

Baseline Indicators to Support Decision Making in Sanitation

Case Study: Integrated Water Resources Management Project in Rural Karst Area of Gunung Kidul, Java, Indonesia

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(IFG, 2004)

Introduction

- Background - IWRM project, Indonesia
- Sanitation in karst regions

Methodology

- Indicator selection based on the Integrative Sustainability Concept of Helmholtz-Association

Results

- Baseline indicators for assessment of sanitation technologies and current conditions

Conclusion and recommendation

Introduction – Background IWRM, Gunung Kidul, Java Indonesia



Source: IWG, 2004

Gunung Kidul:

- Population: 686,772
- Total area: 1,485,000 km²
- **Gunung Sewu** (south-eastern region) consists predominantly of karstic structure → suffers periodically from **water scarcity**



- 2000: „Exploitation and management of underground water resources“ → water from underground caves is pumped and distributed to the people

- Within the IWRM-project (since 2008) besides water supply additional focus is laid water treatment,- distribution and sanitation



Source: IWG, 2004



Sinkhole

Karst aquifers: highly vulnerable to the contamination from human activities

Current state:

- Sanitation is less prioritized
- Minimum involvement of the authority



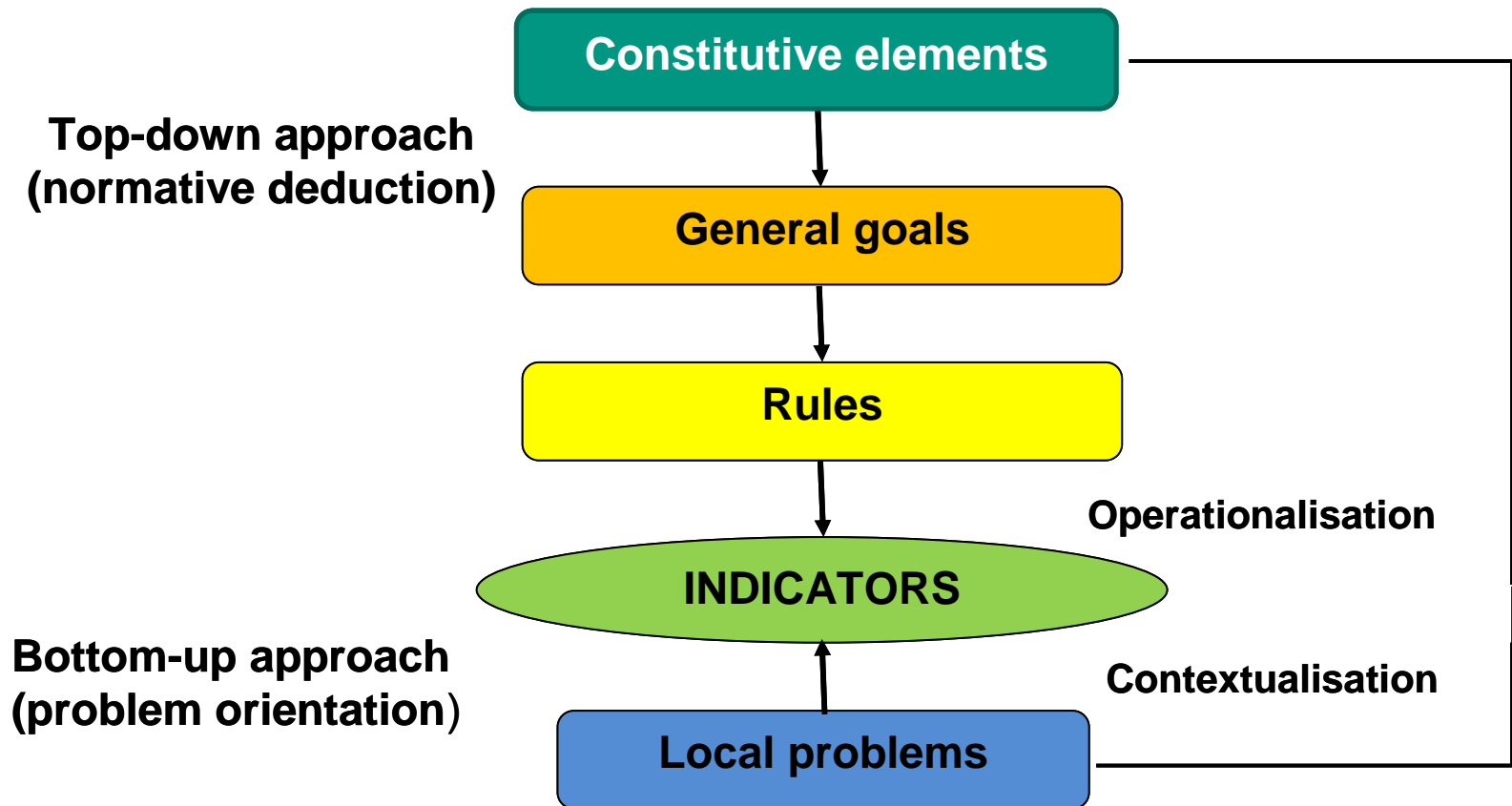
With regard to a sustainable development in Gunung Kidul a comprehensive solution for sanitation is needed



Target: Development of a **set of indicators** to provide information on **baseline** sanitation related condition of a region, in order to **support decision making** process in sanitation sector

Methodology - Indicator selection based on the Integrative Sustainability Concept

(introduced by the Helmholtz Association of German Research Centres)



(Source: Kopfmüller, 2001, in Bräutigam and Gonzales, 2006)

Methodology - Integrative Sustainability Concept: Goals & Rules

<i>Goals/rules</i>	<i>1. Securing human existence</i>	<i>2. Maintaining society's productive potential</i>	<i>3. Preserving society's options for development and action</i>
	1.1 Protection of human health	2.1 Sustainable use of renewable resources	3.1 Equal access for all people to information, education, occupation
	1.2 Ensuring satisfaction of basic needs	2.2 Sustainable use of non-renewable resources	3.2 Participation in social decision-making processes
	1.3 Autonomous subsistence based on own income	2.3 Sustainable use of the environment as a sink	3.3 Conservation of the cultural heritage and diversity
	1.4 Just distribution of chances for using natural resources	2.4 Avoiding technical risks with potentially catastrophic impacts	3.4 Conservation of the cultural function of nature
	1.5 Reduction of extreme income and wealth inequalities	2.5 Sustainable development of man-made, human and knowledge capital	3.5 Conservation of social resources (tolerance, solidarity, etc.)

Source: Kopfmüller et al. (2001, p.172).

Methodology - Indicator selection for sanitation

Indicators were developed based on the Integrative Sustainability Concept of the Helmholtz Association



This set of indicators was discussed with several government institutions and stakeholders in the region



The indicator set is proposed with respect to **two purposes**:

- 1) the main indicators describe “**ideal**” **baseline indicators** for sustainability related analyses,
- 2) the **modified indicators** are designed mainly considering the poor availability and quality of data

Goal (1): Securing human existence
Rule (1.1): Protection of human health

Indicators	Rationale	Baseline	Data source	Remarks
1.1.2 Percentage of population suffering from water related diseases	Improved sanitation is closely connected with better health (e.g. less cases of water related diseases)	-	-	Modification of indicator needed to be more contextual with the region
1.1.2a Percentage of population suffering from diarrhea (water borne disease)	A significant water related disease in the region Gunung Kidul is diarrhea	1.24% (percentage of reported cases related to total number of population)	Department of Health Gunung Kidul (2009)	No target for reduction is set (priority fund and action for another diseases, e.g. as upper respiratory infection (~10%))

Goal (2): Maintaining society's productive potential
 Rule (2.3) Sustainable use of the environment as a sink

Indicators	Rationale	Baseline	Data source	Remarks
2.3.1 Percentage of wastewater treated before discharged to the nature	Treated wastewater reduces the burden of environment.	-	-	No reliable data for this indicator are available for Gunung Kidul, but it can be assumed that only <20 % of the waste water is pre-treated)
2.3.1a Percentage of households connected to functioning decentralized wastewater treatment plant	Decentralized WWTP constructed and operated by different stakeholders discharge treated effluent	0.35%	Dept. Of Public Work, Gunung Kidul (2011)	<ul style="list-style-type: none"> • The OM of decentralized WWTP relatively succeeded • Effluent is controllable (compared to the „septic tanks“ used by 63.3% of the population) • Dept.'s target: increase of coverage by 0.02%/ yr

3. Preserving society 's options for development and actions
3.2 Conservation of social resouces (tolerance, solidarity, etc.)

Indicators	Rationale	Baseline	Data source	Remarks
3.2.1 Proportion of population supplied by water supply systems managed by community served	This indicator is to assess whether community plays a significant role in water supply sector	9.3%	Statistic Bureau Gunung Kidul (2008)	<ul style="list-style-type: none"> • 68% of population is connected to state owned pipeline, but reliability in rural area is low • Higher degree of satisfaction in communal system's users in rural area • Communities, which are interested to develop a communal system can apply for fund

Conclusions – Challenges and difficulties for selecting appropriate indicators for Gunung Kidul

- **Overlaps and uncovered tasks** among institutions
→ **difficulty in justifying the stakeholders** in charge for discussing the indicators
- Several problems identified at community level **not always recognized by the institutions** in charge → institutions **not even consider** these issues to be monitored with indicators
- For **problems recognized**, the institutions (often) **do not set any target values** for the improvement, mostly due to financial restriction
- **Data availability and reliability** in the region
→ **lack of data** and very **difficult to justify their reliability**

These indicators **provide baseline data on the sanitation system** (institution, technologies, current mainstream) to support decision making.

BUT: Challenge (unsolved question): several indicators **do not have target values**, since related institutions have neither future concept nor funds



difficult to analyze and track the way towards a sustainable development in the region



Further approach should be developed to set realistic target values especially for research purpose

THANK YOU VERY MUCH

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