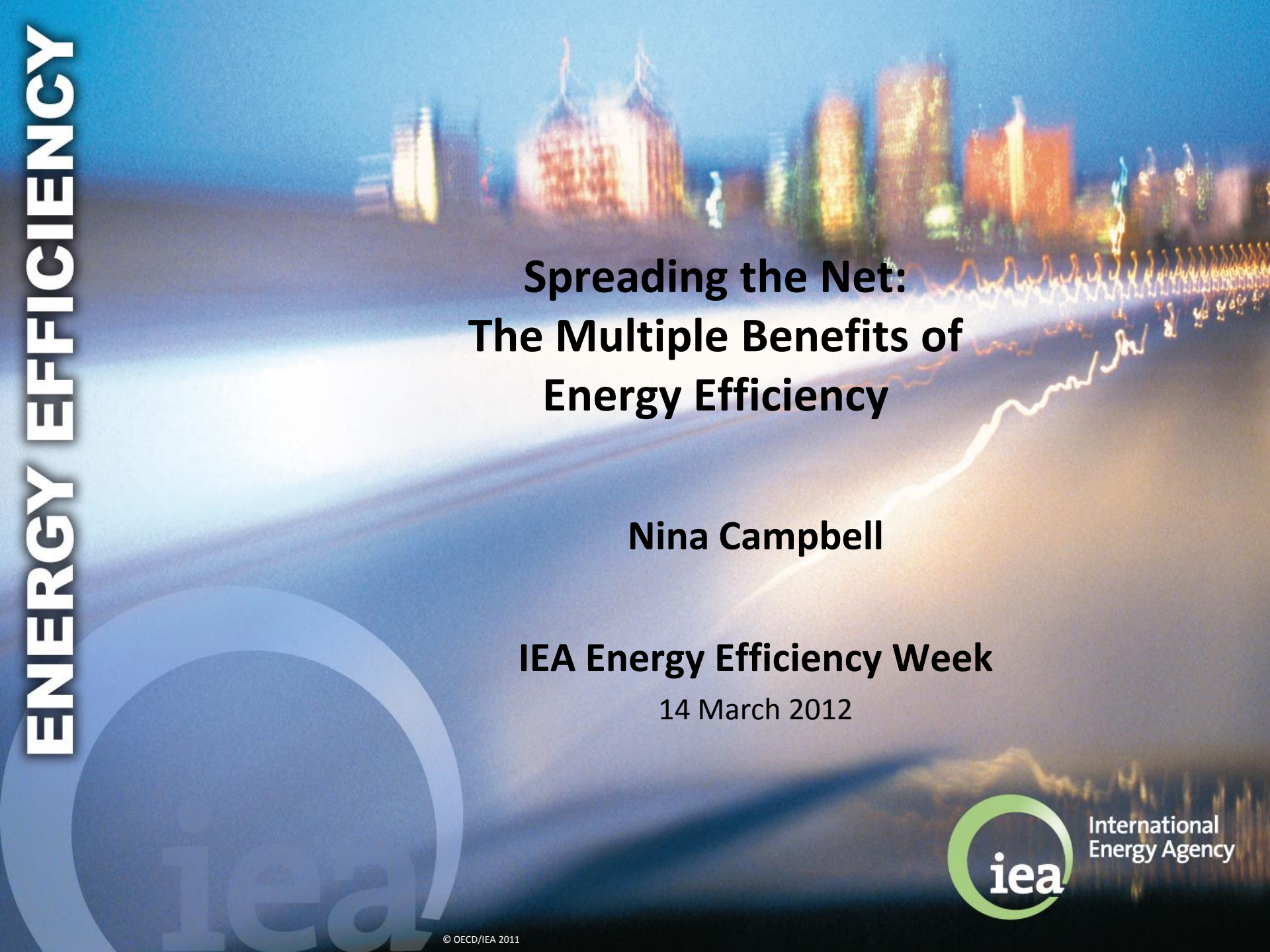

Spreading the Net: The Multiple Benefits of Energy Efficiency

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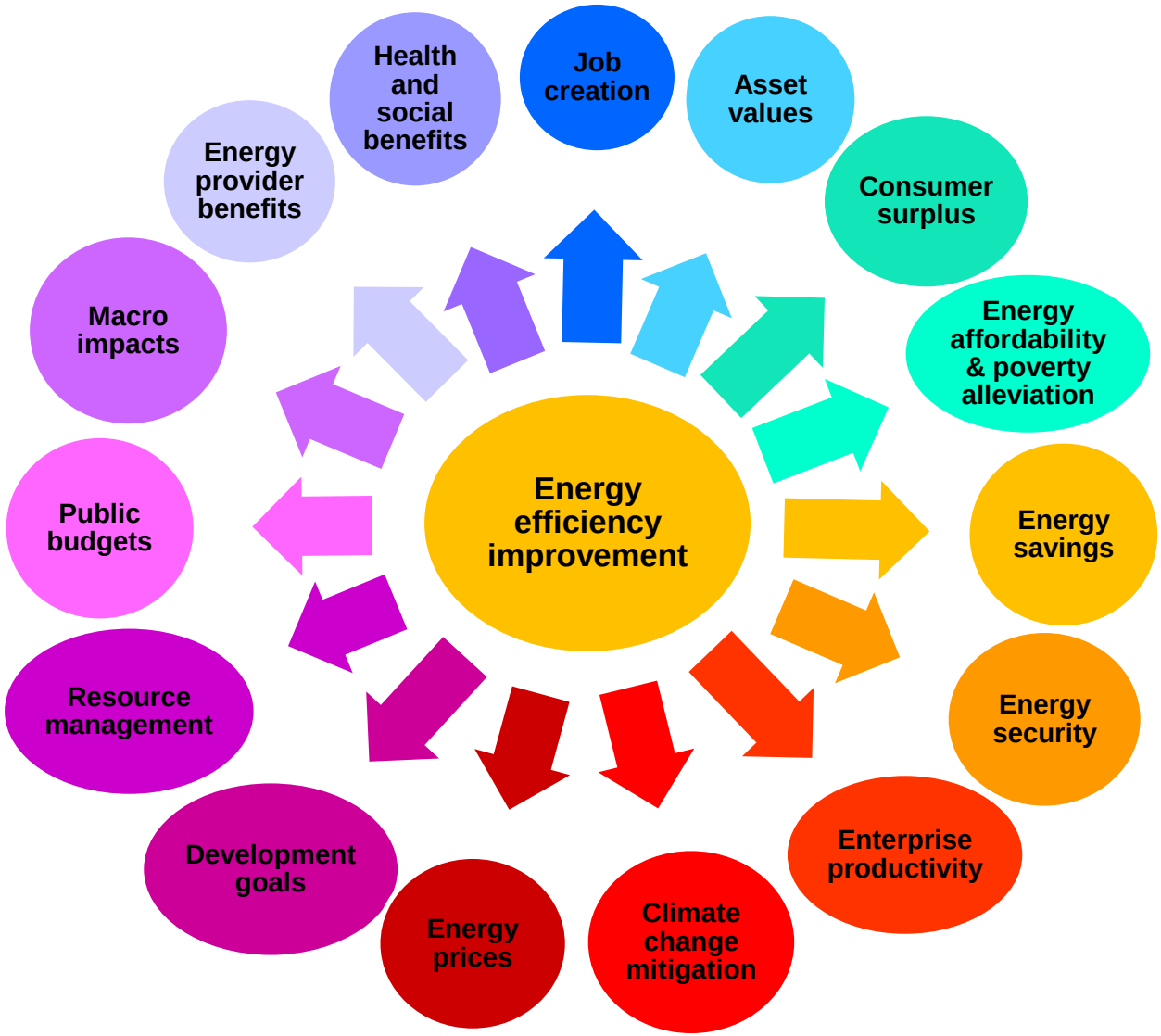
- Outline of our perspective on multiple benefits
- Summary of IEA work to date:
  - Inventory of benefits explored: individual; sector-specific; national; international
  - Initial observations
  - Implications for the rebound effect
- What we could do long term

Multiple benefits of energy efficiency



Levels of multiple benefits from energy efficiency improvements

International	• Energy prices • GHG emissions • Resource management • Development goals
National	• Macroeconomic effects • Public budget impacts • Job creation • Energy security
Sector specific	• Asset values • Energy provider and infrastructure benefits • Industrial productivity and competitiveness
Individual	• Health and social improvement • Energy affordability and poverty alleviation • Consumer surplus (disposable income)

Individual level (individual, household, enterprise)

a. Health and social improvements

e.g. as a result of improved heating and cooling and air quality in buildings; more efficient transport systems and power generation.

b. Energy affordability and poverty alleviation

e.g. the impact on reducing fuel poverty; improving quality of life; increasing access to energy and aggregate impacts for poverty alleviation.

c. Consumer surplus (Increased disposable income)

e.g. energy efficiency improvement at individual or firm level should reduce energy bills for the same energy services and free more disposable income.

Sector-specific

d. Increased asset values

e.g. Investors willing to pay a sales premium, tenants a rental premium, for property with better energy performance, particularly commercial.

e. Energy provider and infrastructure benefits

e.g. Help energy providers in providing a better energy service to their customers, reducing operating costs and improving profit margins.

f. Industrial productivity and competitiveness

e.g. reductions in resource use and pollution; improved production and capacity utilisation; less operation and maintenance

National

g. Macroeconomic effects

e.g. increases in GDP; improved trade balance; national competitiveness; and employment.

h. Public budget impacts

e.g. Reduced spending on public energy procurement; reduced fuel imports; less foreign currency reserves; reduced outlay on subsidies.

i. Job creation

e.g. energy efficiency work and increased disposable income can generate direct and indirect jobs in energy and other sectors.

j. Energy security

e.g. reduced energy demand can improve energy system security across the 4 dimensions of risk – fuel availability, accessibility, affordability, and social and environmental acceptability.

International level

k. Energy prices

e.g. If energy demand is reduced significantly in several markets, energy prices can be reduced.

l. Reduced GHG emissions

e.g. when energy efficiency improvements result in reduced demand for fossil fuel energy.

m. Resource management

e.g. Reduce pressure on scare resources; manage supply constraints; reduce incentive to pursue technologies with environmental impacts.

n. Development goals

e.g. eradicating poverty; increasing economic growth; improving environmental sustainability; and increasing access to energy.

The Rebound Effect

- **Positive welfare or utility gains from energy efficiency can increase energy consumption = rebound effect**
- **Measurement methodology similar**
- **If primary objective of EE policy is economic development - Different interpretation of rebound effect?**

Rebound Effects	Consumer		Producer	
	Income	Substitution	Output	Substitution
Direct	Turning up the heat, driving more	Buying a bigger house	Increasing production	More energy use relative to other factors
Indirect	Taking a holiday		Lower cost cars lead to more transport consumption	
Macro-economic	Lower prices for energy services boost demand for all goods and services economy-wide; increased employment		Increased productivity, higher profits/dividends implies investment in the economy	

Benefits		Time-frame for effect		Level for outcome to take effect			Country context dependency		Rebound effect
		Short	Long	Individual	Economy-wide	Interna-tional	Energy-mix	Developing country	Impact on energy consump-tion
Social	Energy affordability	X		X				X	+
	Poverty alleviation	X		X				X	+
	Health	X		X	X			X	
	Employment	X		X	-			X	+
	Energy access		X		X			X	+
	Country development	X			X	X	X	X	+
Economic	Consumer surplus	X		X	X			X	+
	productivity	X		X				X	+
	Avoided energy infrastructure investment		X		X		X	X	-
	National competitiveness		X		X			X	+
	Economic resilience		X		X			X	
	Energy prices	x	X		X	X	X	X	+
	Trade balance		X		X	X	X	X	+
	Energy security		X		X		X	X	-
Environment	Fossil fuel energy demand	X			X		X	X	-
	Greenhouse gas emissions	X		X	X	X	X	X	-
	Air pollutants	X		X	X		X	X	

Initial observations

- Energy efficiency as a key contributor to green growth and recession buster
- Why are the wider outcomes from energy efficiency not measured?
- How can we measure the multiple benefits of energy efficiency improvements?
- Country contexts important