

Energy Indicators in Strategic Energy Planning

What can we learn from
Energy Impact Assessment?

EXPERIENCE EXCHANGE WORKSHOP

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Timon Wehnert

Institut für Zukunftsstudien und Technologiebewertung, Berlin
Institute for Futures Studies and Technology Assessment, Berlin

IZT – Institut für Zukunftsstudien und Technologiebewertung, Berlin

Institute for Futures Studies and Technology Assessment



- **Independent, non-profit research institute, founded in 1981.**
- **Research and consulting on technology foresight and sustainability.**

Outline

Motivation

Why make things more complicated?

Issues for Strategic Energy Planning

South African and German Perspectives

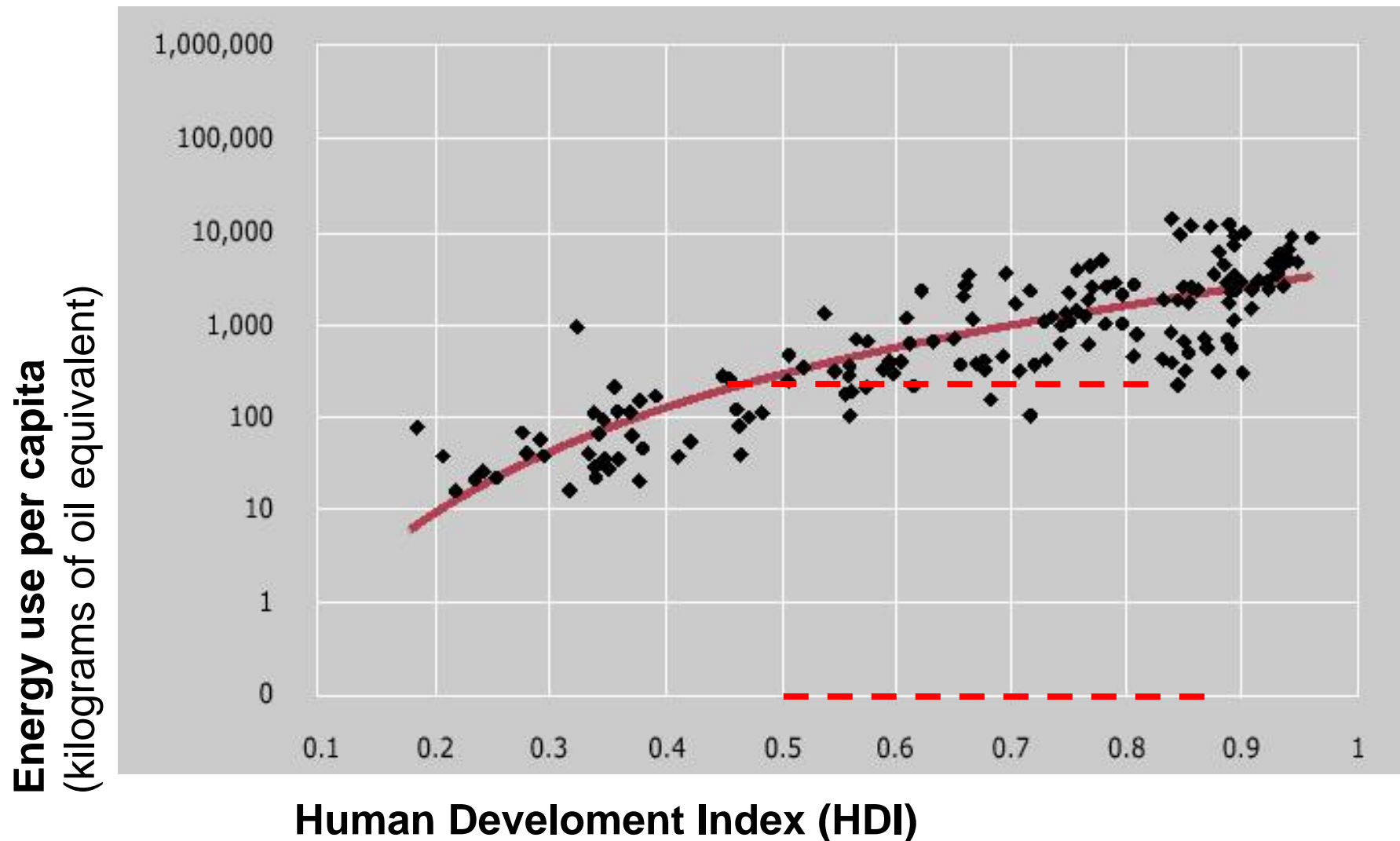
Sets of Indicators

Globally established ones and new ideas

New Indicators

What should be integrated into ALEP?

Effects of Energy Use?



Source: United Nations Programm, Human Development Report 2001; Quoted according to "The World Bank Group's Energy Program" 2001

Which Priorities?

Excessive attention to just connections has, perhaps, led analysts and policy makers to pay too much attention to stringing wires and not enough to the role of electricity in the household and local economy where the poorest people live.

David G. Victor

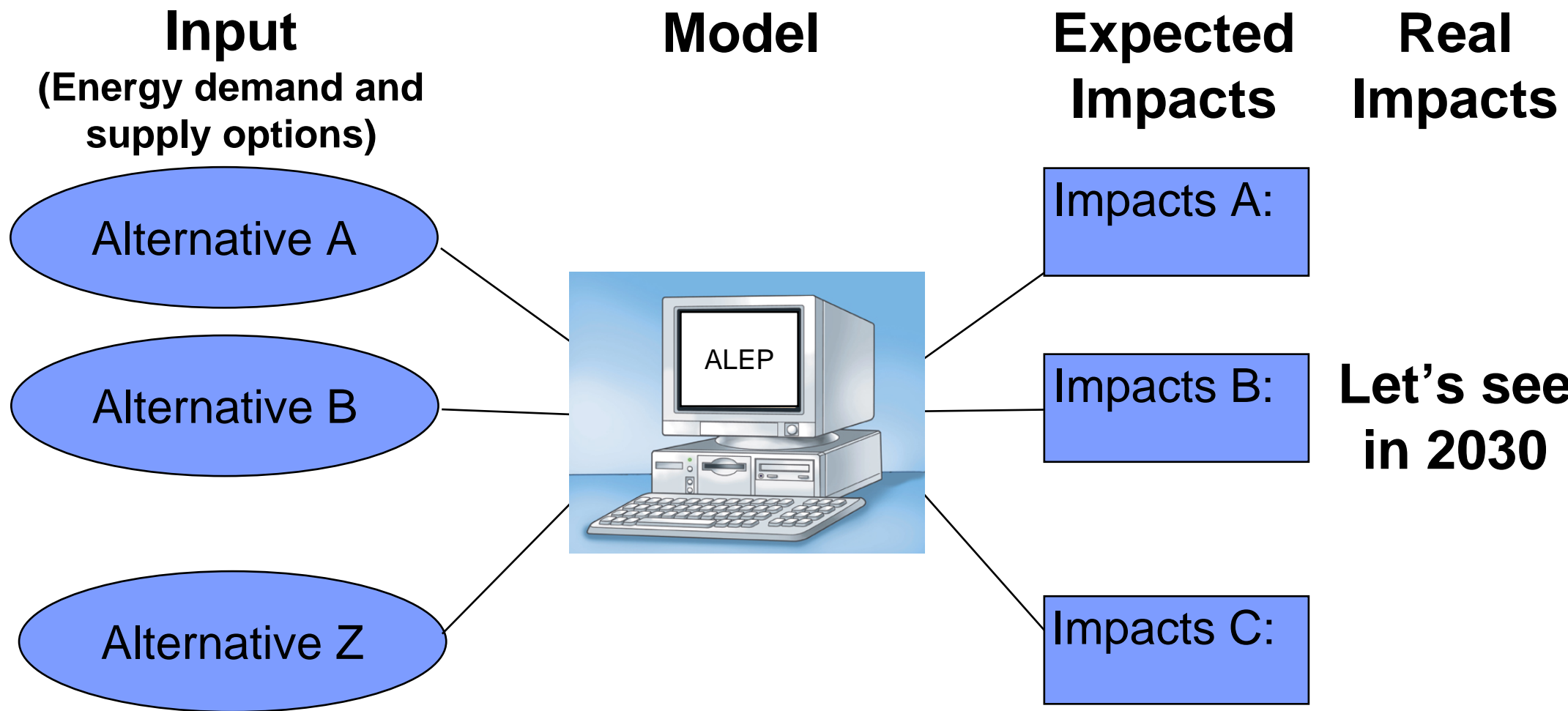
Quoted from:
The Effects of Power Sector Reform on Energy Services for the Poor
United Nations, 2005

The Overall Goal

Energy planning for sustainable development

If energy planning meets only energy related goals
then we will have extra work meeting all other goals.

Energy Planning





Characteristics of the Model

Input

Estimates on:

- Population
- Energy demand patterns
- Prices of energy sources

Choices:

- Supply structure
(e.g. rate of electrification)

Estimated Impacts

Established outputs:

- Costs
- Pollutants

What else would we like to know?

Is planning the solution?

**Can we hope to implement
what we planned?**

**How can energy planning help
to achieve goals in other areas?**

Experiences from Germany

Technology Images

- Renewables have a positive image
- and may serve to promote other energy related issues (e.g. energy saving)

⇒ **Indicator: Share of renewable energy sources**

South Africa:

- Other technology images (modern living?)

Experiences from Germany 2

Electricity Generation by City Utilities

- Own generation sites give city utilities new options
- Small scale power plants are attractive for local production
- Renewable energy technologies as strategic element

⇒ **Indicator: Share of decentralised generation**

South Africa:

- Strengthen city utilities
- Increase private sector participation
- Framework conditions for black empowerment



Sustainable Energy Planning

Possible further issues to be addressed for the Gauteng region

- Poverty alleviation & equity
- Health / indoor pollution
- Black empowerment
- Income generation & regional job creation
- System reliability
(e.g. failure risks of new technologies)
- ???

Sectors to be addressed: Households, public buildings, industry, transportation?

Possible Indicators for the Gauteng Region

Equity	
Accessibility	Share of households without commercial energy
Affordability	Energy expenditures by income quintile (share of disposable income)
Disparities	Energy mix by income quintile

Taken from:
Energy Indicators for Sustainable Development: Guidelines and Methodologies, IAEA (and others) 2005)

Possible Indicators for the Gauteng Region

Health	
Health Risk	Health risk per kwh used (according to energy mix for each income quintile)
Indoor Pollution (alternative)	Share of households using “risky” energy sources
Hazardous Energy Sources (alternative)	No. of people killed per year due to energy use

Rebound Effects

Technological developments sometimes lead to rebound effects concerning the overall environmental performance:

E.g.: Congestion in traffic is responsible for higher energy consumption. New and wider roads should reduce congestion. However, the attraction of additional traffic overcompensate the effects in energy efficient driving and lead to higher all over energy consumption.

- ⇒ How are / could rebound effects be treated in energy modelling?
- ⇒ Which modifications are necessary, when adapting interational / European models to regional South-African applications?

Workplan for Enerkey

**Which other indicators
could be appropriate for the Gauteng Region?**

New Indicators in ALEP Model

Checklist:

- Suitable for an energy model?
 - Quantifiable?
 - Known cause – effect relations?
 - How easy to measure?
Data available?
- ⇒ How else to be treated in strategic energy planning?



Types of Indicators

	Available indicator	Needed indicator
Strategic planning	Costs per energy unit	???
Monitoring (continuous)	Energy costs per income quintile ???	Gender impact of new energy technologies

Types of Indicators

Different indicators could be used differently in energy planning and monitoring processes

	Available indicator	Needed indicator
Strategic planning	ALEP Modelling	Qualitative e.g. stakeholder process
Monitoring (continuous)	Regional statistics	Qualitative e.g. consumer survey

Conclusion

**Most important:
Poverty alleviation**

Priority setting process

Decisions to be taken:



- Define targets
- Select feasible indicators
- Choose Inside the model or parallel process

Thank you!

Timon Wehnert

Institut für Zukunftsstudien und Technologiebewertung
Institute for Futures Studies and Technology Assessment

Schopenhauerstr. 26 / 14129 Berlin / Germany

 +49-30-803088 13,  +49-30-803088 88

t.wehnert@izt.de, www.izt.de