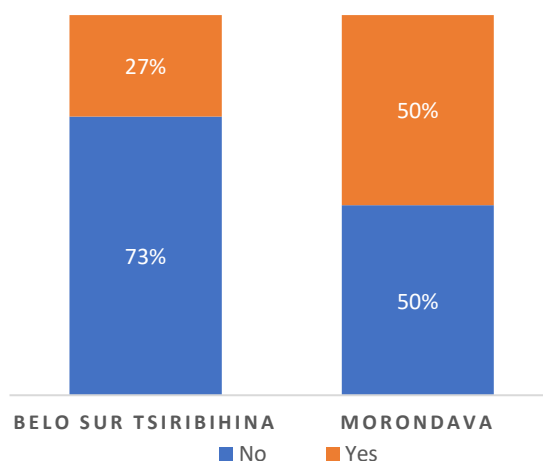
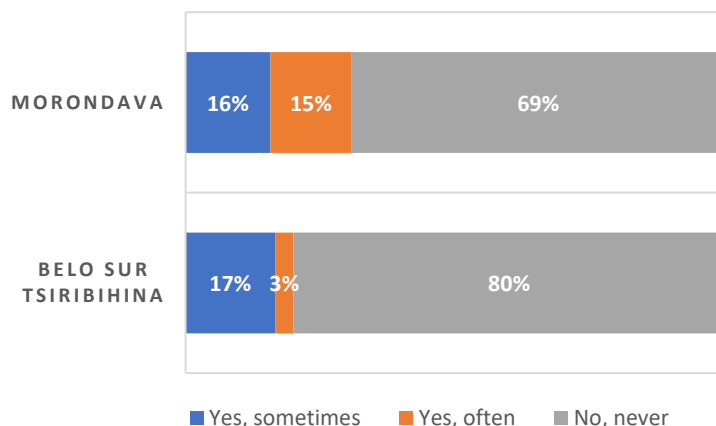


Figure 10. Disputes between returnees or IDPs and the host community



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

8. Resilience to natural disasters

Recurring locust infestations are one of the major natural disasters affecting the Menabe, despite the added impact of the recent arrival of tropical cyclones across the island. Due to the effects of climate change, the trajectory of tropical cyclones is changing, evidenced by the Alvaro storm in January 2024, which will present future difficulties for the Menabe region.

As most of the rural population are farmers, locusts have greatly affected the region via the complete destruction of seasonal crops. Even though there are humanitarian agencies operating in the affected areas, no permanent solution has yet been found. So far, the dissemination of airborne anti-locust products have been used to try and stem the spread.

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 and safe?

According to key informants, most people in the districts of Morondava and Belo sur Tsiribihina feel their communities are stable and secure. In the Belo sur Tsiribihina fokontany, 83 per cent of localities considered themselves stable, whereas, in Morondava, only 50 per cent of localities perceived the same.

Future Intentions

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

Data on the future intentions of local residents in the Belo sur Tsiribihina district show that if the situation does not improve, in terms of access to basic services, security and the impacts of natural disasters, the inhabitants will consider leaving to find better opportunities (despite the current overall stability).

In the Morondava district, 81 per cent of inhabitants intend to stay even if the situation does not improve. This is explained by a perception of a more optimistic assessment of the situation in their localities compared to others. Equally, migration presents a major challenge for many here, particularly around travel costs and the period of adaptation before finding another source of income (which could be allocated to other investments to improve their current living conditions). It was noted that this was the case even if the destination area was in their own district or in the Menabe region at large i.e. the urban commune of Morondava or the fokontany of Lambokely in the district of Belo on Tsiribihina.

Figure 11. Adoption of agroecological cultivation methods

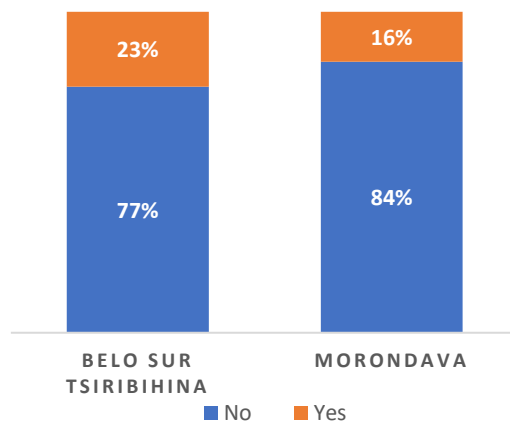


Figure 12. Stability sentiment by district

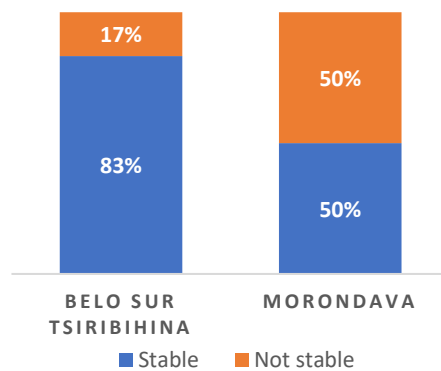
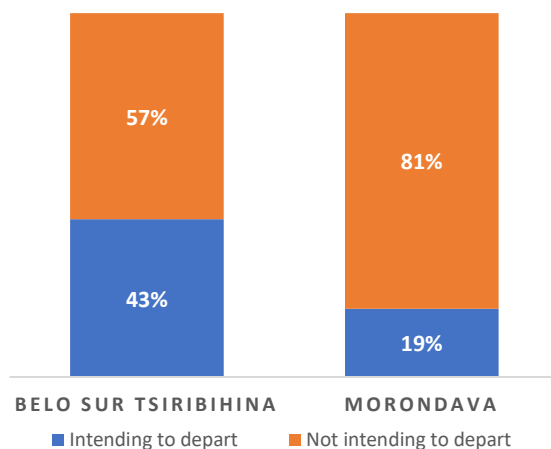


Figure 13. Future intentions by district



Perception Change

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

Over the last six months, information gathered from key informants has shown that the population of the Belo sur Tsiribihina district are more optimistic, particularly towards food shortages caused by natural disasters.

This might have been due to the Belo sur Tsiribihina district not yet being affected by the regional locust infestations at the time of data collection. Locusts have affected more than 11,000 hectares of land and destroyed the rice and maize harvests in 3 districts of the Menabe region, including the Morondava district.

Capacity to adapt

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

Capacity to adapt to natural disasters is low, despite a number of humanitarian agencies working in the area.

As of yet, there is no clear strategy to improve resilience with regard to the recurrent locust infestations. The locusts have repeatedly destroyed harvests, and more focused efforts are needed to prevent, cope and improve the resilience of all the localities affected throughout the Menabe region.

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 Menabe region, divided into two groups. Each colour represents a group of localities with similar responses to the Solutions and Mobility Index survey. The table on page 12 provides a breakdown of the average SMI scores and sub-scores for each of these groups.

Cluster 0 – Moderate SMI scores with low services scores

Cluster 0 is characterized by a moderate SMI score (40) for the localities in this group. However, the baseline services sub-scores are low (19).

These localities represent 24 per cent of the fokontany evaluated, across eight communes, comprising 3 communes in the Belo sur Tsiribihina district and 5 communes in the Morondava district. Improving the stability of this cluster depends essentially on improving access to baseline services, such as access to water, healthcare, and education.

Cluster 1 – Moderate SMI scores with low services and social cohesion scores

Cluster 1 has moderate SMI scores (36), resilience (43), and security (43), but low scores for services (20) and social cohesion (24). This cluster contains the majority of the fokontany in the 2 districts (47), or 76 per cent of the localities assessed in the Menabe region.

In addition to the characteristics of Cluster 0, Cluster 1 is further characterized by low social cohesion scores. This is evidenced by the ongoing discrimination against migrants in certain fokontany and by low community participation. To improve the stability of the localities in this cluster, access to basic services and social cohesion should be prioritized.

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

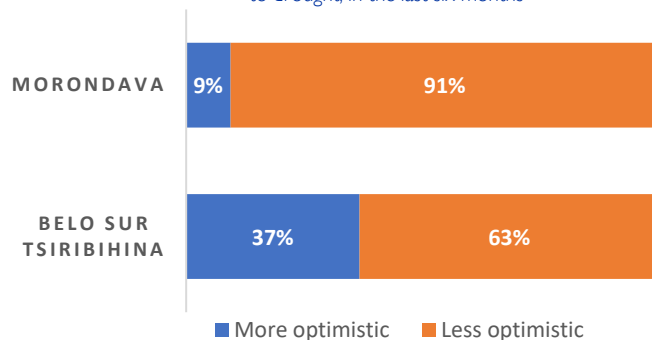
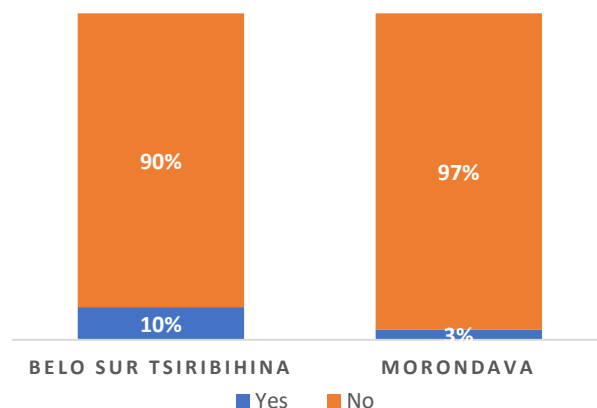


Figure 15. Existence of measures to increase community resilience to disasters through adaptive mechanisms



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 Menabe region, in the west and south-west of Madagascar.

Figure 16. Breakdown of localities by district and cluster

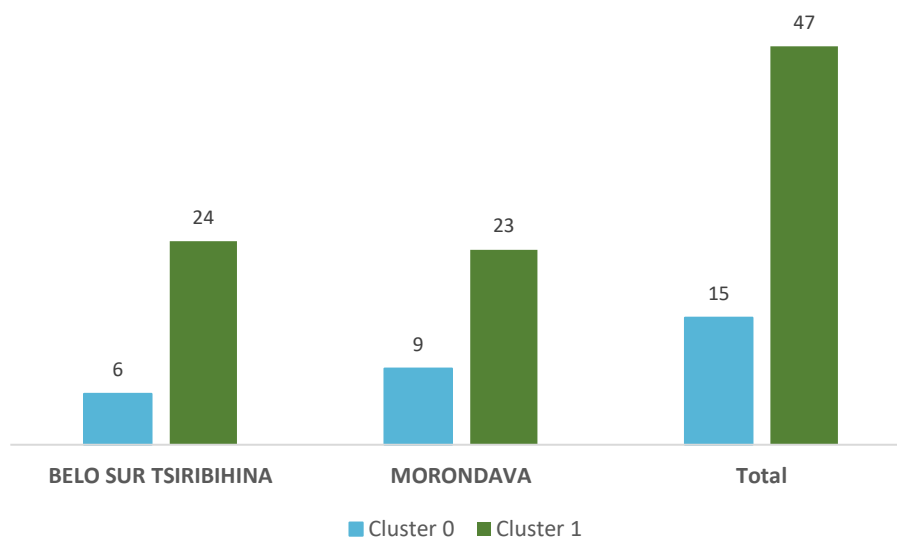
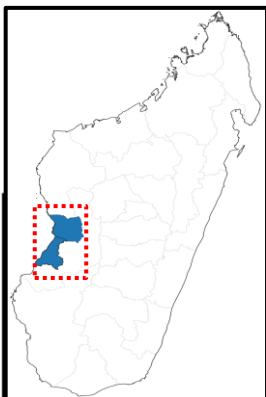
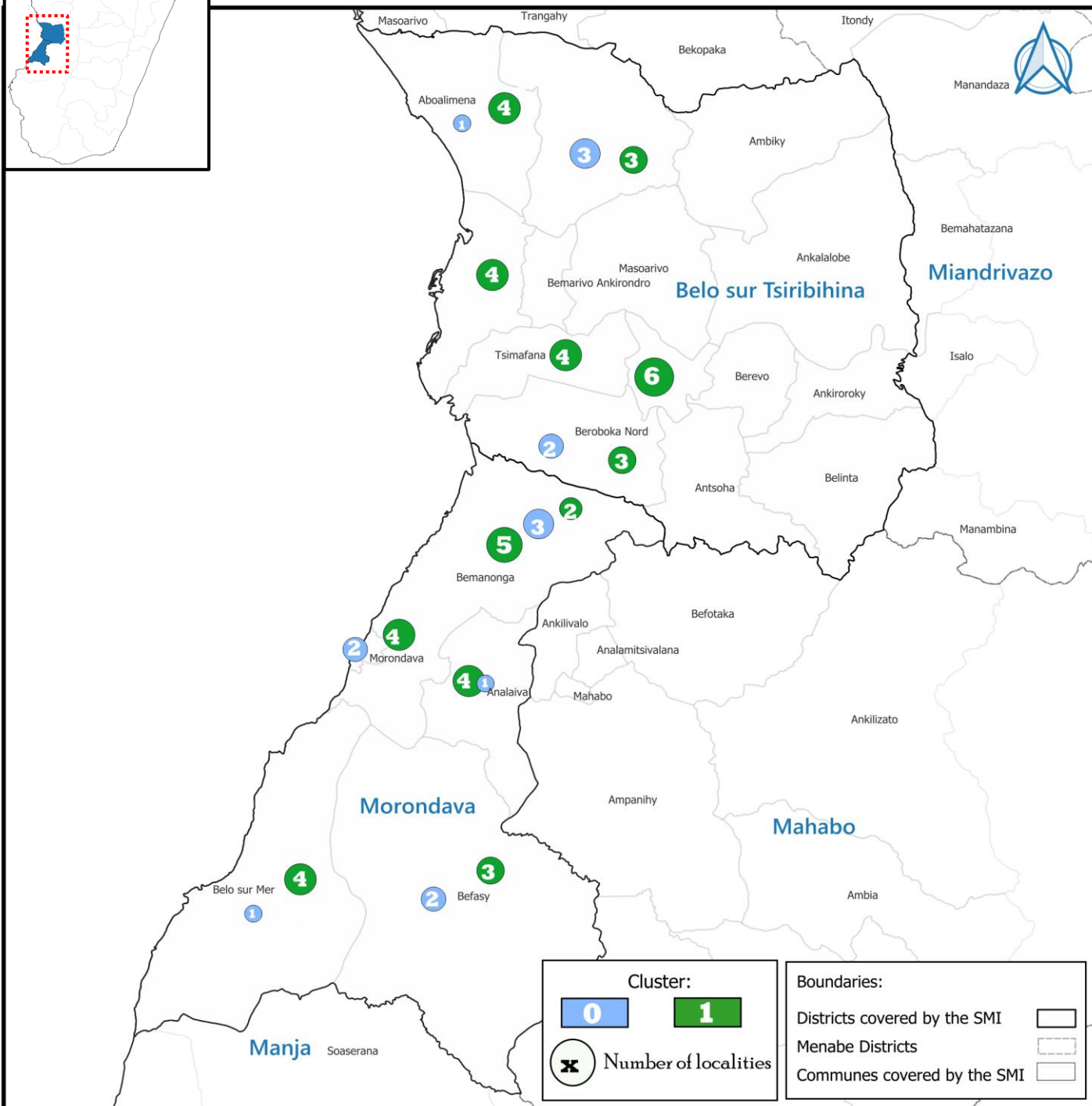


Table 4. Average SMI Score and Sub-score by Cluster

	SMI Score	Services Sub-score	Security Sub-score	Social Cohesion Sub-score	Resilience Sub-score	Number of Localities
Cluster 0: Moderate SMI scores with low services score	39.83	18.62	54.01	43.99	44.46	15
Cluster 1: Moderate SMI scores with low service and social cohesion scores	35.84	19.53	42.69	23.56	42.74	47
Average	37.83	19.08	48.35	33.77	43.60	31



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 results of this first round of the Solutions and Mobility Index, conducted in 62 localities in the Menabe region, reveal that a number of key indicators have a direct impact on the perception of stability in places hosting displaced populations, most of whom come from Madagascar's Great South region.

The **8 key indicators** with the greatest influence on perceptions of stability, in order of impact, are: **access to water, access to means of subsistence, community concerns with security, access to healthcare, public services, local markets, participation in community activities and cooperation, and adaptation to natural disasters.**

The results of the assessment show that the Menabe region is more stable than the Great South region, despite generally low scores on all indicators (influenced predominately by very low services scores). The Menabe region is still a desirable host region for migrants from the Great South, and adapting current interventions with this information will help to improve the stability and the living conditions of the region's population in the future.

6.1 Recommendations

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

1. **Standardized interventions strategies:** To improve access to basic services, including access to water, means of subsistence, healthcare services and education, it is recommended that programmes aimed at the above be prioritized in all localities. Furthermore, locust control measures should be increased and implemented across the region.
2. **Clustering similar localities:** It is important to strengthen social cohesion, particularly in the Cluster 1 localities, by ensuring the implementation of the '**Regional Migration Management Strategy 2022-2026 - Menabe Region**', particularly with regard to the '**Sustainable governance for migration**' axis.
3. **Strengthen security (as a catalyst for future stability):** It is essential to maintain the ongoing efforts (in terms of security) in localities where the perception of insecurity continues to be high. By improving security, particularly through the increased presence of security forces in localities (especially in the Belo sur Tsiribihina district), it should be possible to reduce incidents of theft (including livestock) and strengthen social cohesion with the dina.

7. APPENDIX I

A. Selecting localities

A broad selection of localities were chosen in the Menabe region, as it is one of the areas that receives the most IDPs from the Great South region of Madagascar. The districts of Morondava and Belo sur Tsiribihina are the most affected by these arrivals. 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. In total, 62 fokontany were selected across the two districts.

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 have been 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 ordinally ranked from best to worst case scenario. To calculate the index, logistic regression 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 villages

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 items 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 lack of 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: SAFETY AND SECURITY

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

Frequency of crisis/disaster

Frequency and type of disaster(s) 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, local disaster risk reduction mechanisms

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

– Menabe 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 fragility 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 the 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.

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Data collection and analysis funded with the support of:

