



Risk mitigation study on rural electrification businesses

An industry analysis with support by the Alliance for Rural Electrification (ARE) and the Deutsche Gesellschaft für internationale Zusammenarbeit GmbH (GIZ)

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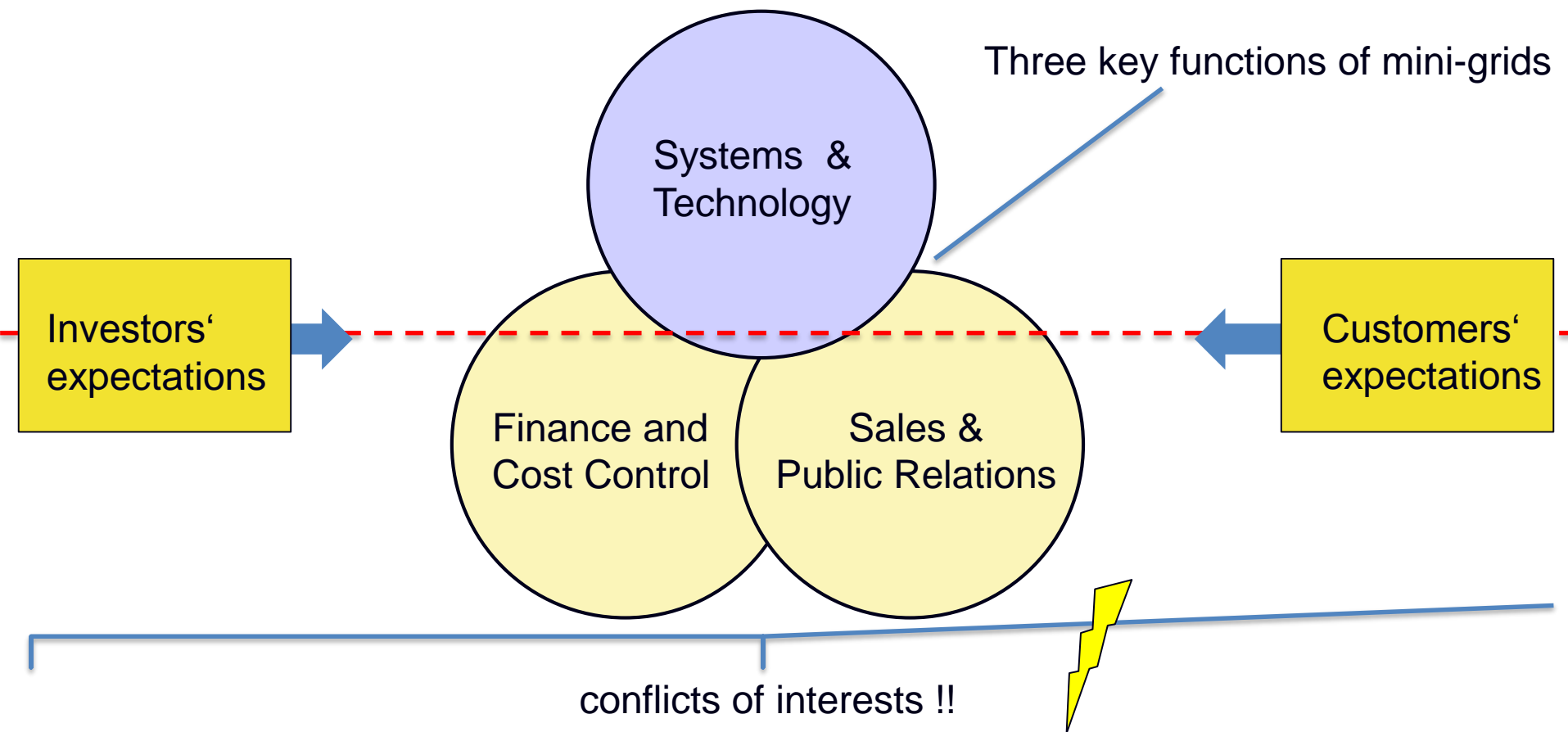
Content of this presentation

- 1. Background of the study**
- 2. Risk assessment**
- 3. Key recommendations**
- 4. Comments on “ElectriFI”**

The objectives of the study

- **Industry self-analysis:**
 - major business risks
 - status of risk management
 - derived recommendations
- **Target groups:**
 - project developers and mini-grid operators
 - newcomers entering the business
 - bankers and financial institutions

Focus: Electrification by mini-grids

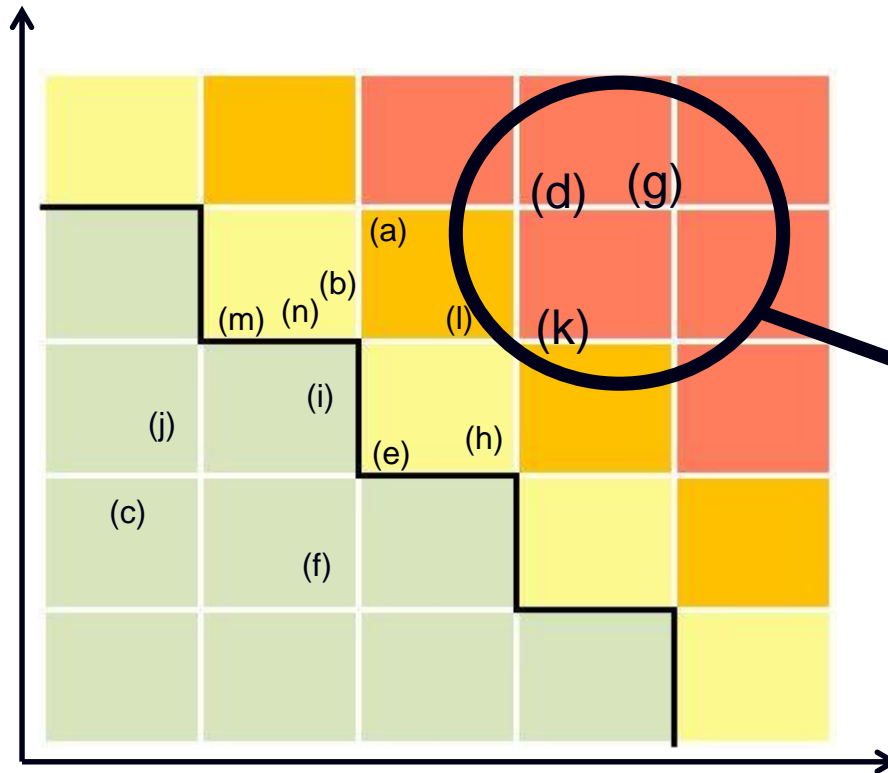


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Assessment of major risks

Loss potential



(g) Political risk
(d) Payment risk
(k) Risk of resource price variability

Source: standardized interviews
with member companies of ARE

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3. Key recommendations

- Need for holistic business models
- Need for aligned financial tools and instruments
- Need for a standardized risk management procedure

4. Comments on “ElectriFI”

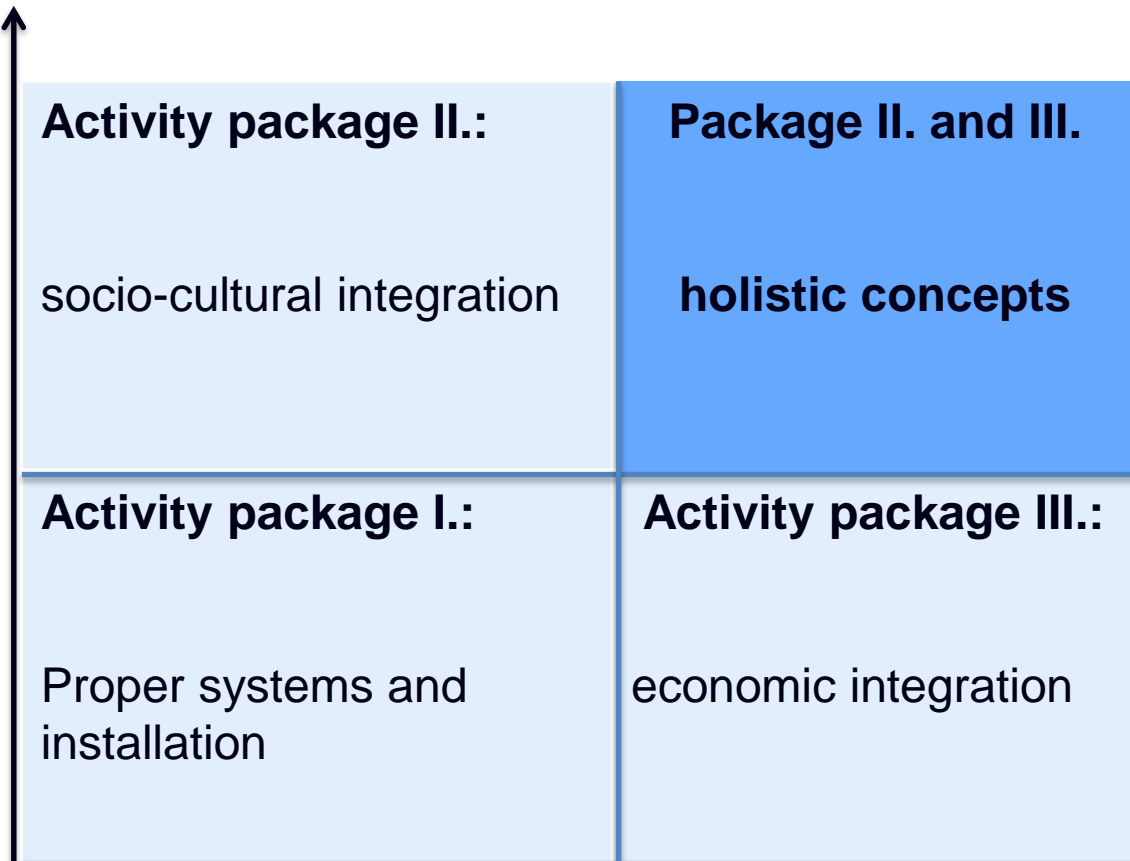
5. Summary

Major operational risks of HMGs

socio-culturally related risk	economically-related risks
– low staff qualification	– low ability and willingness to pay
– lack of staff responsibility	– tariffs not cost-covering
– conflicts ESCO with villagers or other stakeholders	– bad capacity usage during day-time
	– low financial reserves

The long way towards holistic concepts

*mitigation of
socio-cultural
risks*



*mitigation of
economical risks*

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1. Background of the study


2. Risk assessment

3. Major issues of risk mitigation

- Need for holistic business models
- **Need for a standardized risk management procedure**
- Need for aligned financial tools and instruments

4. Comments on “ElectriFI”

Risk management concepts and tools in use:

Tools in use [%]	often				rarely
					
Risk Audits	-	-	-	25	75
Risk Maps	14	14	25	-	58
Cash-Flow at Risk	25	13	25	-	38

Reasons & Consequences ??

Source: interviewed ARE member companies

Towards an industry-specific Risk Management Procedure

Benefits of a standardized procedure:

- working guidelines, checklists etc. for practitioners
- a common “language“ between practitioners and finance institutions
- improved transparency for finance institutions

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Complained financial difficulties with “ticket size”

Debt bottleneck:

Subject matter: smaller projects (e.g. €200K – €500K)

>> Needed debt too small to become accepted by DFI etc.

Equity bottleneck:

Subject matter: larger projects (e.g. > €1 million)

>> Needed equity too high to be found within the private sector

Source: Feedback out of interviews

Derived suggestions

(1) A kind of “Roundtable Initiative“

➡ to develop ideas for a framework how to align financial instruments

(2) Workshop discussion with EU/EC

➡ ElectriFI support for local banks in the target countries

e.g. by partial bank guarantees

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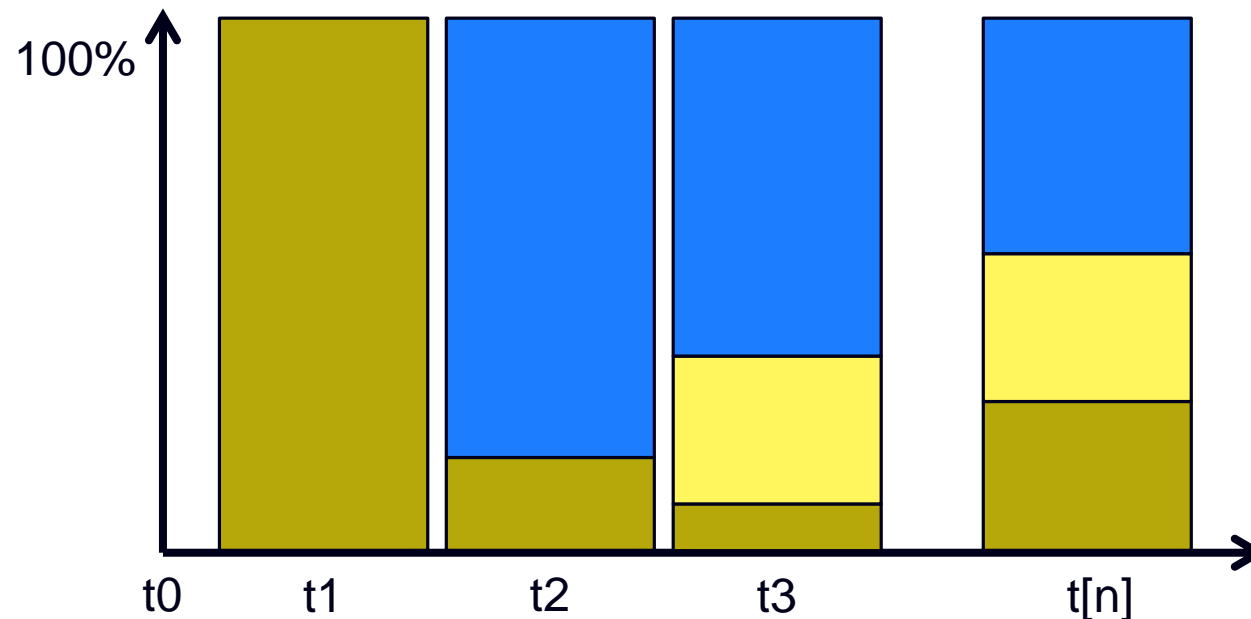
3 Key recommendations

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4. Comments on “ElectriFI”

Proportion of required capital categories

amounts
of disbursement



Legend:

- t0: Project start
- t1: Early stage project development
- t2: Asset installation
- t3: Operation phase
- t[n]: Up-scaling phase

Mezzanine
Risk-Instruments
Grant

Convertible grants as equity surrogate

➤ **Related considerations:**

- equity is required for large-sized projects
- debt is required for small-sized projects
- SME instruments are needed for these smaller projects
- danger: convertible grants tend to displace equity

Convertible grants as equity surrogate

➤ Recommendation for smaller projects:

To support local banks by providing credit guarantee facilities

➤ Advantages of local banks:

- ✓ regional vicinity
- ✓ reduced transaction costs
- ✓ possibility to provide smaller debt volumes

Back-up

Overview on results

The positive part of the message:

available

- a promising potential for future rural electrification markets
- reliable technical solutions for decentralized electrification
- enormous project experience within many companies and institutions

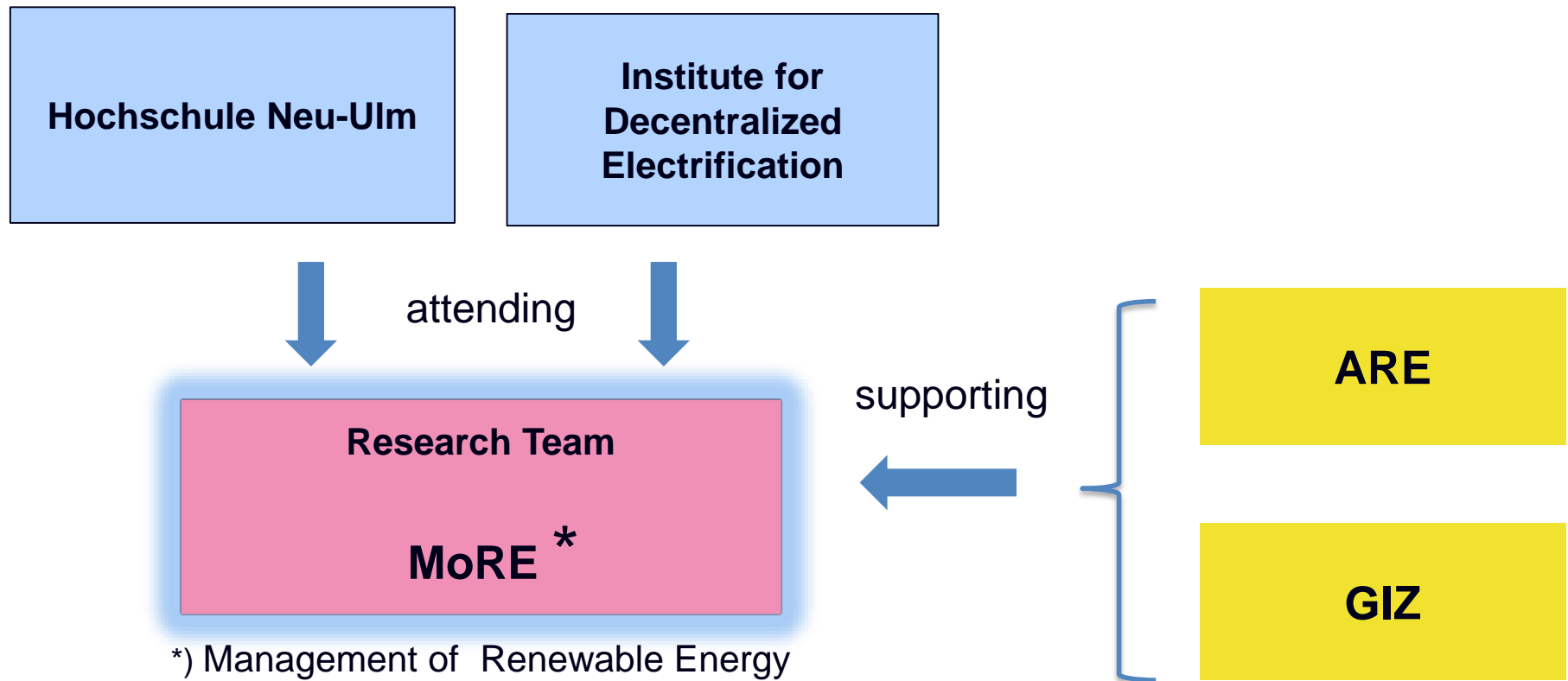
Overview on results

The negative part of the message:

not available

- appropriate policy frameworks to avoid political risks
- an easy-to-handle risk management procedure
- financial resources aligned according to size and conditions (grants, equity, debt)
- sufficient insight of bankers into the specifics of the electrification business
- frameworks to realize holistic grid concepts and for up-scaling

The working structure



Definition of mini-grids

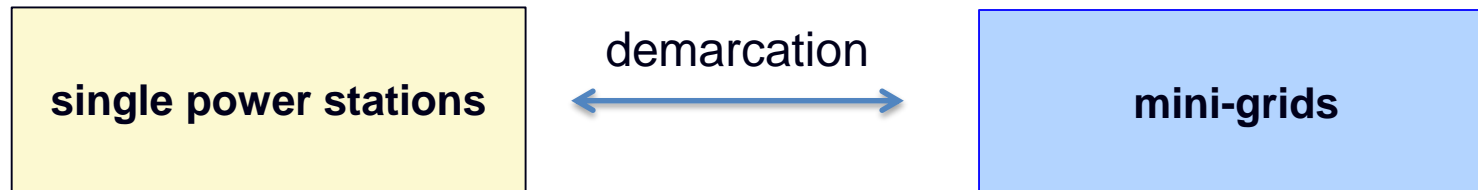
Mini-grids involve:

- small-scale electricity generation
- distribution of electricity to a limited number of customers via a distribution grid that can operate in isolation from national electricity transmission networks and supply relatively concentrated settlements with electricity.

[“Micro-grids” are similar to mini-grids but operate at a smaller size and generation capacity (1-10 kW).]

Source: Mini-grid policy toolkit, 2014

Focus of the study: Electrification by mini-grids



Purpose:

Energy for a residential use or a company

Purpose:

Energy for a village or settlement (households and/or productive use)

Additional needs:

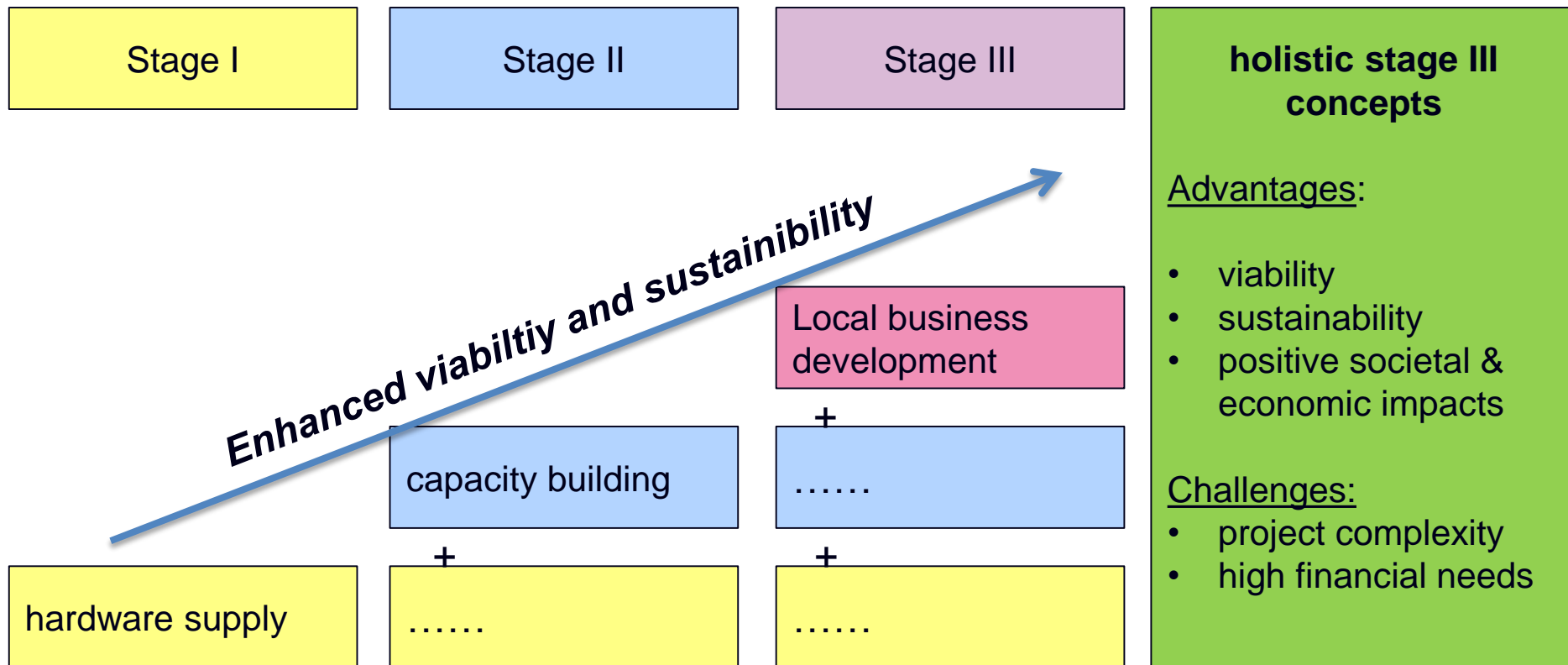
- funding management
- customer management
- tariff design and collection
- policy/legal framework management
- community & government involvement

The working procedure

Major steps:

1. literature analysis
2. industry survey by two questionnaires
3. draft of study
4. feedback from interview partners
5. final study

Generic stages of rural electrification



Realization of holistic concepts

Socio-cultural integration:

- capacity building
- assistance + control
- stakeholder management

Option:

near-by entity in charge to support a cluster of regional mini-grids



Respective concept paper:

“PUMA – Poly-Utility
Management Agencies”

Economic integration:

- productive use
- customer for „daylight energy“
- higher capacity usage

Option:

DFI financed projects for local business development



Respective concept paper:

“BCD – Business Customer
Development” (in preparation)

The BCD concept

Business Customer Development / simplified example

- 1) to start an information campaign
- 2) to coach EPs developing BPs
- 3) to select appropriate BPs/ EPs
- 4) to assign seed money to EPs
- 5) to accompany the start-ups

EP = Entrepreneur

BP = Business Plan

Responsibility:

- By special Project Developer
- or by an entity like PUMA

Risk Management (2)

Major reasons for insufficient use of risk management tools:

- Low familiarity of project developer with the concepts and tools
- No easy-to-handle industry-specific working templates available
- Risk management expectations of financiers often not fitting to projects
- Language gap between practitioners and finance experts

Risk Management

Possible consequences of missing project risk management concepts:

- Inadequate preparation for risk prevention and treatment
- Creditworthiness may be lower than necessary (“banker’s eye!”)

Investment Criteria within the ElectriFI approach (1)

➤ Minimum Project Size €1.5 million

- prohibits development of small stand-alone show-case projects
- discriminates smaller projects/enterprises

➤ Conclusion

- specific approach or instrument needed for smaller projects and SMEs

Investment Criteria within the ElectriFI approach (2)

- **A financing model which shows sufficient cash flows to support lending**
 - e.g. IRR 10-15%
 - excluding emission credits and/or renewable energy certificate cash flows

- **Related questions**
 - which accounting standard will be underlying?
 - who is in charge of verifying IRR plausibility?

Further thoughts

➤ Asset splitting

- infrastructure (non-moveable assets) should be owned publically
 - ✓ e.g. international fund or national utility
- moveable assets should be owned privately (ESCO)
- assets of productive use should be owned privately (local entrepreneurs)
 - ✓ MFI schemes needed

➤ Repayment in case of financial viability

- who is proofing viability ?
- which accounting standards are used?
- repayments in local currency are in danger of high losses due to currency risks!

Option

Focus on specific countries would reduce this risk as repayments could be used to support other projects using the same currency. (e.g. Thai-Baht for Laos, Cambodia, Thailand)