THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF AGRICULTURE LIVESTOCK AND FISHERIES

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NATIONAL FOOD SECURITY BULLETIN

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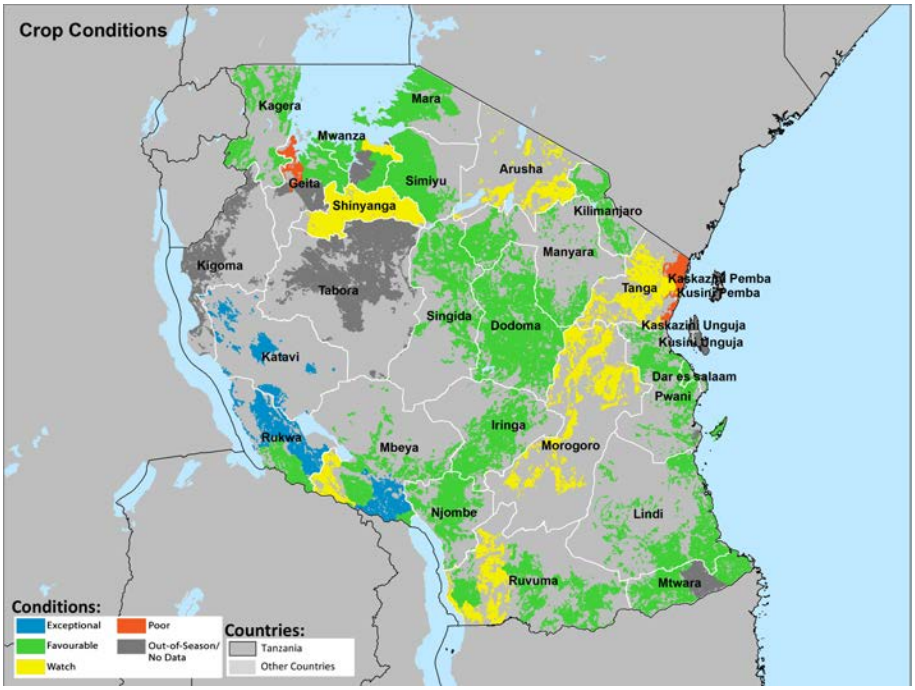

Fig.1 This crop condition map synthesizes information for all crops as of 28th February 2017. Crop conditions over the main growing areas are based on a combination of national and regional crop analyst inputs along with remote sensing data and rainfall data provided by the Tanzania Meteorological Agency.

NATIONAL HIGHLIGHTS

1. In most of the unimodal areas farmers are busy with various farm activities including weeding, herbicide application and fertilizer application. Generally, food crops in the unimodal areas are in favorable conditions following good distribution of Msimu rains. The performance of rainfall in most of the unimodal areas is good and stable.
2. In the bimodal areas the Vuli production season has ended. Poor performance of Vuli rains (late onset, inadequate as well as poor distribution) led to a poor harvest of food crops from the Vuli season. The Masika rains started earlier between the last week of February and the first week of March where farmers are busy planting and weeding.
3. Food prices continue to increase. For rice the highest prices were observed in Ilala, Njombe, Dodoma, Songea and Tanga, and the lowest prices in Kigoma, Arusha, Bukoba, Mpanda and Iringa market centers.
4. For maize above average prices were observed in Musoma, Morogoro, Dodoma, Singida, and Tabora market centers, while prices in Songea, Mbeya and Bukoba were the lowest.
5. Priced of bean were highest in Sumbawanga, Temeke, Moshi, Geita and Morogoro and lowest in Bukoba, Mbeya, Shinyanga and Kigoma.

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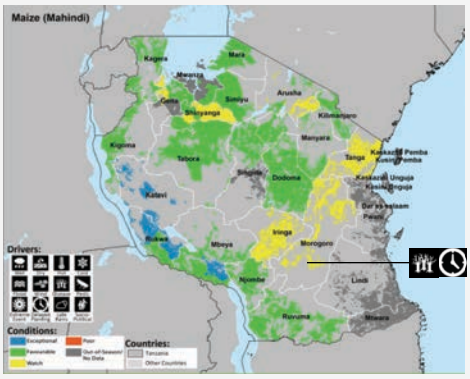
Crop Condition Highlights for Major Food Crops

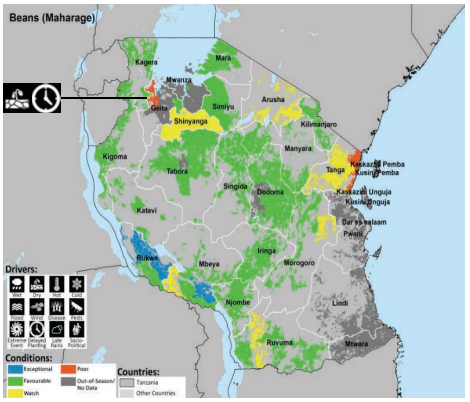
Maize

In many parts of the bimodal areas including Morogoro, Geita, Shinyanga and Tanga, maize experienced watch conditions due to the poor distribution of rains. In the unimodal areas parts of Dodoma and Tabora experienced watch conditions for maize due to delayed rainfall and poor distribution of Msimu rainfall. Other parts of Unimodal areas such as Katavi, Rukwa, Ruvuma, Njombe, Mbeya and Kigoma experienced favorable and exceptional conditions following good performance of msimu rainfall.



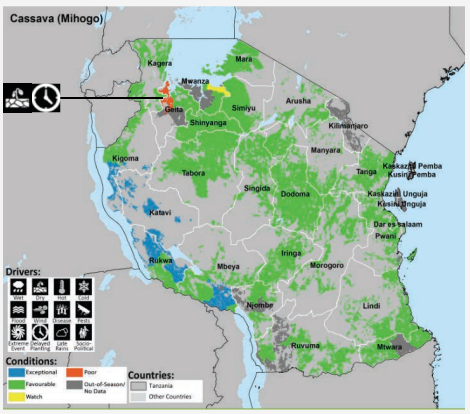
Beans

Many parts of bimodal areas experienced watch conditions and parts of Geita and Tanga experienced poor conditions due to insufficient rainfall. Parts of the bimodal areas including Kilimanjaro, Manyara, Mara and Simiyu regions experienced favorable conditions following stable rainfall. The unimodel Regions Rukwa, Mbeya, Njombe, Iringa, Kigoma and parts of Ruvuma experienced favorable conditions except some parts of Ruvuma which experienced watch conditions.



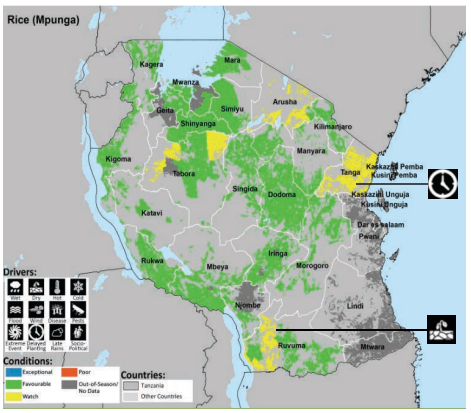
Cassava

The majority of the regions experience favorable conditions at different stages of crop growth. However, some parts of Kagera, Mwanza, and Geita experienced watch conditions due to insufficient and/or poor distribution of rains.



Rice

Farmers in unimodal areas continue with various farm activities including weeding and fertilizer application. Some parts of Tabora, Mbeya, Katavi, Iringa and Njombe experienced favorable conditions due to continuing good rainfall performance. Watch conditions were experienced in most parts of the bimodal areas due to insufficient rainfall . However, in some few parts of bimodal areas (e.g parts of Kilimanjaro, Manyara, Mara and Simiyu) rice experienced favorable conditions.



Satellite-based crop/vegetation Conditions

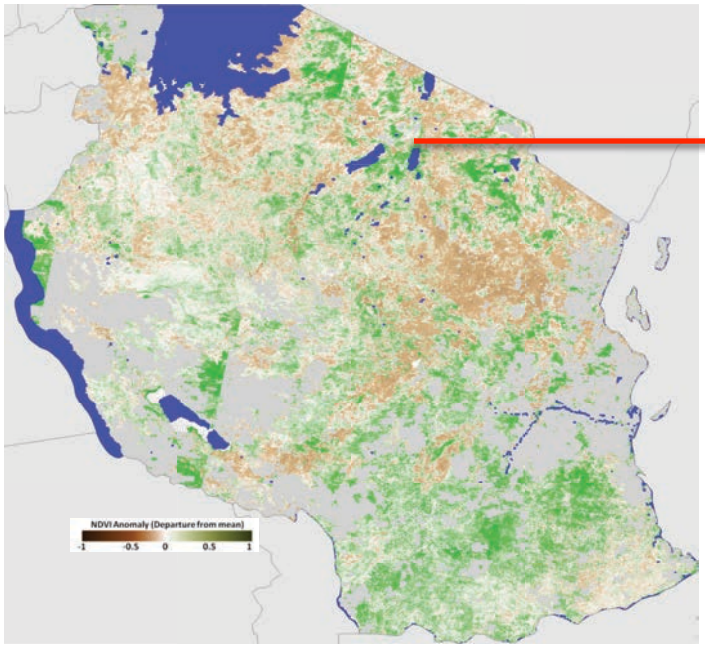


Fig. 5: MODIS Normalized Difference Vegetation Index (NDVI) anomaly for 02 – 18th FEBRUARY, 2017. Areas below average are shown in brown.

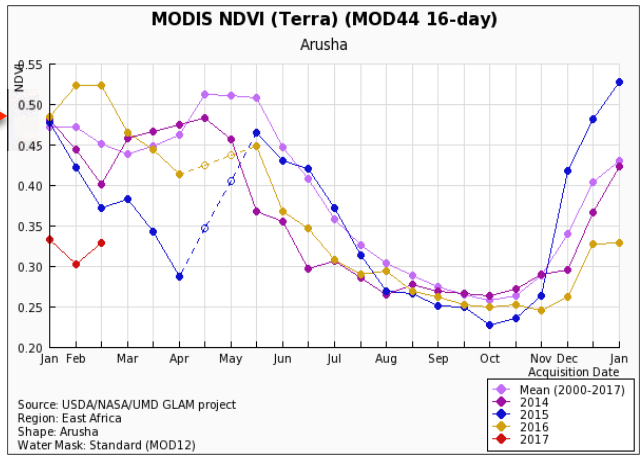


Fig. 6: MODIS 16 day NDVI for 28th February, 2017 as it compares to 2014, 2015, 2016 and the longterm mean. Data show NDVI values significantly below previous years and below the long-term average for Arusha region.

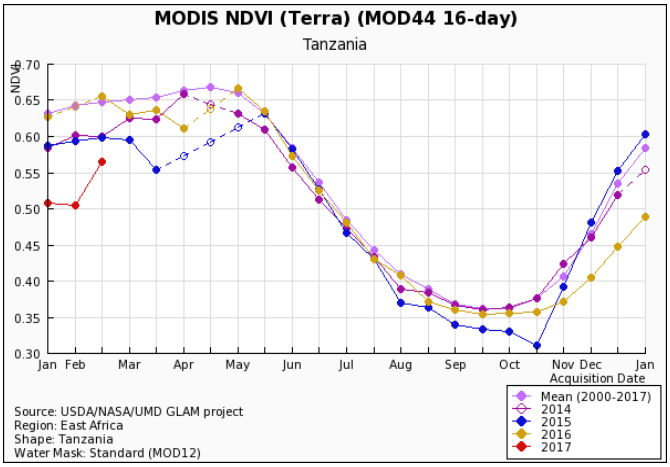


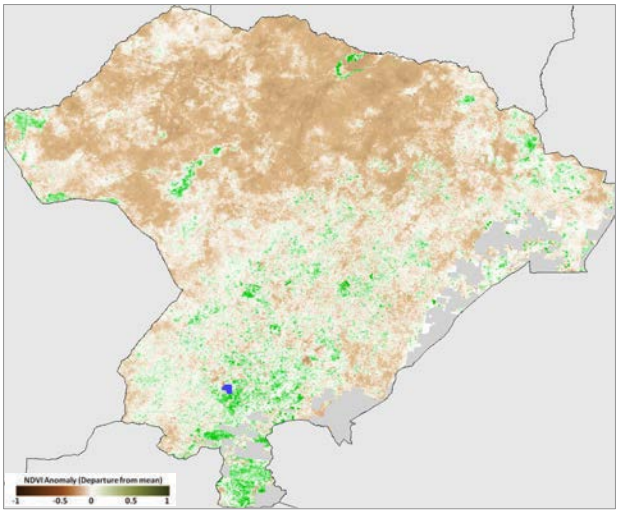
Fig. 7: MODIS 16 day NDVI for 28th February, 2017 as it compares to 2014, 2015, 2016 and the longterm mean. Data show NDVI values significantly below average for the whole country.

NDVI of February 2017 is below the long term mean and below the NDVI values of 2014, 2015 and 2016. However, in large parts of the country NDVI for February 2017 does shows an improvement compared to the preceding month. The northern parts of the country, especially parts of Arusha region are still experiencing dry conditions (Fig. 5 and Fig. 6).

Vegetation condition was below average in all parts of the country except Katavi where conditons were closer, but still below, the long-term average. The largest negative deviations indicating much drier conditions than normal were observed in the northern parts, in particular Mara, Arusha and Manyara regions.

Poor performance of Vuli rains (late onset, inadequate as well as poor distribution) led to poor harvest of Food crops from Vuli production in many parts of the bimodal areas. Farmers in most of the bimodal areas are now using the Masika rains for various farm activities. In most of the unimodal areas, various farm activities including weeding and fertilizer application are in progress and crops are in good conditions following the ongoing Msimu rainfall. Rainfall is becoming more stable in most of the unimodal areas.

Regional Highlight: Iringa



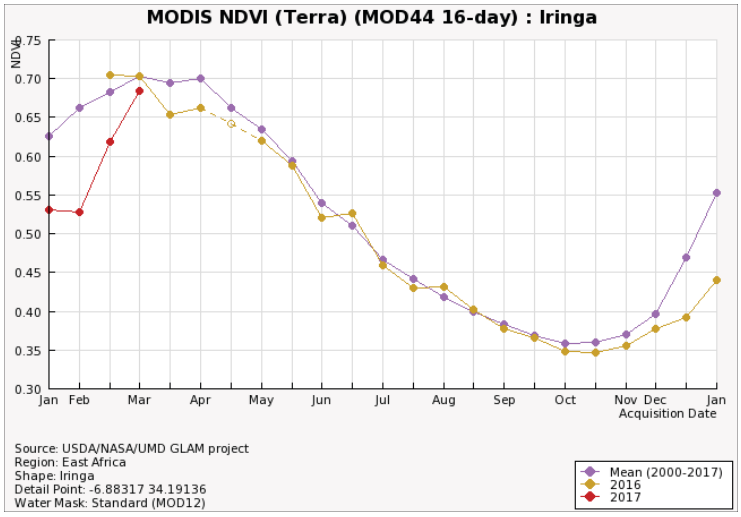


Fig. 8 - Left: MODIS Normalized Difference Vegetation Index (NDVI) deviation from long-term average (anomaly) image for 2nd to 17th February 2017 for Iringa Region. Fig. 8 -Right: Time series of NDVI for Iringa Region from May 2016 to February 2017.

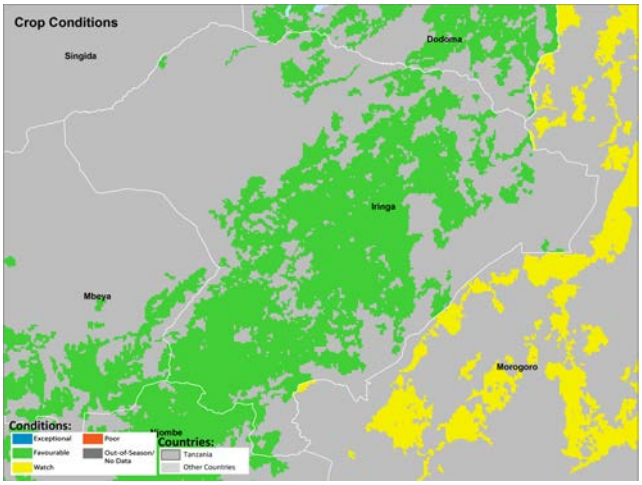


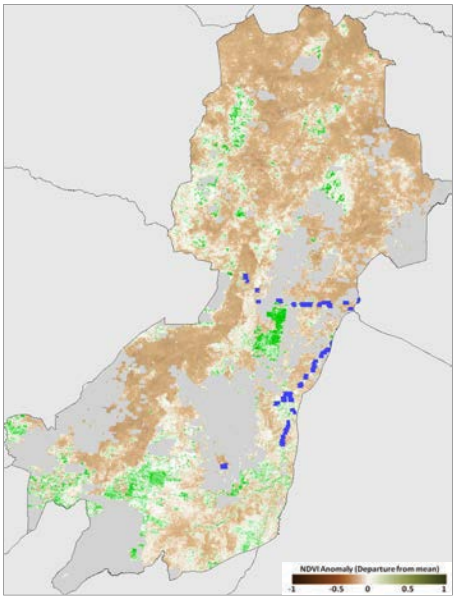
Fig. 9 Synthesis of crop conditions based on field and remote sensing information.

Conditions are overall favorable thought some parts of the region are still slightly below below average when compared to the long-term data (2000 to 2017) (Figure 8). Within the region this is particularly true for the northern part, while the southern part is showing slightly above average conditions.

Dry conditions continue in Iringa region, although there has been some improvement compared to the previous month. Maize crop are in the stem elongation phase and farmers report average conditions, based on field data.

Photos − Left: Mafinga, Iringa. Right: Iringa, Iringa.

Regional Highlight: Morogoro



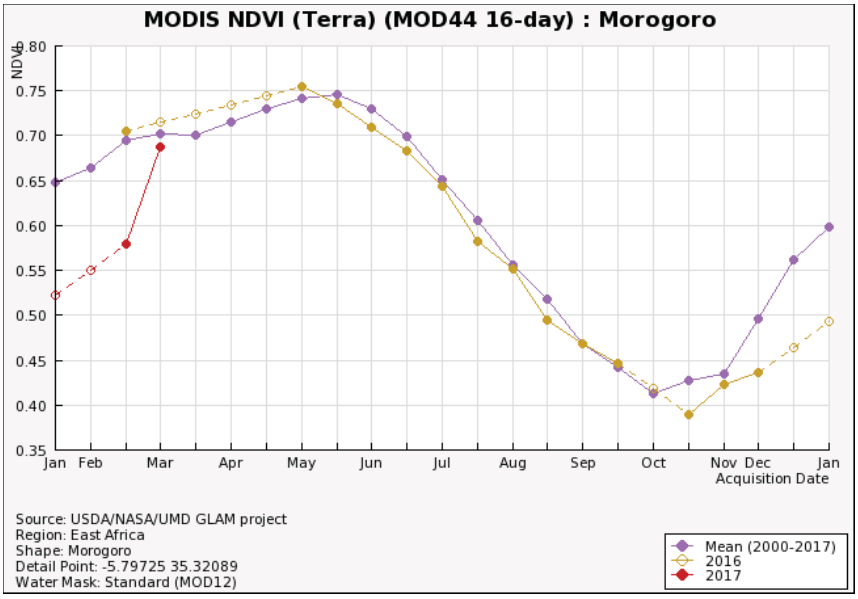


Fig. 10 - Left: MODIS Normalized Difference Vegetation Index (NDVI) deviation from long-term average (anomaly) image for Morogoro Region. Fig. 10 - Right: Time series of NDVI from June 2016 to February, 2017.

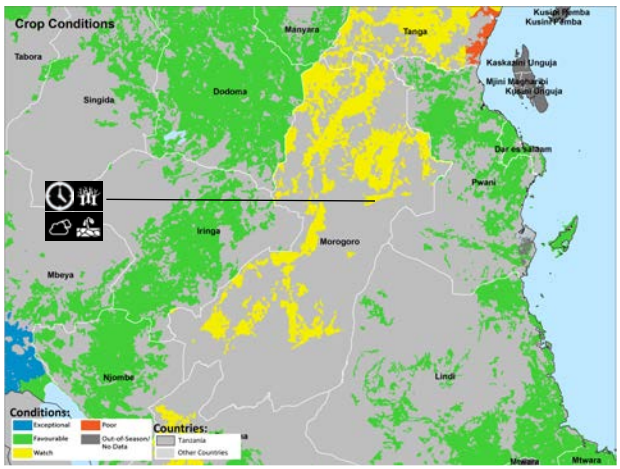


Fig. 11 Synthesis of crop conditions based on field and remote sensing information.

The remote sensing information indicates below average crop conditions across Morogoro Region in comparison to the long-term average from 2000 to 2017 except for small areas in the north-east and in the south.

Morogoro region is reported to have below average conditions and continues to be on watch status with the major drivers being delayed planning, dry conditions, pests and late rains. Maize is in the leaf development stage. Some farmers report average conditions for their field in this stage of the cropping cycle.

Photos: Maize crop in Kidogalo and Kibedya, Morogoro region at the end of February 2017.

Rainfall Performance during February, 2017

Most of the unimodal areas experienced seasonal rains which were above normal to normal rainfall as illustrated in Figure 8. Normal rainfall performance over the unimodal areas was observed over few places such as Tabora, Mbeya and the northern part of Dodoma region. Otherwise, the remaining parts of the unimodal areas experienced above normal rainfall. Out of season rainfall was also observed over few of the bimodal areas but was below normal in most areas except Lake Victoria Basin (LVB) which experienced above normal rainfall as shown in Figure 12 (right). Generally, normal to above normal rainfall was observed over most of the country during February 2017 as shown in Figure 12 (left), with significant off-seasonal rainfall over all of the bimodal areas except few areas of northern Tanga, northwestern Kilimanjaro and North eastern of Manyara (Figure 12 −right).

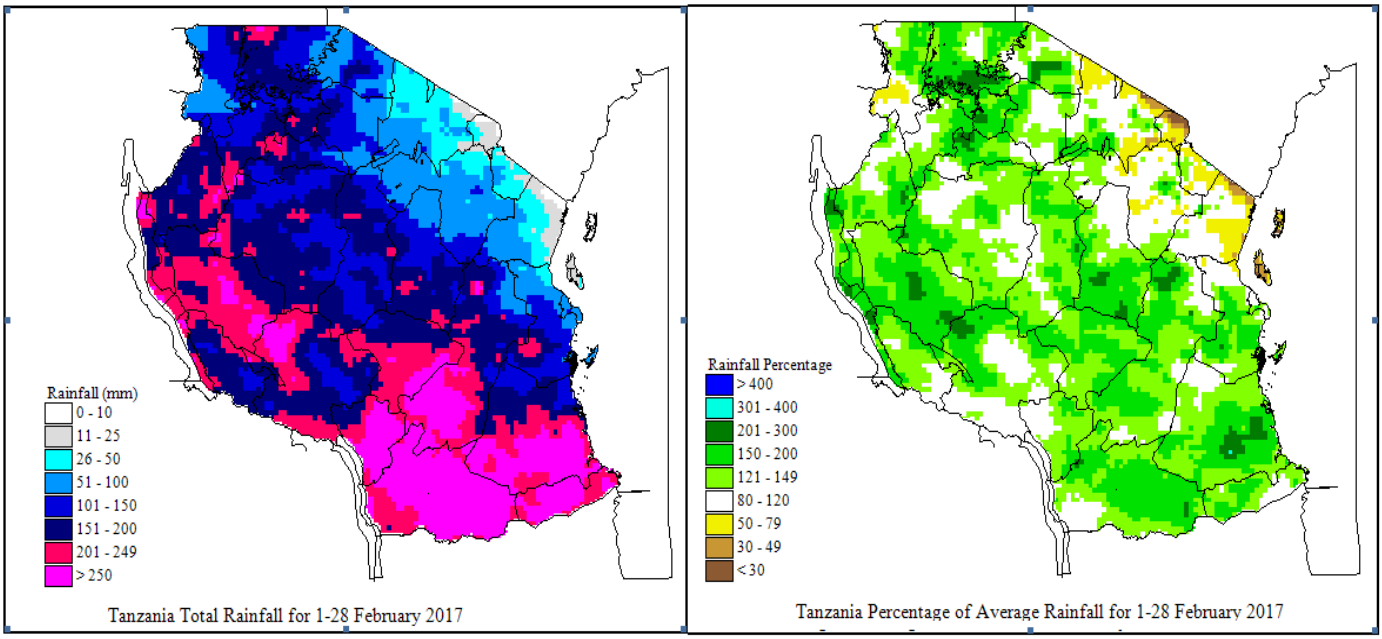


Fig. 12 - Left: Rainfall Distribution for 1 – 28 February, 2017 as monthly total. Right: Rainfall Distribution as Long term average.

Agro-meteorological impact during February, 2017

The observed above normal rainfall over the unimodal areas provided adequate soil moisture, which was favorable for development of crops and growth of replanted maize crop in Mtwara, Lindi and Dodoma regions. Maize crop was reported to be at various stages from vegetative to maturity. Despite heavy rainfall in some places of the country, crops were in average condition in most places with no damage reported. Farmers were mostly engaged in weeding and fertilizer application. Over the bimodal areas, the observed above normal rainfall was useful for land preparation for the *masika* season (March to May rainfalls) and replenishment of water and pasture for livestock. Pasture condition and water availability for livestock and wildlife was good over most areas, but moderate in few places such as Dodoma, Arusha, Manyara, Simiyu, Shinyanga, Mwanza and Mara regions.

Seasonal Rainfall Outlook March – May, 2017

According to TMA; during March - May, 2017 normal to above rainfall are expected over most areas of the country as seen in Figure 12. However, North-eastern Highlands (Arusha, Kilimanjaro and Manyara) and Northern Coast (Morogoro, Coastal Region, Dar es Salaam, Tanga and Isles of Unguja and Pemba) are expected to feature normal to below rainfall with long dry spells (Figure 13 left). Again, poor rainfall distributions are expected to prevail over some areas during March – May, 2017 rainfall season.

However, North-eastern Highlands (Arusha, Kilimanjaro and Manyara) and Northern Coast (Morogoro, Coastal Region, Dar es Salaam, Tanga and Isles of Unguja and Pemba) are expected to feature normal to below average rainfall with long dry spells (Figure 14).

LONG TERM MEAN RAINFALL AND RAINFALL OUTLOOK MARCH-MAY 2017

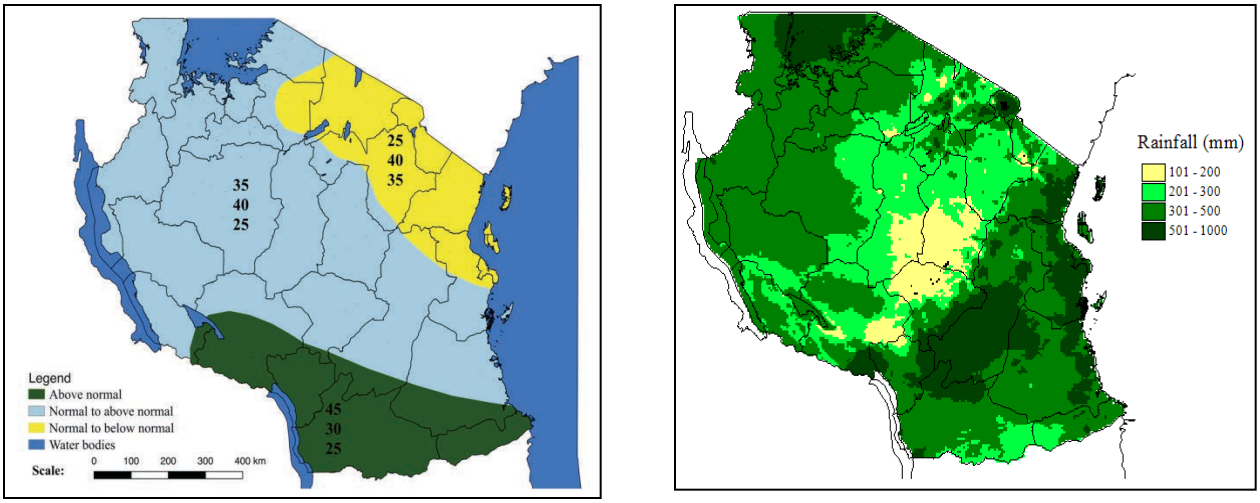


Figure 13 (left): Outlook for the March to May 2017 rainfall season; Figure 10 (right): Climatological long term average (normal) rainfall for March to May

Weather Outlook for February, 2017

Rainfall for month of February is mainly for unimodal regime (Kigoma, Tabora, Katavi, Singida, Dodoma, Rukwa, Songwe, Mbeya, Iringa, Njombe, Ruvuma, Lindi and Mtwara regions) is expected to be mainly normal over most areas.

- Lake Victoria Basin (Kagera, Mwanza, Mara, Geita, Simiyu and Shinyanga regions): Mainly dry conditions and few isolated rain showers and thunderstorms are expected.
- Northeastern highlands (Kilimanjaro, Arusha and Manyara regions): Mainly dry conditions and few isolated rain showers and thunderstorms are expected, particularly over the high grounds.
- Northern coast (Dar es Salaam, Morogoro and Tanga regions, the isles of Unguja and Pemba): Mainly dry conditions and few isolated rain showers and thunderstorms are expected, especially during the first dekad.
- Western regions (Kigoma, Katavi and Tabora regions): Moderate rain showers and thunderstorms are expected. Central areas (Dodoma and Singida regions): Rain showers and thunderstorms are expected, especially during first dekad.
- Southwestern highlands (Rukwa, Iringa, Songwe and Mbeya regions): Frequent rain showers and thunderstorms are expected.
- Southern Coast (Mtwara and Lindi regions): Occasional rain showers and thunderstorms are expected, especially during the first dekad.
- Southern region (Njombe and Ruvuma region): Frequent rain showers and thunderstorms are expected.

Agro meteorological outlook during February 2017

Due to prolonged below normal rainfall performance and consequently crop failures in most places of the bimodal area, poor yields are expected from the *vuli* season crops. Farmers over the bimodal areas are advised to take precautionary measures to cope with poor food crop production and hence food insecurity. The expected rainfall over the unimodal areas during February 2017 will provide favorable conditions for crops growth and development.

The rainfall will also be favorable for crops germination and establishments in Lindi, Mtwara and Dodoma regions but may not sustain long term crop varieties. Farmers are advised to grow drought tolerant and early maturing crops after getting consultation from Agriculture Extension Officers in their localities. In addition, livestock keepers are also advised to consult Livestock Extension Officers for proper livestock management including optimal use of the available water and pasture, and reducing the herd size.

1.0 March – May (Masika) rains, 2017

This is more significant over bimodal areas (which receives rains twice a year). Length of growing season is expected to be 90 days and above over most areas except Dar es Salaam region, northern part of Pwani and eastern parts of Tanga region where less than 40 days are expected for thegrowing season (Figure 3 - right). A detailed rainfall projection is given below.

1.1 Lake Victoria Basin: (Kagera, Mara, Mwanza, Geita, Simiyu and Shinyanga regions):

Rains that have started over Kagera and Mwanza regions are expected to spread to other regions of Geita, Mara, Simiyu and Shinyanga regions during the first to second week of March 2017. The rains are expected to be above normal to normal over Kagera, Mwanza, Simiyu, Shinyanga and Geita regions.

1.2 Northern Coast areas and its Hinterlands: (Dar es Salaam, Tanga, and Coast regions, Islands of Unguja and Pemba and northern Morogoro areas):

Ongoing rains that started over few areas of Dar es Salaam and Coastal regions are expected to coincide with the start of *Masika* rains in the first to second week of March, 2017. The rains are expected to be normal to below normal with likelihood of long periods of dry spells.

1.3 North-Eastern Highlands: (Kilimanjaro, Arusha and Manyara regions):

Rains are expected to start over most areas in the first to second week of March 2017 and are likely to be normal to below normal over most areas with likelihood of dry spells over few areas.

2.0 *Msimu* Rainfall season November 2016 – April 2017

Seasonal rains are more significant for unimodal areas (Western, Central, Southwestern Highlands, Southern region and Southern Coast). Rainfalls in these areas have started in November, 2016 and are progressing well over most areas. The rains over most parts of these areas are expected to be mainly normal to above normal. More details are given below:

2.1 Western areas: (Tabora, Rukwa, Katavi and Kigoma regions):

The overall rainfall performance is expected to be normal to above normal over most parts of the regions. The rains are expected to end earlier during the second to third week of April 2017.

2.2 Central (Singida and Dodoma regions):

Rains are expected to be normal to above normal over most parts of the region. The rains are expected to end during the second to third week of April, 2017.

2.3 Southwestern highlands: (Mbeya, Songwe, Iringa, and Njombe regions and Southern Morogoro areas):
Rains are expected to be normal to above normal over most parts of the region during the remaining period with high chances of above normal rainfall over Songwe, Njombe, and southern Morogoro areas. The rains over these areas are expected to end during the fourth week of April, 2017.

2.4 Southern Region and Southern Coast: (Ruvuma, Mtwara and Lindi regions):
Rains are expected to be above normal-to-normal over most parts except for northern part of Lindi region where normal to above normal rains are expected. The rains are expected to end during the fourth week of April to first week of May 2017.

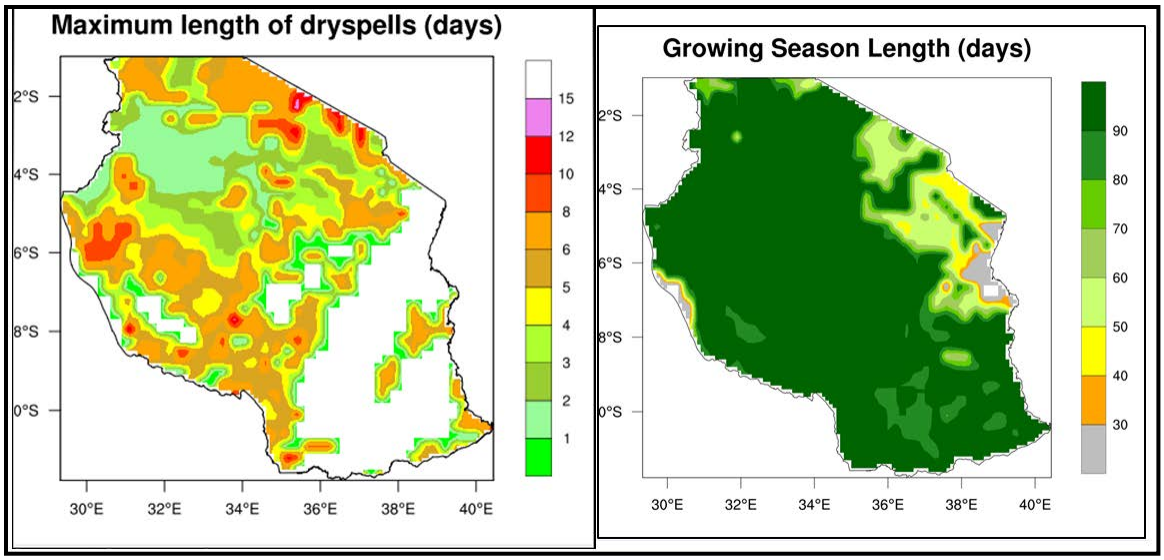


Figure 14-Left: Likely hood of dry-spells during MAM and right: Length of growing season

Impacts and Advisory

Crop Sector-Normal to above normal

Soil moisture will be sufficient for crop production. However, above normal rainfall could lead to the following impacts:

- Floods leading to destruction of crops, infrastructures e.g. bridges, culverts, irrigation, roads
- Excessive moisture leading to water logging
- Good performance of water loving crops e.g. paddy, sugarcane,
- Crop pests and diseases incidences will increase
- Sufficient water for irrigation
- More rainfall during harvesting will damage crop harvest and affect storage conditions.

Advisory

Farmers are advised to continue with normal agricultural farming practices to maximise food production by planting high yielding crops and varieties, increasing acreages of food crop production, planting of plantation crops as well as growing agro-forestry trees; but they should follow the advice from agricultural extension officers and weather forecast updates.

- Planting should be done on time.
- Promote Rain Water Harvesting
- For areas expecting enhanced rains, early detection and control of fungal and bacterial diseases, flood mitigation e.g. river embankment, rehabilitation of irrigation schemes, etc. are highly recommended

Normal to below normal rainfall

Soil moisture will be sufficient for crop production. However, below normal rainfall could lead to the following impacts:

- Inadequate soil moisture, crop failure in case of long dry spells and food shortage and increase in price
- The expected below normal rains could affect the planting of the crops

Advisory

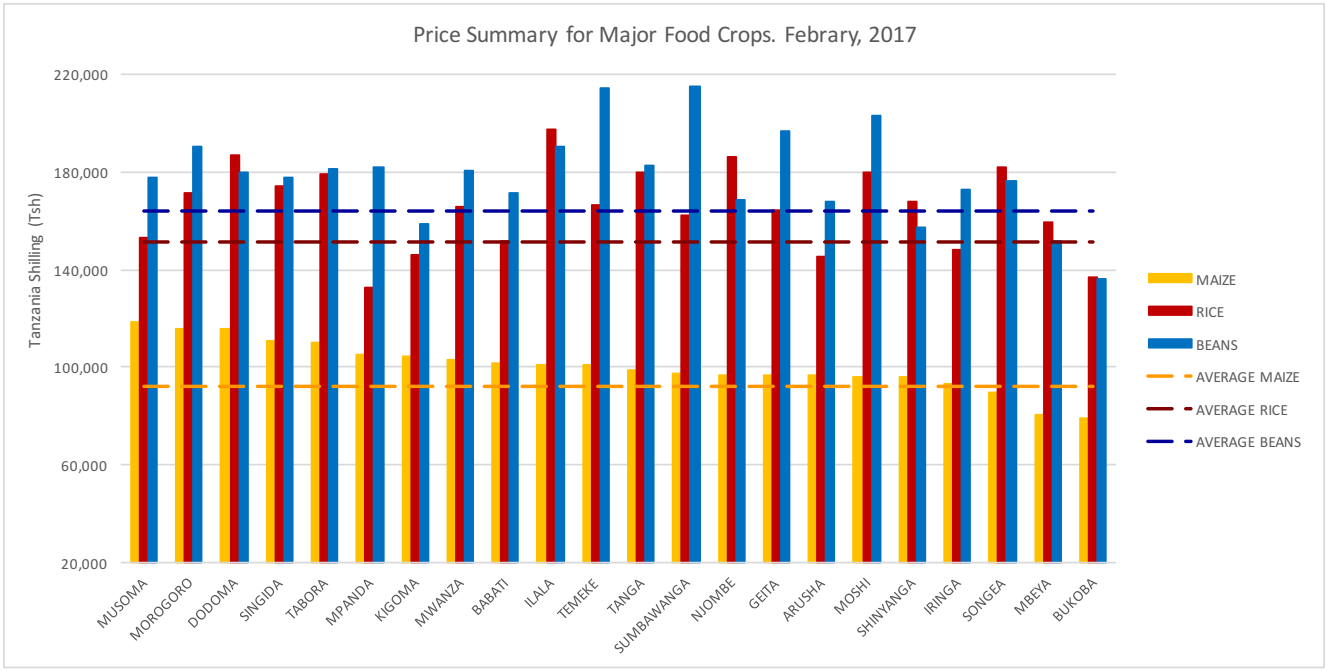
1. Planting of early maturing and drought tolerant crops
2. Soil and water conservation technology to be applied e.g. conservation agriculture (mulching, ridging and minimal tillage)
3. Timely dissemination of appropriate agro-meteorological information to farmers in all areas
4. Strengthening of national strategic grain reserves in areas likely to be affected by low rainfall
5. Encouraging post-harvest management of harvested produce from short rains;

Livestock and Fisheries Sectors-Normal to above normal

Pasture and water availability for livestock production will be sufficient. However, above normal rainfall could lead to the following impacts:

- There will be diseases outbreaks such as Foot and Mouth Disease (FMD), Foot lot, Black Quarter (BQ), Rift Valley Fever (RVF), and Lumpy Skin Disease (LSD).
- Increased incidences of ticks will lead to increases in tick borne diseases such as East Cost Fever (ECF), Babesiosis and Anaplasmosis.
- Damage of infrastructures in case of floods such as charcoal dams, fish ponds, roads and livestock markets which will affect livestock trade.
- Provision of veterinary services will also be affected.
- Fish production will increase eg. Aquaculture, capture-fish.

Major Food Prices at Selected Markets



The chart above shows average market prices for major food crops in combination with average price data for the selected markets for February, 2017. Ilala, Njombe, Dodoma, Songea and Tanga had the highest prices for rice ranging from(1,800/= to 1975/= per Kg) while Kigoma, Arusha, Bukoba and Mpanda had lowest market prices ranging from (1,463/= to 1,325 per kg). Musoma, Morogoro, Dodoma, Singida and Tabora had above average maize price while Songea, Mbeya and Bukoba were all below average maize prices. However, the lowest maize price were observed in Bukoba market 789.30/= per kg), Mbeya market (804.38/= per kg) and Songea market (896.25/= per kg). Sumbawaga, Temeke, Moshi and Geita had the highest prices for beans ranging from (1,965/= to 2,150/= per kg) while Bukoba, Mbeya and Shinyanga had the lowest prices of beans ranging from (1,358.33/ = to 1,571.43/= per kg).

National Food Availability

The table below shows 2015/16 Food Crop Production versus Requirement for the year 2016/17

2015/16 Food Crop Production Vs Requirement for the year 2016/17			
Total	**Cereals**	**Non-Cereals**	**Total**
Production	9,457,108.00	6,715,733.00	16,172,841.00
Requirement	8,355,767.00	4,803,560.00	13,159,326.00
Deficit (-) / Surplus (+)	1,101,341.00	1,912,174.00	3,013,515.00

Source: MALF, Preliminary Food Crop Production Forecast 2015/16

VULNERABILITY

Occurrence of Crop pests in February 2017

Photo: Maize plant damaged by Army Worms in Sumbawanga, Nkasi District, Rukwa.

Some Ministry of Agriculture Livestock and Fisheries (MALF) received information on the outbreaks of various Crop pests including quelea quelea, army worm, and rodent and red locust in various parts of the country.

Quelea quelea: The outbreak of quelea quelea have been reported in Mbarali district council (in Kapunga estate especially in Mwashikamile and Lwanjili wards), Same District council (in Ndungu Irrigation Scheme especially in Kalemawe, Maore, Ndungu and Kihurio wards), Moshi DC (in Lower Moshi and Kahe)

Army worm: Outbreak of Army worm have been reported in various parts of the country including Lindi region (in Mtama, Jamhuri and Ng'apa wards), Pwani region (in Mwateni, Utete, Ngorongoro, and Mhororo wards), Morogoro region (in Kilombero and Ifakara Districts) and Rukwa (in Nkasi District)

Rodents: Outbreak of rodents have been reported in Iringa and Morogoro region (Iringa DC, Lindi DC, Ruangwa, Kilwa, Kilombero, Kilosa, Liwale, Morogoro DC and Mvomero)

INTERVENTIONS

- A total of 120 liters of pesticide (Bamethrin 2.5% EC) have been distributed in Kilombero District and 50 liters in Rufiji to fight against Army worm.
- The government has continued to monitor weather condition towards crop condition, as well as monitoring the food situation in all 26 regions for more effective intervention.
- The government has continued to sensitize the farmers to use drought tolerant varieties and early maturing varieties.
- Comprehensive Food and Nutrition Security assessment was done between 11th January and 2nd February 2016 to identify the vulnerable population and immediate interventions required.
- The government has assisted farmers to get seeds (subsidized price and free).

MEDIUM TO LONG-TERM STRATEGIES

- Provide training sessions on improved crop production, crop diversification as well as marketing in order to increase household income.
- Improve market linkages and accessibility through construction of roads, market infrastructures introduction of regulations for the transport of commodities, etc.
- Construction and rehabilitation of drainage systems and irrigation schemes as well as improved agricultural land management to avoid water logging.
- Promote fully-fledged watershed management in order to reduce the associated risks of flooding of the agricultural land through - tree planting, land use management plans, riverbank maintenance, construction of dams, etc.

Terms and Definitions		
MALF	Ministry of Agriculture Livestock and Fisheries	
NFSD	National Food Security Division	
TMA	Tanzania Metrological Agency	
RAS	Regional Administrative Secretary	
NDVI	Normalized Difference Vegetative Index. The NDVI is used to measure and monitor plant growth, vegetative cover, and biomass production.	
MODIS	Moderate resolution Imaging Spectroradiometer	
BIMODAL	Areas receiving rains twice a year. This means that the majority of precipitation falls in two distinct seasons a year i.e. short rains Vuli-September to December, Long rains Masika - March to June.	
UNIMODAL	Areas receiving rains once a year Msimu rains i.e from November to April	
Conditions	**Exceptional**	Conditions are much better than average at time of reporting
	Favorable	Conditions range from slightly below to slightly above average at reporting time
	Watch	Conditions are not far from average but there is a potential risk to production
	Poor	Crop conditions are well below average. Crop yields are likely to be 10% or more below
	Average	This is only used when conditions are not likely to be able to recover, and impact on production is likely
Drivers	**Wet: Flooding**	Wetter than Average due to flooding
	Wet: Water Logging	Wetter than Average due to water logging
	Dry	Dryer than Average
	Hot	Hotter than Average
	Cold	Cooler than average or risk of frost damage
	Extreme Event	This is a catch-all for all other climate risks (i.e. hurricane, typhoon, frost, hail, winterkill, wind damage, etc.)
	Delayed Planting	Postponement to the start of season
	Pests	Destructive insects or animals
	Disease	Impairment of the crop that causes abnormal functioning
	Wind Damage	Damage caused by high winds
	Flood	An excessive amount of water located beyond its normal boundaries
	Socio-political	Social or political factors that impact crop conditions (i.e. policy changes, agricultural subsidies, government intervention, etc.)
	Late Rains	Delayed onset of rainy season
Trends	**Improving**	Crop conditions are improving
	Stable	Crop conditions are stable
	Worsening	Crop conditions are worsening

Sources and Disclaimers:

The Tanzania National Food Security Bulleting is compiled by the National Food Security Division (NFSD) in the Ministry of Agriculture Livestock and Fisheries (MALF) with inputs from the Tanzania Meteorological Agency (TMA), The Tanzania Ministry of Trade and Support from the University of Maryland and Sokoine University of Agriculture. The findings and conclusions in this joint ministerial and departmental report are consensual statements from the NFSD team, and do not necessarily reflect those of the individual agencies represented by these experts.