

Forest Conservation Performance Rating (fCPR) Report 2

Bad News for the Pan-Tropics and Everybody Else

David Wheeler, Dan Hammer, and Robin Kraft

Abstract

This paper updates Working Paper 294, “FCPR—Forest Conservation Performance Rating for the Pan-Tropics.”

Forest Conservation Performance Rating (fCPR) is 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. This paper introduces quarterly conservation performance ratings for 56 tropical forest countries, as well as 781 of their states and provinces that contain tropical forests. 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 at the global and regional levels. Some gains were made at the height of the global economic crisis, but they have proven to be temporary. Since 2010, forest clearing has exhibited rapid growth in most of tropical Asia, Latin America and Africa.

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Summary

This paper introduces and illustrates **fCPR** (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 CGD's FORMA (Forest Monitoring for Action). This paper introduces quarterly conservation performance ratings for 56 tropical forest countries, as well as 781 of their states and provinces that contain tropical forests. 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 at the global and regional levels. Some gains were made at the height of the global economic crisis, but they have proven to be temporary. Since 2010, forest clearing has exhibited rapid growth in most of tropical Asia, Latin America and Africa.

While these results are disappointing, we should note that some improvements at the state/provincial level have been scored by Brazil, Indonesia, and other major 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 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.

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). This paper rates the conservation performance of 56 tropical forest countries currently tracked by FORMA, as well as 781 of their states and provinces that contain tropical forests. It is the first in a series that will draw on FORMA's forest clearing indicators at 500-meter spatial resolution for the entire pan-tropics.¹

How **FCPR** 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: 2006-2008.² 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.³

Once the mid-century and REDD+ paths are established for the 56 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

¹ A previous paper (Wheeler, Hammer and Kraft, 2012) provided pilot **FCPR** estimates for 27 countries based on initial FORMA data reported monthly at 1-km. spatial resolution. Since publication of that paper, FORMA has advanced to full coverage of the pan-tropics; a biweekly reporting cycle; spatial resolution of 500 meters, and significantly-improved signal-processing methodology. For the 27 countries included in the pilot exercise, the results reported in this paper supersede the previous estimates.

² The average for each area is based on 70 observations.

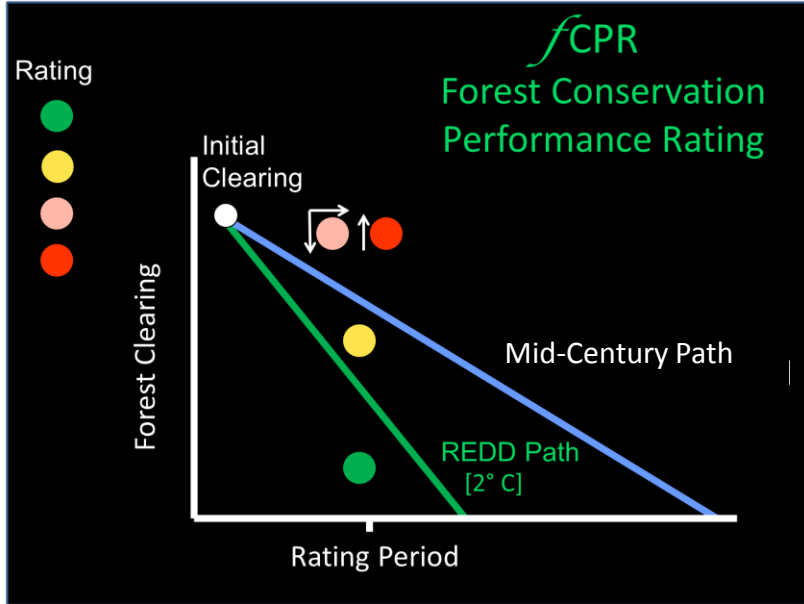
³ In the pilot FCPR paper (Wheeler, Hammer and Kraft, 2012), the slope of the moderate path was adjusted country-by-country to reflect an econometric estimate of the typical relationship between income per capita and deforestation. However, this adjustment created so much interpretive confusion and digressive discussion of the econometrics that we have opted for simplicity and clarity with the mid-century path.

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

recognize incremental progress, we assign Light Red to countries where clearing is falling or stable, and Dark Red to countries where clearing is still increasing.

FORMA's biweekly database currently spans December 19, 2005 to September 29, 2012. Using a three-year period (2006-2008) to set the initial benchmark for each country, we develop 16 quarterly performance ratings for Q4 2008 - Q3 2012.⁵

Figure 1: Assigning Performance Ratings



⁵ We use two months for the Q3 2012 rating; it will be extended to three months in the next update. 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.

FCPR Country Ratings

Table 1 presents color-coded ratings for the 56 countries, along with regional and global ratings.⁶ To aid interpretation, we include average quarterly clearing indicator values for Q4 2008 – Q3 2012 as a measure of relative scale. We separate the countries by region and sort to highlight countries whose current ratings are Red. Figure 2 summarizes the country results, while Figure 3 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 achieve Dark Red or Light Red ratings. The results suggest overall deterioration in performance, with a temporary reversal during the global economic crisis. Red countries increased from 40 in Q4 2008 to 48 in Q3 2012, while Green countries fell from 16 to 8.

Figure 3 displays geographic patterns for the first rating quarter (Q4 2008), the quarter that registered the maximum impact of the economic crisis (Q4 2010), and the final rating quarter (Q3 2012). Besides the overall decline in positive ratings since Q4 2008, the most striking feature is the deterioration of Asia's relative ratings. In Q3 2012, the regional count for Green or Yellow ratings in Asia has fallen to 0.

Reflecting the overall deterioration in performance, the weighted global color rating in Table 1 has shifted from parity in the counts of Yellow and Light Red during the first 8 rating quarters to uniformly Light Red during the most recent 5 quarters. In Asia, a general trend toward Red was partially offset by Indonesia's achievement of a Green rating from Q3 2009 to Q3 2011. Since then, however, Indonesia has reverted to Dark Red and the regional rating has followed suit. In contrast, Latin America has remained Yellow since Q3 2009 because Brazil has remained Green while performance elsewhere has deteriorated. Africa has remained Red for all 16 quarters, because its Red-rated countries have much more clearing than its Green-rated countries. In addition, the continent's Green country count has fallen from 6 in Q4 2008 to 3 in Q3 2012.

When regional results are compared, it becomes clear why the global rating in Q4 2012 remains Light Red: Latin America remains Yellow, with a global indicator weight of 5,741, while Asia and Africa are Dark Red, with global indicator weights of 5,424 and 828, respectively. But Latin America only remains Yellow because Brazil, with an indicator weight of 3,745, remains Green. Without the massive counterweight of Brazil, the global rating would now be Dark Red.

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 (56-country) clearing during the rating quarter.

Figure 2: Country Ratings, 2008 Q4 - 2012 Q3

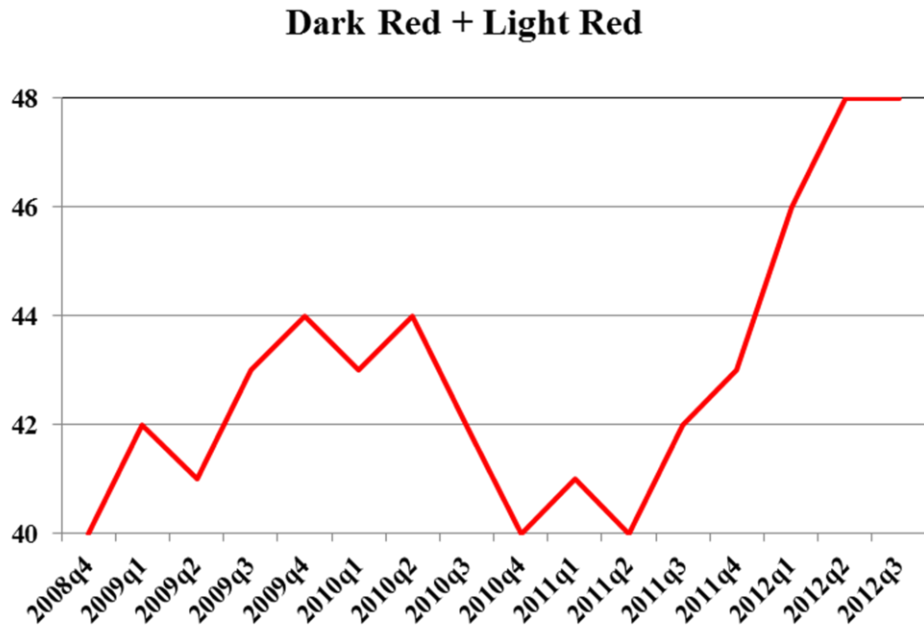
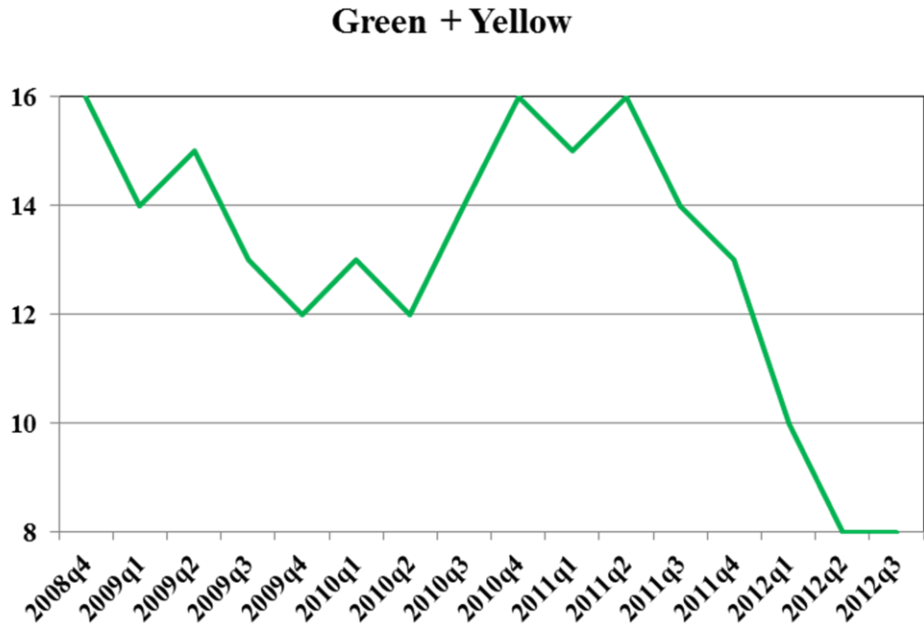
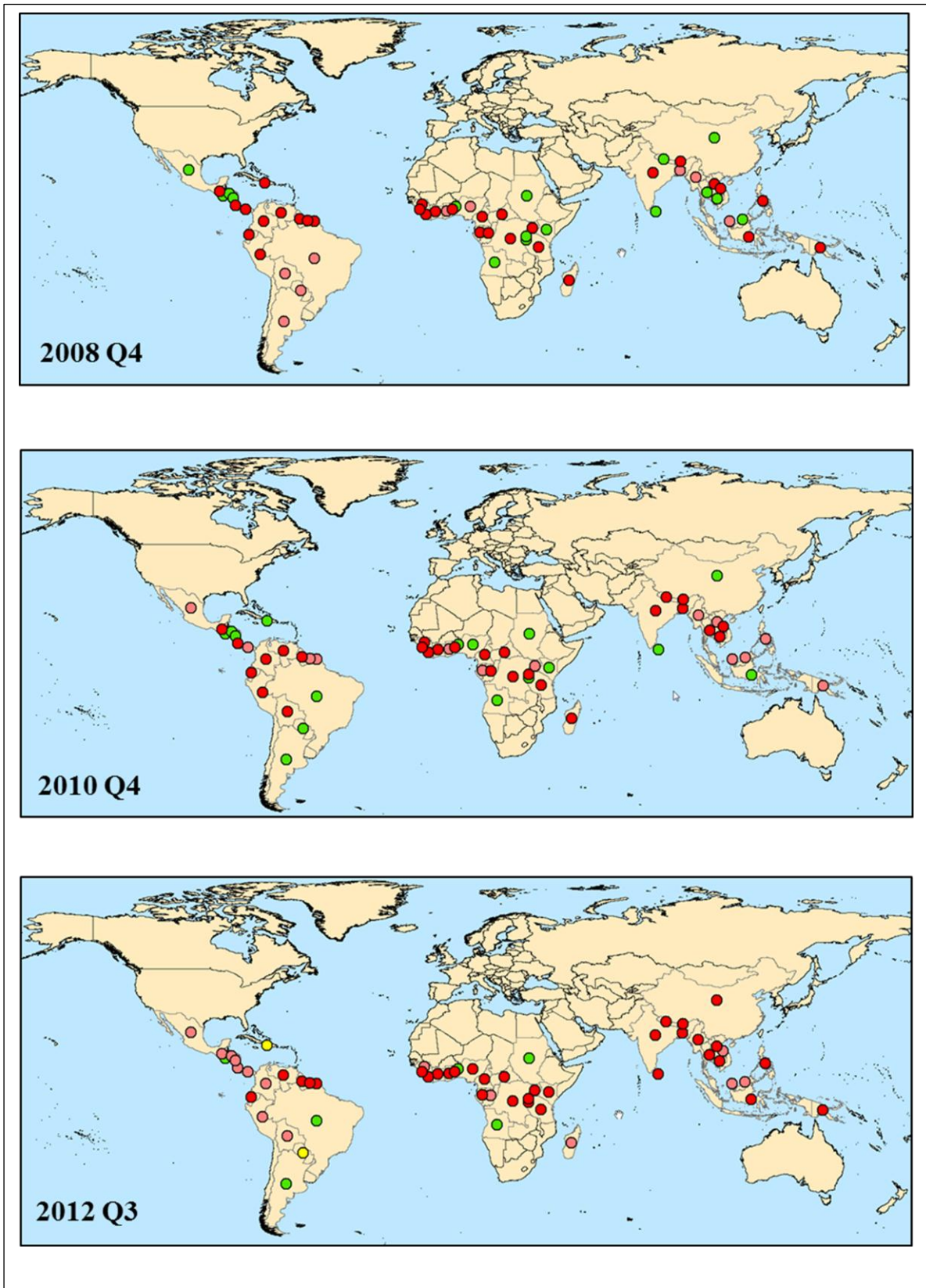


Figure 3: Country Performance Ratings



CPR State and Province Ratings

Table 2 provides ratings for 781 states and provinces that contain tropical forest areas, while Figure 4 provides summary information for localities whose performance has been superior (Green or Yellow) or sub-par (Dark or Light Red). Here we see striking evidence of widespread deterioration: Superior ratings fell steadily from 435 in Q4 2008 to 298 in Q3 2012, while sub-par ratings rose from 346 to 483.

Figures 5 and 6 provide more detailed views for South America and Southeast Asia, the two regions that dominate tropical forest clearing. In Figure 5 (and Table 2), the period from Q4 2008 to Q3 2010 was marked by the “greening” of the Brazilian Amazon and substantial areas of Bolivia and Paraguay, accompanied by the spread of Red areas in the rest of Brazil’s northern and western neighbors, along with southern Brazil. While Brazil retained its overall Green status in Q3 2012, the period since Q3 2010 was also marked by deterioration in the states of Amazonas, Bahia, Goias, Tocantins and Espirito Santo, while most of Bolivia reverted to Red, and Green areas continued to disappear in the other states on Brazil’s periphery.

Indonesia displays a highly-varied pattern in Figure 6 and Table 2. Among major forest-clearing provinces in Sumatra, Aceh and Sumatera Utara have been consistently Red, Riau has been consistently Green, and Sumatera Barat and Sumatera Selatan have varied widely. Kalimantan exhibits similar variation, with consistent Red ratings in Kalimantan Timur and Kalimantan Barat, consistent Green in Kalimantan Tengah, and deterioration from Green to Red in Kalimantan Selatan.

Figure 4: State/Province Ratings, Q4 2008 – Q3 2012

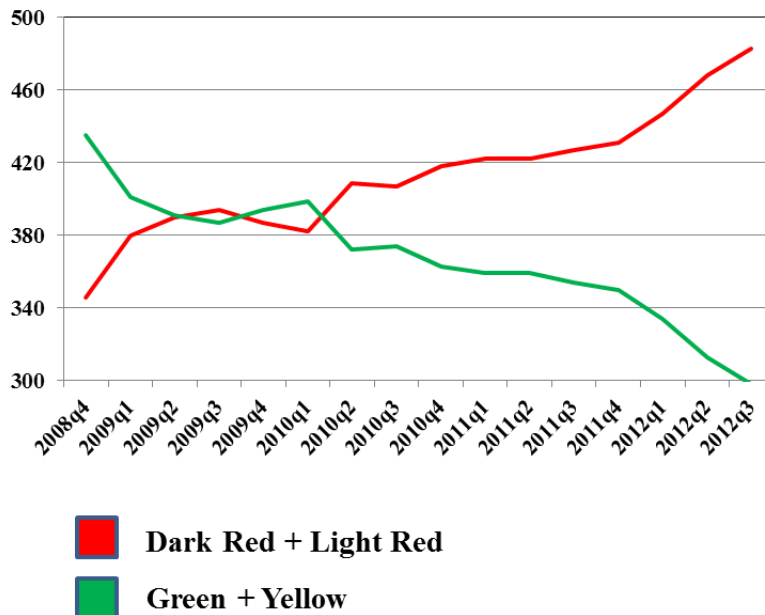


Figure 5: Provincial Performance Ratings, South America

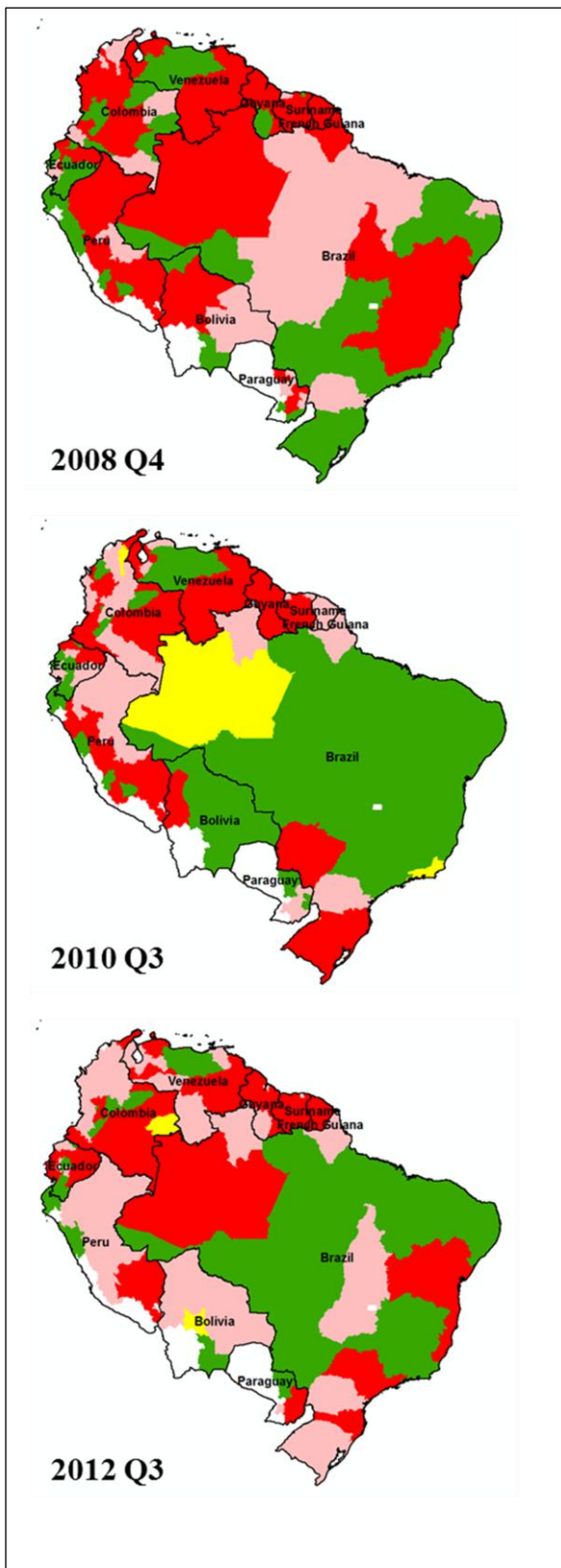
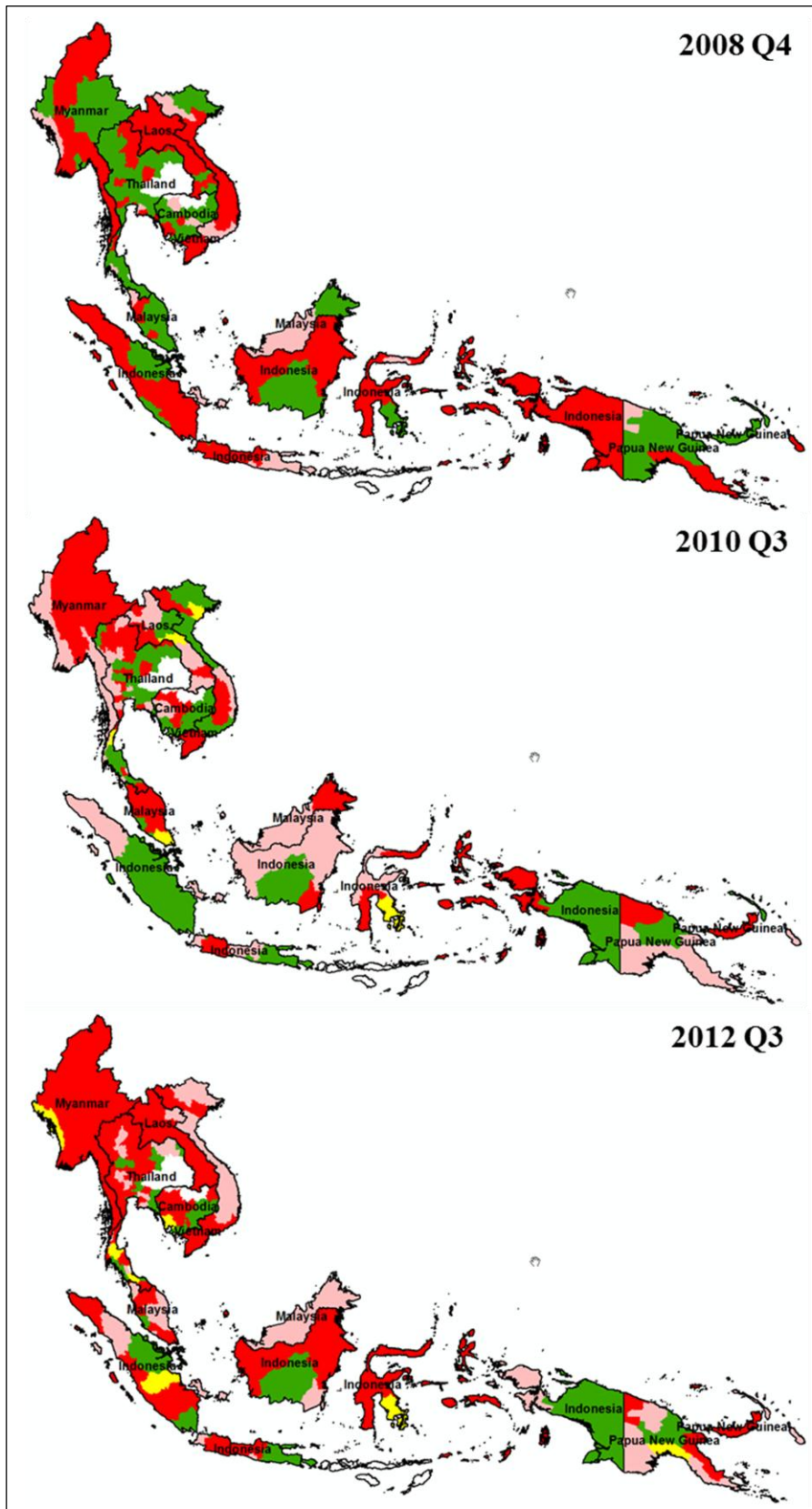


Figure 6: Provincial Performance Ratings, Southeast Asia



Elsewhere in Southeast Asia, Table 2 and Figure 6 reveal a steady pattern of deterioration. It was particularly evident in Myanmar, Malaysia and Papua New Guinea from Q4 2008 to Q3 2010, but by Q3 2012 the pattern had become quite general.

Conclusion

In this paper we have introduced **FCPR** (Forest Conservation Performance Rating), which color-codes performance in 56 pan-tropical countries and 781 of their states and provinces. We assign Green ratings when countries, states and provinces are on track to zero tropical forest clearing in 2025; Yellow when their progress is consistent with zero clearing by 2050, and Red when they fail to achieve either benchmark.

Our results are sobering, with 48 countries rated Red and only 8 Green or Yellow in the most recent rating period (Q3 2012). We find a general pattern of deterioration since Q4 2008, with only Brazil retaining Green status among major forest clearing countries. And even within Brazil, some states have moved from Green to Red during the past two years. The rest of Latin American has trended strongly Red since our first rating period. Indonesia has reverted to Red after an extended Green period, and the rest of Asia has trended strongly Red as well. Africa has remained Red since Q4 2008.

Although we find few grounds for optimism in these results, we should note that nearly 300 of the 781 states and provinces are currently rated Green, and a significant number of localities have improved their ratings since Q4 2008. These positive developments 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.

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Wheeler, David, Dan Hammer and Robin Kraft. 2012. FCPR–Forest Conservation Performance Rating for the Pan-Tropics. Center for Global Development Working Paper No. 294. May. <http://www.cgdev.org/content/publications/detail/1426160>

Table 2: Performance Ratings of Provinces and States, Q4 2008 - Q3 2012

| Region/Country | Province/State | Clearing Indicator | 2008 | | | | | 2009 | | | | 2010 | | | | 2011 | | | | 2012 | | |
|----------------|------------------------|--------------------|------|----|----|----|----|------|----|----|----|------|----|----|----|------|----|----|---|------|--|--|
| | | | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | | | | |
| Lao PDR | Khammouan | 60.892 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Louang Namtha | 10.7924 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Louangphrabang | 16.7137 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Oudômxai | 10.8435 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Phôngsali | 4.0317 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Saravan | 1.2788 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Savannakhét | 39.3634 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Vientiane | 45.6295 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Vientiane [prefecture] | 7.2806 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Xaignabouri | 23.0006 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Xaisômboun | 20.4856 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Xiangkhoang | 11.6024 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Lao PDR | Xékong | 2.9144 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Johor | 44.49 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Kedah | 29.33 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Kelantan | 55.6112 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Melaka | 2.0203 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Negeri Sembilan | 18.949 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Pahang | 107.4681 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Perak | 79.6456 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Perlis | 0.371 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Pulau Pinang | 2.4686 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Sabah | 162.4404 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Sarawak | 379.3127 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Selangor | 17.2369 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Malaysia | Trengganu | 30.0383 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Myanmar | Ayeyarwady | 3.0938 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Myanmar | Bago | 24.5853 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Myanmar | Chin | 132.4687 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |
| Myanmar | Kachin | 31.5716 | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | |

