

# Energy security and climate policies: An unequal and transient marriage

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Can **low carbon** societies deliver  
on energy security?

# Can low carbon societies deliver on energy security?

low carbon

increasing renewables and efficiency in the short-term

long-term climate stabilization

Would the EU 2030 energy goals improve energy security?

Would climate stabilization improve energy security?

# Can **low carbon** societies deliver on energy security?

Would the EU 2030 energy goals improve energy security?

Would climate stabilization improve energy security?

## **energy security**

- Security of what?
- Security for whom?
- Security from what threats?

} low vulnerability of vital energy systems

Would the EU 2030 energy goals improve energy security?

# vital energy systems in Europe

## Gas

- 40% heating<sup>3</sup>
- 20% electricity<sup>3</sup>
- 50 bln €/year import bill<sup>2</sup>
- 65% imported<sup>1</sup>

## Oil

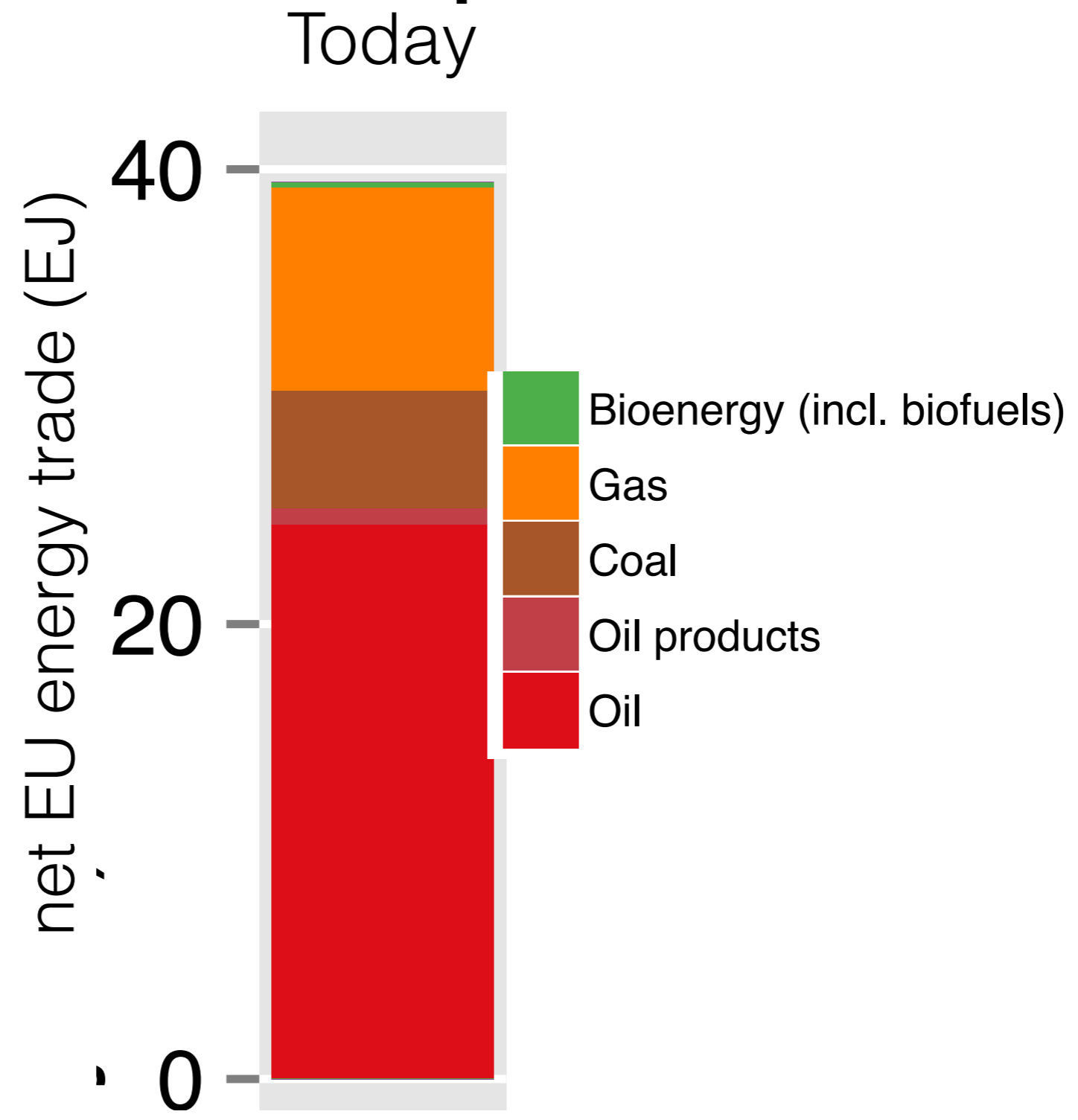
- >90% transport<sup>3</sup>
- 350 bln€/year import bill<sup>2</sup>
- >80% imported<sup>1</sup>

### References:

1. Eurostat for year 2012.
2. [Bloomberg](#) for year 2012.
3. IEA for year 2010

Would the EU 2030 energy goals improve energy security?

# EU energy imports today

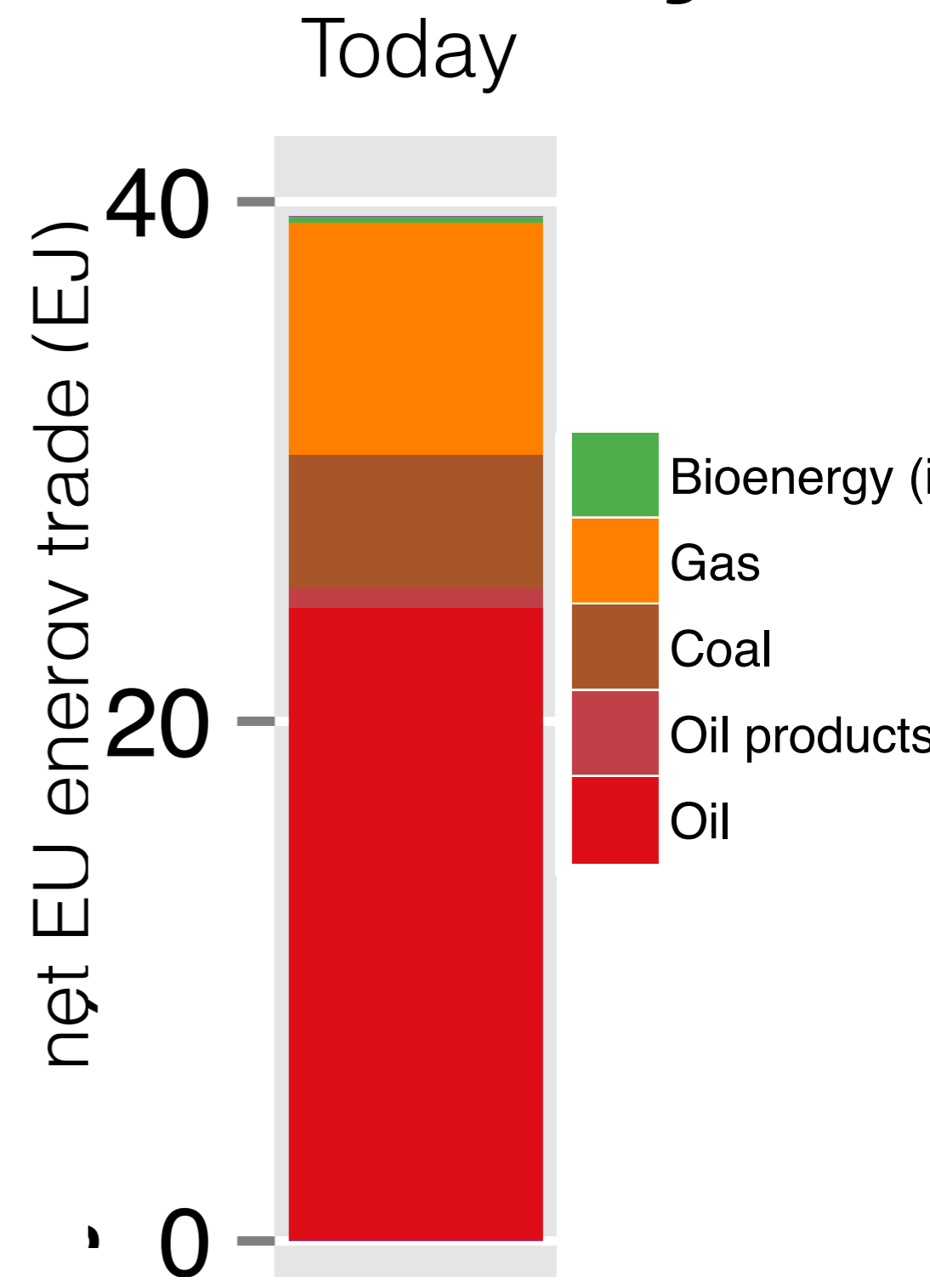


Would the EU 2030 energy goals improve energy security?

# EU energy imports today

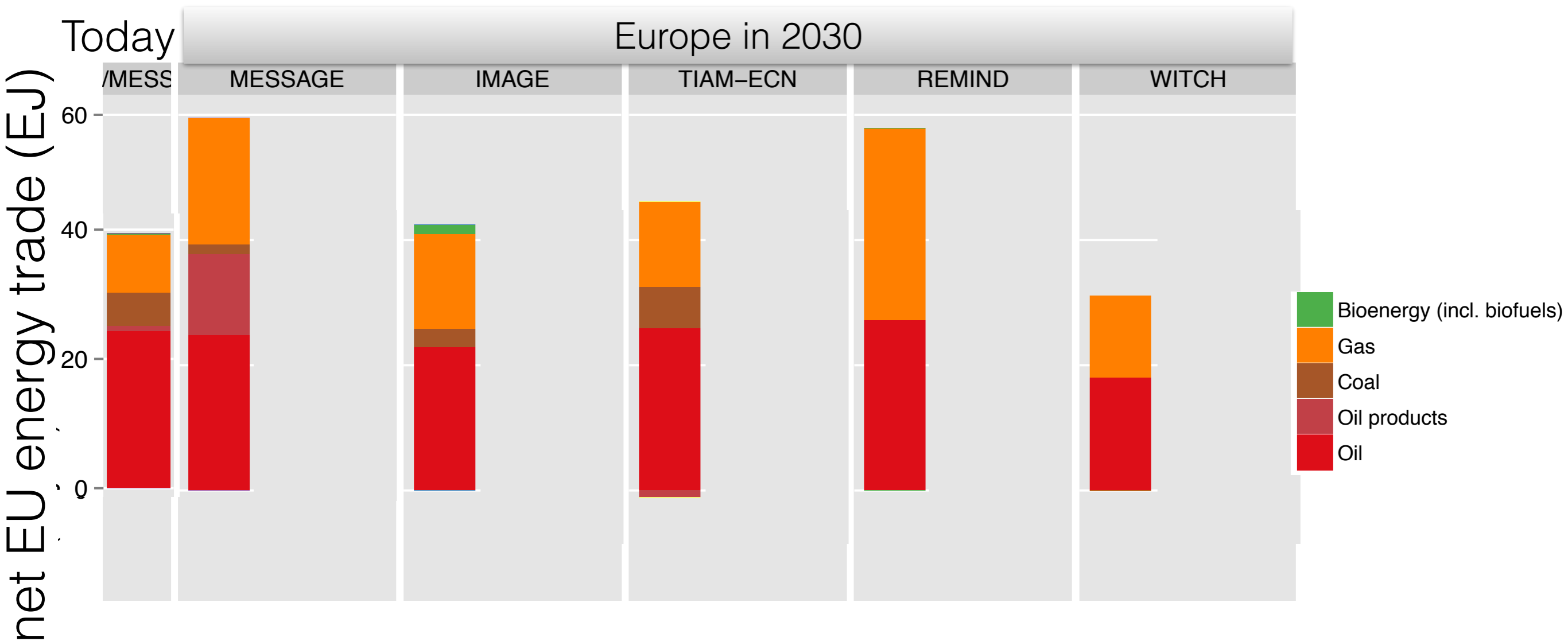
## EU 2030 energy goals

- ↓ GHG emissions by 40%
- ↑ the share of renewables to at least 27%
- ↑ energy efficiency by 30%



Would the EU 2030 energy goals improve energy security?

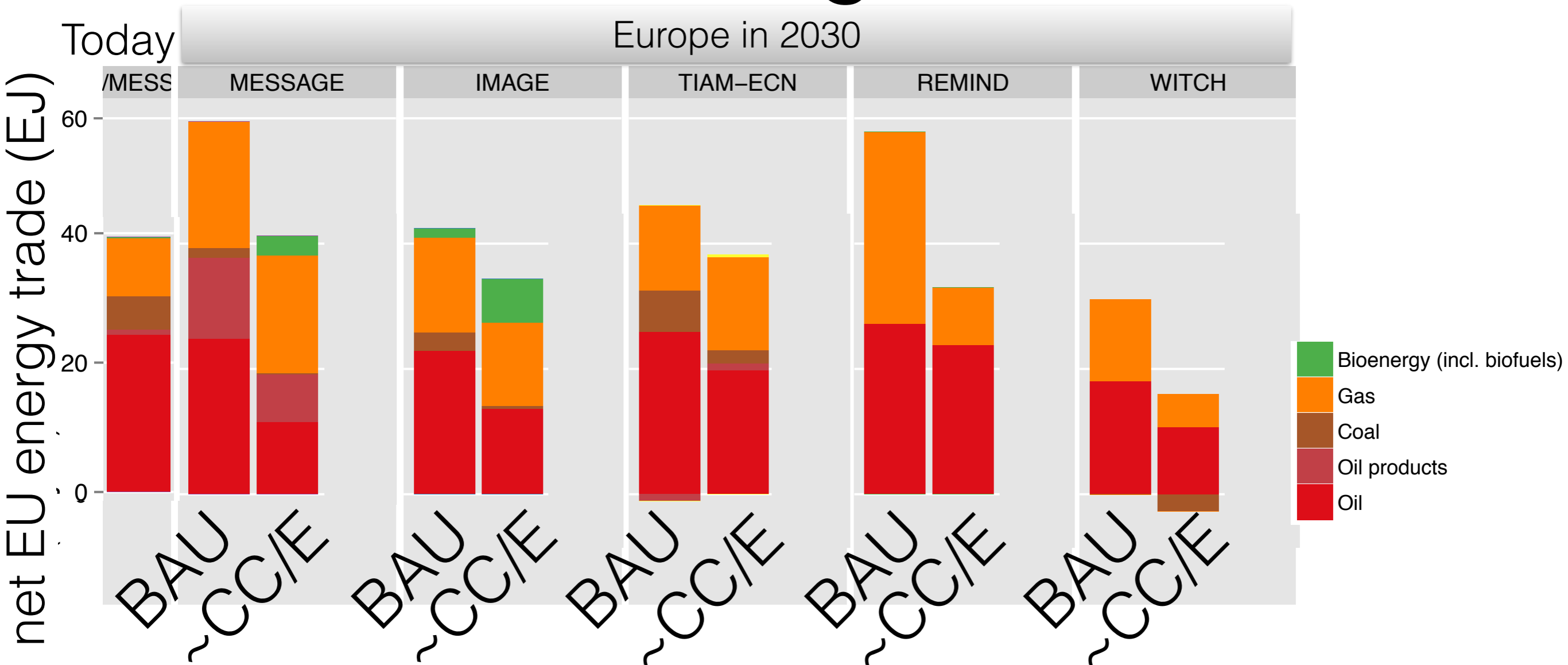
# EU energy imports 2030 under Business as Usual (BAU)





Would the EU 2030 energy goals improve energy security?

# EU energy imports 2030 under ~2030 goals



Oil imports ↓ in all models but in most not significantly.

Gas imports imports significantly decline only in two models.

Would the EU 2030 energy goals improve energy security?

# vital energy systems in Europe



Would the EU 2030 energy goals improve energy security?

# Gas vulnerabilities vary

	gas dependence	% of gas in heating	supply	storage
<b>Germany</b>	86%	50%	3 suppliers, >15 pipelines	20-25% of annual demand
<b>Sweden</b>	99%	8% (used in one locality)	one supplier: Denmark	-
<b>Hungary</b>	73%	78% 96% in Budapest	one main pipeline from Russia	30-40% of annual demand
<b>Latvia</b>	100%	81%	one supply source: Russia	150-300% of annual demand
<b>Lithuania</b>	100%	62%	one supply source: Russia	-

References:

Eurostat 2014, IEA 2014, City of Budapest data 2014

Would the EU 2030 energy goals improve energy security?



Brussels, 28.5.2014  
COM(2014) 330 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN  
PARLIAMENT AND THE COUNCIL

European Energy Security Strategy

**ANNEX 2: STATUS OF KEY SECURITY OF SUPPLY INFRASTRUCTURE PROJECTS**

**Natural gas projects**

<b>A</b>	<b>Short-term projects</b>	<b>(2014 – 2016)</b>	
#	Name project	Details	Finished by
<b>Baltic gas market</b>			
1	LT: LNG vessel	Vessel (not a PCI). Status: under construction	End 2014
2	Klaipėda-Kiemėna pipeline upgrade	Capacity enhancement of the connection from Klaipėda to the LT-LV interconnector. Status: EIA and engineering design	2017
<b>Gas optionality in Central and South-East Europe</b>			
1	PL: LNG terminal	Terminal in Swinoujscie and connecting pipeline (not a PCI due to maturity). Status: under construction	End 2014

Would the EU 2030 energy goals improve energy security?



EU2030 goals does a bit for oil we don't know what they do for gas

- The priorities for energy security and climate not identical



**biggest** countries for **climate**



most **vulnerable** countries for **energy security**

# Can **low carbon** societies deliver on energy security?

Would the EU 2030 energy goals improve energy security?

Would climate stabilization improve energy security?

## **energy security**

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Would climate stabilization  
improve energy security?

# Three perspectives of energy security vulnerability



Would climate stabilization improve energy security?

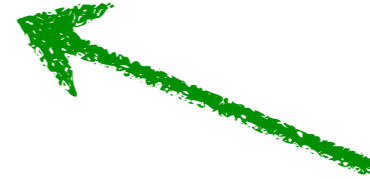
# Three perspectives of energy security vulnerability



intentions



probabilities



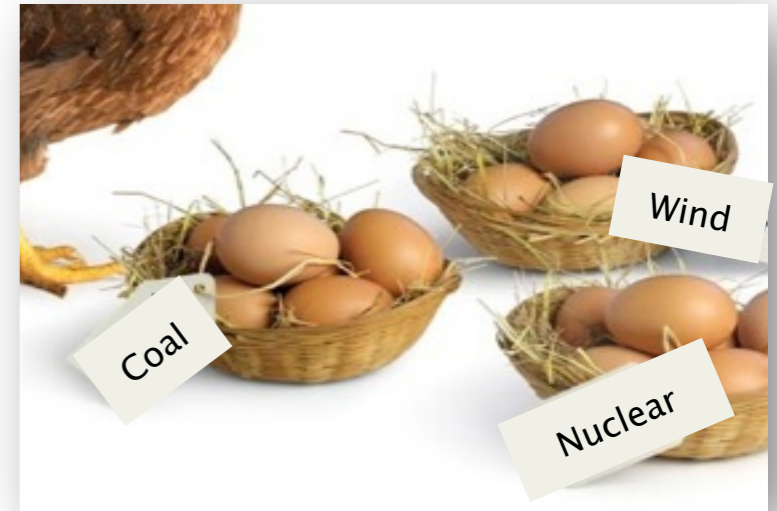
uncertainties



**Sovereignty**  
trade



**Robustness**  
resources



**Resilience**  
diversity



Would climate stabilization improve energy security?

### LIMITS Model Inter-Comparison Impact of Climate Policy on Energy Security

**trade**

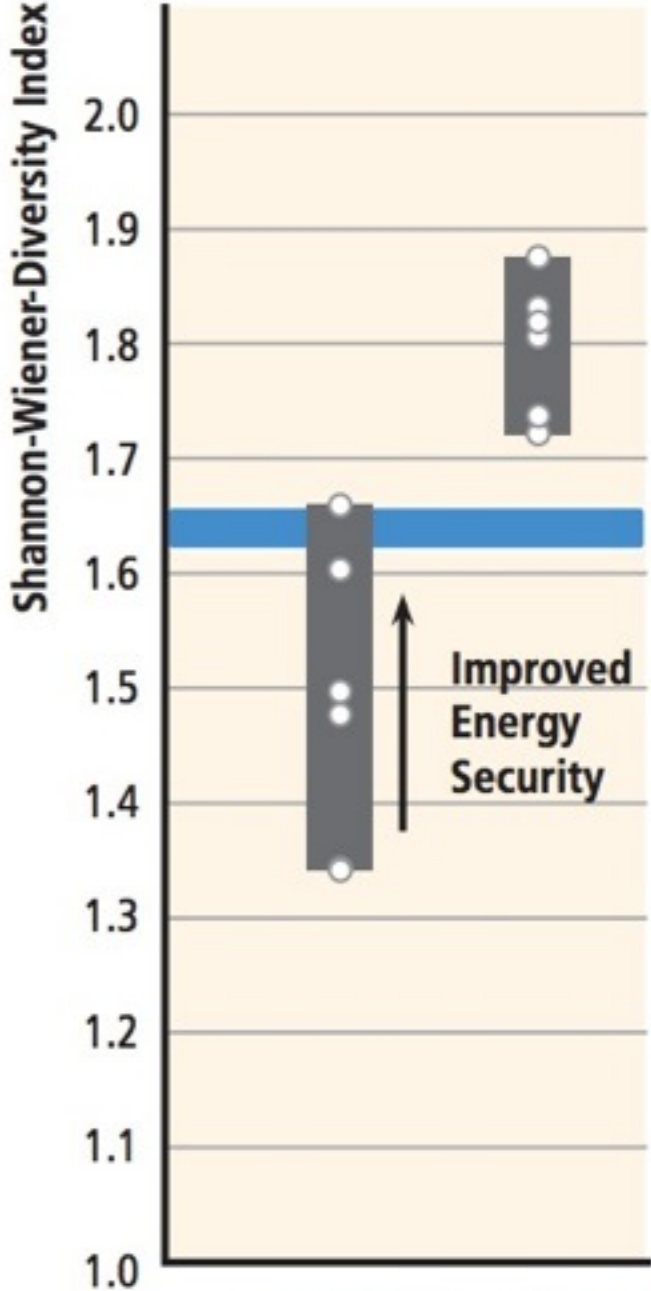
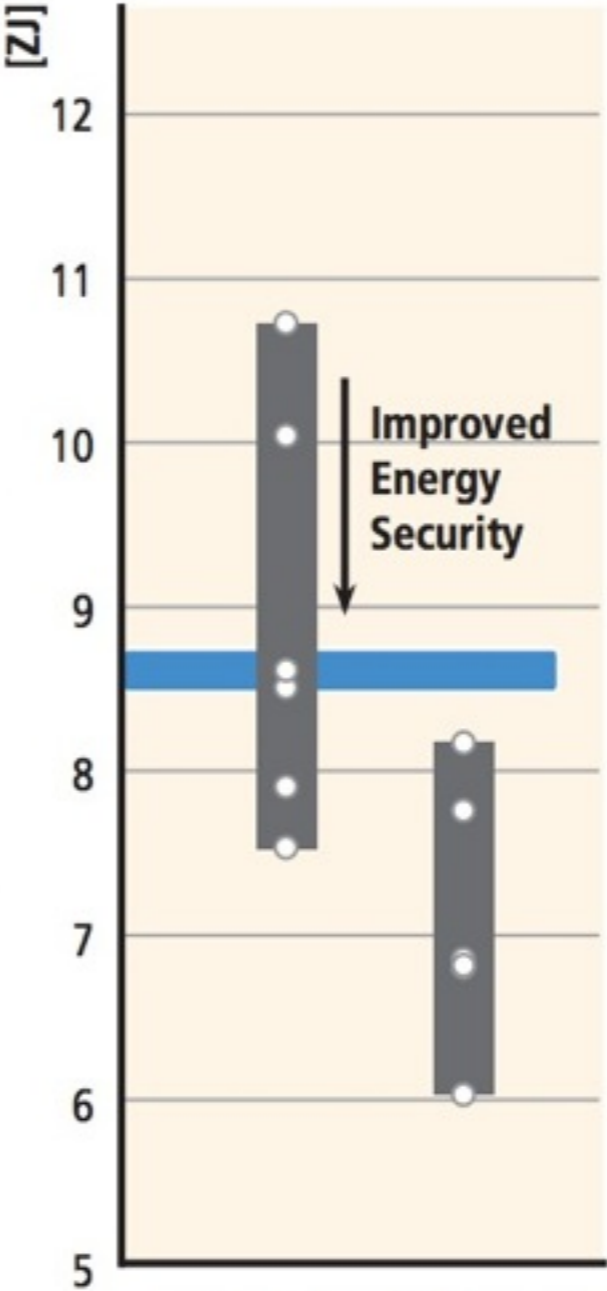
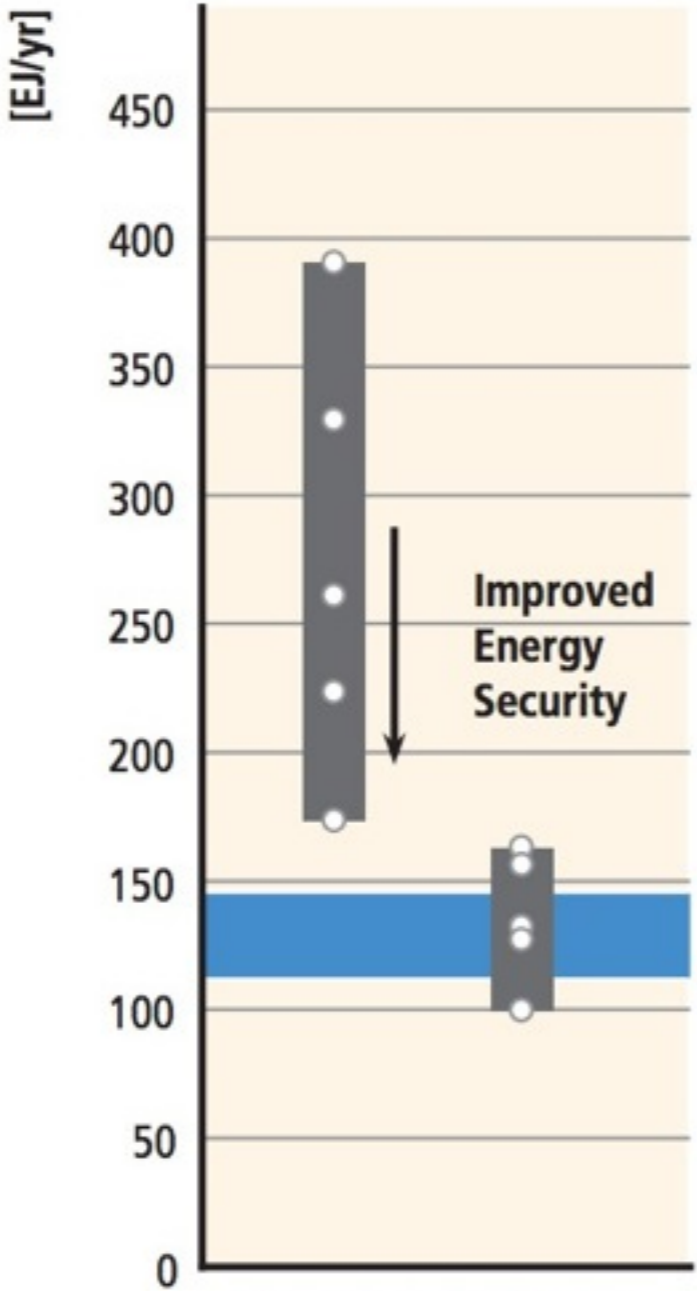
**resources**

**diversity**

Energy Trade  
(Global, 2050)


Cumulative Oil Extraction  
(Global, 2010-2050)

Electricity Diversity  
(Global, 2050)




From IPCC based on Jewell et al. 2013


Would climate stabilization improve energy security?




	USA		
	trade	resources	diversity
Business as Usual	↓↓ imports	-	↓ diversity
450	↓↓ exports	-	↑↑ diversity



	China		
	trade	resources	diversity
Business as Usual	↑↑↑↑↑ imports	↑↑↑ depletion	↓ diversity
450	↑ imports	↑ depletion	↑↑ diversity

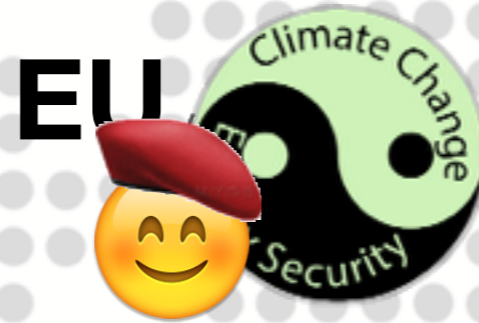


	EU		
	trade	resources	diversity
Business as Usual	↑↑ imports	↑↑ depletion	- diversity
450	↓ imports	↑ depletion	↑↑ diversity



	India		
	trade	resources	diversity
Business as Usual	↑↑↑↑↑ imports	↑↑↑↑↑ depletion	↓↓↓ diversity
450	↑↑ imports	↑ depletion	↑↑ diversity

Would climate stabilization improve energy security?

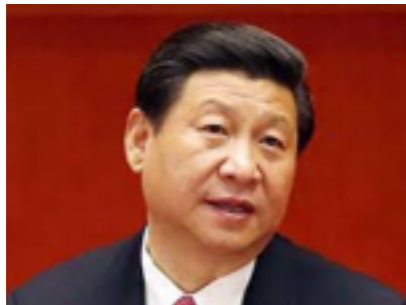


## Could energy security policies benefit climate?

- Security of what?
- Security for whom?
- Security from what threats?
- Security at what costs?

Would climate stabilization improve energy security?

# Would energy independence save the climate?



“China faces grave energy security challenges dependence on foreign energy”

– China’s 2012 energy policy



“..avoid [energy] over-dependence...and develop indigenous capacities...”

– Modi’s election 2014 manifesto



*Energy independence by 2020*

—Romney 2012

Energy independence by 2030



*Cut oil imports 1/3 by 2025*

—Obama 2012

Cut oil imports 2/3 by 2030

Would climate stabilization improve energy security?

# Would pursuing energy independence save the climate?

<b>Scenarios</b>	<b>Energy independence</b>	<b>Oil independence</b>	<b>No import restrictions</b>
<b>USA</b>	Energy independence by 2030	Cut oil imports 2/3 by 2030	
<b>All other OECD</b>	Cut imports in half by 2030	Cut oil imports in half by 2030	
<b>Emerging economies</b>	Maintain level of imports	Cut oil imports in half by 2030	
<b>Exporters</b>	Never an importer	Never an importer	

# Conclusions: Can low carbon societies deliver on energy security?

low carbon

energy security

Would the EU 2030 energy goals improve energy security?

Would climate stabilization improve energy security?

low vulnerability of vital energy systems

- Security of what?

oil and gas

imports, resources, energy options

- Security for whom?

EU + European countries

major economies

- Security from what threats?

import disruptions

import disruptions, price volatility, resource scarcity and unknown threats

# Conclusion

Would the EU 2030 energy goals improve energy security?

Would climate stabilization improve energy security?



EU2030 goals ↓ oil imports but no consistent impact on gas

- Priorities for energy security and climate are not identical



Long-term security impacts of climate pathways diverge



Achieving energy independence much cheaper than 2°C



energy independence has very little climate impact



**biggest** countries for **climate**



most **vulnerable** countries for **energy security**

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An unequal and transient marriage

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