

*f*CPR

Forest Conservation Performance Rating for the Pan-Tropics

Report 4: Brazil in the Vanguard

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August, 2014

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Summary

This report updates CGD's Forest Conservation Performance Rating, a system of color-coded ratings for tropical forest conservation performance that can be implemented for local areas, countries, regions, and the entire pan-tropics. The ratings reward tropical forest conservation in three dimensions: (1) Progress toward elimination of tropical forest clearing by 2050; (2) progress toward achieving more ambitious REDD+ goals; and (3) achieving an immediate reduction in forest clearing. We assign Green ratings to areas that meet condition (2); Yellow to areas that meet (1) only; Dark Red to areas that fail both conditions, with forest clearing still increasing; and Light Red to areas that fail both conditions, but with declining forest clearing

We have developed **fCPR** at the Center for Global Development (CGD), using biweekly forest clearing indicators from FORMA (Forest Monitoring for Action). This report covers developments since 2005 in 89 tropical forest countries, 1,096 of their states and provinces, and 12,556 of their sub-provinces and municipalities. We also combine the **fCPR** country ratings to produce ratings for major regions and the entire pan-tropics.

Overall, we find that conservation performance has deteriorated significantly since 2005, and the most recent developments provide few grounds for optimism outside of Latin America. With rough stability in that region and rapidly-increasing indicator values in Asia and Africa, the global forest clearing indicator is currently at its highest level since FORMA's inception. Even Latin America owes its stability almost entirely to Brazil, which has reduced forest clearing enough to neutralize rapid increases elsewhere in the region.

Despite the generally-negative global trends, our detailed assessment at the sub-national level reveals improvements at the state/provincial level in many forest-clearing countries. These provide reminders that appropriately-focused, effective implementation of local policies can reduce forest clearing significantly. We hope that the **fCPR** ratings, and FORMA itself, will contribute by monitoring progress toward this goal, and by indicating problem areas where focused attention may promote more rapid progress. We will publish frequent updates on CGD's website (<http://www.cgdev.org>) and inform subscribers to our newsletter at http://www.cgdev.org/section/topics/climate_change/newsletter_archive.

This report is the fourth in the **fCPR** series. Previous reports can be found at the following links:

Report 1: <http://www.cgdev.org/publication/fcpr%E2%80%93forest-conservation-performance-rating-pan-tropics-working-paper-294>

Report 2: <http://www.cgdev.org/publication/forest-conservation-performance-rating-fcpr-report-2-bad-news-pan-tropics-and-everybody>

Report 3: http://www.cgdev.org/sites/default/files/FCPR_Report_3.pdf

1. Why We Developed *fCPR*

fCPR (**Forest Conservation Performance Rating**), developed by the authors at the Center for Global Development (CGD), mobilizes the latest forest monitoring technology to produce frequently-updated conservation performance ratings for local areas, countries and regions in the pan-tropics. We have designed *fCPR* to support the mission of REDD+ (Reducing Emissions from Deforestation and Forest Degradation in Developing Countries) in three ways. First, *fCPR* directly promotes conservation by recognizing governments that protect their forested lands. Second, the system aids priority-setting by highlighting areas where forest conservation is lagging. Third, *fCPR* offers the global community an open-source, unbiased, frequently-updated view of global, regional and national progress toward achieving the goals of REDD+. Its ratings reward tropical forest conservation in three dimensions: (1) Progress toward elimination of tropical forest clearing by 2050; (2) progress toward achieving more ambitious REDD+ goals; and (3) achieving an immediate reduction in forest clearing.

We have developed *fCPR* using biweekly forest clearing indicators from FORMA (Forest Monitoring for Action), which we prototyped at CGD and expanded at the World Resources Institute as part of Global Forest Watch.¹ This report updates our ratings of conservation performance for 89 tropical forest countries,² 1,096 states and provinces, and 12,556 subprovinces and municipalities.

¹ The FORMA time series data can be viewed on a global map at <http://www.globalforestwatch.org> and downloaded from http://www.globalforestwatch.org/sources/forest_change.

² We use the term "country" for expositional convenience. The *fCPR* ratings include several autonomous and semi-autonomous political entities as well (e.g., Taiwan China; Hong Kong China).

2. How *f*CPR Rates Tropical Forest Areas

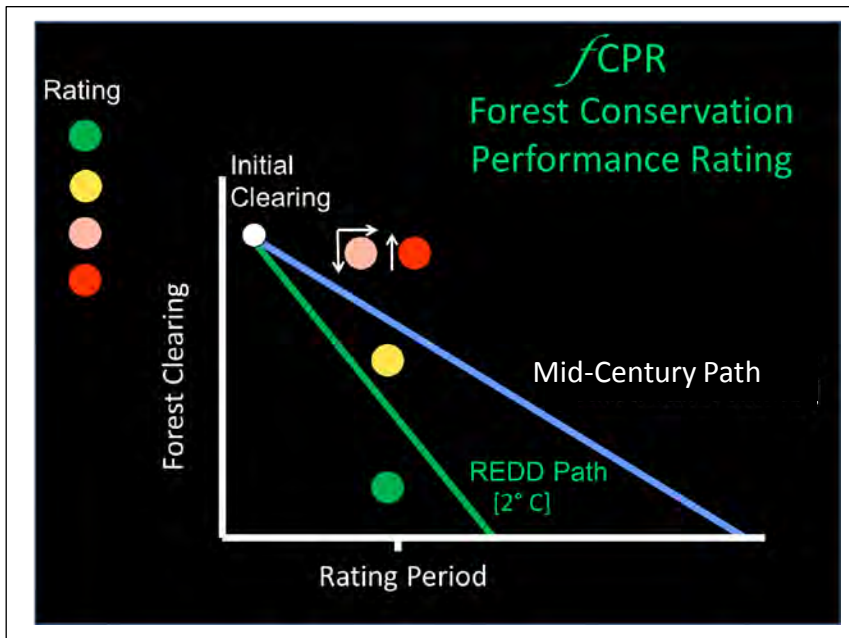
Rating performance requires benchmarks for judging progress. In REDD+ programs, a common benchmark is forest clearing during a previous period. We begin with a benchmark based on average forest clearing at two-week intervals during the first three years of FORMA coverage: 2006-2008.³ Once the initial benchmark is set, we rate an area's progress relative to two paths that decline from the benchmark to zero clearing in 2050 and 2025, respectively. The moderate variant, which we term the "mid-century path", reflects a conservative view of potential progress. The steeper variant, or "REDD+ path", reflects the global community's recognition that we are unlikely to avoid a climate catastrophe unless carbon emissions plummet in the near future.

Once the mid-century and REDD+ paths are established for the 89 countries tracked by FORMA, we assign quarterly performance ratings as illustrated in Figure 1. We develop the ratings from 12-month moving averages (MA) of FORMA's twice-monthly clearing indicators, to remove seasonal fluctuations.⁴ We further stabilize the series by calculating quarterly averages of the MA. Countries are Green if their quarterly averages are below their REDD+ lines. Green countries are on track to achieve zero clearing by 2025. We assign Yellow to countries whose quarterly averages are between their mid-century and REDD+ lines. Yellow countries will achieve zero clearing by 2050 if progress continues, but they are not yet on track to zero clearing by 2025. Finally, we assign Red to poor performers: countries whose quarterly averages are above their mid-century and REDD+ lines. To recognize incremental progress, we assign Light Red to

³ The average for each area is based on 70 observations.

⁴ The moving average for a month is calculated from its clearing indicator and the indicators for the previous 11 months.

Figure 1: Assigning Performance Ratings



countries where clearing is falling or stable, and Dark Red to countries where clearing is still increasing.

FORMA’s biweekly database currently spans the period from January 1, 2006 to June 10, 2014. Using a three-year period (2006-2008) to set the initial benchmark for each country, we develop quarterly performance ratings for Q4 2008 - Q2 2014.⁵

3. fCPR Country Ratings

Table 1 presents color-coded ratings for the 89 countries, along with regional and global ratings.⁶ To aid interpretation, we include average quarterly clearing indicator

⁵ The rating for Q4 2008 is based on the 12-month moving average for December, 2008. We have checked to see whether longer benchmark periods significantly affect country ratings, and they do not: The correlations between scores for 3-, 4- and 5-year benchmark periods are all 94% or higher.

⁶ To develop the summary ratings, we assign numerical scores to color codes as follows: Green (4); Yellow (3); Light Red (2); Dark Red (1). For a regional rating, we calculate each country’s share of total clearing in the region during the rating quarter. Then we weight country scores by these shares; add the share-weighted scores; round the result to the nearest whole number; and assign the color associated with that number. For the global rating, we follow the same procedure with countries’ scores weighted by their shares in total (89-country) clearing during the rating quarter.

values for Q4 2008 – Q2 2014 as measures of relative scale. Figures 2 and 3 summarize the country results, while Figure 4 provides geographic information.

The graphs in Figure 2 track general performance trends since 2005: Green for total countries that achieve Green or Yellow ratings; Red for countries that have Dark Red or Light Red ratings. The results reveal three phases since Q4 2008: (1) moderate deterioration in performance before the global economic crisis; (2) temporary reversal during the crisis; (3) significant deterioration during the recovery period, reaching an apparent plateau during 2012. Overall, Red countries increased from 52 in Q4 2008 to 63 in Q2 2014, while Green countries fell from 37 to 26.

Figure 3 provides a more detailed interpretation of performance by Red countries. As the first panel shows, the mid-period surge in Dark Red countries (i.e., countries with FORMA indicator values above their mid-century paths and *rising*) has receded. In 2014, countries in this category number around 40 -- roughly the same as the number in 2008 - 2009. At the same time, the number of Light Red countries (indicator values above their mid-century paths but *falling*) has increased substantially since 2012. Overall, the contrast between Dark and Light Red trends offers at least some encouragement.

Figure 4 displays geographic patterns for the first rating quarter (Q4 2008), the final rating quarter (Q2 2014) and the quarter that falls midway between the two (Q3 2011). Besides the overall decline in positive ratings since Q4 2008, two features are striking: (1) The deterioration of Asian ratings, which is also clear in Table 1. Aside from three city-states (Singapore, Hong Kong, Macao) and small island states, the count for Green and Yellow ratings in Asia is 0 in Q2 2014. (2) The change in three southern-tier South

Figure 2: Summary Country Ratings, 2008 Q4 - 2014 Q2

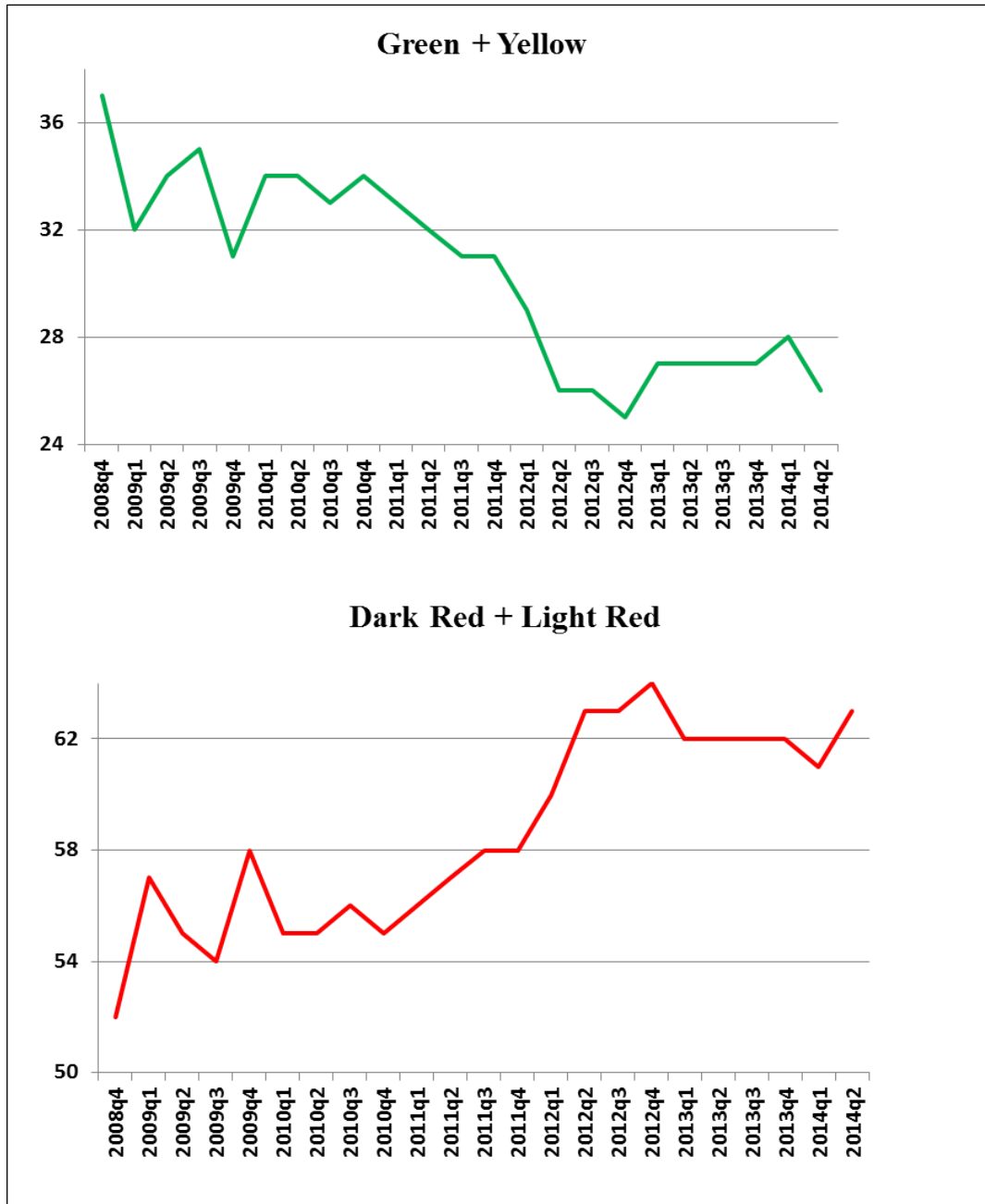
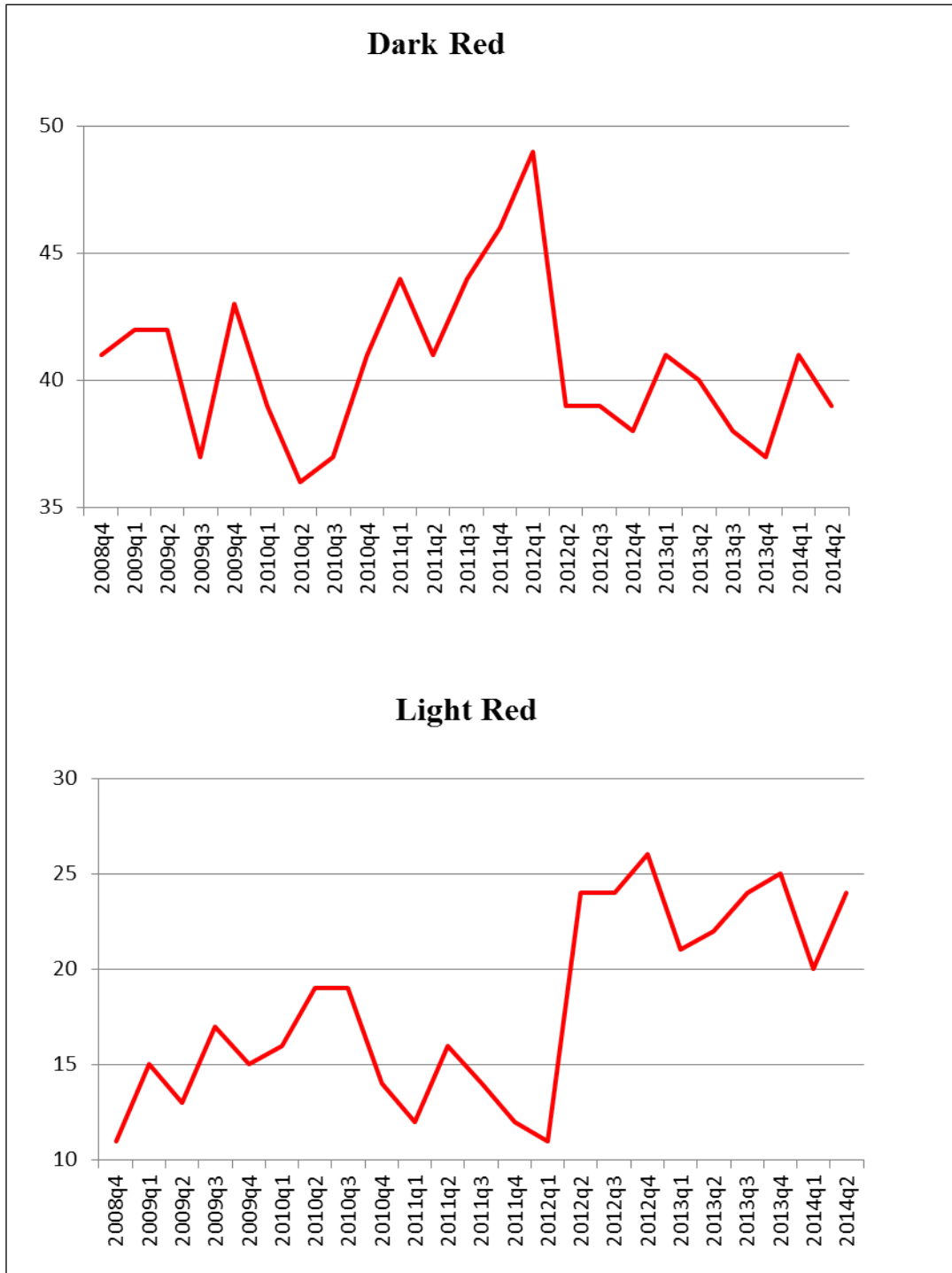


Figure 3: Country Dark and Light Red Ratings, 2008 Q4 - 2014 Q2



American countries (Brazil, Bolivia, Argentina), which have all improved from Light Red to Green since Q4 2008.⁷

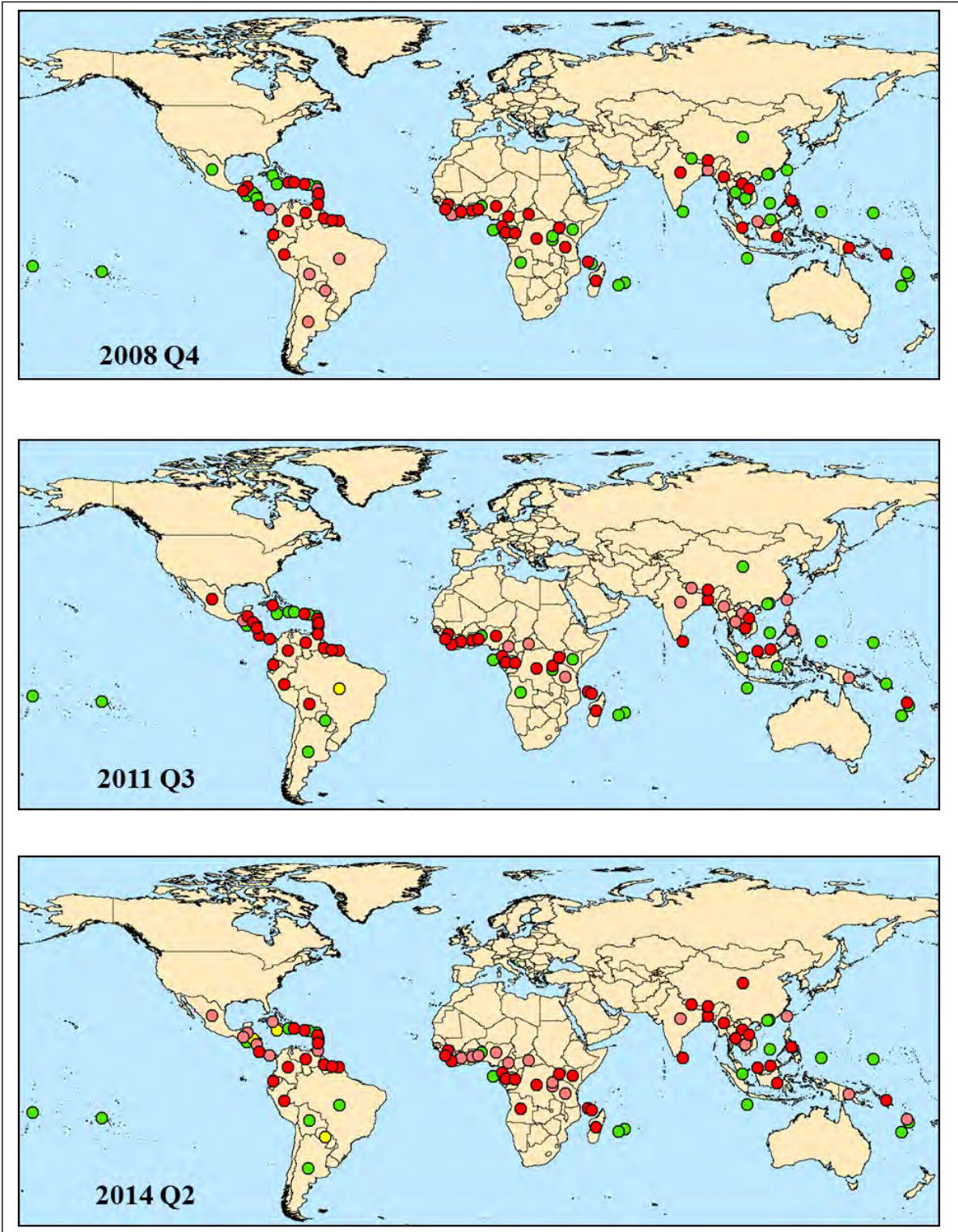
Reflecting the overall deterioration, the weighted global color rating in Table 1 has shifted from a 10/2 split between Yellow and Light Red in 2009-2011 to entirely Light Red in 2012-2014. In Asia, a general trend toward Red was partially offset by Indonesia's achievement of a Green rating from Q2 2009 to Q3 2011. Since then, however, Indonesia has reverted to lower ratings and the regional rating has followed suit. In the two most recent quarters, Indonesia has been Red and so has the region.

In contrast, Latin America has fluctuated between Yellow and Light Red since Q4 2008, with the overall rating dependent on Brazil's huge contribution. When Brazil has been Light Red or Yellow, the region has been Light Red (with one exception, in Q4 2012). When Brazil has been Green, the Region has been Yellow. With the exception of Brazil, Bolivia, Argentina, Paraguay, Honduras and El Salvador, performance in mainland Latin America has remained poor. Africa has been Red for all 23 quarters, because its many Red-rated countries have much more clearing than its few Green-rated countries. In addition, the continent's Green country count has fallen from 7 in Q4 2008 to 3 in Q2 2014. Despite generally Green ratings, Oceania has been consistently Red because the Red-rated Comoros and Vanuatu have far more clearing than the other islands.

When regional results are compared, it is clear why the global rating in Q2 2014 is Light Red: Latin America is Yellow, with a global indicator weight of 5,671, while Asia is Red (with weight 4,741), Africa Red (weight 426), and Oceania Red (weight 5). But Latin America only remains Yellow because Brazil, with an indicator weight of 3,648, is

⁷ Argentina has a small tropical forest area near the frontier with Bolivia.

Figure 4: Country Performance Ratings



currently Green. Without the massive counterweight of Brazil, the global rating would be Red.

Table 2 identifies significant country trends during the past two years. The results are presented by region and direction of trend. In Africa, Nigeria, Ghana, Burundi and Rwanda improved from median Red status in 2013 to median Light Red in 2014. On the other hand, the FORMA indicators for Angola, DR Congo, Kenya, Republic of Congo and Uganda have all deteriorated since 2013. Four have moved from Light Red to Red, while one (Angola) has dropped from Green to Yellow.

During the past two years Asia has displayed progress in only three minor forest states and deterioration in several countries that play major roles in global deforestation. All countries with significant trends have remained above the mid-century line. Taiwan, China, Papua New Guinea and Bangladesh have improved from Red to Light Red, while China, Thailand, Laos, Myanmar, Indonesia and Vietnam have all moved in the other direction.

In contrast, many states in Latin America and the Caribbean have improved during the past two years. Haiti, Brazil and Bolivia have moved from lower ratings to Green; Jamaica has improved to Yellow; and movement from Red to Light Red has occurred in Saint Lucia, Venezuela, Cuba, Mexico, Martinique, Trinidad and Tobago, Guatemala and St. Vincent and the Grenadines. Only Guadeloupe and Paraguay have deteriorated, moving from Green to Yellow.

4. *f*CPR State and Province Ratings

Table 3 provides ratings for 1,096 states and provinces that contain tropical forest areas, while Figure 5 provides summary information for localities whose performance has been superior (Green or Yellow) or sub-par (Red or Light Red). Here we see striking evidence of deterioration: Superior ratings have fallen steadily from 736 in Q4 2008 to 502 in Q2 2014, while sub-par ratings have risen from 360 to 594.

Figures 6 and 7 offer more detailed views for South America and Southeast Asia, the two regions that dominate tropical forest clearing. In Figure 6 (and Table 3), the period from Q4 2008 to Q2 2014 is marked by the “greening” of central and eastern Brazil, including substantial areas of the Amazon. The change from Red to Green is also apparent in eastern Bolivia. However, widespread changes from Green to Red are apparent in Peru, Ecuador, Colombia, Venezuela and Guyana. On balance, Figure 6 suggests displacement of forest clearing from Brazil to neighboring states.

In Southeast Asia (Figure 7, Table 3), Indonesia displays improvement in Sumatra from Q4 2008 to Q3 2011, along with stability in Kalimantan, Sulawesi and Irian Jaya. However, deterioration throughout the archipelago is evident in the period Q3 2011 to Q2 2014. In the most recent period all Green areas on the four islands have disappeared, except for a small region in south Sumatra.

Figure 5: State/Province Ratings, Q4 2008 – Q2 2014

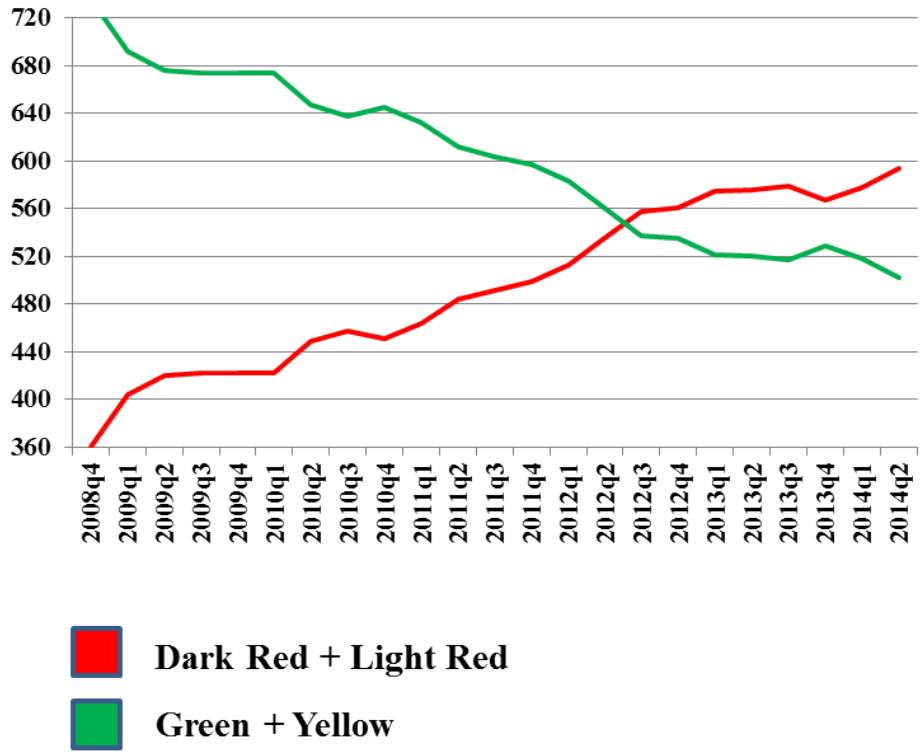


Figure 6: Provincial Performance Ratings, South America

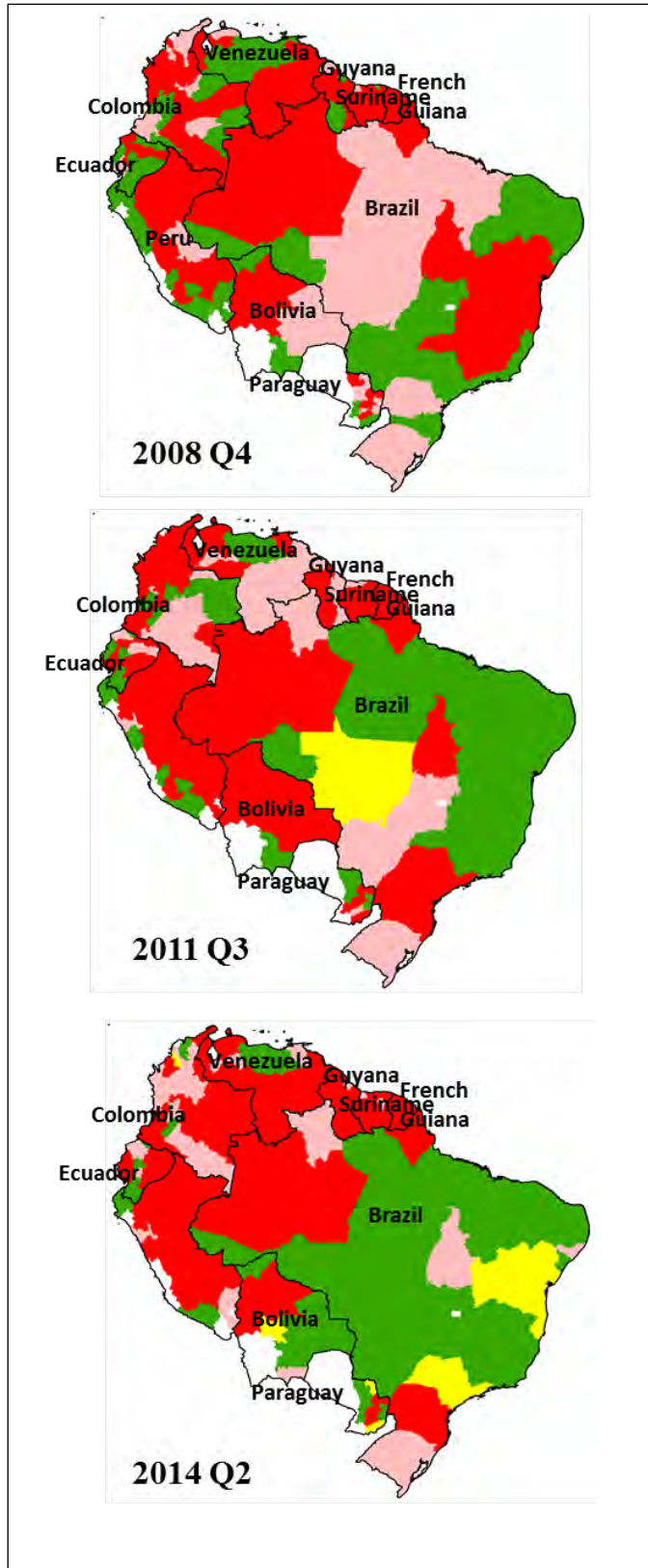
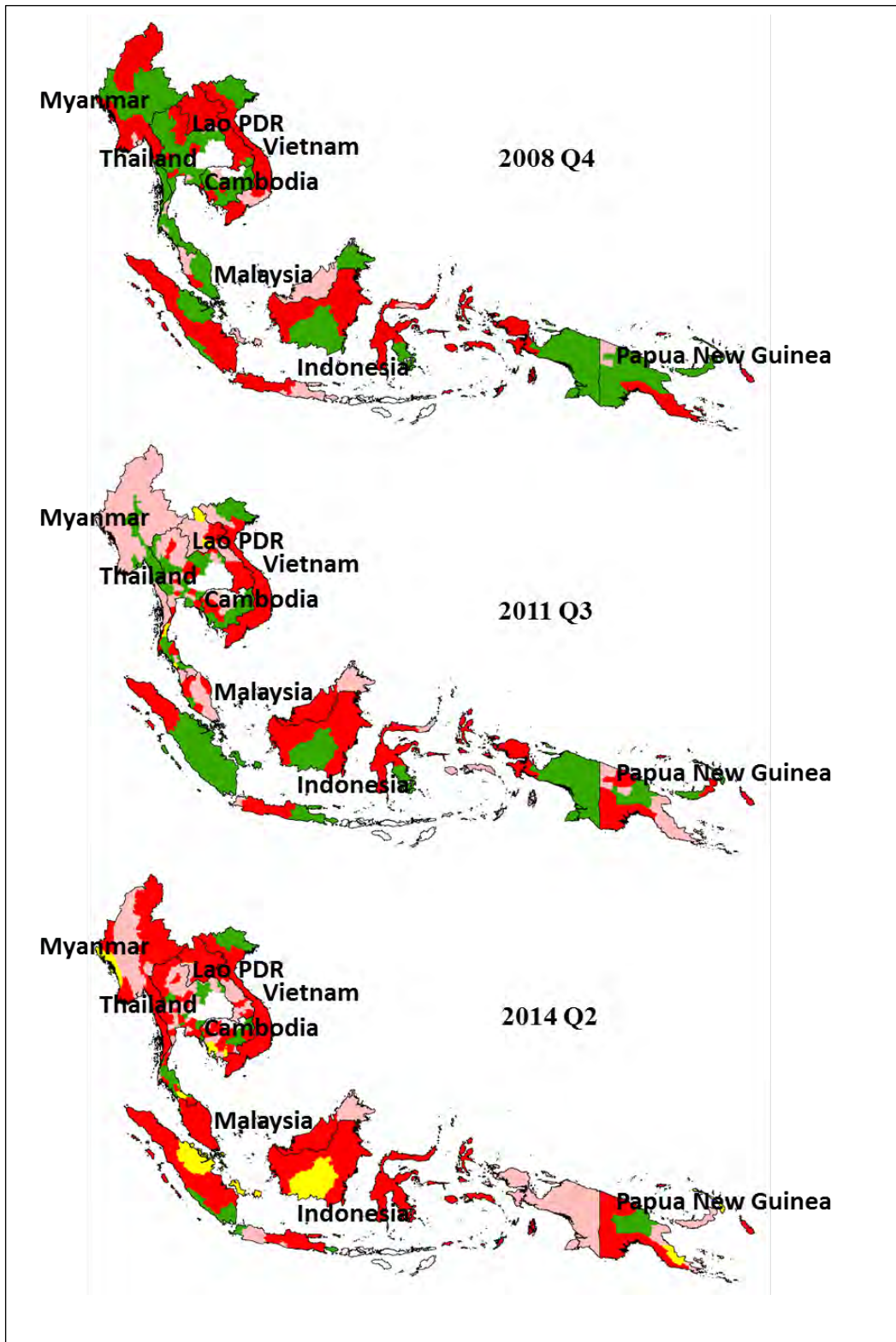


Figure 7: Provincial Performance Ratings, Southeast Asia



Elsewhere in Southeast Asia, Table 3 and Figure 7 reveal a steady pattern of deterioration. In Q4 2008, significant Green areas are still apparent in Myanmar, Thailand, Malaysia and Papua New Guinea. However, they have become largely Red by Q2 2014, while Lao PDR and Vietnam remain almost entirely Red.

5. Global and Regional Trends

Figure 8 displays the 12-month moving average of the global FORMA indicator from January 2007 to June 2014. It passed through two clear cycles between 2007 and 2013, with peaks in September 2008 and December 2012 and troughs in September 2007 and March 2010. Unfortunately, the downturn after December 2012 proved short-lived. Since then, the indicator has risen to a new high

Figure 8: FORMA Global Indicator, 2007 - 2014 (12-Month Moving Average)

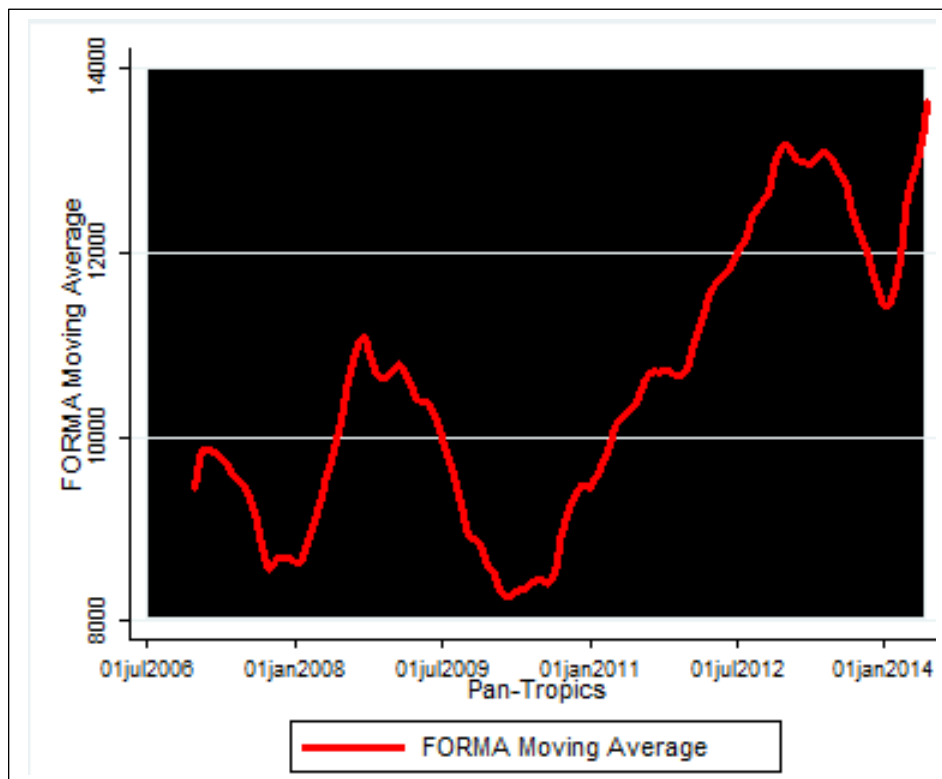


Figure 9 enables us to identify the regional sources of the global changes displayed in Figure 8. Latin America shows no apparent trend, as decreased forest clearing in Brazil has been roughly balanced by increased clearing elsewhere in the region. However, Asia and Africa both display rapid growth during the past three years. Asia's indicator value is far larger than Africa's, so the overall conclusion is clear: Recent growth in the global indicator primarily reflects increased forest clearing in Asia, with a modest additional contribution from Africa.

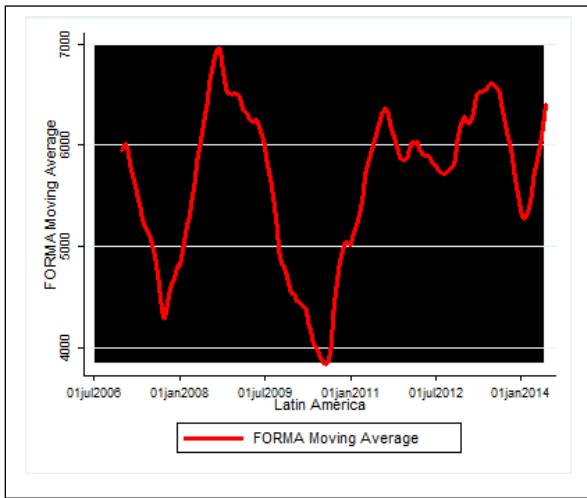
6. Summary and Conclusions

In this report we have updated *fCPR* (Forest Conservation Performance Rating), which now color-codes performance for 89 pan-tropical countries, 1,096 of their states and provinces and 12,566 of their sub-provinces and municipalities. We assign Green ratings when areas are on track to zero tropical forest clearing in 2025; Yellow when their progress is slower but consistent with zero clearing by 2050, and Red when they fail to achieve either benchmark.

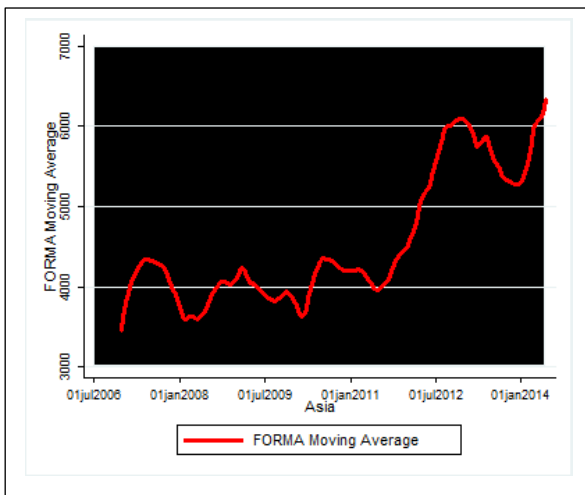
Our results are sobering: 63 countries are rated Red and only 26 Green or Yellow in Q2 2014, and many of the Green countries are small island states. We find a general pattern of deterioration since Q4 2008, with only Brazil retaining Green status among major tropical forest countries. And progress in Brazil has been offset by deterioration elsewhere in Latin America. In Asia, Indonesia has reverted to Red after an extended Green period, and the rest of Asia has trended strongly Red. Africa has remained Red since Q4 2008, as forest clearing has continued to expand.

Figure 9: FORMA Regional Indicators, 2007 - 2014 (12-Month Moving Average)

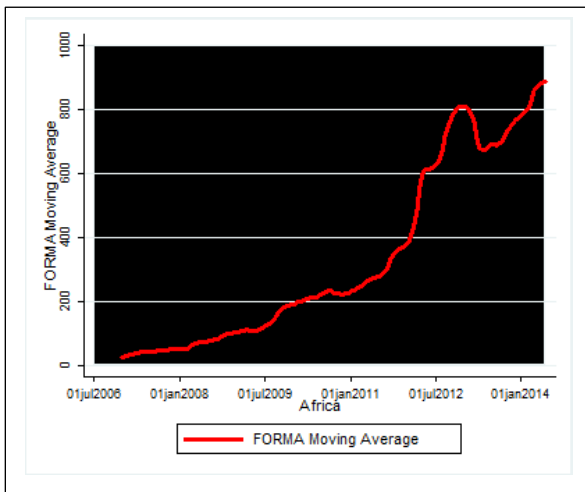
Latin America / Caribbean



Asia



Africa



Despite these discouraging trends, we find some grounds for optimism at the provincial level. Among the 1,096 states and provinces tabulated in Figure 4, 478 remain Green in Q2 2014. These areas provide reminders that appropriately-focused, effective implementation of local policies can reduce forest clearing significantly. We hope that the *f*CPR ratings, and FORMA itself, will contribute by monitoring progress toward this goal, and by indicating problem areas where focused attention may promote more rapid progress. We will publish frequent updates on CGD's website (<http://www.cgdev.org>) and inform subscribers to our newsletter at http://www.cgdev.org/section/topics/climate_change/newsletter_archive.

OCEANIA

4.56



Christmas Island

0



Comoros

3.07



Fiji

0



French Polynesia

0



Mauritius

0



Mayotte

0.48



Micronesia

0



New Caledonia

0



Palau

0



Reunion

0



Samoa

0



Solomon Islands

0.36







































































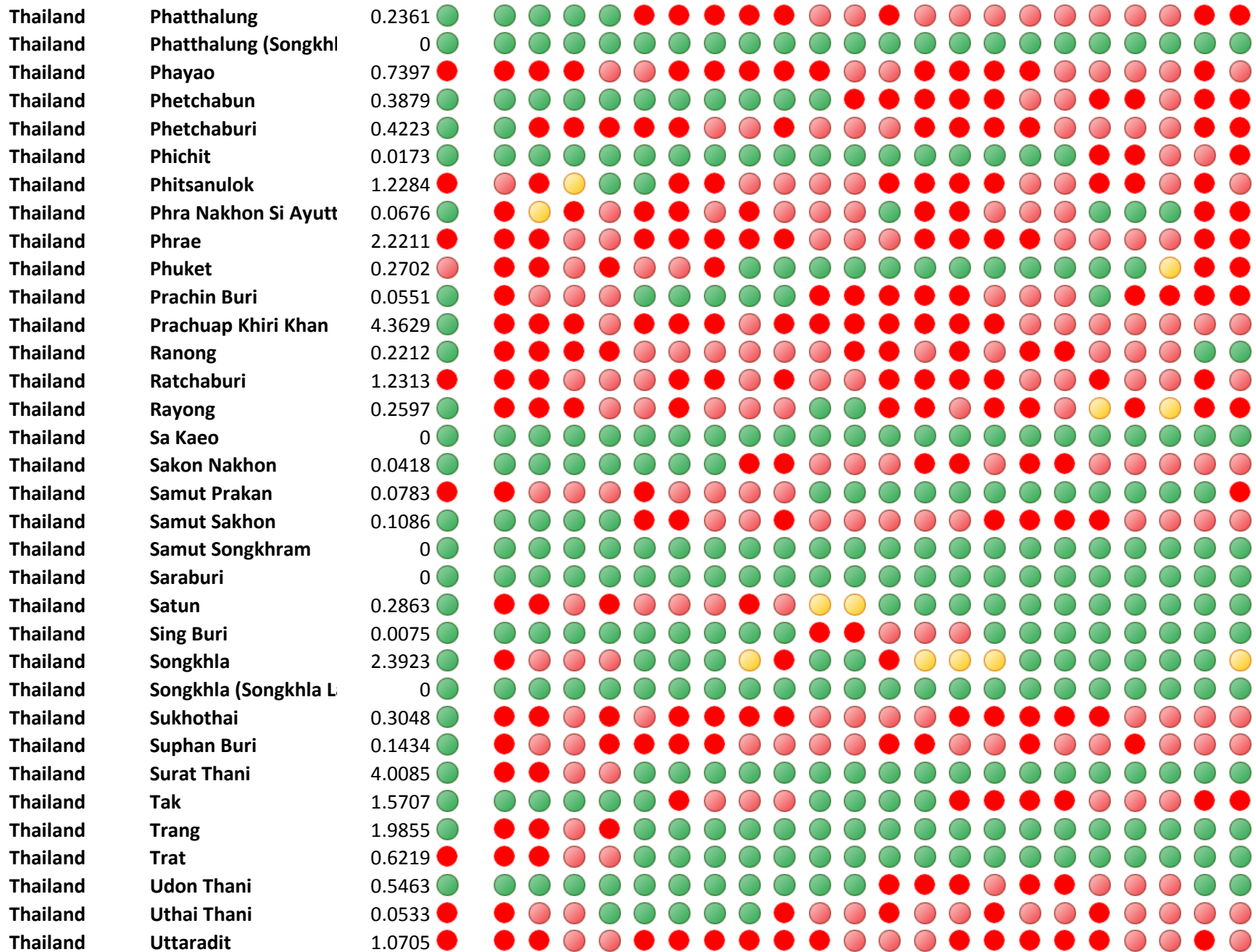
Vanuatu



















0.65














Table 2: Countries With Significant Improvement or Deterioration, 2013-2014

Region/Country	2013	2014	Unit Change
AFRICA			
Nigeria			1
Ghana			1
Burundi			1
Rwanda			1
Angola			-1
Democratic Republic of the Congo			-1
Kenya			-1
Republic of Congo			-1
Uganda			-1
ASIA			
Taiwan China			1
Papua New Guinea			1
Bangladesh			1
China			-1
Thailand			-1
Laos			-1
Myanmar			-1
Indonesia			-1
Vietnam			-1
LATIN AMERICA / CARIBBEAN			
Haiti			2
Brazil			1
Bolivia			1
Jamaica			1
Saint Lucia			1
Venezuela			1
Cuba			1
Mexico			1
Martinique			1
Trinidad and Tobago			1
Guatemala			1
Saint Vincent and the Grenadines			1
Guadeloupe			-1
Paraguay			-1
OCEANIA			
Mayotte			-1
Solomon Islands			-3



Thailand	Yala	0.6625		
Vietnam	Central Highlands	67.9908		
Vietnam	Mekong River Delta	3.7046		
Vietnam	North Central Coast	43.9513		
Vietnam	North East	1.713		
Vietnam	North West	13.8308		
Vietnam	Red River Delta	0.739		
Vietnam	South Central Coast	4.3939		
Vietnam	South East	0.7155		

LATIN AMERICA / CARIBBEAN

Antigua & Barb	Saint George	0		
Antigua & Barb	Saint John	0		
Antigua & Barb	Saint Mary	0		
Antigua & Barb	Saint Paul	0		
Antigua & Barb	Saint Peter	0		
Antigua & Barb	Saint Philip	0		
Argentina	Catamarca	0		
Argentina	Corrientes	0		
Argentina	Jujuy	0.5525		
Argentina	La Rioja	0		
Argentina	Misiones	60.4729		
Argentina	Salta	10.3378		
Argentina	Tucumán	0.004		
Belize	Belize	0.978		
Belize	Cayo	13.7606		
Belize	Corozal	0.1572		
Belize	Orange Walk	4.7245		
Belize	Stann Creek	0.4301		
Belize	Toledo	0.6307		
Bolivia	Chuquisaca	0		
Bolivia	Cochabamba	21.0042		
Bolivia	El Beni	115.1684		