

# Global Climate Change Policy Tracker: Executive Summary

Continued Progress on Mandates,  
but the Emissions Challenge Remains

April 2012



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# Executive Summary



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## Key Conclusions

- Our new consistent historical analysis of maximum potential<sup>1</sup> policy impact on abatement shows continued improvement since the major impact of the Copenhagen Accord.
- On the best case global outlook, emissions peak in 2016 in line with economic growth in emerging economies and decline slowly to 2020 but still leave a 5.8Gt “gap” compared to a 450ppm stabilization pathway.
- China and other emerging and developing economies have played a key role in new abatement policies. However, China still remains the dominant emitter in 2020 even if all policy goals are achieved, and China’s lead climate negotiator has been recently reported to have discussed an extension of the timeline to meet its carbon intensity target<sup>2</sup>. Nevertheless, China’s energy intensity target (i.e. efficiency) remains the largest source of abatement globally.
- The phase out of nuclear power in Germany will most likely negatively impact emissions out to 2020 on its own, but in context of all policies Germany still reduces emissions substantially and achieves their emissions targets. Although a phase out of nuclear power in Japan is not yet mandated it will certainly pose a challenge in terms of controlling emissions.
- The recession has slowed emissions growth in Europe and the US in the past few years, where economic growth will be moderate in coming years. Our BAU shows a more noticeable slowing after 2015 when we see economic growth in emerging markets moderate more.
- Clean Energy Ministerial (CEM) countries remain the dominant drivers of BAU emissions and thus have the greatest potential to reduce them.
- Our best in class policy analysis which looks at the strength of supporting policies in investor terms of TLC, now includes a “traffic light” view of how likely countries are to achieve their mandates.
- We believe that out of the CEM countries China, Germany, Brazil and many of the Nordic countries have strong policy regimes in place to meet their mandates, whilst the rest of the EU and other emerging economies’ policy regimes remain mixed. The US and Italy in particular remain challenged in meeting their clean energy mandates. However, in terms of emissions, an aggressive coal to gas switch can have a valuable effect in the US.

<sup>1</sup> The trajectory of maximum potential abatement, measured in Giga or Mega tonnes of CO<sub>2</sub>e (GtCO<sub>2</sub>e or MtCO<sub>2</sub>e), is obtained by choosing the set of policies (emissions reduction targets or mandates) that has the greatest impact for each individual country

<sup>2</sup> “China gives itself five more years to reduce emissions intensity”, Bloomberg, April 18 2012

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It has long been our mantra that countries with more ‘TLC’ – transparency, longevity and certainty – in their climate policy frameworks will attract more investment and thus build new, clean industries, technologies and create jobs faster than their policy lagging counterparts. This is particularly evident in countries such as Germany and China, who have emerged as global leaders in low carbon technologies and investment in the past decade.

At a global level, the international UN Climate Change Conference in Durban in December 2011 presented some positive steps made toward laying the foundations for an all-encompassing binding 2020 agreement and developing country funding through the Green Climate Fund. China did indicate its openness to a deal in 2015 that would potentially include carbon caps for the developing world starting in 2020. However, a recent report indicates that China itself is thinking of extending its timeline for its 2020 carbon target<sup>3</sup>. At a regional level, the EU continues to strive to meet its legally binding target of a 20% reduction in carbon emissions from 1990 levels by 2020. And at the national level, the US Environmental Protection Agency has recently moved to tighten pollution restrictions on coal – though EPA carbon regulations are still pending –, and Australia passed its legislation setting a fixed carbon tax starting in July, 2012, and moving to an emissions trading scheme in 2015.

Yet the past year has also seen remarkable political and economic volatility. Japan’s earthquake and tsunami and subsequent nuclear crisis, the European sovereign debt crisis, and vast current and projected growth in demand for energy from emerging economies have all combined to impact markets in fundamental ways. In addition fiscal constraints imposed by the ongoing economic slowdown have also caused a slow-down – or stabilization – in political support for cleaner energy technology incentives in many countries in 2011 and into 2012, notably at the US Federal level, and in Spain and Italy. Of particular importance is that given the US’ current political gridlock and the need to reduce its debt, retroactive or proactive extension of several of its key renewable energy tax programs (the Loan Guarantee Program, Treasury Grant Program and Production Tax Credits) is at best uncertain and at worst highly unlikely, leaving the US renewable energy industry in a considerable state of uncertainty with substantial implications for emerging clean technology industries.

Thus despite some positive developments in pockets of countries there is a growing recognition that limiting global climate change to just 2 degrees Celsius may be increasingly difficult to achieve. We present this “Global Climate Change Policy Tracker” document to assess this and analyze the impact of current emission targets and mandates on global emission abatement. The Clean Energy Ministerial (CEM) is a high-level global forum to promote policies and programs to advance clean energy technology and to encourage the transition to a global clean energy economy. The 23 governments participating in the CEM are the focus of this tracker update report, as together the nations they represent account for ~80% of global greenhouse gas (GHG) emissions and ~90% of global clean energy investment<sup>4</sup>.

Although we have tracked global climate policy since 2009, previously we used the most recent data on energy and economic growth rates, making comparison between our reports difficult. So, in this document we present a new approach to the impact of Mandates and Emission Targets on global carbon abatement potential. We will look at a **time-series to show the impact of targets in 4 time points from our starting base date of 2008: October 2009 (pre-Copenhagen), March 2010 (post-Copenhagen), January 2011 and February 2012**. In effect the time-series presents snapshots in time of the global political landscape around climate and renewables policy. This shows the following:

- **After Copenhagen, based on the maximum potential abatement, the gap relative to a 450ppm stabilization pathway fell from 11.5 GtCO<sub>2</sub>e to 7.7 GtCO<sub>2</sub>e.**
- **Between January 2011 and February 2012 the gap fell from 7.3 GtCO<sub>2</sub>e to 5.8 GtCO<sub>2</sub>e.**
- **China played a significant role in this. While the very recent uncertainty over its carbon intensity plans is unhelpful, China’s energy intensity target currently remains unchanged, and is the key to maximum potential abatement.**

<sup>3</sup> “China gives itself five more years to reduce emissions intensity”, Bloomberg, April 18 2012

<sup>4</sup> Clean Energy Ministerial <http://www.cleanenergyministerial.org/about/index.html>

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- **Brazil also played a key role due to its deforestation focus.**
- **The US administration's commitment to reduce greenhouse gas emissions by 17% will need strong underlying support from a coal to gas switch.**

We also continue to focus on our 'Best-in Class' analysis of countries and states according to their policy landscapes, as well as taking a new look at **whether these nations are actually likely to meet their clean energy and emission targets** with these policy structures – a way of testing whether a policy regime is aligned to a country's mandates. This shows that since October 2009, the leading countries and states in climate policy have continued to maintain their position, while others have lagged behind or moved backwards:

- **Of major emitting nations, China, Germany and Brazil have the most robust policy regimes to achieve their mandates, although a great deal rides on China continuing to reduce its energy intensity.**
- **The Nordic countries (Sweden, Denmark, Norway and Finland) all look set to achieve their mandates.**
- **In the EU the UK, France and Spain all currently face an uphill task in deploying enough clean energy capacity to meet their mandates, but it is not impossible. This is also the case in Australia.**
- **Italy looks unlikely to be able to meet its 2020 clean energy mandates.**
- **Japan, Indonesia and Canada may need to strengthen their policy regimes to meet their mandates. Japan faces the added issue of how to move forward with regard to its nuclear power industry.**
- **India, South Africa, Mexico and Russia all struggle to achieve their mandates**
- **The US remains challenged by stop-start policy at the federal level. A major coal-to-gas switch may be the key to lower emissions shorter term as an aggressive switch would significantly contribute to the abatement from state mandate policies and could come close to meeting the abatement from the US emissions target<sup>5</sup>.**

In terms of the impact on carbon abatement in February 2012, 612 emission targets and mandates are modeled globally, 15 of which are newly enacted since January 2011. Throughout the time series of emission abatement the key impacts on potential abatement through time comes from targets enacted in just a few key regions: China and the EU, with China being the main contributor to increasing emission abatement since October 2009. What is important to note here though is that although China continues to push for very ambitious policy targets for renewable energy and energy consumption, the country's Business As Usual (BAU) emissions in 2020 are a magnitude higher to the next biggest emitter, the US, and so China's policy response is inevitably likely to reflect this and the need to use energy more efficiently and derive it from more diverse sources.

In total the maximum potential abatement of modeled policy initiatives as of February 2012, assuming that these are implemented, will reduce global emissions compared to the BAU by ~11 GtCO<sub>2</sub>e in 2020 to reach global emissions of 49.8 Gt/y in 2020. In the [CEM simulation](#) (which only consider the federal level policies and only CEM nations), the abatement from mandates in 2020 is 7.1 GtCO<sub>2</sub>e and the abatement from emissions targets is 6.7 GtCO<sub>2</sub>e.

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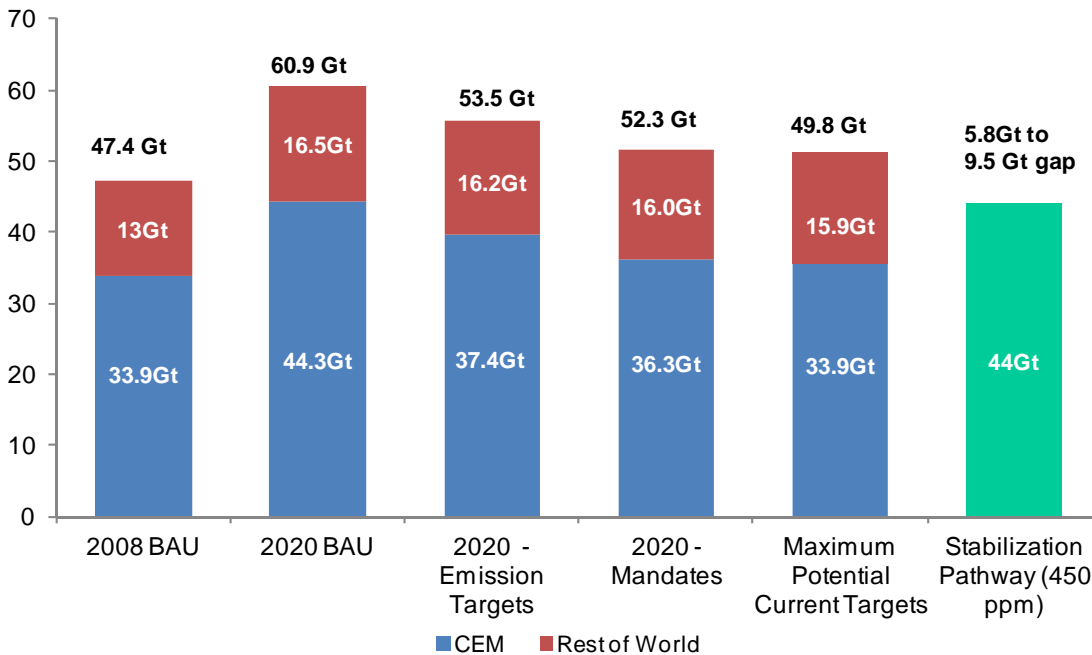
<sup>5</sup> The Administration's 17% emissions target equates to a reduction in emissions of 908 MtCO<sub>2</sub>e by 2020. All state and federal mandates achieve a 665 MtCO<sub>2</sub>e reduction. An aggressive coal to gas switch could reduce emissions a further 275 MtCO<sub>2</sub>e.

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Of particular importance is that we find that the current global maximum potential abatement scenario (in the scenario capturing all world policies) of 49.8 GtCO<sub>2</sub>e is still 5.8Gt higher than the 44 Gt/y target for emission stabilization in 2020 (the 450ppm pathway) as set by the United Nations Environmental Programme. This represents an improvement in the gap between stabilization pathway and maximum potential compared to previous time points (as shown in the chart below), however the remaining 5.8 GtCO<sub>2</sub>e of emission reduction needed to achieve the emission stabilization target is roughly equivalent to total US emissions in 2009 and shows that a very significant challenge still lies ahead.<sup>6</sup>

## Key Paper Exhibits

The 2020 Estimated Outcome based on Current Targets (February 2012), Global and CEM

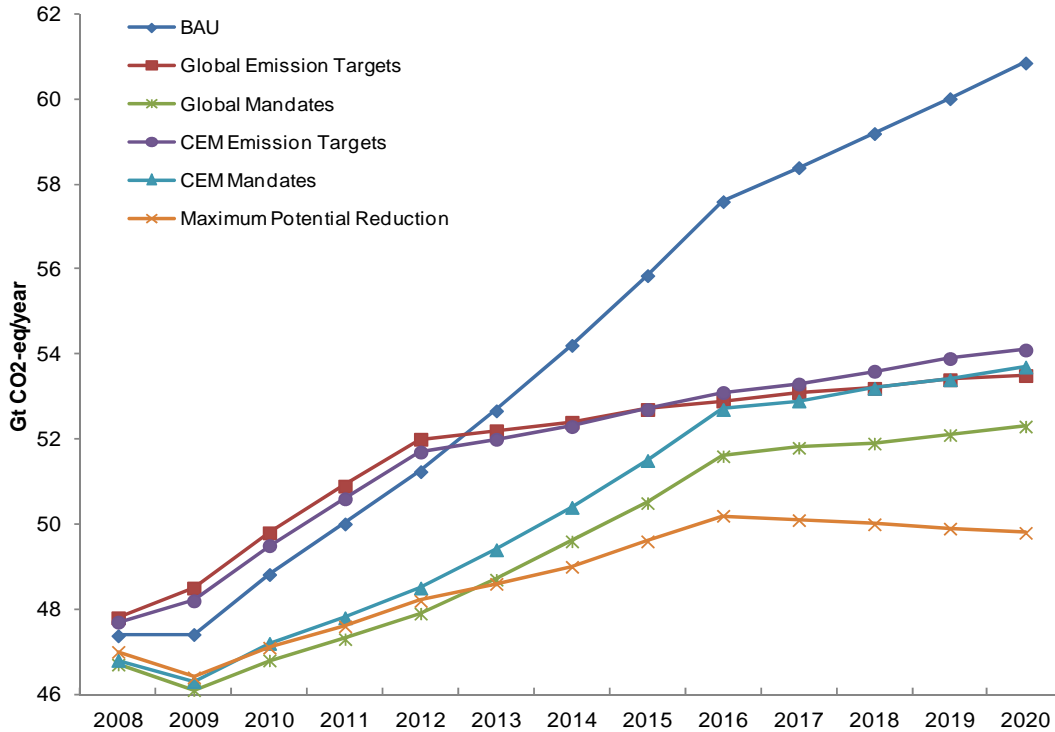


Source: DBCCA Analysis 2012; Columbia Climate Center analysis 2012

<sup>6</sup> CCC Analysis, 2012

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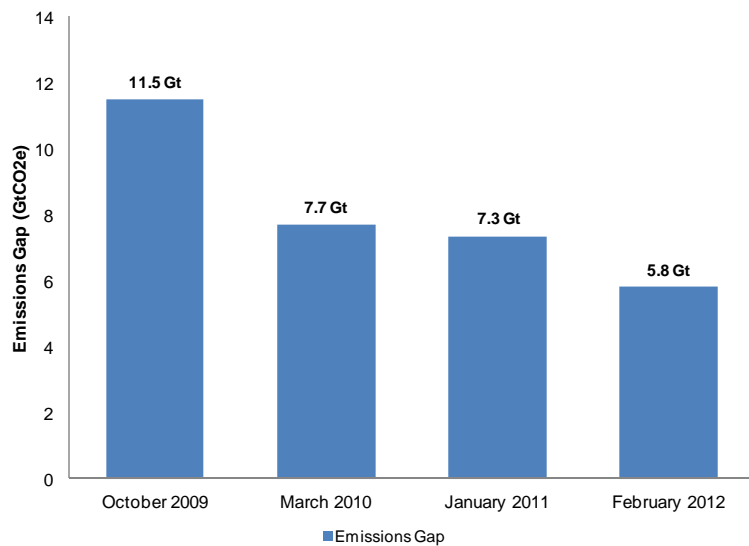
## Global Emission Abatement Impact of Current Climate Policy



Source: CCC, DBCCA analysis 2012. Results consist of targets in place as of February 2012.

\* Range of 450 ppm pathways – Recent analyses (The Emissions Gap Report, UNEP (2010), p.10) propose 39-44 Gt/y level as the 2020 target for stabilization (UNEP, 2011).

## The Time-Series of the Global Gap between Maximum Potential of Targets and the 44 Gt Stabilization Pathway (includes national and state targets)



Source: DBCCA Analysis 2012; Columbia Climate Center analysis 2012

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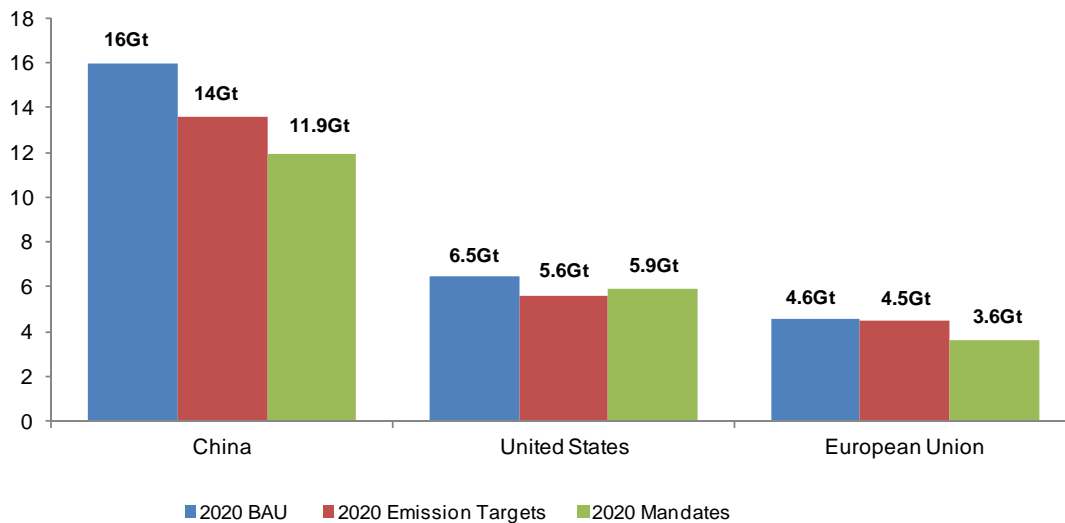
**Top 10 targets by Abatement Potential used in the Maximum Potential Calculation (Mt, 2020)**

Country	Policy	Abatement Potential by 2020* (Mt)	Policy Type
China	Reduce energy intensity 20% from 2005 levels by 2010 and 18% reduction from 2010 levels by 2015	3424	Mandate
Brazil	80% reduction in deforestation by 2020 compared to historic levels	1097	Mandate
United States	17% reduction from 2005 levels of GHG emissions in 2020	908	Emission Target
Indonesia	26% reduction in emissions from BAU levels by 2020	883	Emission Target
European Union	20% of primary energy to come from renewable sources by 2020	665	Mandate
Russia	40% reduction in energy intensity per unit of GDP from 2007 levels by 2020	518	Mandate
European Union	21% electricity from renewable sources in total electricity consumption by 2010	477	Mandate
China	200 GW installed wind capacity by 2020	444	Mandate
European Union	Reduce primary energy consumption by 20% by 2020 through energy efficiency measures	416	Mandate
Japan	Reduce emissions by 25% from 1990 levels by 2020	367	Emission Target

Source: Source: DBCCA Analysis 2012; Columbia Climate Center analysis 2012.

\* The base date for abatement potential in the calculations is 2008.

**2020 BAU Emissions Compared to Emissions when Emission Targets and Mandates are Applied in China, US and the EU (including states)**



Source: DBCCA Analysis 2012; Columbia Climate Center analysis 2012



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Best-in-Class Policy Table for the CEM Countries

Country	Emissions Control			Financial Support				Long-term Grid Improvement Plan	Risks	Deployment		Likelihood of meeting mandates
	Binding/Accountable Emission Target	Renewable Electricity Standard	Long-term Energy Efficiency Plan	Feed-in Tariff	Long-term Govt-based 'Green Bank'	Tax Benefits	Long-term funding programs		Budget strength (deficit as % of GDP in 2011)	Capital Investment (\$mn) 2009-2011	GDP 2011 (Official Exchange Rate \$tn)	
Germany	✓C	✓	✓	✓	✓	✓	✓	✓	-1.7%	52687	\$3.63	
China	✓C regional	✓	✓	✓	✓	✓	✓	✓	-1.2%	191222	\$6.99	
United Kingdom	✓C	✓	✓	✓	✓	✓	✓	✓	-8.8%	46904	\$2.48	Low base
Finland	✓C	✓	✓	✓	X	✓	✓	✓	-1.7%	2608	\$0.27	
Denmark	✓C	✓	✓	✓	X	✓	✓	✓	-2.8%	8108	\$0.33	
Australia	✓C	✓	✓	State-level	✓	✓	✓	State-level	-2.5%	10977	\$1.51	Low base
Norway	✓	✓	✓	✓	X	✓	✓	✓	+13.5%	5246	\$0.48	
Japan	✓	✓	✓	✓	X	✓	✓	✓	-8.5%	15770	\$5.86	Nuclear phase-out
Brazil	✓	✓	✓	X	✓	✓	✓	✓	-3.1%	51714	\$2.52	
France	✓C	✓	✓	✓	✓EIB	✓	✓	✓	-5.8%	19912	\$2.80	Reliant on nuclear – low base
Italy	✓C	✓	✓	✓	✓EIB	✓	✓	✓	-3.6%	25439	\$2.25	FIT changes
Spain	✓C	✓	✓	✓	✓EIB	✓	✓	✓	-6.5%	81220	\$1.54	Incentive freeze
South Korea	⌚COP Acc	✓	✓	✓	X	✓	✓	✓	+2.2%	4447	\$1.16	
Sweden	✓C	✓	✓	X	X	✓	✓	✓	+0.6%	7101	\$0.57	

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	Binding/Accountable Emission Target	Renewable Electricity Standard	Long-term Energy Efficiency Plan	Feed-in Tariff	Long-term Govt-based 'Green Bank'	Tax Benefits	Long-term funding programs			Budget strength (deficit as % of GDP in 2011)	Capital Investment (\$mn) 2000-2011	
Canada	✓	State-level	✓	State-level	X	✓	✓	State-level	-3.8%	25363	\$1.76	
Indonesia	⌚ COP Acc	✓	✓	✓	X	✓	✓	X	-1.2%	2501	\$0.83	
India	⌚ COP Acc	✓	✓	State-level	X	✓	✓	✓	-5.0%	41229	\$1.84	
Mexico	⌚ COP Acc	✓	✓	X	X	✓	✓	State-level	-2.4%	5207	\$1.19	
United States	⌚ COP Acc	State-level	State-level	State-level	⌚	✓	State-level	State-level	-8.9%	219498	\$15.06	
South Africa	⌚ COP Acc	✓	✓	✓	X	X	✓	⌚	-5.2%	374	\$0.42	
UAE	X	State-level	✓	X	X	⌚	State-level	State-level	+5.0%	918	\$0.36	N/A
Russia	✓	✓	⌚	X	X	X	X	✓	+0.4%	895	\$1.79	

Source: DBCCA Analysis, 2012. GDP and Budget Strength data: CIA World Factbook; Capital Investment by country: Bloomberg NEF. \*note: Does not include small scale projects, corporate or government R&D for adjustments for reinvested equity.

## Key to Likelihood of Meeting Mandates Ratings

	There is a strong likelihood that the country/region will meet its clean energy mandates – policies are aligned to the targets and progress to date is good.
	There is a moderate likelihood that the country/region will meet its clean energy targets – policies are not perfectly aligned to the targets and there is some progress to date.
	There is a strong likelihood that the country/region will not meet its clean energy targets – policies are either not in place or do not align at all to the targets and there is little or no progress to date.

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