



EGEDA 26, Bandar Seri Begawan, Brunei Darussalam

December 3, 2014

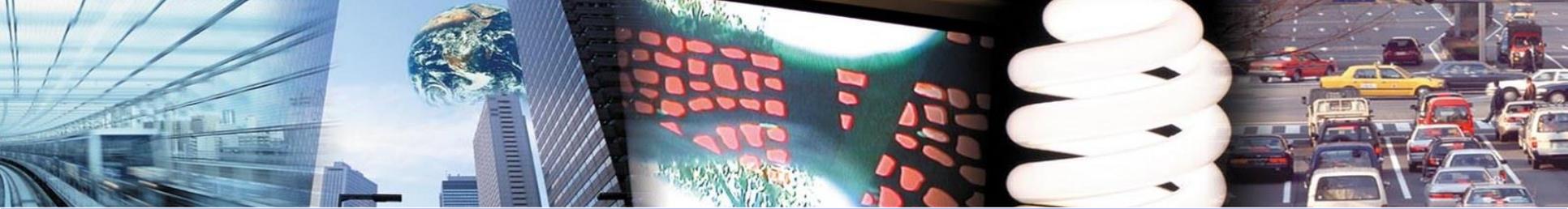
APEC's Energy Intensity Reduction Goal: Progress Update

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Why This Presentation?

- APEC has adopted a goal of reducing APEC-wide energy intensity (that is energy/GDP) by 45% between 2005 and 2035.
- APERC has been monitoring APEC's progress toward this goal; most recent update was presented at EWG 46 (November 2013) based on statistics through the year 2011.



Some Reminders

- Energy data comes from the IEA
- GDP data comes from the World Bank and is adjusted for PPP
- Exceptions
 - Papua New Guinea's energy data comes from APEC under coordination of EDMC
 - Chinese Taipei's GDP data is estimated by APERC

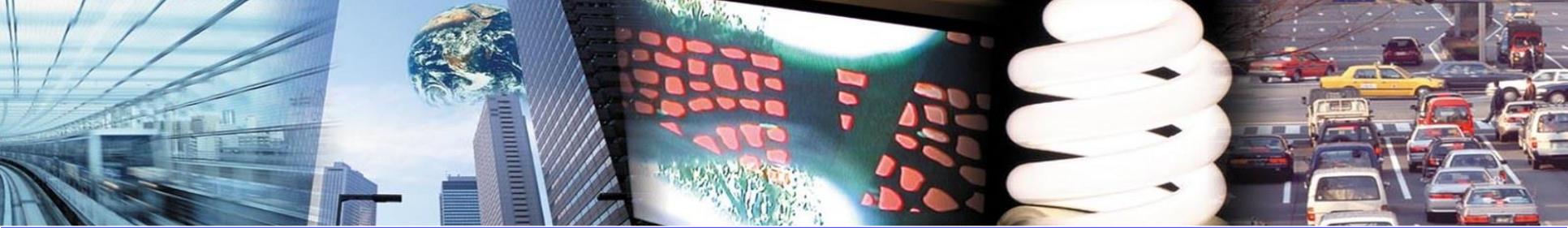


Some Reminders

- Three measures of Energy Intensity are considered (only numerator varies)
 - Primary Energy
 - Final Energy
 - Final Energy less non-energy use

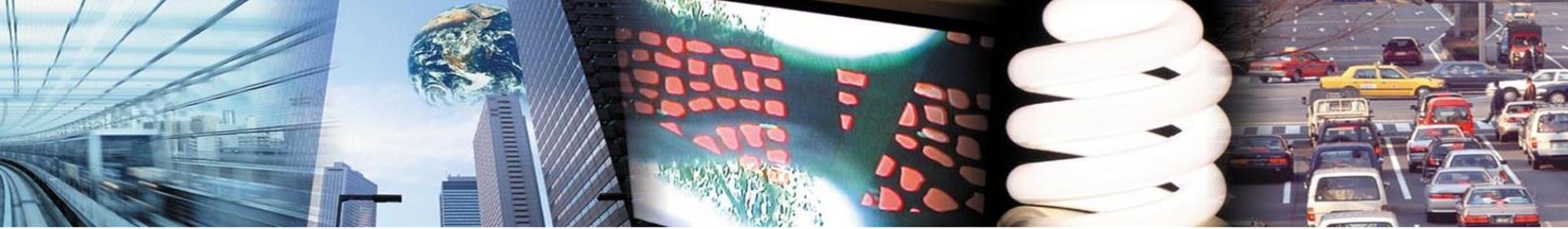
- Measure is like a weighted average:

- $$\frac{\sum_{i=1}^N Energy_i}{\sum_{i=1}^N GDP_i}$$

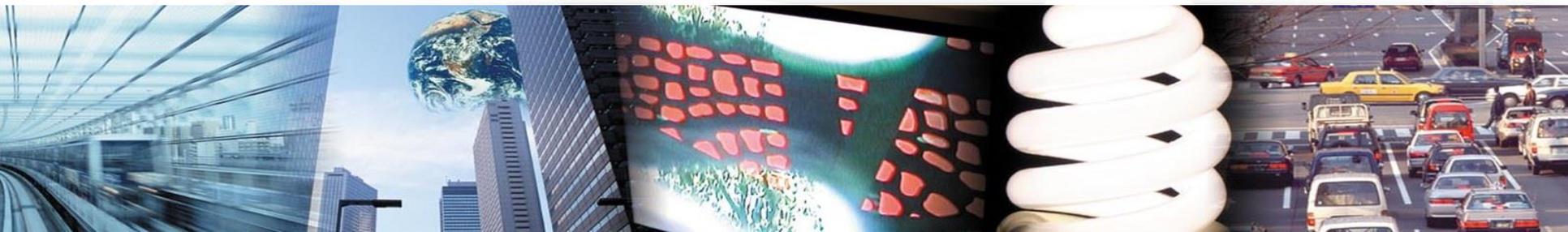


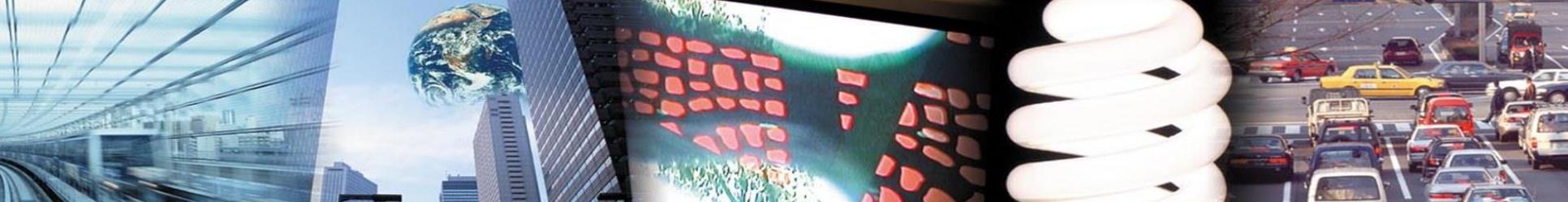
Some Changes

- IEA recently published its 2014 update, but only primary energy has 2013 statistics; final consumption is only thru 2012
- Hence, this update is based on statistics through 2012
- World Bank changed its base year from 2005 PPP to 2011 PPP for the years 1990 to current (2012)



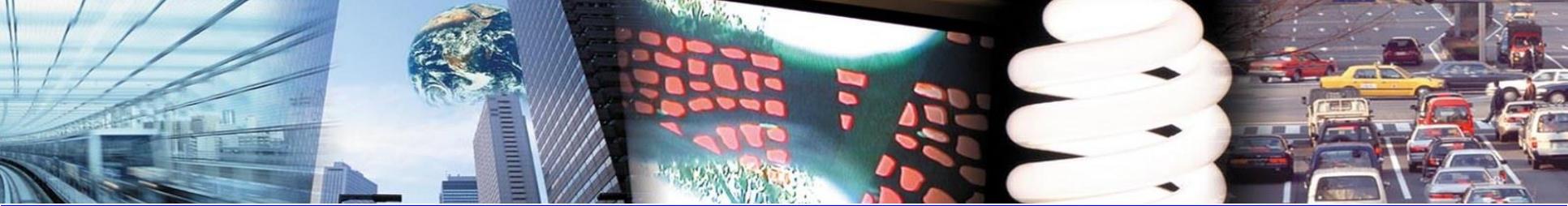
The Results





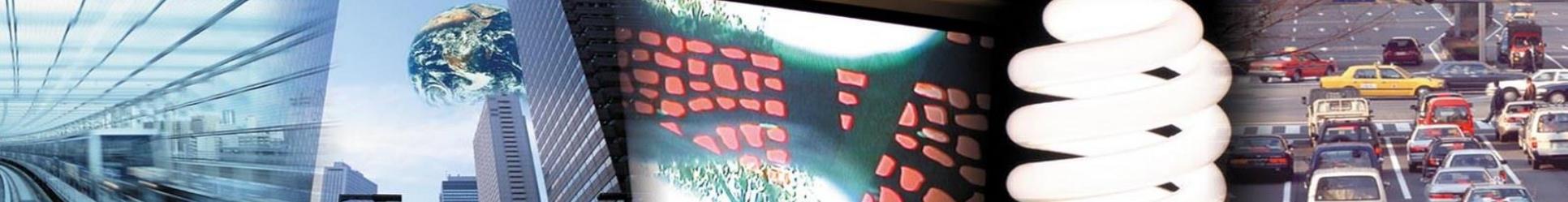
What happened to the Primary Energy Intensity up to 2012?

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total 2005-2012 | Trend to 2035 |
|------------------------------------|-------|-------|-------|-------|------|-------|-------|-----------------|---------------|
| Change in Primary Energy | 2.7% | 2.5% | 0.6% | -0.4% | 6.3% | 3.0% | 1.8% | 17.7% | |
| Change in GDP (2011 USPPP) | 5.4% | 5.6% | 3.0% | -0.1% | 5.8% | 4.3% | 4.4% | 32.0% | |
| Change in Primary Energy Intensity | -2.5% | -2.9% | -2.4% | -0.3% | 0.5% | -1.3% | -2.5% | -10.8% | -38.8% |



... Final Energy Intensity up to 2012?

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total 2005-2012 | Trend to 2035 |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|--------------------|------------------|
| Change in Final Energy | 2.3% | 2.9% | -0.4% | -1.2% | 5.4% | 2.5% | 0.8% | 12.9% | |
| Change in GDP (2011 USPPP) | 5.4% | 5.6% | 3.0% | -0.1% | 5.8% | 4.3% | 4.4% | 32.0% | |
| Change in Final Energy Intensity | -2.9% | -2.5% | -3.3% | -1.1% | -0.3% | -1.7% | -3.5% | -14.4% | -48.7% |



...and Final Energy Intensity excluding Non-energy use up to 2012?

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Total 2005-2012 | Trend to 2035 |
|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-----------------|---------------|
| Change in Final Energy | 2.4% | 2.6% | -0.4% | -1.5% | 5.0% | 2.5% | 0.6% | 11.5% | |
| Change in GDP (2011 USPPP) | 5.4% | 5.6% | 3.0% | -0.1% | 5.8% | 4.3% | 4.4% | 32.0% | |
| Change in Final Energy Intensity | -2.8% | -2.8% | -3.4% | -1.5% | -0.7% | -1.8% | -3.7% | -12.3% | -43.0% |



How Do These Results Compare with Last Year's Progress Report?

| 2005-2012 | Trend to 2035 | 2005-2011 | Trend to 2035 |
|---------------------------------|---------------|-------------------|---------------|
| Primary Energy Intensity | | | |
| | Latest | EWG 46 (Nov 2013) | |
| -10.8% | -38.8% | -7.1% | -30.6% |
| Final Energy Intensity | | | |
| | Latest | EWG 46 (Nov 2013) | |
| -14.4% | -48.7% | -9.4% | -39.0% |

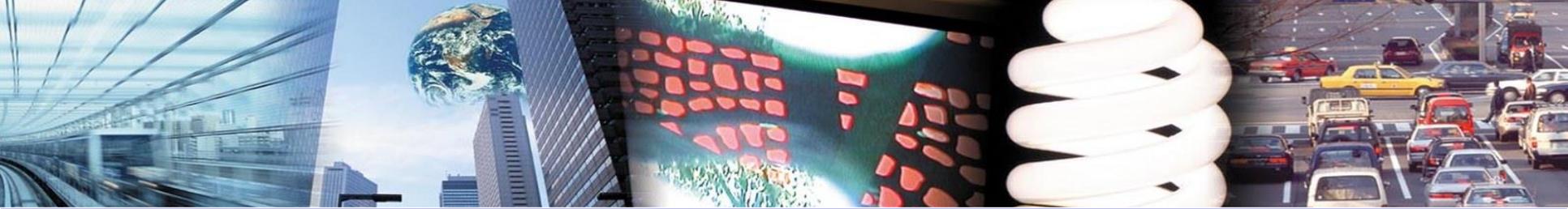


What Drove the Improvement? Ex: Primary Energy

- World Bank's new GDP is more optimistic
 - 2005-2011: 26.4% increase vs. 24% increase (using previous data)
 - Change in Primary Energy Intensity 2005-2011 would have been -8.5% vs. -7.1%
- 2012 was a good year for GDP growth
 - 2005-2011 p.a. 4.0%, but 2011-2012 was 4.4%
- Smaller increase in energy consumption in 2012
 - 2005-2011 p.a. 2.4%, but 2011-2012 only 1.8%

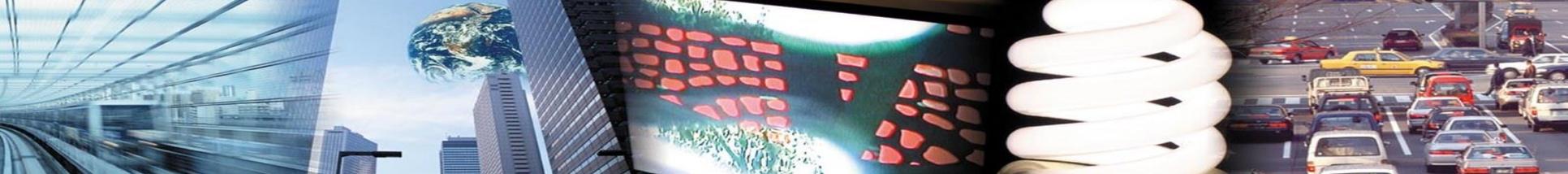
IEA vs APEC Data

| | Primary Energy Intensity | Final Energy Intensity |
|--------------------|--------------------------|------------------------|
| Based on IEA data | -10.8% | -14.4% |
| Based on APEC data | -9.8% | -11.6% |

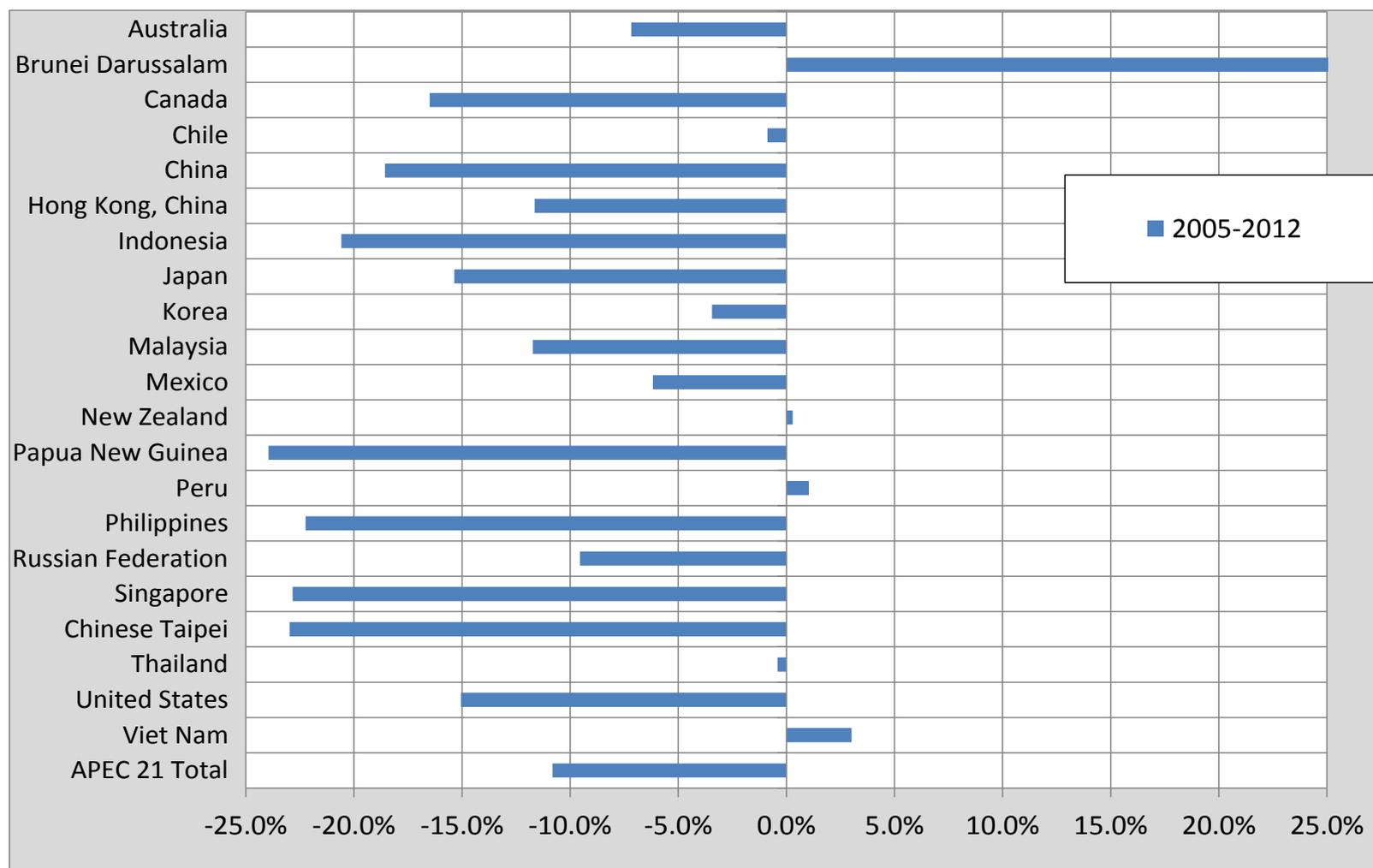


Closing Thoughts

- Caution against pessimism/optimism arising from year-to-year changes in progress measurements
- Measured as a weighted average
- Energy intensity is not a measure of energy efficiency
 - Challenge/opportunity for EGEDA
- APEC-aggregate aspirational goal
 - Discourage “league tables”/”standings”
 - Yet, members find such tables useful

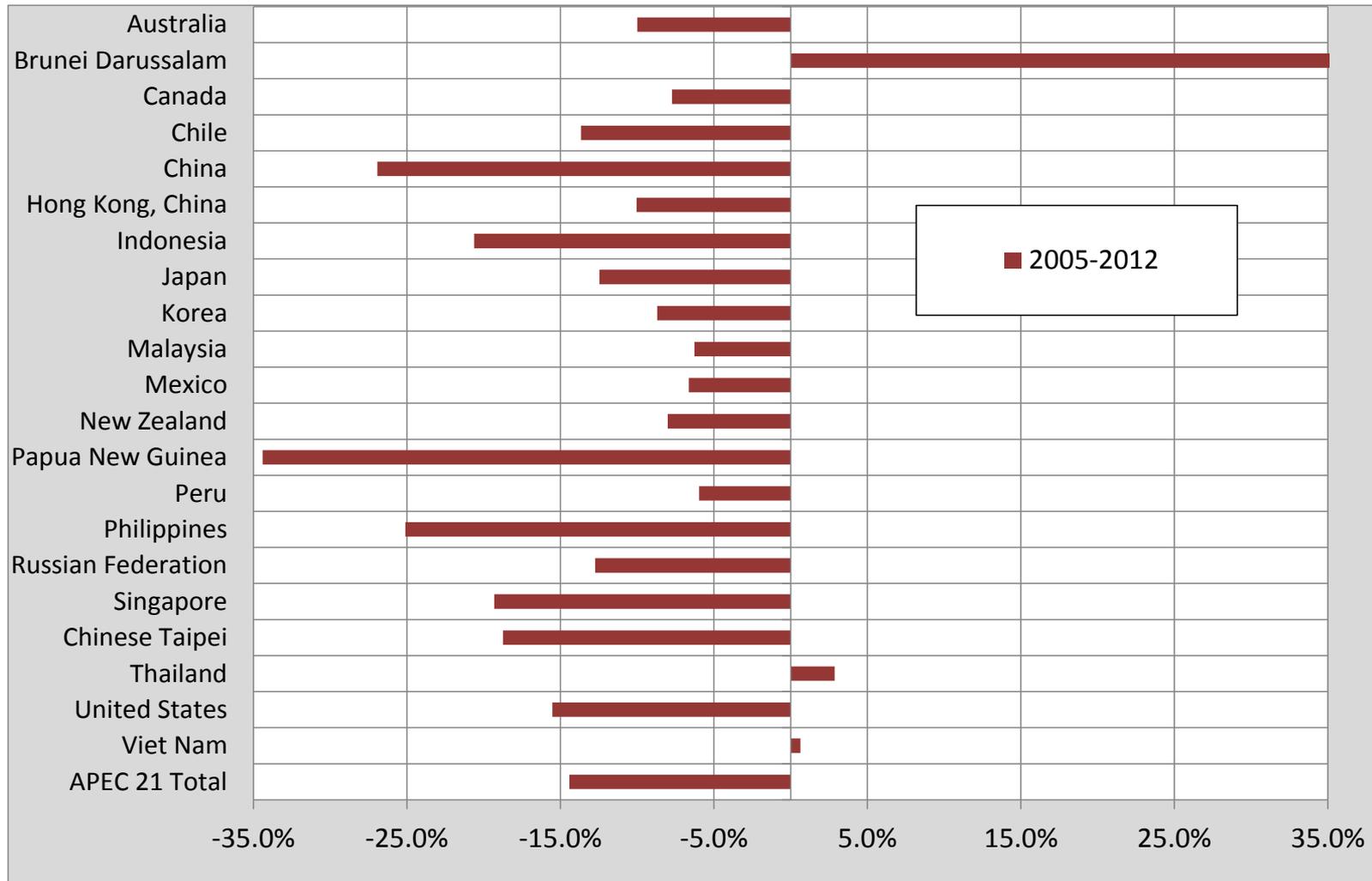


How does the Primary Energy Intensity by Economy Looked Like by 2012?



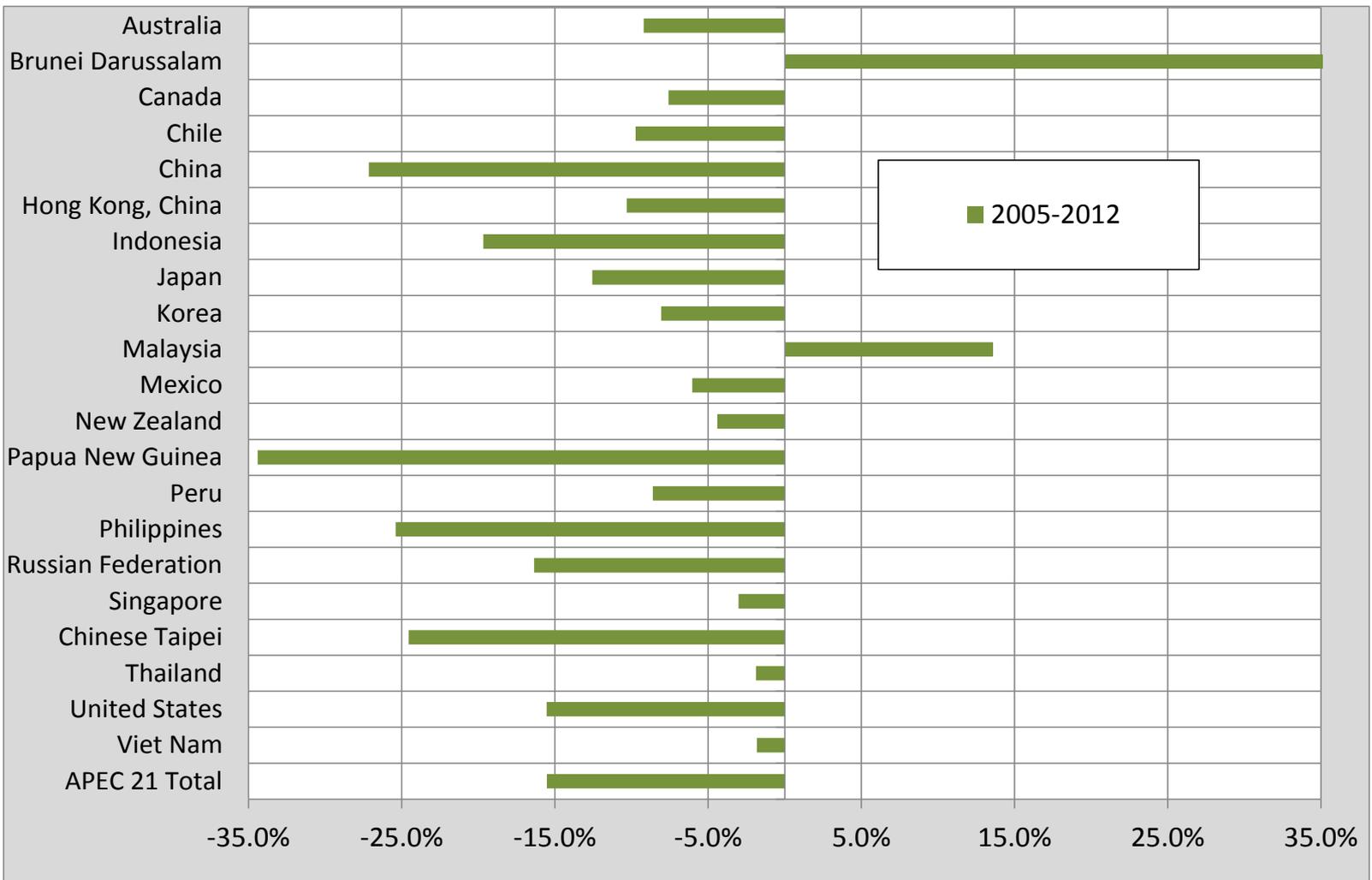


...the Final Energy Intensity by Economy Looked Like by 2012?





.. and the Final Energy Intensity Excluding Non-energy by Economy Looked Like by 2012?





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