EVALUATION OF METHODOLOGIES AND PROJECTIONS TO TRACK GLOBAL AND NATIONAL DECARBONIZATION PROGRESS

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Context and Process

Overall Findings

Implications and Next Steps

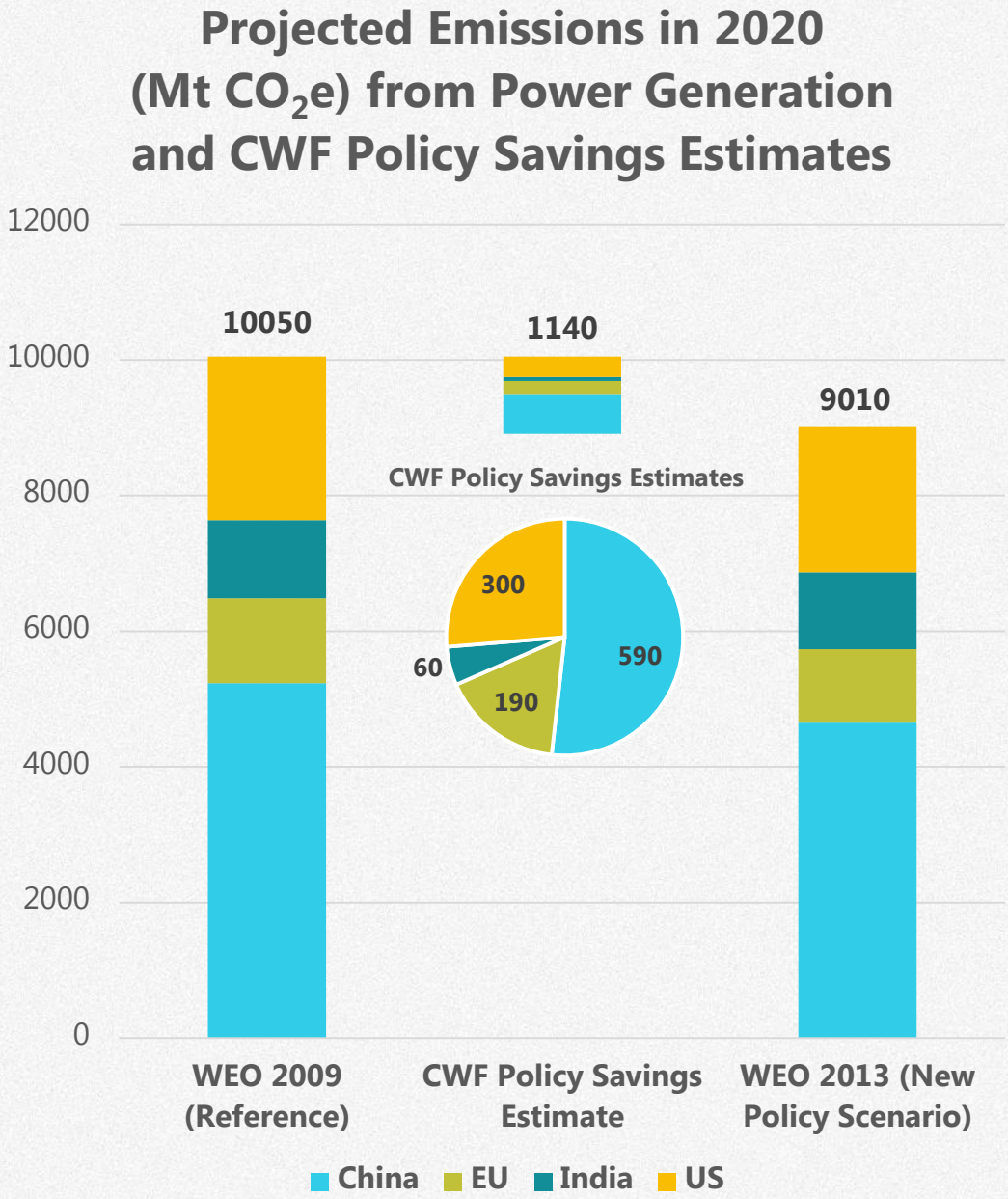
Context and Process

Introduction

- *Countries are working to develop low carbon pathways with national goals (based on pledges) and associated policies.*
- *ClimateWorks was founded in 2008 to support public policies to limit dangerous climate change.*
- *We (in conjunction with others) are working toward a systematic way to evaluate how current national policies are expected to deliver on needed reductions and goals.*
- *This work attempts to quantify what those future policy reductions may be in 2020 and how others track expected reductions, through the power sector as an example.*
- *This analysis is a comparison of power sector policy progress in 4 major emitting regions using data from ClimateWorks, Climate Action Tracker, the International Energy Agency, and Bloomberg New Energy Finance.*

Tracking decarbonisation:

Analysis to better understand and build confidence around >1 Gt CO_2e of expected emission reductions in 2020 from the Power sector in 4 regions.



ClimateWorks Foundation (CWF)

- *Founded in 2008, began working with McKinsey & Co. Global Greenhouse Gas Abatement Cost Curve model, originally using a BAU from World Energy Outlook 2007.*
- *Post-recession, BAU was updated with new baseline data and supporting analysis from World Energy Outlook 2009.*
- *BAU included natural decarbonization, policies in legislation through 2007, and market driven changes expected in fuel mix and production technology.*
- *Beginning in 2010, CWF developed a model add-on to calculate and aggregate specific '**Strategy Targets**' to calculate expected impact in 2020 against this BAU.*
- *Grantees and partners reported quarterly on progress over time. Beginning in 2010, CWF began cataloging these into an assessment of '**Policies in Implementation**.'*
- ***'Strategy Targets' and 'Policies in Implementation' included estimates of the magnitude of carbon abatement and/or associated sector metrics, as well as estimates of probability in each region/sector.***

Summary of Comparison

- *Beginning in 2010, ClimateWorks worked with grantees and partners on estimates of expected CO_2e savings in 2020, or 'Strategy Targets,' associated with broader advocacy programs of grantees and partners.*
- *ClimateWorks also aggregated reporting from grantees and partners for specific 'Policies in Implementation' and estimates of associated expected CO_2e savings in 2020.*
- *Over the last two years:*
- *Compared estimates of expected CO_2e savings from similar policies with those from the Climate Action Tracker.*
- *Compared the baseline scenario from the 2009 World Energy Outlook with most recent data from 2013 World Energy Outlook, particularly the 'New Policies Scenario' or NPS.*
- *Compared projections for RE capacity in 2020, specifically for Solar and Wind, in market forecasts from Bloomberg New Energy Finance, with WEO 2009 and 2013 projections.*

Climate Action Tracker (CAT)

- *Collaboration between Ecofys, Climate Analytics, and Potsdam Institute for Climate Impact Research (PIK).*
- *Since 2009, the group has tracked emission reduction commitments across countries, and assessed current domestic policies and policy packages.*
- *In 2013, Ecofys and Climate Analytics worked with CWF to review and compare respective approaches and estimates from individual policies and policy packages.*
- *Generally, CAT aims to assess and update expected emission pathways resulting from policy impacts. This differs from CWF, which has looked at expected impact in 2020 as a deviation from a prior BAU scenario.*
- *Depending on circumstances, CAT will quantify policies or policy packages to combine with existing BAU or policy scenarios. This methodology focuses on estimating an* ***updated emissions trend line****, and prioritizes the* ***most significant policies*** *for each country/region.*

International Energy Agency (IEA)

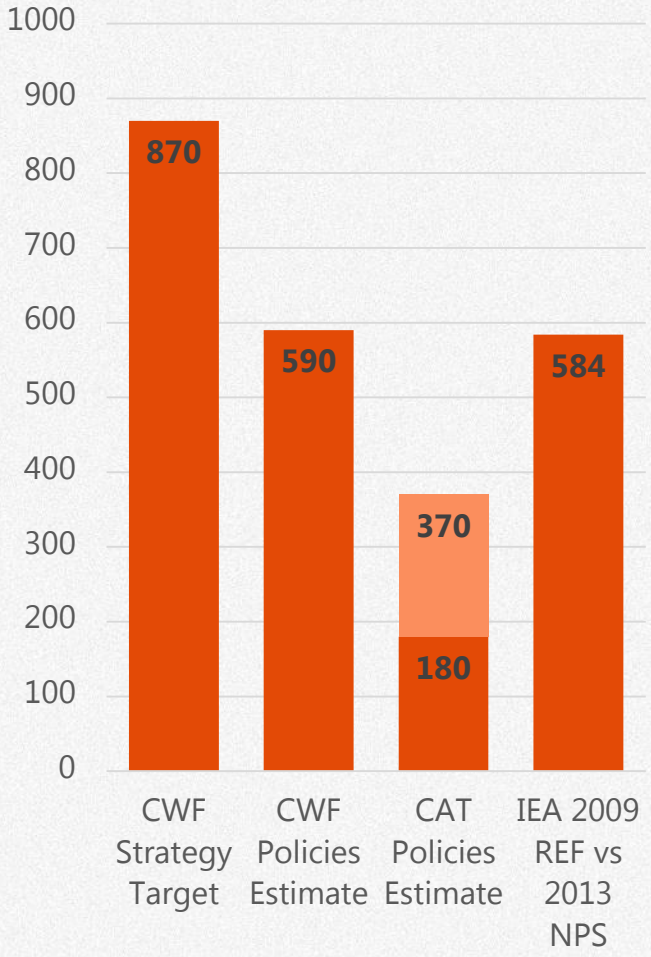
- *The IEA publishes the World Energy Outlook (WEO) annually to provide insights into trends in energy demand and supply.*
- *In 2009, the WEO developed a reference scenario based on IEA statistics for OECD and non-OECD countries. In 2013, the WEO presented projections for three scenarios:*
- *The Current Policies Scenario (CPS) is based on the implementation of government policies and measures that were enacted by mid 2013.*
- ***The New Policies Scenario (NPS) takes into account policies already in implementation, as well as further policies that have been announced by mid 2013 (assumed with cautious implementation).***
- *The 450 Scenario (450) sets out an energy pathway consistent with a ~50% chance of limiting the increase in average warming to less than 2°C.*
- *The IEA maintains a list of energy and climate policies that feed its modelling. However**, the WEO does not attribute carbon savings to individual policies**.*

Bloomberg New Energy Finance (BNEF)

- *In June 2014, BNEF released its most current 2030 market outlooks for Solar PV and Wind energy.*
- *BNEF uses a number of in-house models and the contribution of experts from around the world to develop market outlooks, including a power demand forecast, a capacity forecast, a small-scale PV model and projections on the levelized costs of power technologies.*
- *Short term forecasts (up to 2016) are based on **known development pipelines** as determined by BNEF sector experts and data.*
- *Medium term forecasts (up to 2020) are based on **expected build rates for clean energy technologies that are strongly determined by policy goals** and BNEF's expectations of goals being met or exceeded.*
- *Long term forecasts (up to 2030) are modelled economically based on an investment decision framework, but were not used for this comparative analysis.*

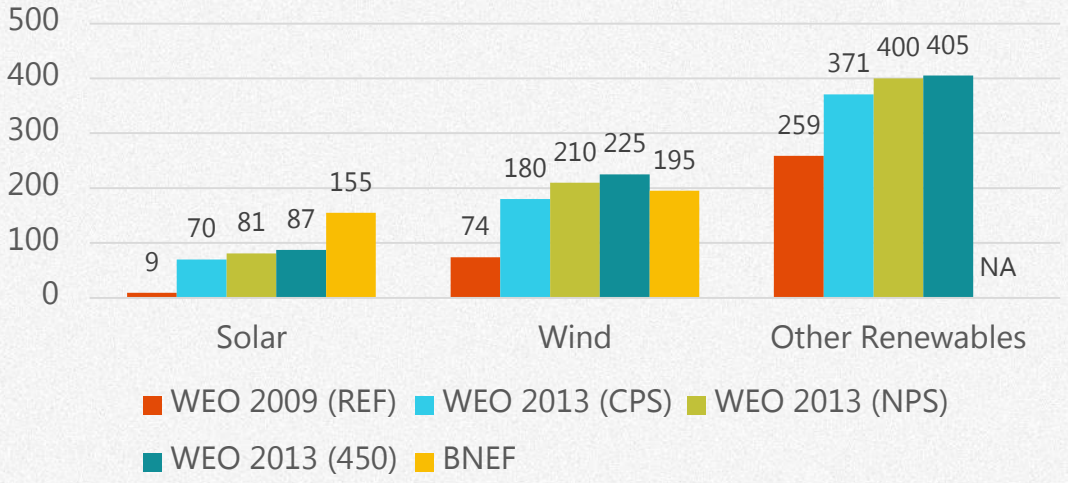
Regional Findings

Clean Power in China: Expected Reductions in 2020 (Mt CO_2e)

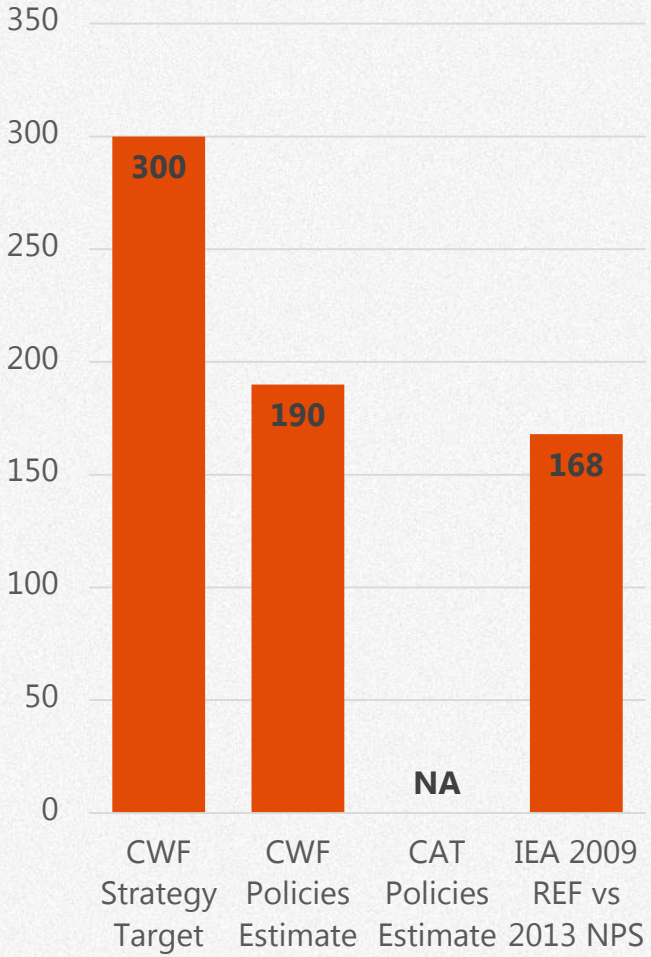


Policies or Measures in Implementation between ~2008 and ~2013 in China	CWF Expected Reductions in 2020	Ecofys/Climate Analytics Expected Reductions in 2020 from Related Policies
FIT for solar PV to increase PV capacity from 20 GW to 50 GW in 2020	30 Mt CO_2e	90-180 Mt CO_2e
Increase in wind target to 200 GW expected to add at least 75 GW of additional wind in 2020	170 Mt CO_2e	
Air quality standards (PM 2.5) and air quality management plans for major urban areas	170 Mt CO_2e	N/A
Coal retirement of small inefficient plants	100 Mt CO_2e	90-190 Mt CO_2e
China Environmental Dispatch Rule, to displace coal with natural gas for an additional 101 TWhs	30 Mt CO_2e	N/A
Target to increase natural gas to 10% of total energy supply by 2020	90 Mt CO_2e	N/A
TOTAL Expected CO_2e Reductions	590 Mt CO_2e	180-370 Mt CO_2e

Renewable Energy Capacity Projections in China for 2020 (GW)

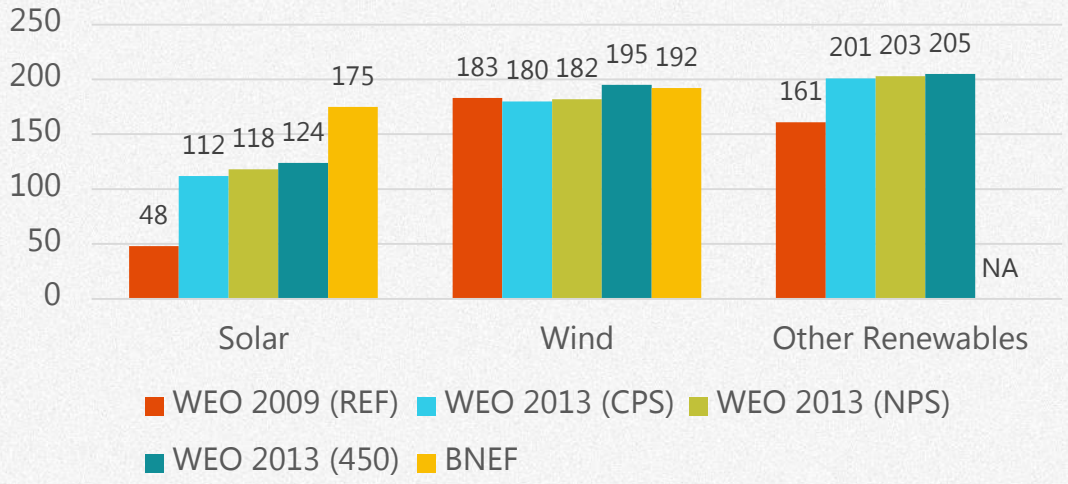


Clean Power in EU: Expected Reductions in 2020 (Mt CO_2e)

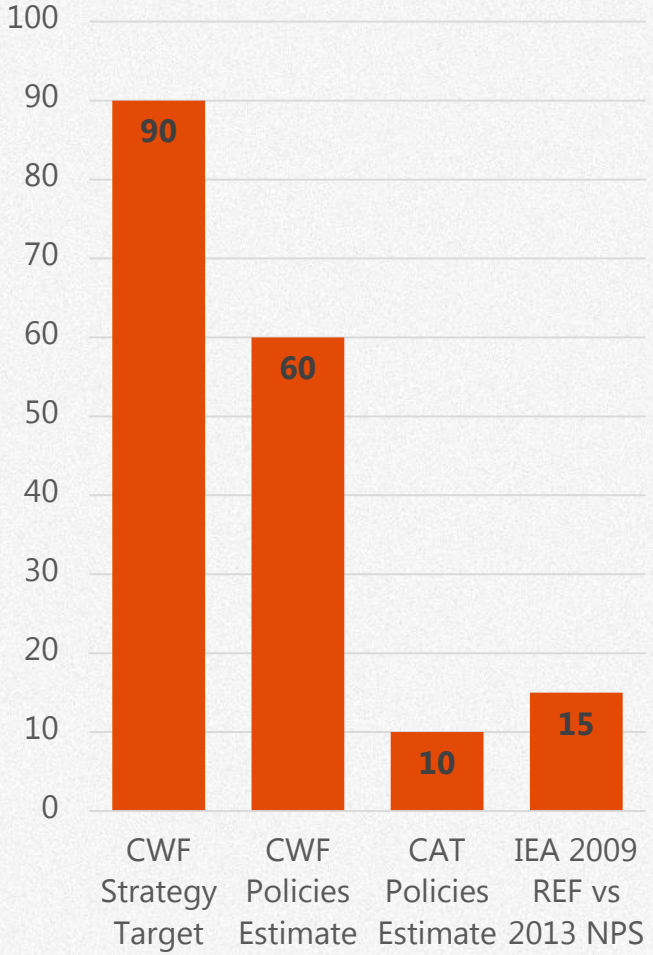


Policies or Measures in Implementation between ~2008 and ~2013 in the European Union	CWF Expected Reductions in 2020	Ecofys/Climate Analytics Expected Reductions in 2020 from Related Policies
70+ GW of new coal plants blocked	140 Mt CO_2e	N/A
Construction of 10 new unabated coal-fired power plants in the UK and 5 new coal-fired power plants in Germany was stopped	50 Mt CO_2e	N/A
TOTAL Expected CO_2e Reductions	190 Mt CO_2e	N/A

Renewable Energy Capacity Projections in EU for 2020 (GW)

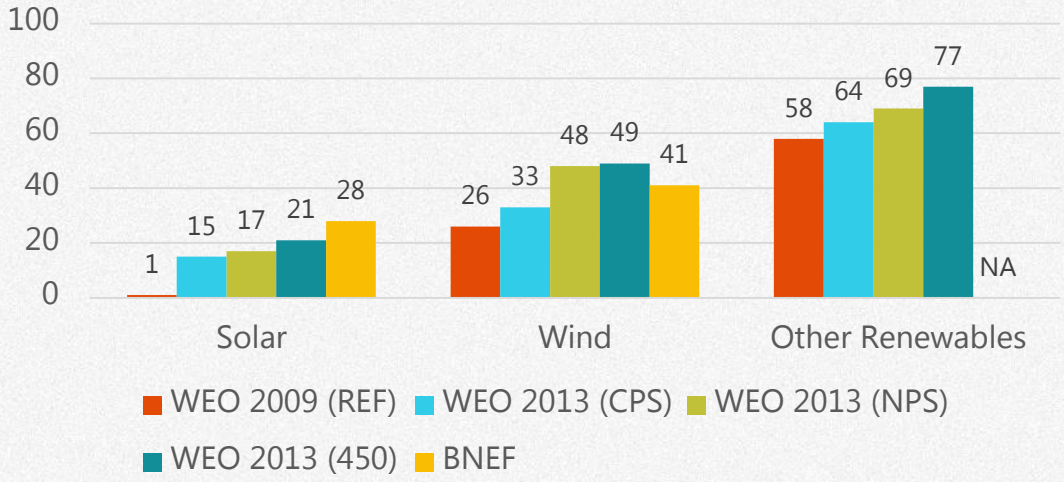


Clean Power in India: Expected Reductions in 2020 (Mt CO_2e)

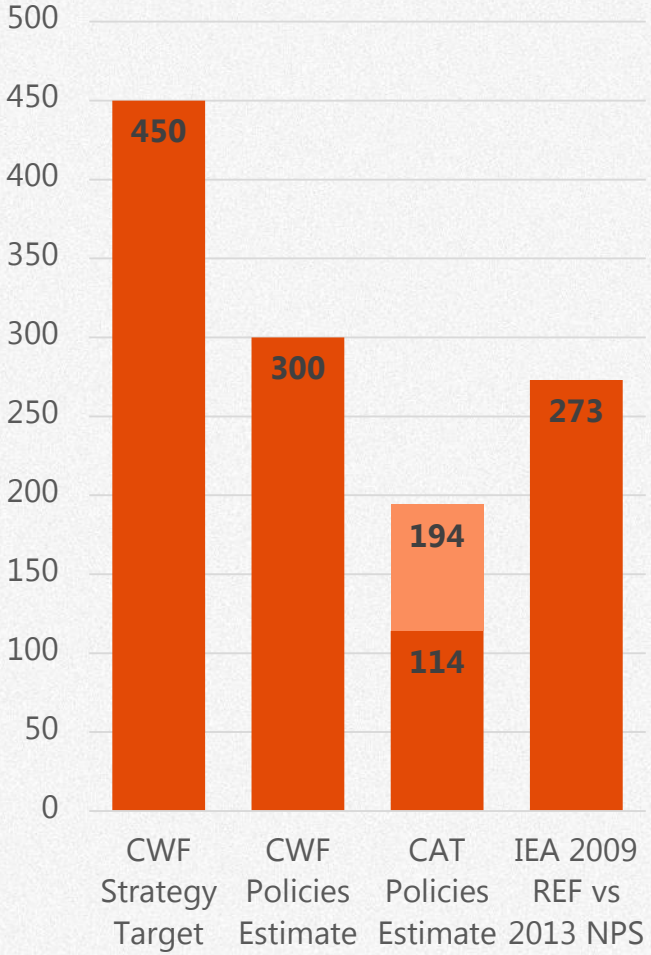


Policies or Measures in Implementation between ~2008 and ~2013 in India	CWF Expected Reductions in 2020	Ecofys/Climate Analytics Expected Reductions in 2020 from Related Policies
The National Solar Mission; the National Wind Mission; India's 12th five year plan raises RE capacity additions to 30 GW	60 Mt CO_2e	10 Mt CO_2e
TOTAL Expected CO_2e Reductions	60 Mt CO_2e	10 Mt CO_2e

Renewable Energy Capacity Projections in India for 2020 (GW)

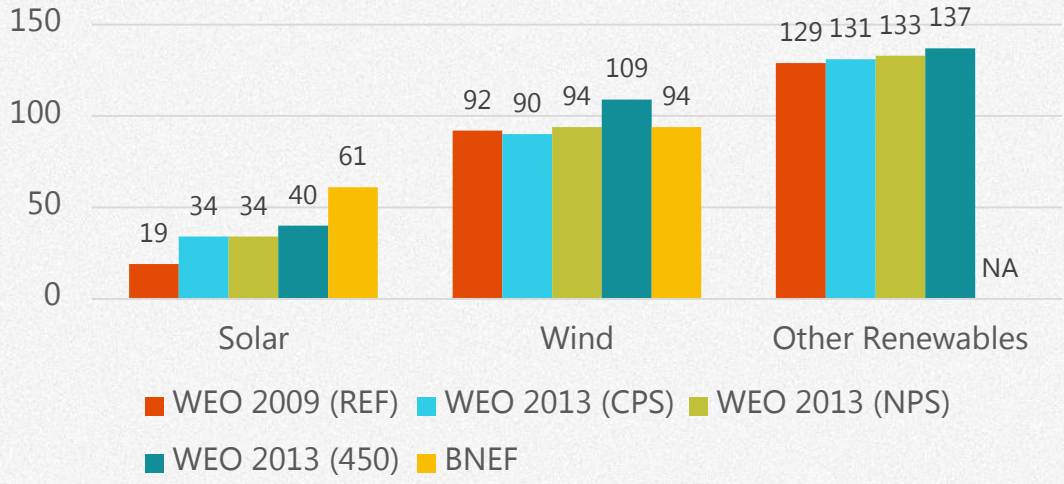


Clean Power in US: Expected Reductions in 2020 (Mt CO_2e)



Policies or Measures in Implementation between ~2008 and ~2013 in the United States	CWF Expected Reductions in 2020	Ecofys/Climate Analytics Expected Reductions in 2020 from Related Policies
New renewable energy and efficiency standards in multiple states	40 Mt CO_2e	14 Mt CO_2e
California increases it RPO to 33% by 2020	20 Mt CO_2e	
New EPA regulations, 45+ new coal plants stopped and 13% of coal fleet with confirmed retirement dates	170 Mt CO_2e	90-180 Mt CO_2e
EPA New Source Performance Standard for existing oil and gas wells	70 Mt CO_2e	N/A
TOTAL Expected CO_2e Reductions	300 Mt CO_2e	114-194 Mt CO_2e

Renewable Energy Capacity Projections in US for 2020 (GW)



Implications and Next Steps

Summary

- A variety of global analyses point to over 1 Gt CO_2e of emissions reductions in the power sector in 2020 from increased RE capacity and decreased coal consumption as policy progress.
- If comparison between WEO 2009 REF and WEO 2013 NPS is taken to 2030, expected reductions in emissions in these four regions is >2.2 Gt CO_2e.
- Projections for solar energy in 2020 have grown dramatically over projections from 4 years ago.
- We are also working on looking out further to understand 2030 reductions and other sectors.
- Moving forward, looking more closely at specific driver metrics (leading indicators) will provide deeper insights into progress of decarbonization than only CO_2e targets or projected reductions.

Thank You