




Global Forecast of ACT Demand (for 2010 and 2011)

December 2009

RBM PSM Forecasting Task Force

- Clinton Health Access Initiative
 - MIT-Zaragoza International Logistics Program
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Purpose of the document

- Robust and timely forecasts are critical for production & supply chain decisions by manufacturers
- At the WHO/MMV Conference in September'09:
 - Several groups (including CHAI, MIT Zaragoza, BCG and Sanofi Aventis) presented forecasts of global ACT demand that varied in methodology and outcome
 - Manufacturers and other stakeholders expressed a need to synthesize these forecasts into a joint publication, to facilitate greater understanding of projected ACT demand
- In response, CHAI and MIT-Z have updated and synthesized their ACT demand forecasts into this joint publication (including comparisons between the two forecasts and details on their methodology, assumptions, range)
- Forecasts by other groups (BCG, Sanofi, UNITAID/McKinsey, and Dalberg) will be included in future reports if and when they become available.

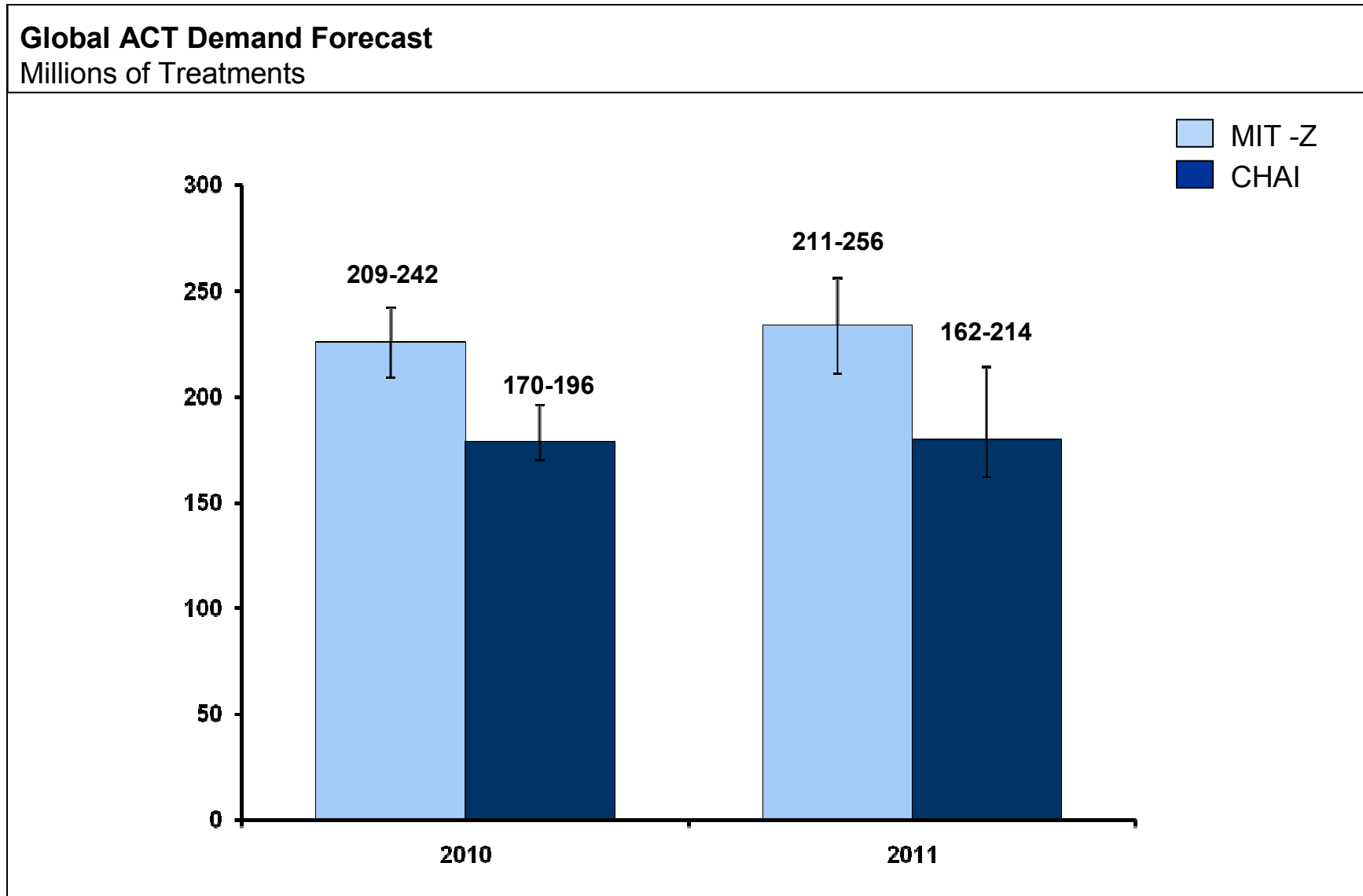
Guidance for interpreting the forecasts contained in this document

- Forecasts represent global demand of quality-assured ACTs , i.e. ACTs approved by a Stringent Regulatory Authority (SRA)¹ or by the External Review Panel of the Global Fund.
- For both MIT-Z and CHAI forecasts:
 - Height of the columns/bars demonstrate the most likely value of demand within the range
 - Forecasts represent the “best guess” estimates, given currently available information. These do not (and cannot) preclude the potential for unforeseen events in the future, such as significant additional funding for ACT procurement beyond current plans
- MIT-Z forecast:
 - Ranges indicated represent high, medium, and low demand scenarios resulting from different data inputs and assumptions
- CHAI forecasts:
 - Ranges indicated represent confidence intervals² around the demand estimates resulting from different combinations of data inputs and assumptions

¹ A regulatory authority which is (a) a member of the ICH (as specified on www.ich.org); or (b) an ICH Observer, being the European Free Trade Association (EFTA) as represented by Swiss Medic, Health Canada and World Health Organization (WHO)

² An 80% confidence interval is used. Confidence Intervals is a statistical measure that gives an estimated range of values which is likely to include an unknown parameter (in this case predicted demand for 2010 and 2011

2010 demand forecasts range from 170M–242M treatments, with MIT at the high end of that range and CHAI at the low end

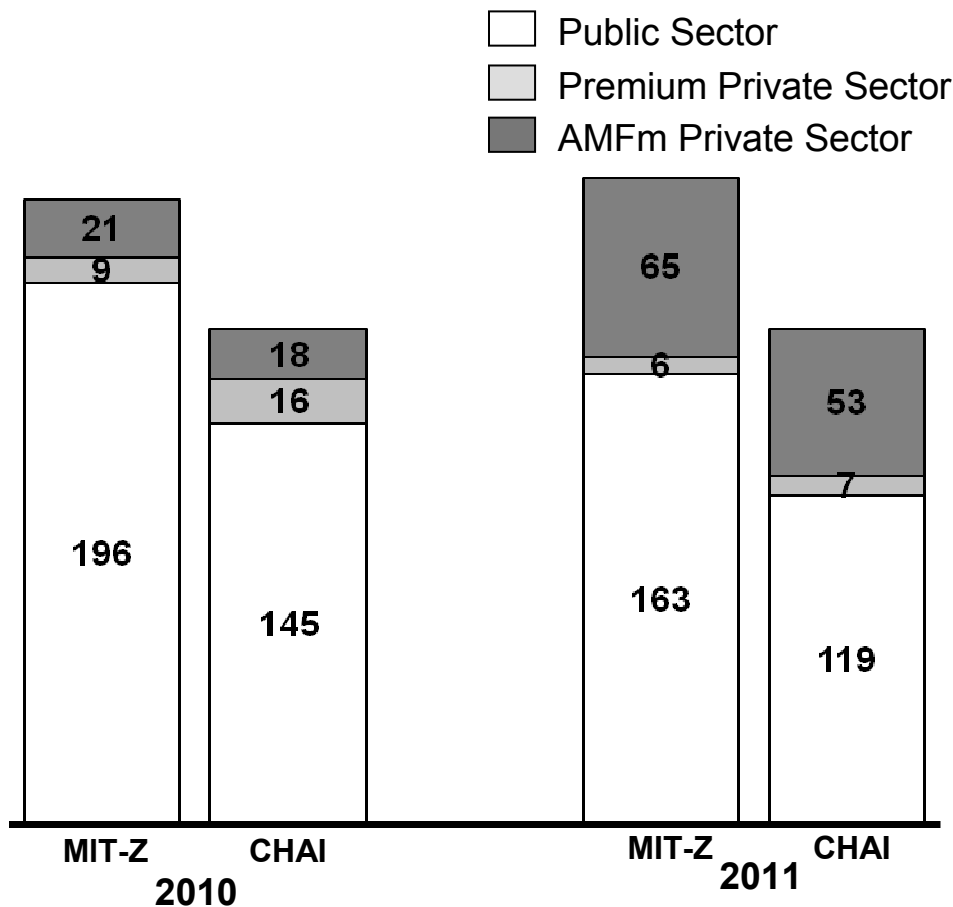


Sources: CHAI, MIT-Z

Demand from the public sector represents 80-90% of worldwide demand in 2010

Global ACT Demand Forecast¹ (Quality-Assured ACTs)

Millions of Treatments



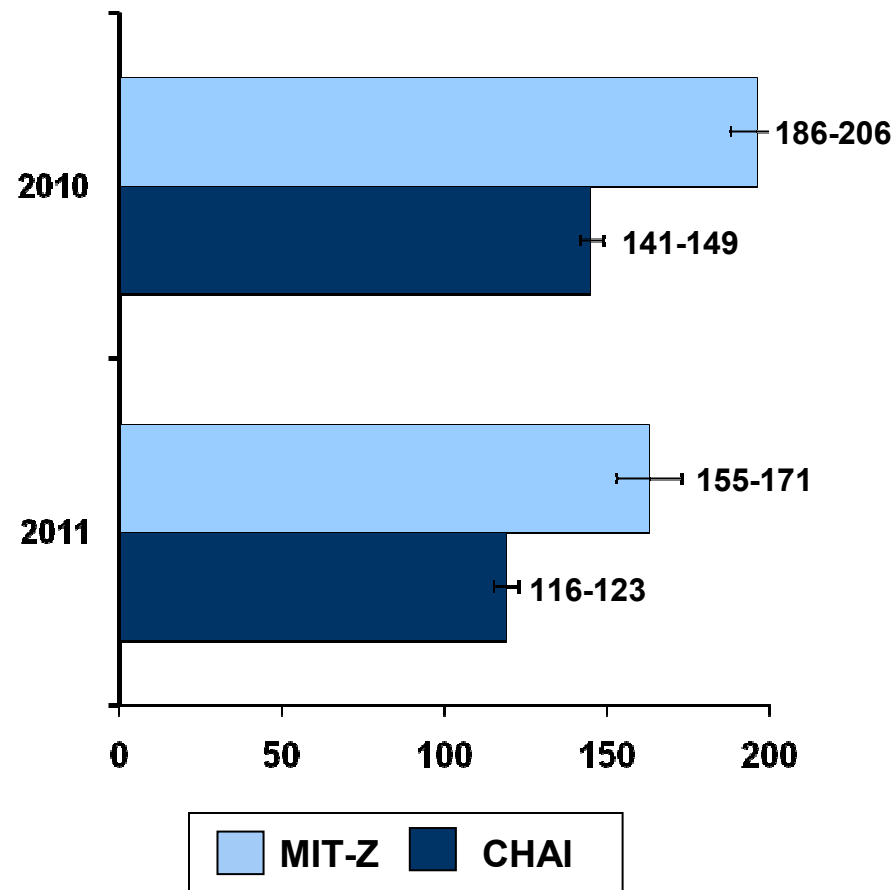
- Public sector accounts for 80-90% of demand in 2010. AMFm-attributable private sector accounts for ~10% and the Premium private sector share is even less
- In 2011, public sector accounts for bulk of the demand but AMFm-attributable private sector share grows to ~30%
- Roll out and uptake of AMFm is the main driver behind increased private sector demand
- Decrease in public sector volumes in 2011 compared to 2010 is attributable to unusually high funding from Global Fund Round 8

¹ The estimates shown here are the most likely estimates as predicted by both models.

2010 public sector demand forecasts range from 141M-206M

Public Sector ACT Demand Forecast

Millions of Treatments

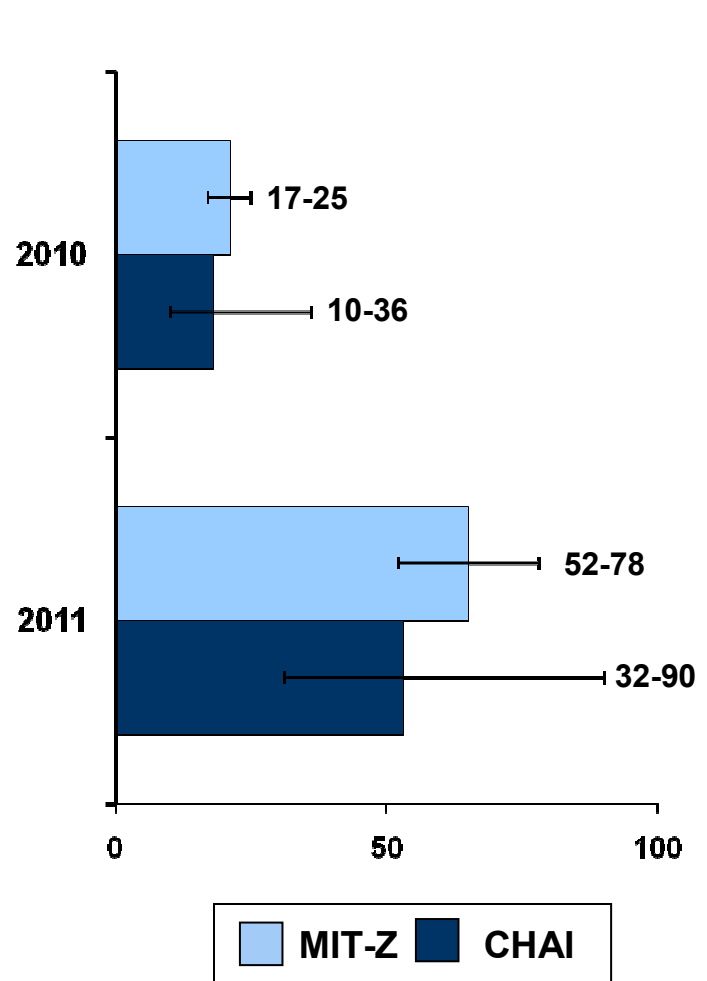


- Differences in estimates are mainly attributable to different methodologies:
 - **MIT-Z:** Gathers data on planned ACT procurement based on Global Fund PSM plans, PMI operational plans and country inputs and then discounts to account for delays in release of funding, tendering and quantification error, and cuts in GF R8 and R9 grants.
 - **CHAI:** Gathers data on planned ACT funding from the Global Fund, PMI, and the World Bank and then uses a predictive model to forecast the rate of actual ACT procurement (compared to what was planned). The model uses the following variables:
 - Historical disbursement rate
 - Country level data ((e.g. GDP, corruption index)
 - GF grant characteristics

2010 AMFm private sector demand ranges from 10M-36M. Differences between forecasts are due to differences in assumptions about timing and uptake of ACTs under AMFm

AMFm Private Sector ACT Demand Forecast

Millions of Treatments



- Both groups calculate private sector anti-malarial market size based on incidence of malaria fevers, % seeking treatment and % receiving ACTs
- Difference in AMFm-attributable private sector estimates is due to variation in assumptions:

	<u>MIT-Z</u>	<u>CHAI</u>
Peak Market Share	•60% for <5's •50% for >5s	50% (+/- S.D.10%), for all ages
AMFm Launch	June/July	Between June to Dec, with June most likely
Time to Peak	End 2011	Between 0.5-3 years, with 1 year most likely

- Lower degree of confidence for private sector estimates, as reflected by wide range of estimates . This is due to uncertainty around certain key assumptions mainly relating to AMFm (see next slide)

Both MIT-Z and CHAI's demand forecasts are highly sensitive to changes in certain key inputs, which have uncertain values

Key Input

Reasons for Uncertainty

*Impacts
private
sector
forecast*

Global Antimalarial Market Size

- Calculated based on incidence of malaria fevers and percent of fever patients seeking treatment
- Estimates for annual incidence of malaria-like fevers vary significantly across different sources

Share of Private Sector Market

- As demonstrated by baseline data from ACTWatch, share of private sector markets and in turn ACT share of private sector markets appears to vary significantly by country
- Survey data like ACTWatch is very important, but is at present limited (covers only 8 countries)

*Impacts both
public and
private
sector
forecast*

High Volume Countries

- High volume countries such as Nigeria, DRC, Tanzania, Uganda, and Kenya account for disproportionate fractions of total ACT volumes.
- Due to their high volumes, predicting procurement volumes by these countries is essential to producing accurate forecasts



APPENDIX



Comparison of methods and key assumptions: Public Sector

	MIT-Z	CHAI
Data Sources	<ul style="list-style-type: none"> • Global Fund grant proposals • PMI Malaria Operational Plans 	
	<ul style="list-style-type: none"> • Global Fund PSM Plans • Quantification assessments conducted by RBM partners (i.e. NMCPs, implementers, consultants, etc) • Also see Coghlan, R. M. Lavery, M. Renshaw, R. Shretta, and P. Yadav. Understanding the Scale Up of ACTs from Multiple Procurement Data Sources. Working Paper 2009. MIT-Zaragoza International Logistics Program 	<ul style="list-style-type: none"> • WB Booster Program Procurement Plans • Also see Cohen J.M., Singh I., O'Brien, M.E. Predicting Global Fund grant disbursements for procurement of artemisinin-based combination therapies. Malaria Journal 2008, 7:200
Methodology	<ul style="list-style-type: none"> • Uses a combination of top-down and bottom-up approach to collecting planned procurement by each country • In the event of large discrepancies further investigation conducted to understand the causes (e.g. multi-year orders, funding shortage/delay, existing inventory) and forecasts are adjusted accordingly (e.g. volume spread over future years to reflect staggered shipments, projected gap filling or emergency procurement etc.) • For countries that account for significant volumes of ACTs, the various data sources are compared and partners with country specific knowledge are consulted to determine the best estimate of country demand • Planned procurement figures are then discounted to account for delays in the release of funding, delays in tendering and quantification error 	<ul style="list-style-type: none"> • Uses a predictive model to predict the rate of actual ACT procurement (compared to planned procurement). The regression analysis conducted to generate the predictive model is based on: <ul style="list-style-type: none"> • Historical disbursement data • Country level data (e.g. GDP, corruption index) • Global Fund grant characteristics (e.g. grant size, disbursement timing, ACT importation timing) • For PMI and WB procurement, numbers are extrapolated from past procurement and available plans • Demand from additional sources such as government self-funded ACTs and bilateral aid accounted by adding flat 5% to total public ACT demand
Assumptions	<ul style="list-style-type: none"> • Discount applied to planned procurement: <ul style="list-style-type: none"> • 25% in 2010 • 15% in 2011 	<ul style="list-style-type: none"> • Grants from Round 1-9 lagged and discounted according to CHAI model (described above) • R10 : rate of disbursement assumed to follow averages of Rounds 4-9

Comparison of methods and key assumptions: Private Sector

	MIT-Z	CHAI
Data Sources	<ul style="list-style-type: none"> • WHO Malaria Report 2008 • ACTWatch • CHAI Tanzania ACT pilot subsidy 	<ul style="list-style-type: none"> • Various national and regional surveys / reports • Kiszewski A., Johns B., Schapira A., Delacollette C., Crowell V., Tan-Torres T., Amenshewa B., Teklehaimanot A., Nafo-Traore F. Estimated global resources needed to attain international malaria control goals. Bulletin of the World Health Organization 2007, 85:8
Methodology	<ul style="list-style-type: none"> • Size of market per country determined by fever incidence and private sector treatment seeking data • Current market share of ACTs estimated on country by country basis. Some countries have existing data available in ACT Watch. For others, average of ACT market share in similar countries is used. • Results from TZ & UG pilots used to model a baseline uptake curve • Uptake of ACTs is modeled separately for children under 5 years old, and people over 5 • Estimates are adjusted to account for supply chain inventory 	<ul style="list-style-type: none"> • Private sector demand for each country is the larger of: <ul style="list-style-type: none"> • i. Total Demand - Public Sector demand • ii. 40% of total demand • Assumptions varied as described below to obtain simulations that describe most likely forecasts
Assumptions	<ul style="list-style-type: none"> • AMFm subsidy begins in June/July, 6 week lag before product arrives at shops • Peak ACT market share: 60% market share for <5's and 50% for over 5s • Time to Peak: by the end of 2011. • Baseline uptake curve discounted by: <ul style="list-style-type: none"> ▪ 0% - For countries with experience implementing subsidized ACTs in the private sector (CM, TZ, UG, RW) ▪ 10% - For countries without experience ▪ 25% - For Nigeria to account for potential complications in the private sector. 	<ul style="list-style-type: none"> • AMFm subsidy begins between June - December, with June most likely (decreasing linearly through Dec) • Nigeria will be September-December, with Sept most likely • Peak ACT market share: 50% (+/- 10% std dev.), for all ages • Time to peak: 0.5-3 years, with most likely value of 1 year