

Methodological Framework: Using the Experience From Past and Present URC Work

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Structure

- Aim of having a methodological framework.
- The URC history of frameworks.
- Common elements in methodological frameworks.
- Analytical structures.
- Issues addressed in the Development, energy and climate project:
 - Development paradigms, well being concepts.
 - National development goals and sustainable development.
 - Indicators and measurement standards.
 - Overview of results, tradeoffs and synergies.
 - Output format.
 - Interactions with policy makers.
- Conclusions.



Short URC History of Methodological Frameworks

- **UNEP Abatement Costing Studies (energy sector), 1990 to 1993.**
- **Economics of GHG Limitations (multiple sectors), 1994 to 1997.**
- **Indirect costs of GHG Limitations (employment, income distribution, local air pollution), 1997-1998.**
- **GHG emission reductions and Sustainable Development Impacts, International book, 2002.**
- **Development and Climate Change Project, 2002 and ongoing.**
- **Development and Climate Change, International book, forthcoming in 2006.**

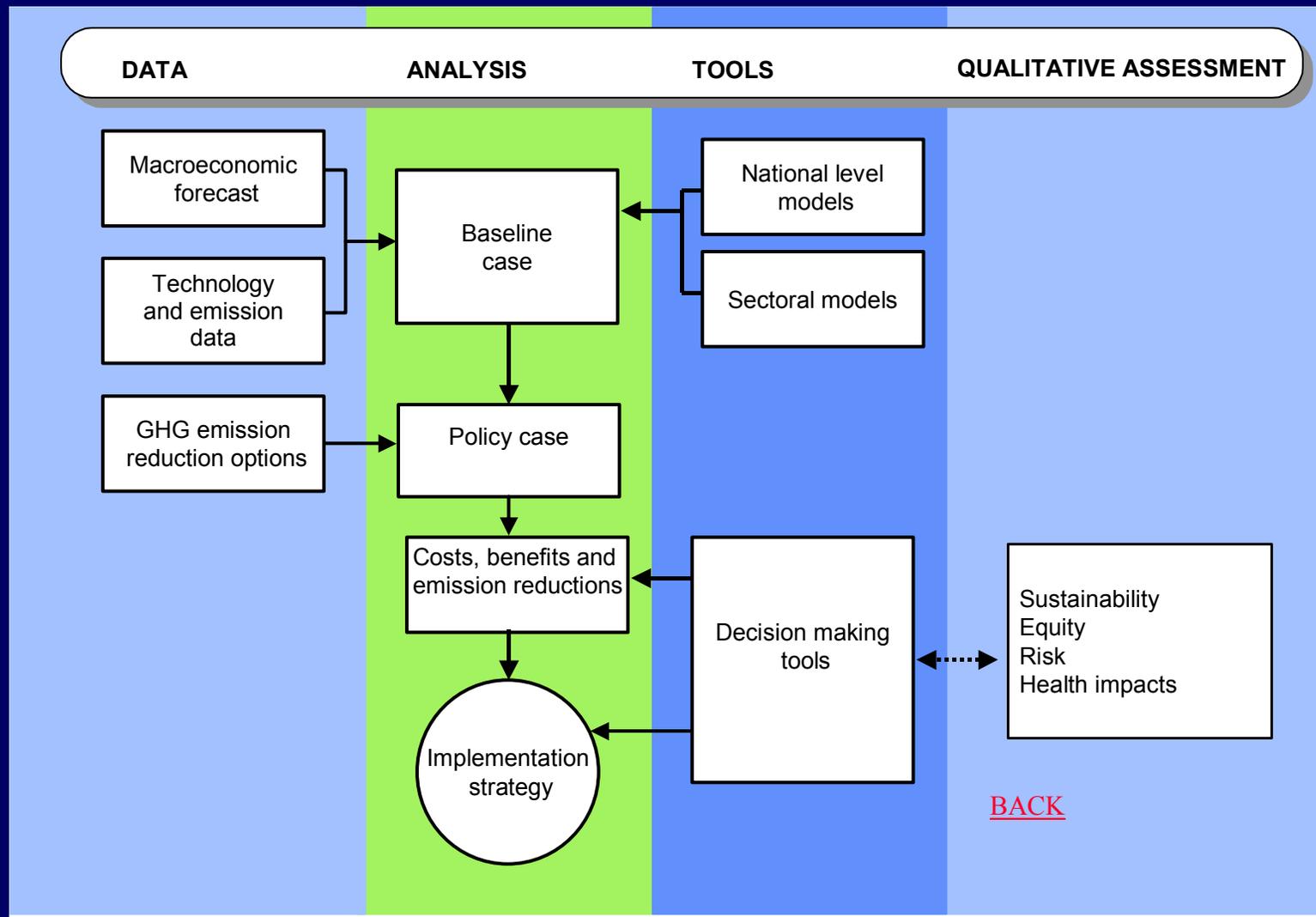


Aim of Having a Methodological Framework

- 1. To establish a consistent common reference point for assessments.**
- 2. To define concepts, assumptions and structures.**
- 3. Background for providing results that can be discussed and compared across countries.**
- 4. Serves as a cookbook on how to do it.**

Common Issues that are Addressed in Methodological Frameworks

- **What would we like to assess (costs, well-being dimensions, energy access etc).**
- **Analytical structure: Interplay between assumptions, data, models, and analytical concepts.**
- **Analytical tools:**
 - **Models.**
 - **Decision analysis approaches: CBA, cost effectiveness, multicriteria.**
- **Major assumptions:**
 - **Economic structure.**
 - **Population.**
 - **Energy efficiency, technologies, fuels etc..**
 - **Household income.**
- **Output format: e.g. cost curve.**



Output Format – Development and Climate

	<i>Development Impacts</i>	<i>Climate Change Mitigation/Adaptation Potential and Related Costs</i>
<p>South Africa</p> <p>DSM programme on tariff induced load shifting</p> <p>Clean energy generation mix: Gas, hydro, nuclear, renewables,</p> <p>Industrial energy efficiency in three major companies.</p>	<p>Cost savings from reduced capacity needs.</p> <p>Energy security benefits, local environmental improvements</p> <p>Energy cost savings, local environmental improvements</p>	<p>DSM Eskom programme on tariff-induced load shifting.</p> <p>Annual CO₂ savings in 2025: 70 mtCO₂</p> <p>Annual CO₂ savings of about 0.07 mill t CO₂</p>
<p>Brazil</p> <p>Ethanol: 22% blend with gasoline in cars, sugarcane</p> <p>Zero tillage to ensure higher content of organics matters in soil</p> <p>Procel energy savings programme</p>	<p>Employment, foreign exchange savings, local air pollution</p> <p>Increased use of herbicides, energy cost savings</p> <p>Procel investments R\$ mill. 33.5 1986-94 Avoided investments 1986-94: R\$mill. 600 and fuel saving benefits</p>	<p>9.45 mill T C saved from 1990-91 (17% of energy sector emissions). Profitable at oil price of \$30</p> <p>60-90 mill. t. CO₂ not released in 1999, 70% reduction in diesel consumption.</p> <p>CO₂ reduction 5.4 mill t CO₂, or 16 % of baseline in 2000</p>

Output Format - Biogas versus Wind

	Non-policy state	State with biogas project	State with windturbine project	Impact biogas project	Impact windturbine project
Cost	x_{10}	BX_1	TX_1	$(BX_1 - x_{10})$	$(TX_1 - x_{10})$
Energy Consumption	x_{20}	BX_2	TX_2	$(BX_2 - x_{20})$	$(TX_2 - x_{20})$
Local environment	x_{30}	BX_3	TX_3	$(BX_3 - x_{30})$	$(TX_3 - x_{30})$
Employment	x_{40}	BX_4	TX_4	$(BX_4 - x_{40})$	$(TX_4 - x_{40})$
GHG emissions	x_{50}	BX_5	TX_5	$(BX_5 - x_{50})$	$(TX_5 - x_{50})$



Development and Climate Project

- **Partnership with centres of excellence in Bangladesh, Brazil, China, India, Senegal, South Africa, Holland, and the UK (with links to Canada, Germany, France, South Korea, and the US)**
- **The aim is to assess climate change in the context of SD.**
- **First phase focused on energy-, food-, and water access and the implications for climate change adaptation and mitigation.**
- **Second phase focuses on the energy sector and will include:**
 - **Detailed national case studies providing quantitative and qualitative information.**
 - **Thematic work.**

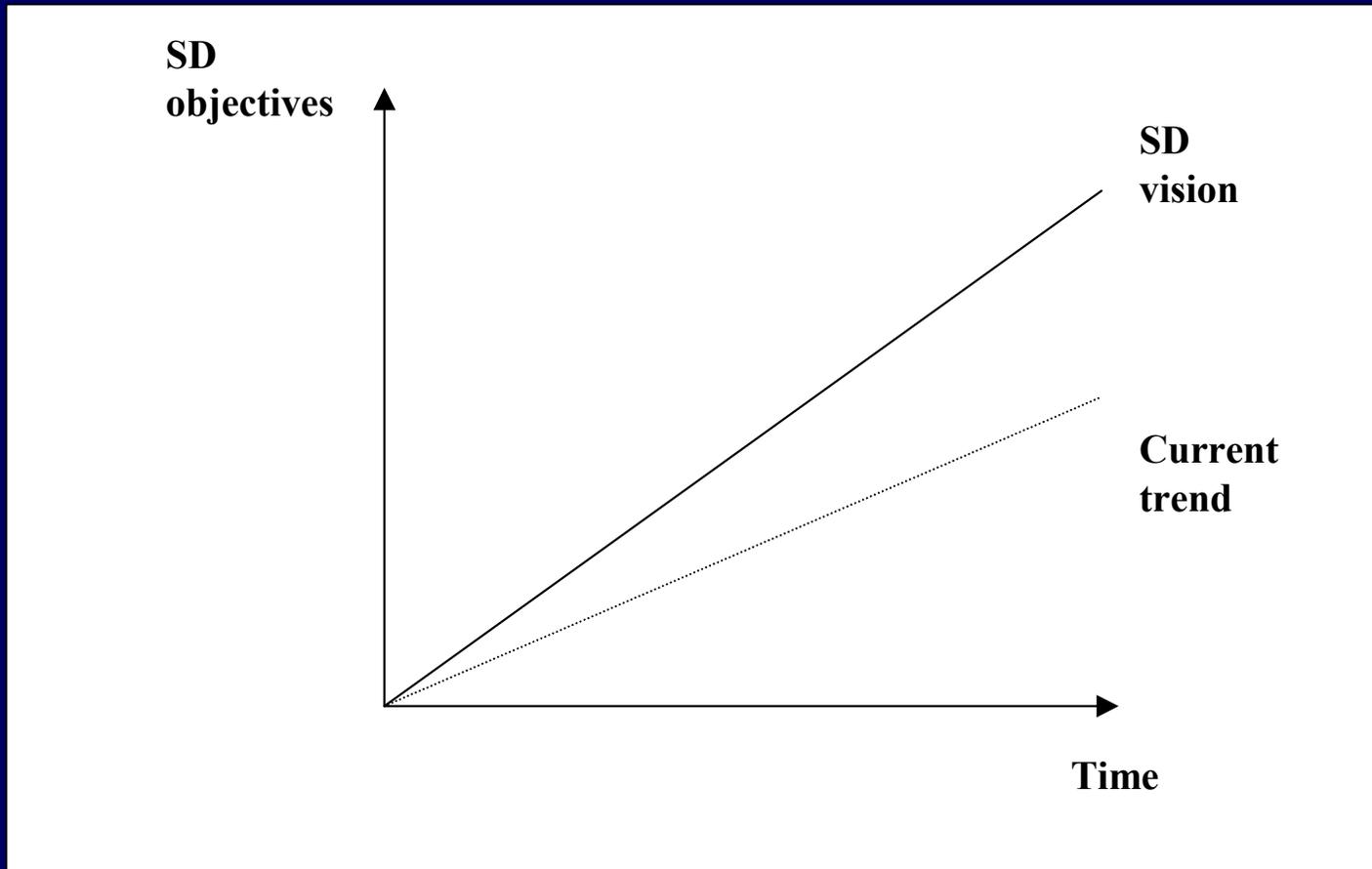
Case Study Work

- **Assessment of energy policies with regard to implications for MDG's and climate change.**
- **Focal areas for indicators:**
 - **Poverty alleviation**
 - **Business sector development**
 - **Employment generation**
 - **Energy access and affordability**
 - **Local and global environmental impacts**
 - **National climate change adaptation and mitigation**
 - **Human resources including education and health impacts**
 - **Institutional networks and capacity building**
- **There is a long way from traditional energy modelling output to these social and environmental aspects.**

Human Well-Being and Basic Needs

- **Human well-being and basic needs (Sen, Dasgupta, and others). Focus on the extent to which individuals can enjoy the *freedom to achieve their ends*.:
 - **Income is a measure of economic growth, but supplemented with basic needs.**
 - **The access to income and basic needs is seen as a fundamental basis for humans' well-being. Basic needs i.e. include education, food, energy, and health.**
 - **Individuals' access to resources – sustainable development?**
 - **Policies: equity, resources, human capital, poverty reduction.****

National Development Goals and SD



	Themes	Sector and Project Level Indicators
Energy supply and consumption	Supply and demand including structure, efficiency, and costs	Energy balance Efficiency of conversion and end use Profit Costs Employment
Environmental impacts	Climate change Air pollution	Climate change vulnerability GHG emissions Air pollution
Accessibility	Supply to business and households Transmission Other infrastructure Markets	Energy balance Transmission systems Supply structure, coverage, efficiency including income segment structure and gender issues. Traditional fuels
Affordability	Costs Investments Income distribution	Cost measures Capital requirements and costs Energy expenditures relative to total production costs Energy expenditures relative to household expenditures for different income segments
Health	Life expectancy Nutrition Energy for health services	Life expectancy Infant mortality Indoor air quality Nutrition Energy supply
Education	Literacy rates Enrolment	Literacy rates Primary and secondary education (time, persons) Provision of light for reading Time for energy provision that substitutes education Skilled labour educated through energy production



How to Measure the Indicators

- **Quantitative data.**
- **Economic/monetary units combined with physical measures.**
- **Narrow it down to a few focal indicators:**
 - **Financial cost.**
 - **Employment.**
 - **Income distribution.**
 - **Energy provision.**
 - **Local air pollution.**
 - **Health impacts.**
 - **Energy provision**
- **Multicriteria analysis combined with some cost effectiveness analysis.**



Defining the Role of Policymakers and Experts

UNEP
RISØ
CENTRE

ENERGY, CLIMATE
AND SUSTAINABLE
DEVELOPMENT

Steps with Policymaker Participation

- Selection of policy priorities that are expected to be relevant to the case e.g. based on NDP's, sectoral plans, or stakeholder sessions.
- Considerations on the relative value or priority of different policy impacts.
- Initial project/policy screening.
- Final discussions and conclusions based on output from the technical assessment

Steps Conducted by Experts

- Definition of indicators that reflect policy priorities introduced in the policy evaluation step, including measurement standards and aggregation rules.
- General rules and procedures that can be used for an integrated assessment of various indicators. Approach for handling of tradeoffs.
- Generation of additional information about social impacts, e.g. related to institutions, governance, and participation.
- Preparation of technical output that can be supplied to policy makers.



Conclusions and Discussion Points

- **Methodological framework supports analytical consistency and establishes a background for common project outputs.**
- **The jacket should be tight enough to enforce comparability, but should not suppress the representation of national specificities.**
- **Successful development and application requires participation of all project teams and testing in national studies.**
- **There is a good learning process in joint case studies and methodological work.**