

MARCH 2015

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# UNLEASHING THE SUPPLY CHAIN

Assessing the economic impact of a US crude oil free trade policy

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*Presented at*

Center for Strategic and International Studies

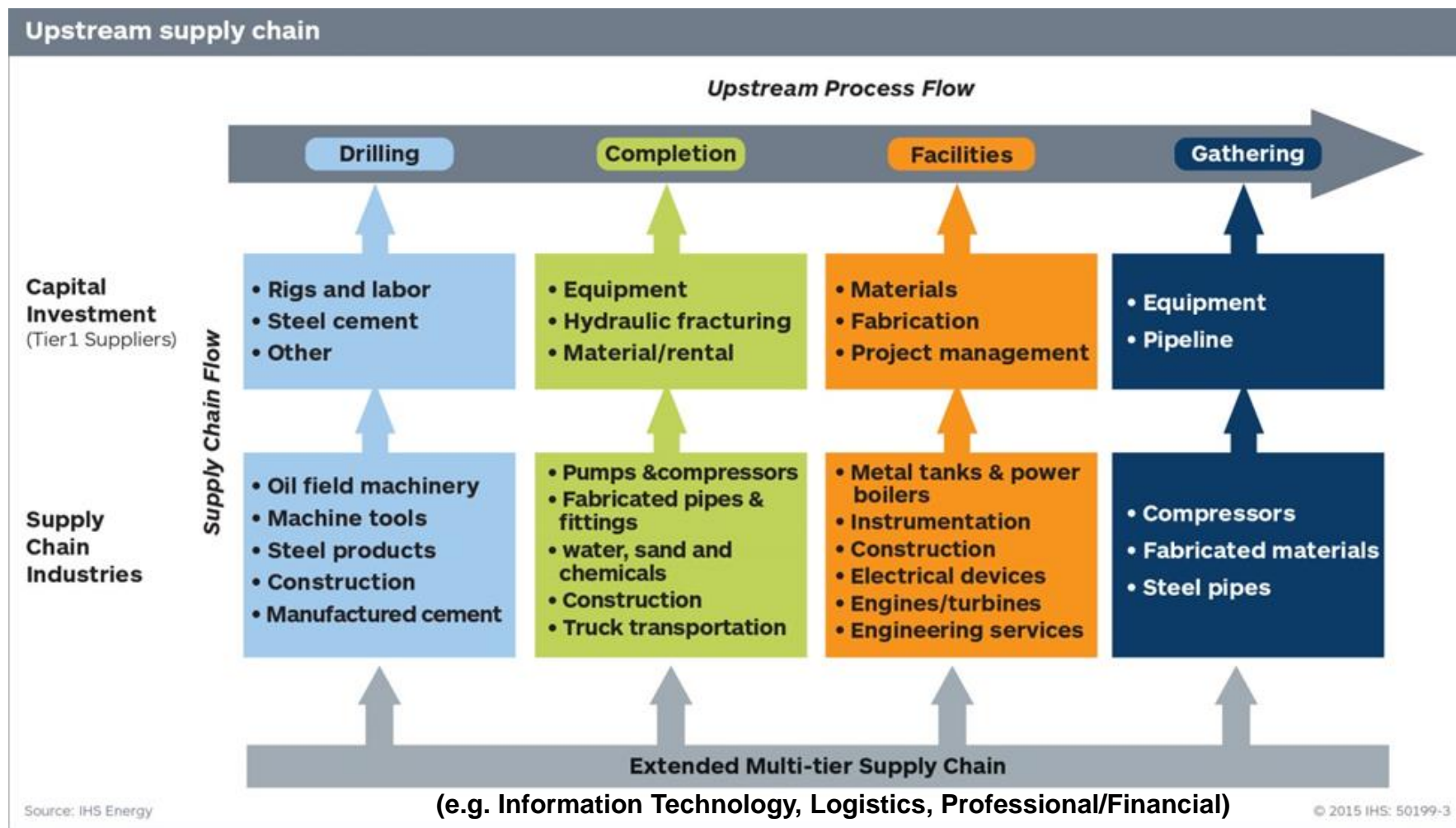
March 23, 2015

## Study Purpose

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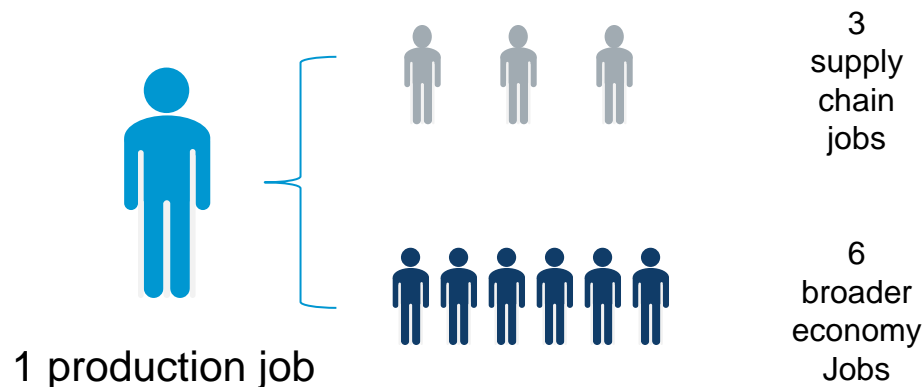
- Building on prior work assessing the industry and macroeconomic impact of changing US policy to allow exports of US crude oil
- This study examines the impact on an intricate and interdependent supply chain
  - Supports the oil industry and has made the scale-up of tight oil production possible.
  - Considers 60 separate supply chain industries
  - Granular impact analysis at the congressional district level

# What is a Supply Chain?



# Oil and gas sector multiplier effects

- The economic benefits of oil and gas activity far exceed benefits to the industry itself.
- Every new production job creates three jobs in the supply chain and another six jobs in the broader economy.



- GDP also multiplies: every dollar of GDP created in the oil and gas sector generates two dollars in the supply chain.

# Basis for production cases and trade policies



Note: Each case starts with the same IHS macroeconomic and international crude oil price forecast

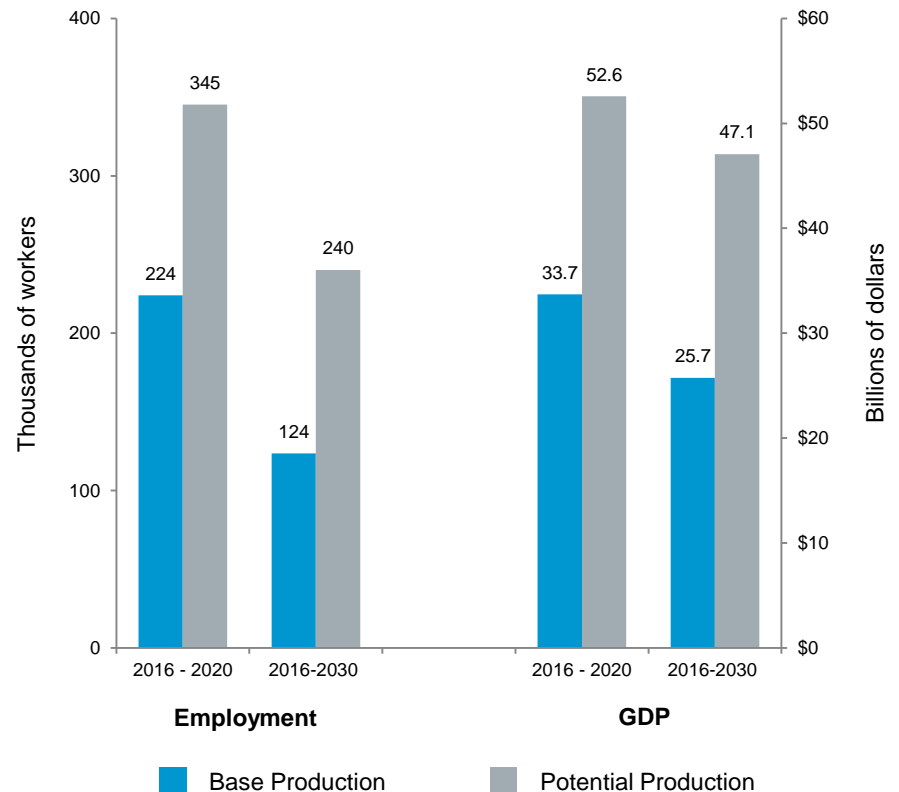
# Free trade impacts on the supply chain

- The supply chain represents significant shares of the national broad economic impact<sup>1</sup>:
  - 31% / 28% of the employment impact
  - 30% / 28% of the GDP or value added
  - 38% / 35% of labor income
  - 33% / 31% of cumulative government revenue
- Impact is greatest in early years and extend over long-term

Broader Economic Impact from Export Policy Change is larger:

- For Base / Potential Production (2016-30)
  - 394,000 / 859,000 employment
  - \$86b / \$170b GDP

Impact of free trade on the supply chain



NOTE: The supply chain impact represents 28-30% of total free trade impact.

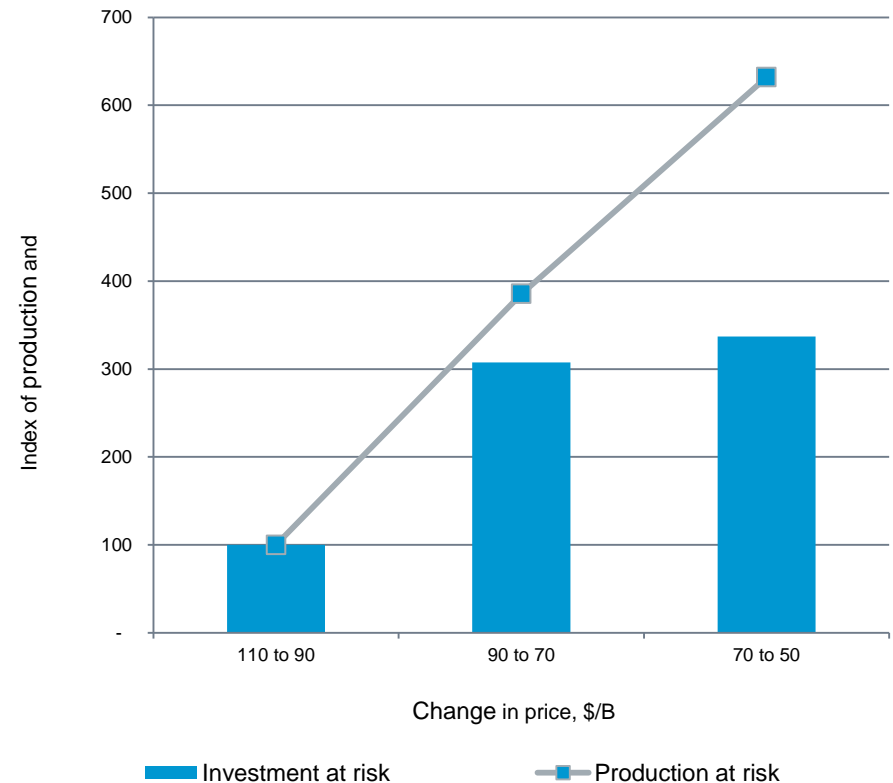
Source: IHS Economics

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# Export policy problem and oil price decline

- Gridlock created by the ban
  - Creating a domestic oversupply – rising stocks
  - Lower US crude oil prices – Brent-WTI Spread
  - Dampens upstream investment and reduces economic activity and job creation.
- Lower global oil prices have the effect of increasing—rather than decreasing—the impact of the export ban

Impact of crude oil price reduction



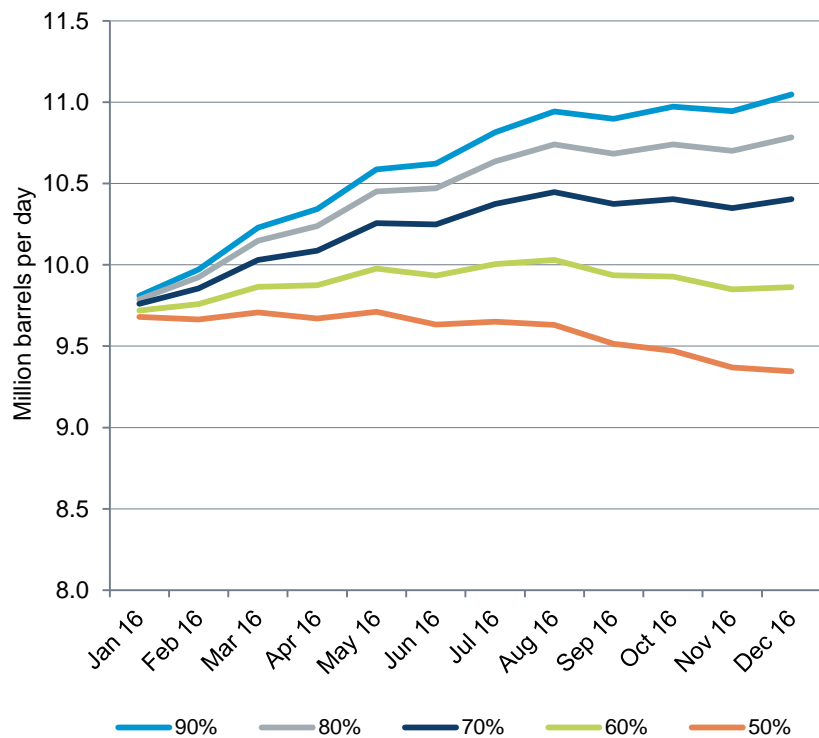
Notes: Based on breakeven price analysis of actual onshore oil wells drilled in US Lower-48 in 2013.

Source: IHS

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# Energy outlook

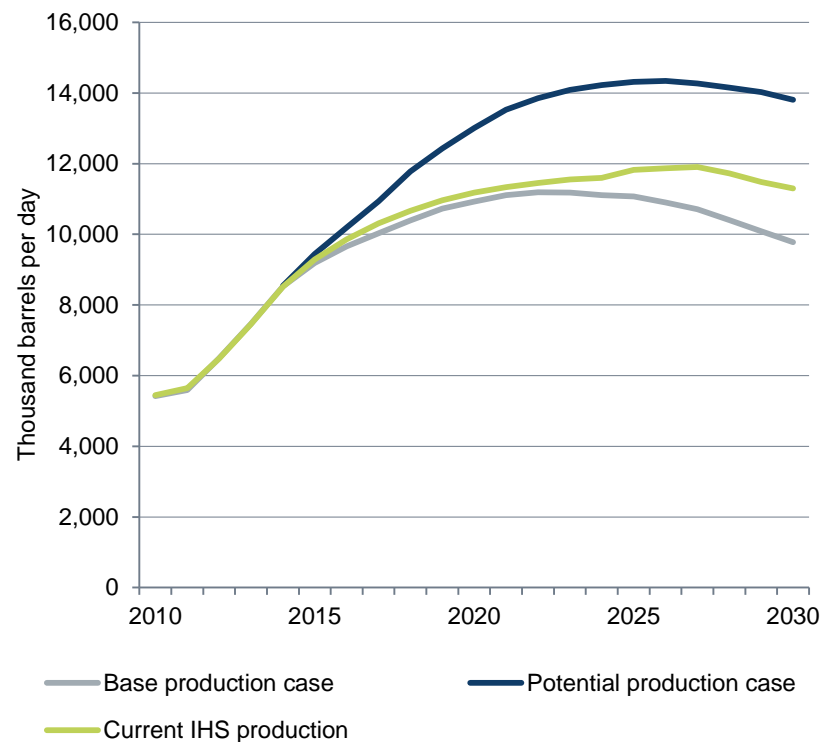
US crude oil production outlook sensitivity cases  
(2016 upstream capital investment as a percent of 2014  
upstream capital investment)



Source: IHS Energy

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U.S. Crude Oil Production Forecast



Source: IHS Energy

© 2015 IHS



# Employment impacts

**Employment: US crude oil export supply chain**  
(number of workers, difference free trade vs. restricted trade)

	2016	2017	2018	2019	2020	2021-30 Average	2016-30 Average
<b>Base Production Case</b>							
US crude oil export supply chain	105,748	250,201	293,140	258,227	212,508	73,384	123,577
US crude oil export total	358,610	811,250	963,720	863,310	699,520	221,532	394,118
<b>Supply chain share of crude oil export total</b>	<b>29.5%</b>	<b>30.8%</b>	<b>30.4%</b>	<b>29.9%</b>	<b>30.4%</b>	<b>33.1%</b>	<b>31.4%</b>
<b>Potential Production Case</b>							
US crude oil export supply chain	149,521	351,675	439,578	414,198	371,202	187,413	240,020
US crude oil export total	521,500	1,206,160	1,536,730	1,483,210	1,320,000	681,645	858,932
<b>Supply chain share of crude oil export total</b>	<b>28.7%</b>	<b>29.2%</b>	<b>28.6%</b>	<b>27.9%</b>	<b>28.1%</b>	<b>27.5%</b>	<b>27.9%</b>

**Jobs in oil sector and supply chain pay well above national average.**

## Gross domestic product (GDP) impacts

**Value added: US crude oil export supply chain**  
(\$millions, real 2009, difference free trade vs. restricted trade)

	2016	2017	2018	2019	2020	2021-30 Average	2016-30 Average
<b>Base Production Case</b>							
US crude oil export supply chain	21,234	40,606	40,480	34,494	31,707	21,754	25,737
US crude oil export total	72,770	132,895	134,950	118,655	106,298	73,013	86,380
<b>Supply chain share of crude oil export total</b>	<b>29.2%</b>	<b>30.6%</b>	<b>30.0%</b>	<b>29.1%</b>	<b>29.8%</b>	<b>29.8%</b>	<b>29.8%</b>
<b>Potential Production Case</b>							
US crude oil export supply chain	29,763	56,967	63,503	57,138	55,515	44,307	47,064
US crude oil export total	103,358	194,745	220,868	206,133	198,340	162,775	170,080
<b>Supply chain share of crude oil export total</b>	<b>28.8%</b>	<b>29.3%</b>	<b>28.8%</b>	<b>27.7%</b>	<b>28.0%</b>	<b>27.2%</b>	<b>27.7%</b>

**Lifting the 40-year ban on US crude oil exports will create significant benefits throughout the supply chain.**

# Government revenue

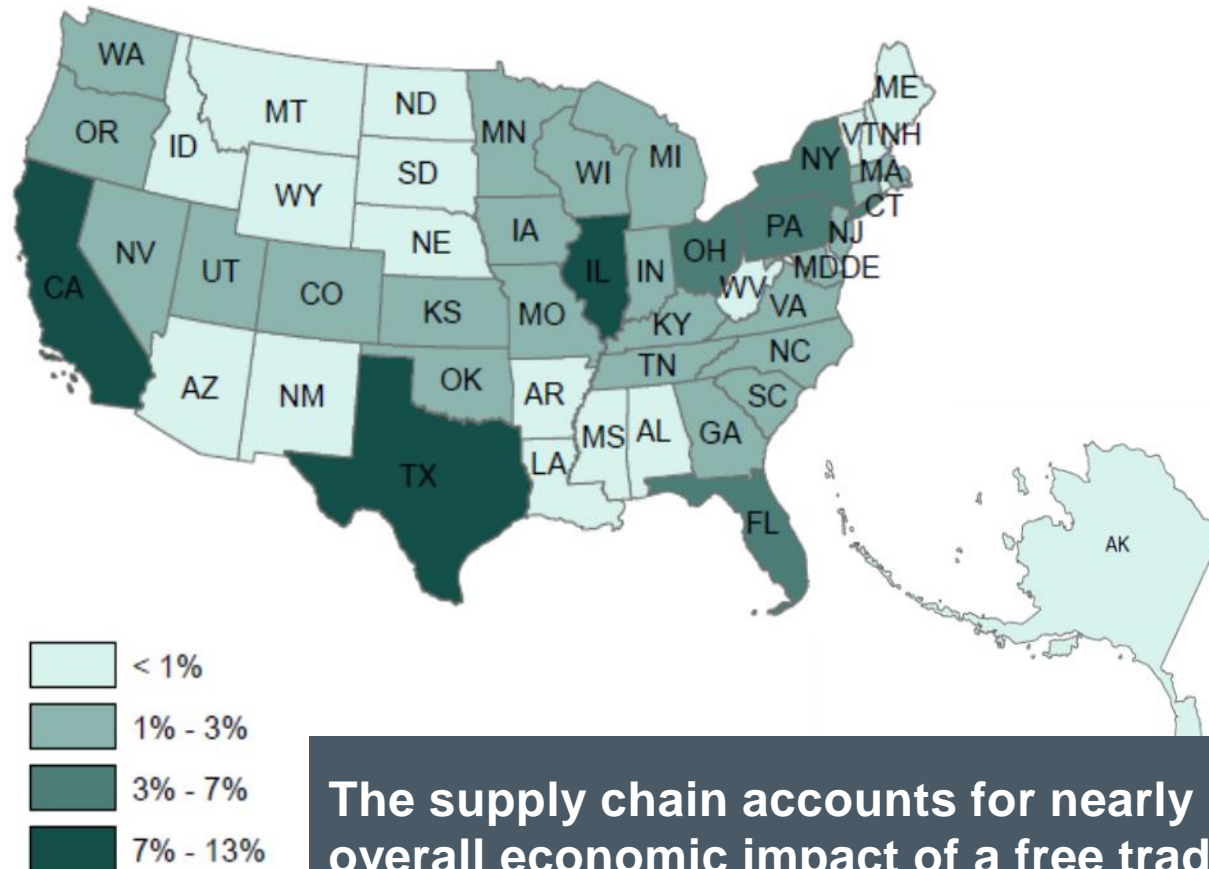
## Government Revenue: US crude oil export supply chain (\$millions, nominal)

	2016	2017	2018	2019	2020	2021-30 Total	2016-30 Total
<b>Base Production Case</b>							
Federal personal and corporate taxes	6,011	14,710	15,734	12,961	10,643	273,737	333,797
State personal and corporate taxes	920	3,262	3,716	2,920	2,693	71,805	85,316
Local personal and corporate taxes	169	406	364	265	276	8,124	9,603
Federal, State, and Local taxes	<b>7,100</b>	<b>18,378</b>	<b>19,814</b>	<b>16,146</b>	<b>13,612</b>	<b>353,666</b>	<b>428,717</b>
<b>Potential Production Case</b>							
Federal personal and corporate taxes	8,579	20,859	24,998	22,556	20,232	571,906	669,131
State personal and corporate taxes	1,220	4,302	5,434	5,044	4,723	158,095	178,818
Local personal and corporate taxes	267	593	621	512	508	17,947	20,448
Federal, State, and Local taxes	<b>10,066</b>	<b>25,754</b>	<b>31,053</b>	<b>28,112</b>	<b>25,463</b>	<b>747,949</b>	<b>868,397</b>

**The additional cumulative government revenue from corporate and personal income taxes attributed to the supply chain industries is approximately \$429 billion in the Base Production Case and more than double that—\$868 billion—in the Potential Production Case.**

# Supply chain impacts across the US – value added

GDP distribution in 2017: US crude oil export supply chain -- Base Production  
(percent, difference free trade vs. restricted trade)



**The supply chain accounts for nearly 50% of the overall economic impact of a free trade policy in several oil-producing and non-producing states.**

Source: IHS Economics

# Employment impacts

## State-level employment contributions: US crude oil export supply chain\*

(number of workers, difference free trade vs. restricted trade)

						2021-2030	2016-2030
Top-10 States	2016	2017	2018	2019	2020	Average	Average
<b>Base Production Case</b>							
California	11,832	33,639	43,129	35,864	29,787	10,828	17,502
Texas	10,086	26,549	32,279	28,931	23,990	7,656	13,226
Illinois	8,138	16,590	17,644	15,052	12,106	4,010	7,309
New York	4,908	11,769	13,956	12,548	10,361	3,867	6,147
Ohio	5,346	10,504	10,475	8,469	7,019	2,404	4,390
Florida	4,238	10,075	12,213	11,956	10,458	4,313	6,138
Michigan	4,066	7,783	8,109	6,744	5,337	1,695	3,266
Pennsylvania	3,418	7,244	7,325	6,061	4,857	1,475	2,911
Oklahoma	3,016	6,759	7,628	6,596	5,192	1,416	2,890
Washington	2,769	6,743	8,204	7,347	6,064	2,295	3,605
<b>Top-10 total</b>	<b>57,816</b>	<b>137,656</b>	<b>160,961</b>	<b>139,568</b>	<b>115,173</b>	<b>39,959</b>	<b>67,384</b>
<b>US total</b>	<b>105,748</b>	<b>250,201</b>	<b>293,140</b>	<b>258,227</b>	<b>212,508</b>	<b>73,384</b>	<b>123,577</b>
<b>US crude oil export total</b>	<b>358,610</b>	<b>811,250</b>	<b>963,720</b>	<b>863,310</b>	<b>699,520</b>	<b>221,532</b>	<b>394,118</b>
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\*The rank for all years is based on the 2017 ranking.

Source: IHS Economics

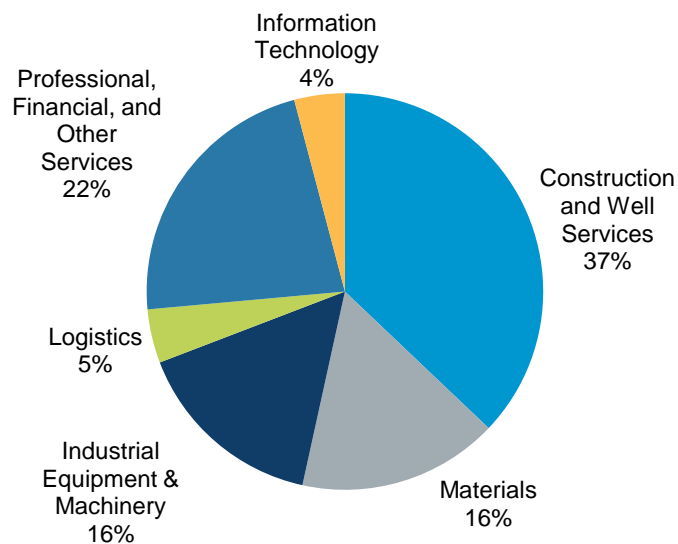
**All states benefit.**

**Populous and oil-producing states reap larger benefits from a free trade crude oil export policy.**

# Supply chain impact diversity

**Supply chain employment impact – Base production**  
(2016-2030 average, difference free trade vs. restricted trade)

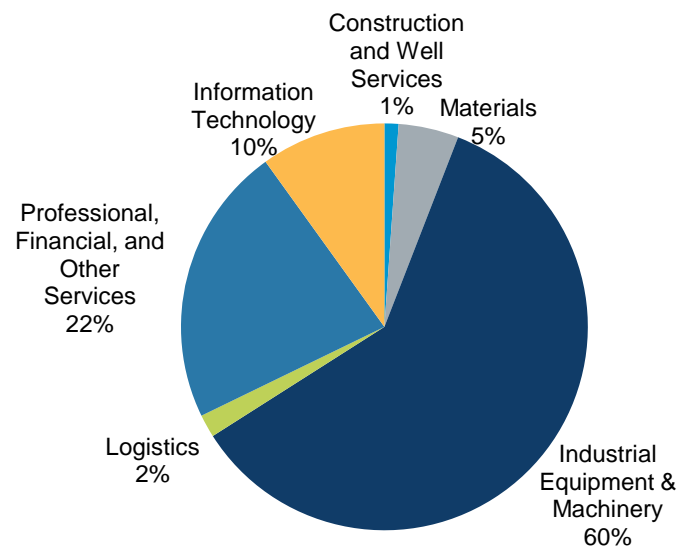
## Texas



Supply chain average impact: 13,226  
Peak impact : 32,279  
(number of workers)

Source: IHS

## Florida

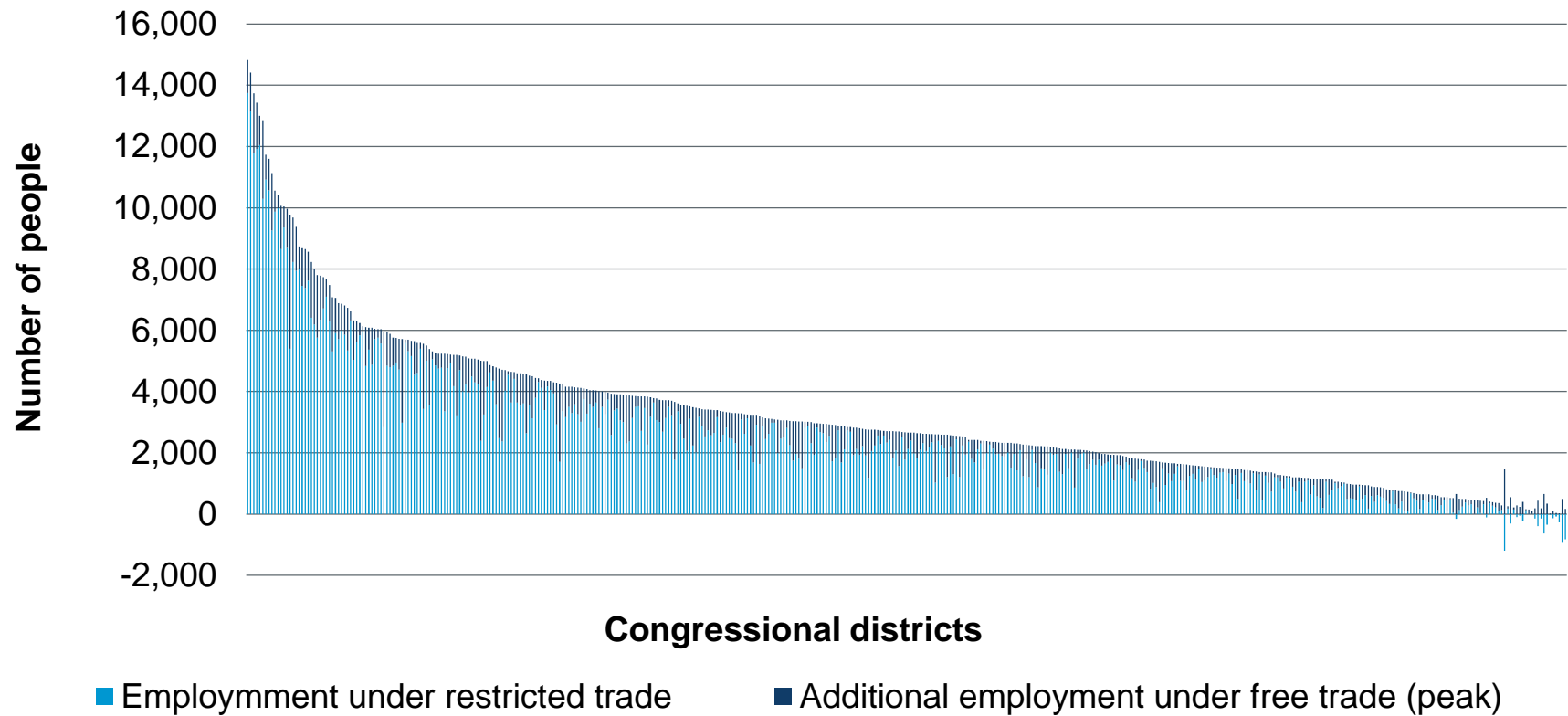


Supply chain average impact: 6,138  
Peak impact : 12,213  
(number of workers)

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# Supply chain assessment base production case

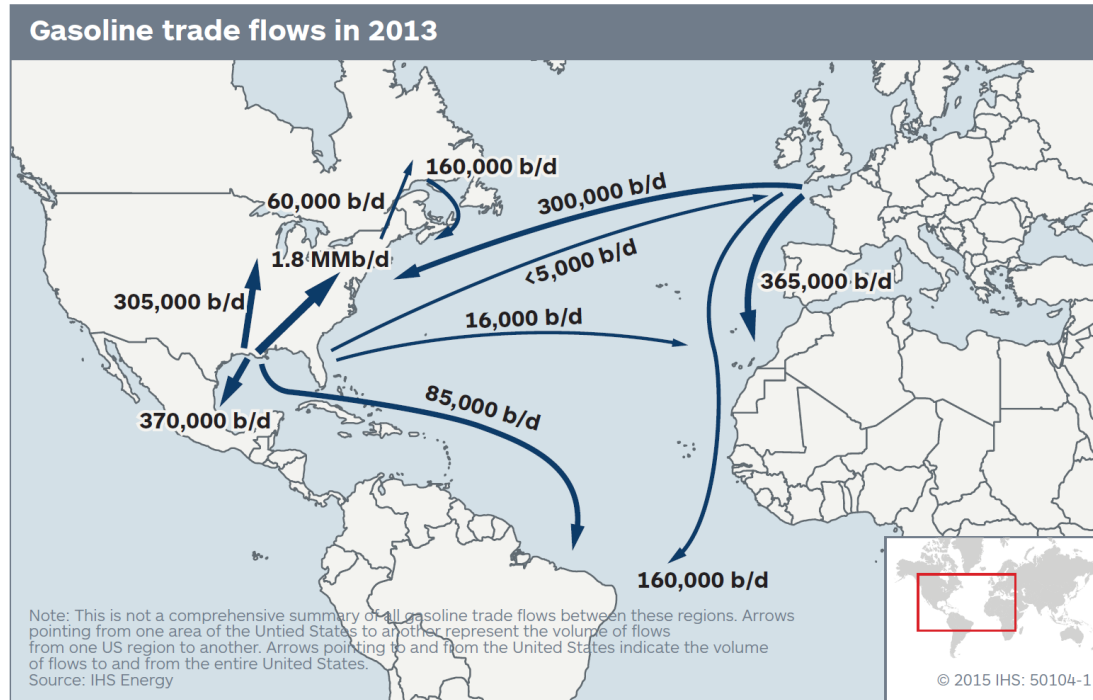
**Employment gains by congressional district – Base production**  
(average, 2016 - 2030)



Source: IHS Economics

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# Refined Product Trade and Pricing



- US is world's largest exporter of refined products – and also imports
- Gasoline prices set by international prices not domestic crude price
- Refining industry will remain vibrant and robust if crude oil export ban is lifted



## Concluding Thoughts

- Impact of export ban is upon us – rising stocks and widening price discount
- Lower prices magnify impact of price discount – affecting viability of a large number of wells
- Double chilling affect of low prices and additive price discount is putting US jobs at risk – jobs in supply chain and across nation
- Infrastructure to export crude is in place – near immediate response expected

Further details provided at [www.ihs.com/crudeoilsupplychain](http://www.ihs.com/crudeoilsupplychain)

Including report, appendies and access the national, state, and congressional district level aggregate data through the Supply Chain Data Tool

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