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# Environmental Performance Index (EPI)

*Perspectives, Strategies and Policy on Sustainable Production*

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- <http://www.utm.my/vicechancellor>

<Speeches>

Or try

- **Google**  
< zaini ujang >



- Najib's environmental policy
- EPI
  - History
  - Methods
  - Results
  - Malaysia
    - Analysis
- Drivers and strategy



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## Najib's environmental policy

- Economic-based environmental policy
- Performance-based
- People-centric



- Economic-based environmental policy
  - Low carbon economy
    - Stern Report (2007)
  - Post-Kyoto pack
  - Green technology – New Ministry
    - Promotion
    - Development
    - Global presence and penetration



“ ... the economics of moving to a low-carbon global economy, focusing on the medium to long-term perspective ... ”

*Stern Report (2007)*



- Performance-based environmental policy
  - Environmental Performance Index
  - Key Performance Indicators
    - Major environmental components
    - Impact
    - Sustainability



- People-based environmental policy
  - Ecosystem – holistic approach
  - Public health
  - Public concern – social, economic, political
    - Services
    - Level of cleanliness
    - Risk management
    - Sustainability



- Many initiatives to develop “Green GDP”
- Focus on “sustainability”
- Scope is too wide covers all activities
- 2005 – Environmental Sustainability Index (Yale)
- 2006 – pilot EPI was published (Yale & Columbia)
  - **Malaysia ranked 9** after NZ, Sweden, Finland, Republic Czech, UK, Austria, Denmark and Canada
  - Japan: 14, Switzerland:16, Germany: 22, Taiwan: 24, Holland:27, USA: 28, Indonesia:79 and China:94
- 2008 – EPI (Yale & Columbia)



- Spot current problems and identify priority environmental issues
- Track pollution control and natural resource management trends
- Highlight where current policies are producing good results
- Reveal where ineffective efforts can be halted and funding redeployment
- Provide a baseline for cross-sectoral performance comparisons
- Facilitate benchmarking and help to identify leaders and laggards on an issue-by-issue basis
- Spotlight best practices and successful policy models



## Two core objectives

- Reducing environmental stresses to human health (Environmental Health objective)
- Protecting ecosystems and natural resources (Ecosystem Vitality objective)

Index	Objectives	Policy categories		Indicators	
EPI	Environmental health	Environmental health	Environ. burden of disease	Environmental burden of disease	
			Water (effects on humans)	Adequate to sanitation Drinking water	
			Air pollution (effects on human)	Indoor air pollution Urban particulates Local ozone	
		Air pollution (effects on ecosystems)		Regional ozone Sulfure dioxide emissions	
		Water (effects on ecosystems)		Water quality index	
		Ecosystem vitality	Biodiversity & habitat		Water stress
					Conservation risk index
					Effective conservation
					Critical habitat protection
	Productive natural resources		Forestry	Growing stock	
			Fisheries	Marine Trophic Index Trawling Intensity	
			Agriculture	Irrigation stress	
				Agricultural subsidies	
				Intensive cropland	
				Burnt land area	
	Climate change		Pesticide regulation Emissions / capita Emissions/electricity generated Industrial carbon intensity		

Index	Objectives	Policy categories	Indicators
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EPI	Environmental health (50%)	Environ. burden of disease (25%)	Environmental burden of disease
		Water (effects on humans) (12.5%)	Adequate to sanitation (6.25%)
			Drinking water (6.25%)
		Air pollution (effects on human) (12.5%)	Indoor air pollution (5%)
			Urban particulates (5%)
			Local ozone (2.5%)
	Air pollution (effects on ecosystems) (2.5%)	Regional ozone (1.25%)	
		Sulfure dioxide emissions (1.25%)	
	Ecosvstem	Water (effects on ecosystems) (7.5%)	Water quality index (3.75%)
			Water stress (3.75%)

**DOE present portfolio only contribute 13.75% max in EPI**

EPI	Productive natural resources (7.5%)	Fisheries (2.5%)	Marine Trophic Index
			Trawling Intensity
		Agriculture (2.5%)	Irrigation stress
			Agricultural subsidies
			Intensive cropland
			Burnt land area
	Climate change (25%)		Pesticide regulation
			Emissions / capita
			Emissions/electricity generated
			Industrial carbon intensity



Rank	Country	EPI
1	Switzerland	95.5
2	Sweden	93.1
3	Norway	93.1
4	Finland	91.4
5	Costa Rica	90.5
6	Austria	89.4
7	New Zealand	88.9
8	Latvia	88.8
9	Colombia	88.3
10	France	87.8

Rank	Country	EPI
11	Iceland	87.6
12	Canada	86.6
13	Germany	86.3
14	United Kingdom	86.3
15	Slovenia	86.3
16	Lithuania	86.2
17	Slovakia	86.0
18	Portugal	85.8
19	Estonia	85.2
20	Croatia	84.4



Rank	Country	EPI
21	Japan	84.5
22	Ecuador	84.4
23	Hungary	84.2
24	Italy	84.2
25	Denmark	84.0
26	Malaysia	84.0
27	Albania	84.0
28	Russia	83.9
29	Chile	83.4
30	Spain	83.1

Rank	Country	EPI
39	USA	81.0
46	Australia	79.8
49	Israel	79.6
53	Thailand	79.2
55	Netherlands	78.7
72	Turkey	75.9
78	Saudi Arabia	72.8
102	Indonesia	66.2
105	China	65.1
149	Niger	39.1



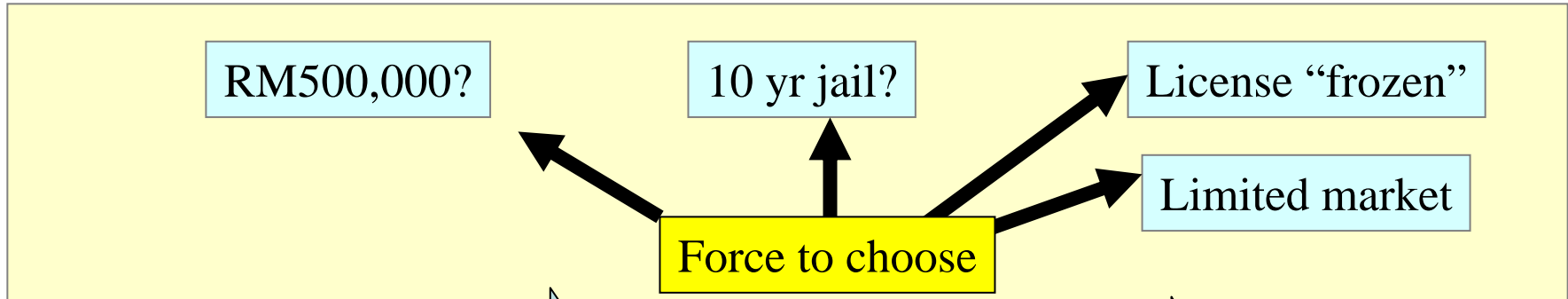
- Developed and developing nations have equal changes
- Integrated perspective of environmental management
- Disadvantages for countries with
  - Water stress
  - Agricultural emphasis
  - Instable politically
- Advantages for countries with
  - Tropical climates
  - Emphasis on eco-tourism
  - Nuclear-based power generation
  - Low-density population
  - Low carbon economy

# EPI for Malaysia

Rank	Environmental Health		Ecosystem vitality	
26	96.7		71.2	
	Indicators	Score	Indicators	Score
	Sanitation	93	Regional ozone	95.1
	Drinking water	98.3	Sulfur dioxide emissions	95.9
	Urban particulate	92.5	Water quality	69.6
	Indoor air pollution	94.7	Water stress	99.2
	Health ozone	96.7	Conservation risk	99.4
			Effective conservation	97.3
			Critical habitat	66.7
			Marine protected areas	32.7
			Irrigation stress	100
			Growing stock	97.9
			Agricultural subsidy 96.0%	96.0
			Marine trophic index	100
			Trawling intensity	60.5
			Intensive crop land	97.1
			Burn land area	99.9
			Pesticide regulation	90.9
			Carbon emission per capita	73.7
			Carbon emission	54.4
			Industrial CO2 emission	83.6

# Drivers to sustainable industry

## Reactive Model

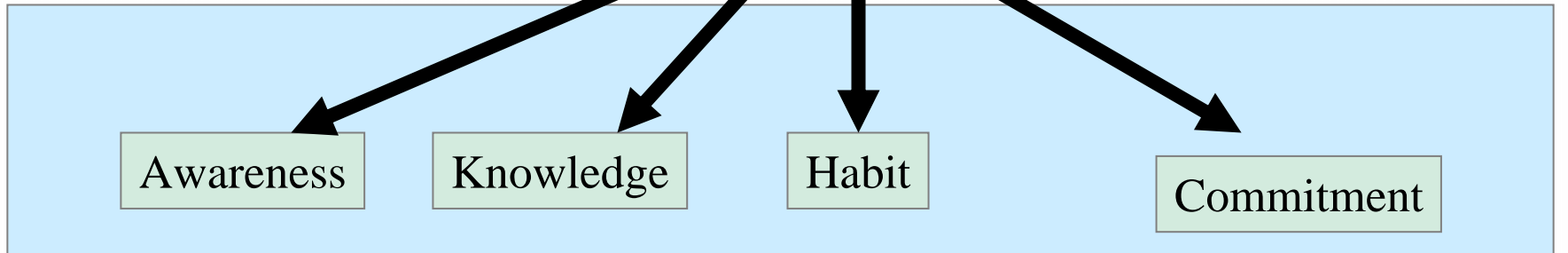


**STIMULUS**

Response

**ACTION**

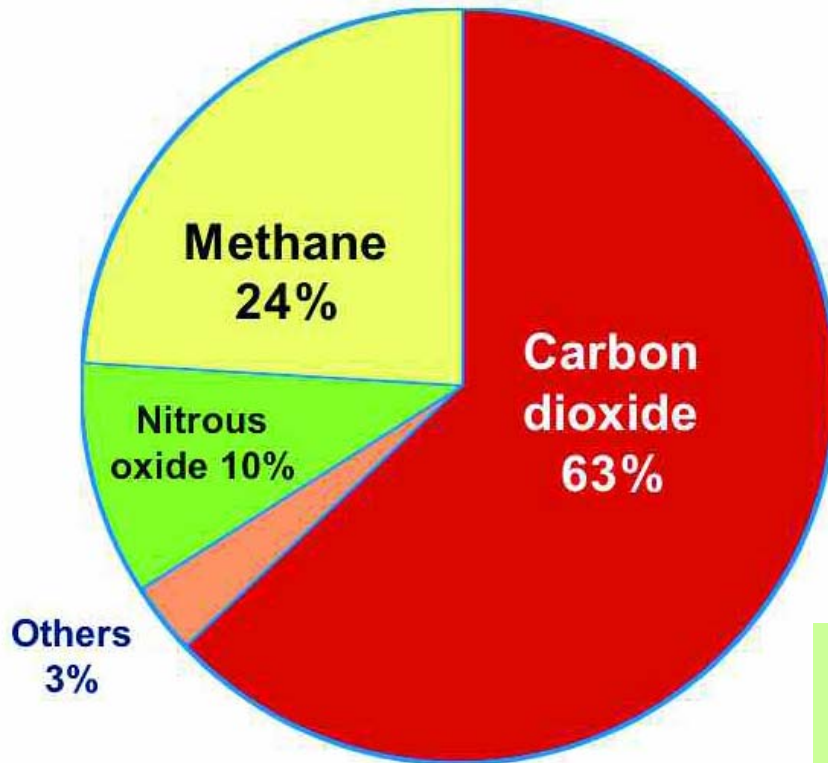
**Freedom to choose**



## Proactive Model

# Greenhouse gases

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- Power generation
- Transportation
- Agriculture
- Industrial processes
- Timber industry
- etc

Conclusion

**NEUTRAL CARBON ECONOMY**



<b>Sweden</b>	Petroleum-independency country in 2020
<b>Germany</b>	Clean technology
<b>Denmark</b>	Wind energy
<b>Norway</b>	Ecological sanitation
<b>California, USA</b>	Green car
<b>Japan</b>	Green products
<b>Singapore</b>	No need water from Malaysia!



Countries	Ecological footprint
GLOBAL	1.9 (gha per capita)
Australia	6.6
United Kingdom	5.6
Jerman	4.5
Jepun	4.4
Malaysia	2.2
China	1.6
India	0.8
Global Footprint Network 2006	



## Target water pollutants, and issues / drivers

Era	Pollutants	Issues / drivers
1800s	Pathogenic bacteria	Public health
1900s	Organic matters (BOD, COD)	Public health
1950s	Heavy metals, biodegradable substances	Public health
1970s	Eutrophication (nutrients P, N etc)	Environmental health
1980s	Trace substances, carcinogens, flavor, taste	Environmental risk
1990s	CO <sub>2</sub> , NH <sub>4</sub> , N <sub>2</sub> O, CFCs, NO <sub>x</sub> , SO <sub>x</sub>	Global warming
2000s	Endocrine disruptors (EDCs), eco-hazard	<b>Public health</b>
2010s	Carbon neutral	<b>Global warming</b>