Energy Efficiency and Institutional Quality: The role of energy efficiency governance

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- Introduction
- Index construction and theoretical support
- Results
- Application
- Concluding remarks and further research

1. Introduction

Every policy, plan, programme or measure may be compromised by one or several of these factors:



Since these failures do not allow for efficient balances, public intervention is needed: **GOVERNANCE** have a relevant role

Governance

"Ability of an administration to generate rules and enforce them in order to achieve particular objectives"

Fukuyama, 2013.

Politics, society and economics

Its effect is well-documented. There exist **indices** to assess this kind of governance.

EE issues

Little is known about the relationship between governance and EE (EE governance) due to the absence of any quality indicator.

OVERVIEW

Introduction 1.1. Motivation 1.2. Aim

2. Index construction and theoretical support

Index construction and theoretical support 2.1. Theoretical support 2.2. Index construction

According to IEA (2010), EE governance is the combination of the institutional and co-ordination arrangements needed to scale-up EE, added to the legislative frameworks and funding mechanisms, which works to support the implementation of EE strategies, policies and programmes".









HIGHLIGHTS

- 32 OECD countries (Israel and Iceland have been excluded).
- 2000-2015 period (persistent factor).
- Three EE governance areas are assessed (8 indicators).

But...

What about the scores?

OVERVIEW

Index construction and theoretical support 2.1. Theoretical support 2.2. Index construction

Filter Classification

Data collection

- Huge collection effort (WEC, IEA, IRENA...)
- Main block: IEA database
- > 1,800 entries
- *"Entry"* = Qualitative and descriptive information regarding a specific policy, law, strategy, plan, programme... SCORING CRITERA REQUIRED
- In force between 2000-2015
- > 1,700 entries
- E.g.: USA (169 entries), Spain (47 entries) or Estonia (4 entries)
- Descriptive/qualitative information. Each entry has been carefully read in order to relate this with the correct EE governance and area and, concretely, with the correct indicator.

Scoring



Aggregation

- There are no previous EE governance scores or indicators. Therefore, the scores obtained are relative scores (between the countries in the sample).
- 0-4 Scale for each indicator (E. Dabla-Norris et al., 2012)
- Subjectivity is minimized through the establishment of strict evaluation criteria for each indicator.

- Three sub-indices: one sub-index by each EE governance area, calculated as the corresponding indicators average.
- One overall index (average of the three sub-indices).

J. B. e. a. E. Dabla-Norris, "Investing in public investment: an index of public investment efficiency," *Journal of Economic Growth*, pp. 17:225-266, 2012.

Joint Research Center and OECD, "Handbook on Constructing Composite Indicators," 2008.

OVERVIEW



Title	Country	Year	Policy Status	Policy Type	Policy Target
Rural Energy Savings Program	United States	2014	In Force	Economic Instruments, Economic Instruments>Fiscal/financial incentives, Economic Instruments>Fiscal/financial incentives>Loans	Multi-Sectoral Policy
US Climate Action Plan	United States	2013	In Force	Policy Support>Strategic planning, Policy Support	Multi-Sectoral Policy
Energy Efficiency and Conservation Loan Program	United States	2013	In Force	Economic Instruments	Multi-Sectoral Policy

0		Country:	United States
liea Interna	tional	Year:	2013
ABOUT NEWSF	ROOM	Policy status:	In Force
		Jurisdiction:	National
Home » Policies and Me	easures » E	Date Effective:	2013
		Policy Type:	Policy Support>Strategic planning, Policy Support
Int	ernation ergy Age	Policy Target:	Multi-Sectoral Policy
iea/		Agency:	Executive Office of the President
\sim		URL:	http://www.whitehouse.gov/sites/default/files/image/president27sclimateactionplan.pdf
Highlighted i Found 169 resul Perform another	records lts. (Tip: · search		 On 25 June 2013, US President Barack Obama presented the US Climate Action Plan for steady, responsible national and international action to cut the GHG emissions that cause climate change and threaten public health. The plan has three pillars: cut carbon pollution in the United States; prepare the United States for the impacts of climate change; lead international efforts to combat global climate change and prepare for its impacts. Each pillar in the plan consists of a wide variety of executive actions the president can take. The key mitigation elements are numerous: to cut CO2 pollution from coal-fired power plants by directing the US Environmental Protection Agency to establish carbon pollution standards for both new and existing power plants; to unlock long-term investment in clean energy innovation by making up to USD 8 billion in loan guarantee authority available for a wide array of advanced energy projects that use fossil fuels; to accelerate clean energy permitting by: directing the US Department of the Interior to permit 10 gigawatts (GW) of renewables on public lands by 2020; setting a goal to install 100 megawatts of renewables in federally assisted housing by 2020 [in July 2015, HUD and the US Department of the president used to the form a CM if for one phase in the form enclose the president president permitting by 2020; setting a goal to install 100 megawatts of renewables in federally assisted housing by 2020 [in July 2015, HUD and the US Department of the president permitting a constal of the president permitting the president permitting a constal of the permitting the president permitting a constal of the permitting a constance on the permitting and the permitting a constance on the permitting permitting a constance on the permitting and the permitting a constance on the permitting and the president permitting a constance on the permitting and the permitting a constance on the permitting and the permitting a const
TitleCountiRural Energy Savings ProgramUnited States			 initiary installations; to expand the federal government's Better Building Challenge to focus on helping commercial, industrial, and multi-family buildings become at least 20% more energy efficient by 2020; to reduce CO2 pollution by at least 3 billion metric tonnes cumulatively by 2030 through efficiency standards for appliances and federal buildings;
			 to increase fuel economy standards by developing post-2018 fuel economy standards for heavy-duty vehicles; to leverage new opportunities to reduce pollution of hydrofluorocarbons (HFCs), direct agencies to develop a comprehensive methane strategy and commit to protect forests and critical landscapes.
US Climate Action Plan	IS Climate Action United De lan States		The key climate resilience and preparedness elements also address several goals: to build stronger and safer communities and infrastructure by directing agencies to support local climate-resilient investment, and integrate climate risk-management considerations into planning and programmes;
Energy Efficiency and Conservation Loan Program	United States		 to pilot innovative strategies in the Hurricane Sandy-affected region to support resilience and reduce vulnerability to future large-scale flood and storm events; initiate the creation of sustainable and resilient hospitals in the face of climate change; to protect the US economy and natural resources by directing agencies to: identify approaches to improve natural defences against extreme weather; maintain agricultural productivity by delivering tailored, science-based knowledge to farmers, ranchers, and landowners; help communities manage drought-related risk by launching a National Drought Resilience Partnership; and expand and update efforts to reduce wildfire risks and prepare for future floods; to provide climate preparedness tools and information peeded by state local, and private-sector leaders through a controllied "boolkir" and a new
			Climate Data Initiative. Key objectives of the international elements are equally ambitious: • to enhance and expand international initiatives through forums such as the Major Economies Forum and the Clean Energy Ministerial, identifying

Index construction and theoretical support 2.1. Theoretical support

	ional	Country
liea Internat	Ional	Year:
ABOUT NEWSR	юом	Policy s
		Jurisdic
Home » Policies and Me	asures » E	Date Ef
		Policy T
Inte Ene	ernation ergy Age	Policy T
iea/		Agency
		URL:
Found 169 result Perform another Filter:	ts. (Tip: search	
Title	Count	
Rural Energy Savings Program	United States	
US Climate Action Plan	United States	Descrip
Energy Efficiency and Conservation Loan Program	United States	

United States 2013 In Force tatus: tion: National fective: 2013 Policy Support>Strategic planning, Policy Support ype: Multi-Sectoral Policy arget: Executive Office of the President http://www.whitehouse.gov/sites/default/files/image/pro On 25 June 2013, US President Barack Obama presente GHG emissions that cause climate change and threaten cut carbon pollution in the United States; prepare the United States for the impacts of climate (lead international efforts to combat global climate ch Each pillar in the plan consists of a wide variety of executive action The key mitigation elements are numerous: to cut CO2 pollution from coal-fired power plants by both new and existing power plants; to unlock long-term investment in clean energy inno advanced energy projects that use fossil fuels; to accelerate clean energy permitting by: directing the 2020; setting a goal to install 100 megawatts of renewa (DOE) announced an expansion of the renewable energy military installations; to expand the federal government's Better Building (20% more energy efficient by 2020; to reduce CO2 pollution by at least 3 billion metric to to increase fuel economy standards by developing po to leverage new opportunities to reduce pollution of commit to protect forests and critical landscapes. The key climate resilience and preparedness elements a tion: to build stronger and safer communities and infrastr risk-management considerations into planning and prog to pilot innovative strategies in the Hurricane Sandy storm events: initiate the creation of sustainable and resilient hospi to protect the US economy and natural resources weather; maintain agricultural productivity by deliverin manage drought-related risk by launching a National prepare for future floods;

> to provide climate preparedness tools and informati-Climate Data Initiative.

Are strategies and actions plans enough? Are the costs of the plans estimated and the targets set for strategies and action plans?

The score is **0** if strategies and action plans have not been found;

 if the number of plans is extremely limited;
 if some plans have been found and in some cases costs are estimated and/or targets are set;

3 if abundant plans have been found and in some cases costs are estimated and/or targets set OR if an adequate amount of plans have been found and the costs are estimated and/or targets set for most of them:

4 if abundant plans have been found and for the most cost have been estimated and/or targets have been set.

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Index construction and theoretical support 2.1. Theoretical support 2.2. Index construction

Key objectives of the international elements are equally ambitious:

• to enhance and expand international initiatives through forums such as the Major Economies Forum and the Clean Energy Ministerial, identifying

Gea Interna	tional	Country:	United States		OVERVIEW
lear internit		Year:	2013		
ABOUT NEWSF	ROOM	Policy status:	In Force		Index construction and
Home » Policies and Me	asures » F	Jurisdiction:	National	Are strategies and actions plans enough?	theoretical support
ione « i onces and me	ubui co vic	Date Effective:	2013	Are the costs of the plans estimated and the	2.1. Theoretical support
	ernation	Policy Type:	Policy Support>Strategic planning, Policy Support	targets set for strategies and action plans?	2.2. Index construction
(ica) En	ergy Age	Policy Target:	Multi-Sectoral Policy	targets set for strategies and action plans:	
IEar		Agency:	Executive Office of the President		
		URL:	http://www.whitehouse.gov/sites/default/files/image/pre	The score is 0 if strategies and action plans	
			On 25 June 2013, US President Barack Obama presente GHG emissions that cause climate change and threaten	have not been found;	
Filter:		New	Zealand = 2 points (7 S advanced energy projects that use fossil fuels; • to accelerate clean energy permitting by: directing th 2020; setting a goal to install 100 megawatts of renewa (DOE) announced an expansion of the renewable energy	S&AP with costs or/and targets set in 4 of them) 3 if abundant plans have been found and in some cases costs are estimated and/or	
Title	Count		 military installations; to expand the federal government's Better Building (20% more energy efficient by 2020; to reduce CO2 pollution by at least 3 billion metric to be at least 3 bi	targets set OR if an adequate amount of	
Rural Energy Savings Program	United States		 to reduce CO2 pointion by a reast 5 billion metric to to increase fuel economy standards by developing po- to leverage new opportunities to reduce pollution of commit to protect forests and critical landscapes. The key climate resilience and preparedness elements a 	plans have been found and the costs are estimated and/or targets set for most of	
US Climate Action Plan	United States	Description:	 to build stronger and safer communities and infrastr risk-management considerations into planning and prog to pilot innovative strategies in the Hurricane Sandy 	them; 4 if abundant plans have been found and for	
Energy Efficiency and Conservation Loan Program	United States		storm events; initiate the creation of sustainable and resilient hospi to protect the US economy and natural resources weather: maintain agricultural productivity by delivering	the most cost have been estimated and/or	
			 weater, manual agricultural productivity by deliverin manage drought-related risk by launching a National prepare for future floods; to provide climate preparedness tools and informati Climate Data Initiative. 	targets have been set.	
			Key objectives of the international elements are equally	ambitious:	
			• to enhance and expand international initiatives thro	ugh forums such as the Major Economies Forum and the Clean Energy Ministerial, identifying	16

<mark>3</mark>. Results





EEGI VS GDP per capita



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EEGI VS WGI



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. Application

The relationship between **EEGI** and **EE**

This work is based on the **stochastiec frontier function of energy demand** proposed by M. Filippini and L. Hunt (2011), but also considering the **urbanization rate** as P.K. Adom, K. Amakye, K.K. Abrokwa and C. Quaidoo propose.

 $\begin{aligned} &e_{it} \\ &= \alpha + \alpha^{y} y_{it} + \alpha^{p} p_{it} + \alpha^{popd} popd_{it} + \alpha^{UR} UR_{it} + \alpha^{a} Ai + \alpha^{oceanic} Oceanic_{i} + \alpha^{cold} Cold_{i} + \alpha^{I} ASH_{it} \\ &+ \alpha^{A} ISH_{it} + u_{it} + v_{it} \end{aligned}$

Where...

The error term: v_{it}

The inefficiency term: u_{it}

EE is calculated as: $EE_{it} = E_{it}^{F} / E_{it} = exp(-\hat{u}_{it})$.

Furthermore...

$$u_{it} = \beta Z_{it} + \varepsilon_{it}$$
 EEGI

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Application 4.1. EEGI and EE

The relationship between **EEGI** and **EE**

Coefficient	BC95	TFE (Greene 2005)	TRE (Greene 2005)
Parameters of the de	emand function		
Constant	4.276***	/	4.758***
p	-0.214*	-0.128***	-0.085***
V	0.763***	0.687***	0.645***
рор	0.175***	0.369***	0.280***
a	0.066***	0.088**	0.071***
cold	0.258***	0.638*	0.181***
oceanic	-0.055**	0.298	0.031
ISH	1.719***	4.355***	0.673***
SSH	1.282***	2.825***	0.019
UR	1.489***	1.968***	0.868***
D	-0.012***	-0.013***	-0.012***
Parameters in the or	ne-sided error		
Constant	0.145	-3.332***	-3.732***
IGEE	-1.823***	-1.011***	-1.047***
Variance parameters	s for the compound error		
Siama	0.153***	0.031***	0.030***
lambda	0.82***	1.806***	1.517***

*, **, *** denotes 10%, 5% and 1% significance level, respectively.

Application 4.1. EEGI and EE

The relationship between **EEGI** and **EE**



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Application 4.1. EEGI and EE

5. Concluding remarks and futher research

LET'S REVIEW SOME CONCLUDING REMARKS

REGARDING THE EEGI

Unpublished index Required index Comprehensive results

REGARDING SFA

Improvements in model results Improve in EE results El is not a good proxy

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Conclusions

5.1. Conclusions 5.2. Further research

FURTHER RESEARCH

> EEGI VS Energy Intensity (EI)

El can be used in panels in order to assesses the influence of the EEGI and to compare the results with those obtained in SFA.

> EEGI in other SFA models

The number of models used can be increased in order to further test the effect of the EEGI.

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Conclusions 5.1. Conclusions 5.2. Further research

ANY QUESTION? Thanks!

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l. Annex









ROBUSTNESS ASSESSMENT

Inter-item and indicator correlations

Spearman correlation to assess the relations between indicators.

The correlations are significant and with the righ sign.

Alpha-Cronbach

It is used to assess whether indicators have been properly grouped.

The results reveal that the grouping is correct.

Sentivity analysis

Alternative aggregation methods (PCA, 8- overall EEGI).

The Spearman correlation between the ranks is correct, so the selected aggregation method also is correct.

ROBUSTNESS RESULTS

	Average interitem correlation	verage interitem No. Of ítems A correlation	
Sub-indices			
Enabling frameworks	0.54	2	0.64
Institutional arrangements	0.50	4	0.70
Co-ordination mechanism	0.68	2	0.65
<i>Basic overall EEGI</i> (3 sub-índices average)	0.52	3	0.83
<i>Basic 8-overall EEGI</i> (8 indicators average)	0.51	8	0.83

Country	Basic ove	erall EEGI	Extended overall EEGI			
Country	Score	Rank	Quartile	Score	Rank	Quartile
Germany	3.55	1	Q1	3.42	1	Q1
Denmark	3.45	2	Q1			
France	3.45	2	Q1	3.28	2	Q1
Sweden	3.20	4	Q1			
New Zealand	3.09	5	Q1			
Italy	3.07	6	Q1	2.95	3	Q1
United Kingdom	3.06	7	Q1	2.88	5	Q1
Canada	3.04	8	Q1			
Spain	3.03	9	Q2	2.90	4	Q1
United States	3.02	10	Q2			
Japan	2.92	11	Q2			
Hungary	2.82	12	Q2	2.56	7	Q2
Belgium	2.74	13	Q2	2.48	9	Q2
Czech Republic	2.72	14	Q2	2.65	6	Q2
Australia	2.67	15	Q2			
Portugal	2.63	16	Q2	2.39	10	Q3
Ireland	2.57	17	Q3	2.49	8	Q2
Finland	2.51	18	Q3	2.34	11	Q3
Norway	2.36	19	Q3			
Korea	2.33	20	Q3			
Netherlands	2.25	21	Q3	2.22	12	Q3
Luxembourg	2.25	21	Q3			
Turkey	2.11	23	Q3	1.96	16	Q4
Austria	2.04	24	Q3	2.10	13	Q3
Poland	1.98	25	Q4	1.99	14	Q3
Slovakia	1.83	26	Q4	1.99	15	Q4
Greece	1.65	27	Q4	1.59	17	Q4
Mexico	1.52	28	Q4			
Switzerland	1.52	28	Q4			
Chile	0.85	30	Q4			
Slovenia	0.55	31	Q4	0.85	18	Q4
Estonia	0.55	31	Q4			
PROMEDIO	2.42			2.39		
Desv. Estándar	0.785			0.597		

Results 3.1. Overall EEGI 3.2. Sub-índices

SCORES BY SUB-INDICES

Enabling frameworks

- The sub-index most correlated with the EEGI.
- L&D is the indicator accounting the highest correlation with the overall EEGI.

Institutional arrangements

- Well-correlated with the overall EEGI.
- Implementing agencies is the most important indicator.

Co-ordination mechanisms

- High scores → Targets are widely considered.
- ¿Improving governement coordination indicator?

Country	Enabling framework		Institutional arrangements			Co-ordination mechanisms			
Country	Score	Rank	Quartile	Score	Rank	Quartile	Score	Rank	Quartile
Denmark	3.60	1	Q1	3.25	2	Q1	3.50	7	Q1
Germany	3.60	1	Q1	3.05	4	Q1	4.00	1	Q1
Spain	3.60	1	Q1	2.00	15	Q2	3.50	7	Q1
Italy	3.50	4	Q1	2.72	8	Q1	3.00	13	Q2
United Kingdom	3.20	5	Q1	2.97	6	Q1	3.00	13	Q2
Canada	3.20	5	Q1	3.42	1	Q1	2.50	21	Q3
France	3.10	7	Q1	3.25	2	Q1	4.00	1	Q1
Sweden	3.10	7	Q1	3.00	5	Q1	3.50	7	Q1
United States	3.10	7	Q1	2.95	7	Q1	3.00	13	Q2
Belgium	3.10	7	Q1	2.12	12	Q2	3.00	13	Q2
Hungary	3.10	7	Q1	1.35	22	Q3	4.00	1	Q1
Luxembourg	3.10	7	Q1	1.15	24	Q3	2.50	21	Q3
Czech Republic	3.00	13	Q2	1.15	24	Q3	4.00	1	Q1
Portugal	3.00	13	Q2	1.40	21	Q3	3.50	7	Q1
Japan	2.70	15	Q2	2.07	13	Q2	4.00	1	Q1
Norway	2.70	15	Q2	1.88	17	Q3	2.50	21	Q3
Korea	2.70	15	Q2	1.80	19	Q3	2.50	21	Q3
Austria	2.70	15	Q2	1.93	16	Q2	1.50	28	Q4
New Zealand	2.60	19	Q3	2.67	9	Q2	4.00	1	Q1
Slovakia	2.60	19	Q3	0.90	29	Q4	2.00	27	Q4
Ireland	2.30	21	Q3	2.42	10	Q2	3.00	13	Q2
Finland	2.30	21	Q3	1.73	20	Q3	3.50	7	Q1
Poland	2.30	21	Q3	1.15	24	Q3	2.50	21	Q3
Australia	2.20	24	Q3	2.32	11	Q2	3.50	7	Q1
Greece	2.10	25	Q4	1.35	22	Q3	1.50	28	Q4
Netherlands	1.90	26	Q4	1.85	18	Q3	3.00	13	Q2
Turkey	1.30	27	Q4	2.02	14	Q2	3.00	13	Q2
Chile	0.90	28	Q4	1.15	24	Q3	0.50	30	Q4
Mexico	0.90	28	Q4	0.65	30	Q4	3.00	13	Q2
Switzerland	0.90	28	Q4	1.15	24	Q3	2.50	21	Q3
Slovenia	0.50	31	Q4	0.65	30	Q4	0.50	30	Q4
Estonia	0.50	31	Q4	0.65	30	Q4	0.50	30	Q4
PROMEDIO	2.48			1.94			2.83		
Desv. Estándar	0.907			0.827			1.006		

EE: Energy Intensity VS Stochastic frontiers

Energy Intensity (EI) is one the most commonly used indicators used to approximate EE performance. EI \rightarrow Drawbacks

Instead, in this work Stochastic Frontiers Analysis (SFA) is used.



OVERVIEW

Application 4.1. El vs SFA 4.2. EEGI and EE

The relationship between **EEGI** and **EE**

 $e_{it} = \alpha + \alpha^{y} y_{it} + \alpha^{p} p_{it} + \alpha^{popd} popd_{it} + \alpha^{UR} UR_{it} + \alpha^{a} Ai + \alpha^{oceanic} Oceanic_{i} + \alpha^{cold} Cold_{i} + \alpha^{I} ASH_{it} + \alpha^{A} ISH_{it} + u_{it} + v_{it}$

Variable	Mean	Std Dev	Min	Max	Obs	Source
е	11.153	1.286	8.457	14.665	464	IEA
p	4.540	0.137	4.187	4.835	464	IEA
y	6.407	1.284	3.038	9.717	464	IEA
pop	2.929	1.271	0.270	5.774	464	IEA
a	19.290	1.614	17.260	22.984	464	IEA
cold	0.241	0.428	0	1	464	OE ^a
oceanic	0.310	0.463	0	1	464	OE ^a
ISH	0.257	0.051	0.137	0.403	456 ^b	WB
SSH	0.622	0.062	0.481	0.764	456 ^b	WB
UR	0.757	0.102	0.534	0.979	464	WB
IGEE	2.540	0.677	0.55	3.55	464	OE

IEA: International Energy Agency; OE: Own Elaboration; WB: World Bank.

- ^a Köppen-Geiger climate classification.
- ^b There is no available data for Canada between 2000-2006 and 2015.

OVERVIEW

Applications 4.1. EI vs SFA 4.2. EEGI and EE

The relationship between **EEGI** and **EE**

Coefficient		TFE (Greene 200)5)	
Parameters of the d	emand function			
р	-0.068**	-0.125***	-0.323***	
у	0.582***	0.672***	0.194***	
рор	0.442***	0.392***	0.406**	
a	0.089**	0.089*	0.074**	
cold	0.527***	0.650**	0.906***	
oceanic	0.248	0.315***	0.983**	
ISH	4.772***	4.338***	5.523***	
SSH	3.104***	2.646***	2.035***	
UR	1.937***	2.029***	1.515***	
D	-0.013***	-0.013***	-0.009***	
Parameters in the o	ne-sided error			
Constant	-4 142***	-4 386***	-5 716***	
FF	-0.660***	/		
<u>IA</u>		-0 687***	, I	
CM	/		-0.209	
Varianaa paramatar	s for the compound orror			
Sigmo		0 031***	0 052***	
Siyilid Jombdo	1 744***	1 900***	0.000	
IdIIIDUd	1.744	1.092	0.794	-
Average EE scores				
EF	0.947	/	/	
IA	/	0.945	/	
СМ	1	/	0.959	

OVERVIEW

Applications 4.1. EI vs SFA 4.2. EEGI and EE

country	TFE	Rank	TFE1	RanK	Δ	IGEE3
EEGI	No	I	Yes		a sa al E	
16 st aciatio	nsaid	Detw	lee a		anat	2.67
Austria	0.93	25	0.92	27	2	2.04
Belgium	0.96	5	0.97	6	1	2.74
Canada	0.97	1	0.97	3	2	3.04
Czech Republic	0.96	9	0.96	9	0	2.72
Denmark	0.95	18	0.96	10	-8	3.45
Estonia	0.90	28	0.86	29	1	0.55
Finland	0.94	22	0.93	21	-1	2.51
France	0.97	2	0.98	1	-1	3.45
Germany	0.97	4	0.98	2	-2	3.55
Greece	0.94	21	0.93	22	1	1.65
Hungary	0.96	7	0.97	7	0	2.82
Ireland	0.93	23	0.93	23	0	2.57
Italy	0.96	13	0.97	8	-5	3.07
Japan	0.94	20	0.95	16	-4	2.92
Korea	0.96	8	0.96	12	4	2.33
Mexico	0.96	16	0.94	20	4	1.52
Netherlands	0.93	24	0.93	24	0	2.25
New Zealand	0.92	27	0.92	25	-2	3.09
Norway	0.93	26	0.92	26	0	2.36
Poland	0.96	14	0.95	18	4	1.98
Portugal	0.96	11	0.96	13	2	2.63
Slovak Republic	0.88	29	0.88	28	-1	1.83
Spain	0.96	12	0.96	11	-1	3.03
Sweden	0.96	15	0.97	5	-10	3.2
Switzerland	0.96	6	0.95	17	11	1.52
Turkey	0.95	17	0.95	19	2	2.11
United Kingdom	0.95	19	0.96	15	-4	3.05
United States	0.97	3	0.97	4	1	3.02
AVERAGE	0.949		0.947		2.69	2.54

Applications 4.1. El vs SFA 4.2. EEGI and EE

IGEE 🕇 => EE 🕇
