



Challenges to Market Development

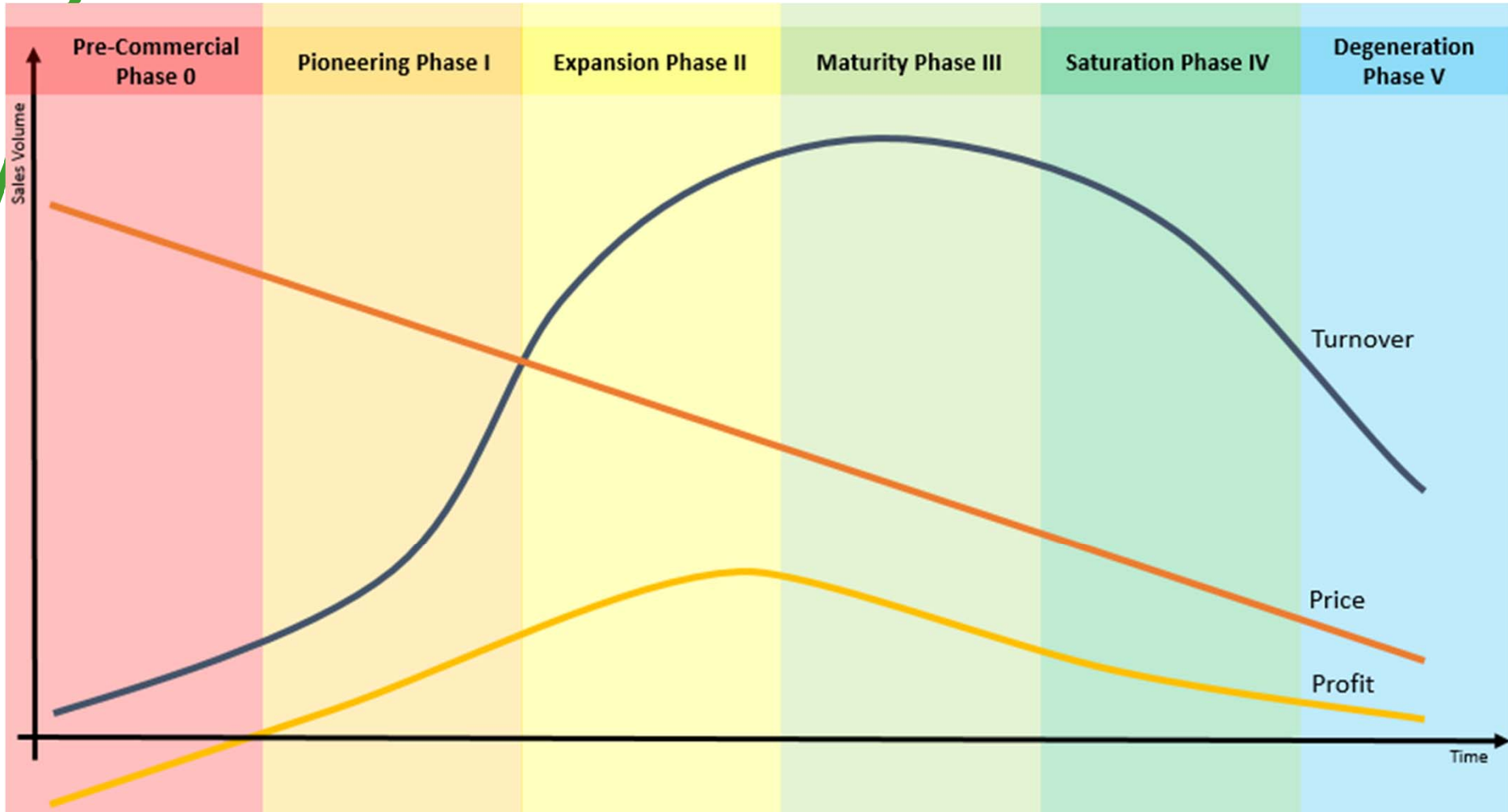
Short Overview

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energising
development

Market Theory



Energy Market Scorecard

Indicators	Variables	Pre-Commercial Phase 0	Pioneering Phase I	Expansion Phase II	Maturity Phase III
S1 Suppliers	Businesses	No (or very few) businesses	Few businesses	Growing amount of new businesses entering the market	Number of businesses starts to decrease. Takeovers / mergers as well as emergence of dominating businesses.
	Business modalities	ICS: business as part-time commercial activity; picoPV: introduced by donors/ NGO's as pilots without business or distribution models defined	ICS: Single person entities who spend a bigger part of their time on ICS production; picoPV: commercialized under traditional business models	ICS: Owner works full time; increasing number employees that work part and full time others; picoPV: different business and distribution models in place	ICS: All suppliers work full time and employ others; picoPV: business models consolidated
	Formality	Mainly informal settings for those attempting to enter the market	Mostly informal settings	Degree of formality rises	Increasing number of formal (registered) businesses
	Jobs created	No (or very few) jobs created; ICS: unipersonal commercial activity; picoPV: 1-5 employees per business	ICS: 'family business' with few employees on a demand basis (1-19); picoPV: Low number of employees (6-19 employees)	Increasing number of personnel (20-99 employees) with larger players in the market and/or small businesses grow.	Number of personnel levels off.
S2 Sales Volume	Products / services sold	Very low sales volume	Low sales volume (few systems sold)	Sale volumes rises rapidly (many systems are sold)	Massive distribution; sales volumes stabilize at the replacement level
	Inventory turnover	Low inventory turnover ratio	Inventory turnover ratio remains low	High inventory turnover ratio	Very high inventory turnover ratio
S3 Prices, costs and profits	Prices	Prices are high, higher than WTP. Prices might be set at the break-even point or with very low profit margin.	Prices are adapted to penetrate the market, in some cases with subsidies from donors	Price competition is at its maximum as suppliers try to increase their market share	High price competition
	Costs	Costs per unit are very high. Sometimes costs are subsidized by donors.	Costs per unit are high. Sometimes costs are subsidized by donors.	Costs per unit start to decrease.	Costs per unit are low.
	Profit margin	No (or very low) profit margin, very low turnover ratio	Low profit margin, low turnover ratio	Profit margin increase. They are maximised during that phase. Turnover ratio rises rapidly, high annual turnover growth rates.	Profit margin decrease; turnover ratio stabilizes.
	Investments	No investments	Some suppliers (have plans to) invest	Suppliers invest and make plans to expand business	Suppliers invest, diversify and expand business
S4 Supply chain development	Length	Two step supply chain. ICS: producers to customers; picoPV: supplier (importing-distributing/retailing) to customers	Short supply chains: Production/import, distribution, retail and wholesale usually done by the same entity	Visible growth of supply chains: Different stages of the supply chain are done by different entities	Complex and/or efficient supply chains: Clearly defined stages of the supply chain are done by different entities.
	Distribution channels	Weak distribution channels.	Weak distribution channels.	Improved distribution channels/network.	Distribution channels/network consolidated.
	Spatial reach	Direct sales only to targeted customers in a very small, local network (rural or urban).	Sales to local villages in vicinity (rural or urban).	Sales move beyond direct vicinity of base of operation.	Sales spread across regions in the whole country.
	Service industry	No service industry (specialized service providers, e.g. clay/metal providers,)	No service industry	Service industry starts developing	Established service infrastructure
S5 Value chain development	Value added	Value added is very low	Value added is low	Value added is increasing	Value added per step is declining, as more steps are introduced.
S6 Business networks	Networks	No business networks	Donors/NGOs facilitate informal (and formal) business networks	Business Networks (associations, cluster, communities of practice, etc.) are created to create synergies and competitive advantages	Business networks have consolidated and are functioning.
	Partnerships	Businesses have no partnerships	Businesses start first partnerships to create trust (via payment record)	Businesses have more partnerships (e.g. trade credit)	Businesses have many partnerships
S7 Warranties	Warranties	Warranties are not granted	Warranties limited to "lower" risk products (e.g. high quality products or very robust products)	Warranties implemented to promote sales and brand loyalty, as well as to encourage consumer trust in the product/service.	Warranties are an integral offer of quality technology suppliers.
	Financial literacy	Business skills are low (e.g. wrong price setting, insufficient record keeping, no business plans)	Some business skills develop	Business skills are improved	Good business skills
	Satisfaction level	Uncertainty on how the business will succeed	Increasing level of satisfaction	High level of satisfaction in the business	Decreasing satisfaction as there are more competitors in the market
	Marketing skills	Businesses are not aware or have the knowledge to run marketing activities.	Businesses have little knowledge to run marketing activities.	Businesses have the skills and understand the potential of marketing and.	Businesses have the skills and understand the potential of marketing.
S8 Entrepreneurial skills	Advertising	Advertising is mostly based on word-of-mouth. NGOs/donors do marketing activities to a limited extent to introduce product/services	Marketing is done by NGOs/donors and to a limited extent by suppliers (e.g. sign in front of the shop) to reach early adopters	Increased competition imposes business to implement marketing activities, including diversification (e.g. showrooms, radio, bike ads)	Marketing is directed at special groups to get a competitive advantage and/or to retain customers
	Marketing evaluation	Marketing is not evaluated by its effectiveness	Suppliers are not aware of the effectiveness of their marketing activities.	Suppliers are aware of the effectiveness of their marketing.	Suppliers have established measurements to assess the effectiveness of marketing.
	Production automatization and optimisation	Low division of labour as well as low automation and optimization process; all employees carry out all production steps by hand without process optimization	Low to medium division of labour as well as low to medium automation and optimization process	Medium level of division of labour as well as medium automation and optimization process	High level of division of labour as well as high automation and optimization process
	Standardized production	Most producers have no standardized production processes and struggle to produce good quality products	Some producers have standardized production processes and varying quality	Most producers have standardized production processes -> good quality, stable	Most producers have a high level of standardization of their production processes and very good quality, stable

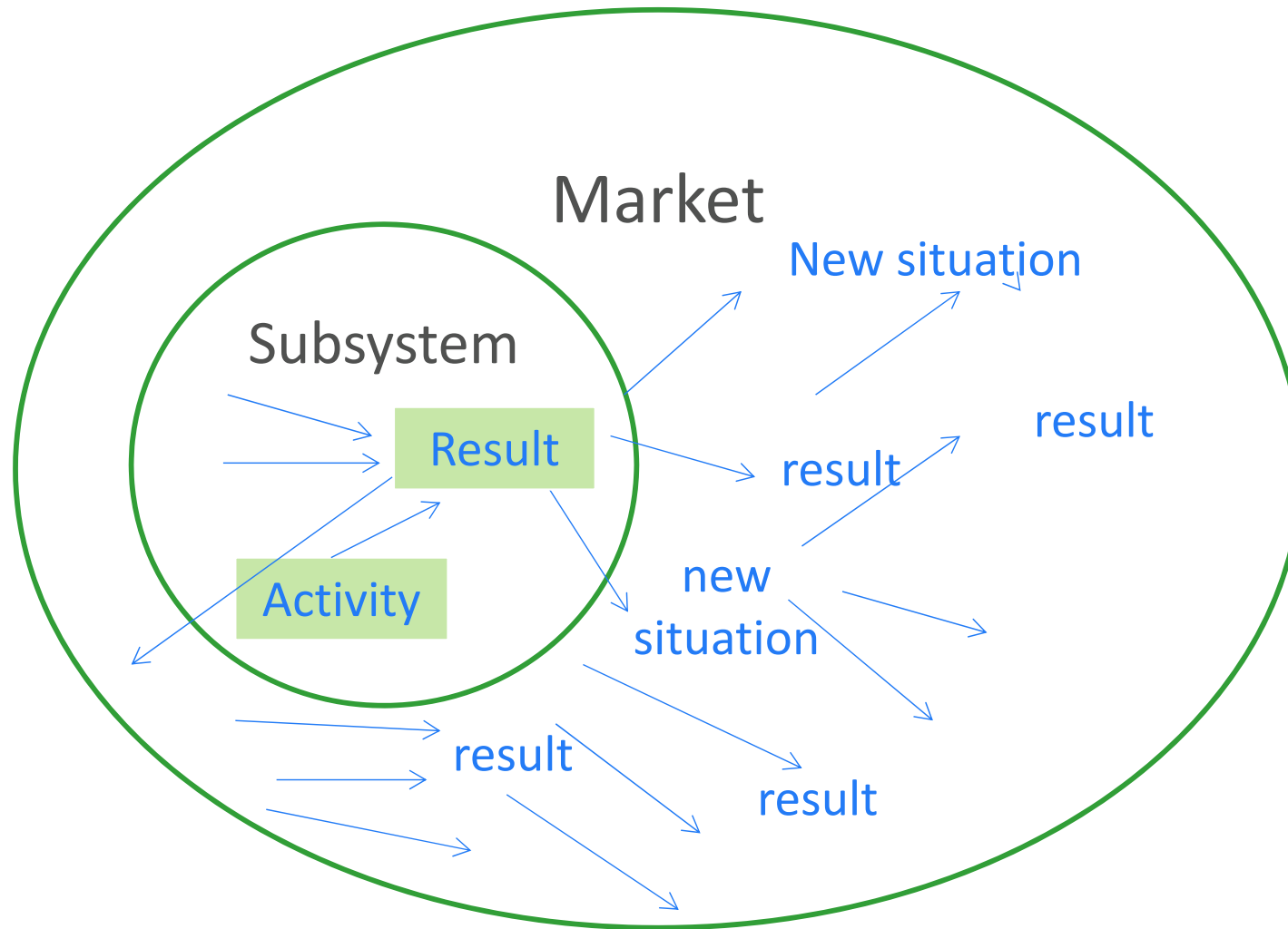
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Energy Market Scorecard

Indicators	Variables	Pre-Commercial Phase 0	Pioneering Phase I	Expansion Phase II	Maturity Phase III
Demand side	D1 Product service diversity	There is only one (or very limited number of) type of product(s)/ service(s) in the market	More types of products/services appear for different needs / preferences	Successful improved product/ service variations dominate. Variations appear for different consumer segments.	Different needs of each consumer segment (regarding services and/or preferences) are served with a diversity of products
	D2 Market penetration	Low market penetration rates (<5%) (low energy access rates).	Market penetration rates increase in areas first where the supply is located (6-15%).	Penetration rates are high in the initial immediate market area (16-30%).	Market penetration increases far beyond the initial immediate market area and target groups (31-55%).
	D3 Willingness to pay	No willingness to pay is paired with low ability to pay	Willingness to pay increases as consumers get to know the product	As product/service diversity increases, more customers with different willingness to pay are reached	As product/service diversity increases more customers with different willingness to pay are reached
	D4 Systems in use	Users know how to use and maintain the technology (<5%)	Users know how to use and maintain technology properly (6-30%)	Users know how to use and maintain technology properly (31-60%)	Almost all users know how to use and maintain technology properly (61-80%)
	D5 Replacement and repair	No replacement yet.	Low replacement rates.	Replacement rate is high.	Replacement rate is close to 100%
	D6 Consumer awareness and perception	No (or very little) consumer awareness: below 5% of the potential customers have knowledge about the technology.	Fast growth in consumer awareness: 6-30% of potential customers have knowledge about the technology.	Most potential consumers (31-60%) are aware of the technology.	Almost all potential consumers are aware of the technology and are knowledgeable about pricing (61-80%).
Enabling environment	E1 Policy	National targets for energy access technologies are non-existent.	National targets are planned.	National targets are in place.	National targets are effectively met.
	Policy	No existing policies for energy access technologies.	Policies start to come in to place.	Effective policies are implemented and enforced as intended.	Policies are consolidated.
	Product taxes	No special tax relief for energy access technologies (e.g. on import duties & tariffs, VAT)	No special tax relief	Tax benefits might arise: Tax relief and/or benefits for importation of energy access technologies	Tax benefits expanded or retracted, depending on self-sustaining character of the market
	Business taxes	No tax incentives or simplified tax system for businesses. Due to informality, most businesses do not pay any taxes.	No tax incentives or simplified tax system for businesses. Due to informality, most businesses do not pay any taxes.	More businesses are formally established and pay taxes.	Most businesses are formally established and pay taxes.
	Subsidies	Partial or full subsidies on the demand side are high in order to "introduce" the technology. Highly donor-based.	First financing mechanisms (including subsidies) emerge/are tested (pilots) – usually donor-driven focused on the demand as well as in the supply side.	There are no direct consumer or supplier subsidies in place.	There are no consumer or supplier subsidies in place.
	Financial institutions	Financial institutions are not yet familiar with products/services.	Financial institutions are sometimes to include products/services into their portfolio.	Financial institutions are aware of product/services.	Financial institutions offer elaborated financing mechanisms customers; and offer good terms and conditions for businesses.
	Financing options and investments by suppliers	Low investments.	Still financial constraints are reflected on (low) investment decisions both on demand and supply side.	Better financing options for suppliers are available as products/services are recognized as profitable by financing institutions.	Investment decisions on the supply side are less limited by financial constraints.
	Financing options for consumers	No financing mechanisms for customers by businesses.	Businesses start developing first financing mechanisms (PAYGO, micro-loans) for customers.	Businesses offer some financing mechanisms for their customers.	Businesses offer more financing mechanisms for different types of customer segments.
	Regulation, norms and standards	No quality codes and standards that set a baseline level of quality, durability, and trust-in-advertising.	Lack of codes and standards for quality; to protect consumer.	Regulations start working on appropriate codes and standards / adopt international ones.	Suppliers are bound to quality codes and standards.
	Enforcement	n/a	n/a	Enforcement/compliance is still unorganized.	Enforcement/compliance is working well.
	Cost of information	Market information is available only at high costs.	Donor facilitate market information (and take over the costs).	Consumers and suppliers have access to market information at lower costs.	Market information is publicly available.
	Market facilitation organizations	Public or private, or a mix of market facilitation organizations are non-existent	Public or private, or a mix of market facilitation organizations are still non-existent	Emergence of market facilitation organizations	Well-established market facilitation organizations
Expertise development	Awareness campaigns	No awareness campaigns at government level. Donor-driven activities push to awareness.	Big push of consumer awareness raising activities by donors with support of Governments.	Governments support awareness raising activities for consumers.	Retracting consumer awareness raising campaigns
	Courses	No specialised study courses/trainings	No specialised study courses/trainings. NGO/Donor offers trainings.	Specialised study courses/trainings emerge. Demand for skilled labour force increases (usually with a lag)	Availability of specialised study courses/trainings for energy access professionals and technicians
	BDT	No Business Development Training courses	The training offered by NGOs includes some business skills.	Labour force trained by NGOs seeks business courses outside of project.	BDT is included in specialised training for RE professionals
	User training	No or low training available provided mainly by NGO/ Donors for innovators.	Structured formal training provided by NGOs for early adopters.	Structured formal user training is provided by businesses.	Structured formal user training is provided by businesses.
Service	Service not available yet (Repair)	Service not available yet (Repair)	Service partially available	Service easily available	Service available

Market Reality



- ✓ No cause-effect relationships across different levels
- ✓ Activities on different dimensions and subsystems are necessary to arrive at a change
- ✓ Projects need to remain flexible and responsive to market development

Challenges / Opportunities (1)

- General
 - Access to finance (for companies and customers) and affordability (to customers)
 - Reaching the last mile / Leave-no-one-behind ('attractive' customers?)
 - Recycling / End-of-Life
 - Local value generation (assembly / production)
 - Innovation?
- Standalone
 - After-Sale Services (repair & maintenance, warranty, etc.)
 - Quality and copycat products
 - Regulation (Taxation in EAC both financial and incoherent application)

Challenges / Opportunities (2)

- Mini-grids
 - Market viability not in sight (ROI periods too long, but typical for infrastructure)
 - Operator skills necessary (esp. technical)
 - Regulation (e.g. what happens when the (main) grid arrives, tariffs)
- Grid expansion / densification
 - Mainly utility business but not only – retail business models are possible
 - ...

Business Models

Off-Grid Electricity

Mini- & Micro Grids



Solar Home Systems (PAYGO)



PicoPV (cash-sales)



Captive Power



On-Grid Electricity

IPP (large)



SPP / SPD



General

Efficient Appliances



Digitalisation



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Thank you for your attention!

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Mini-grid Success Factors

