Enhancing South – South Cooperation and Public – Private Partnerships in Renewable Energy Projects for Rural Development

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Typical schemes for disseminating the use of renewable energy in rural areas

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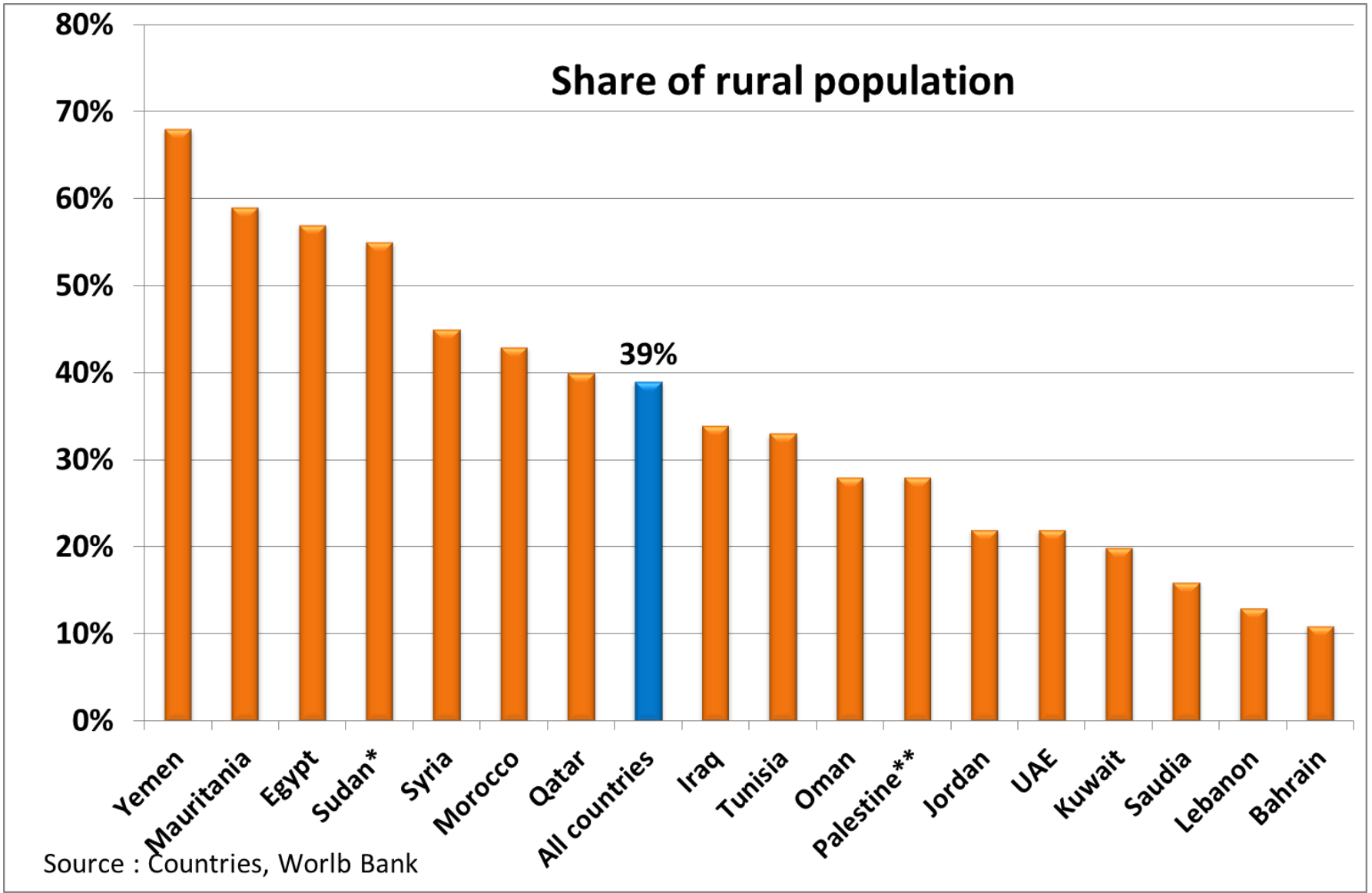
- Characteristic of rural area in developing countries
- Energy issues in rural area
- Alternative solutions for irrigation
- Financial mechanisms for scaling up the alternative pumping
- Conclusion

Characteristic of rural area in developing countries

Large population



Characteristic of rural area in developing countries

Particularities of the rural areas

- **Economic characteristics**
  - Low incomes
  - Non stable incomes
  - Low monetized economies
  - Activities: mainly agriculture

- **Social characteristics**
  - High level of illiteracy
  - Lack of formal organizations

Characteristic of rural area in developing countries

Particularities of rural areas

- **Geographical characteristics**
  - Scattered population with low density
  - Difficulty of access
- **Energy consumption characteristics**
  - Households: mainly lighting and audio-visual appliances
  - Agriculture: mainly pumping

----> Low consumption of conventional energy

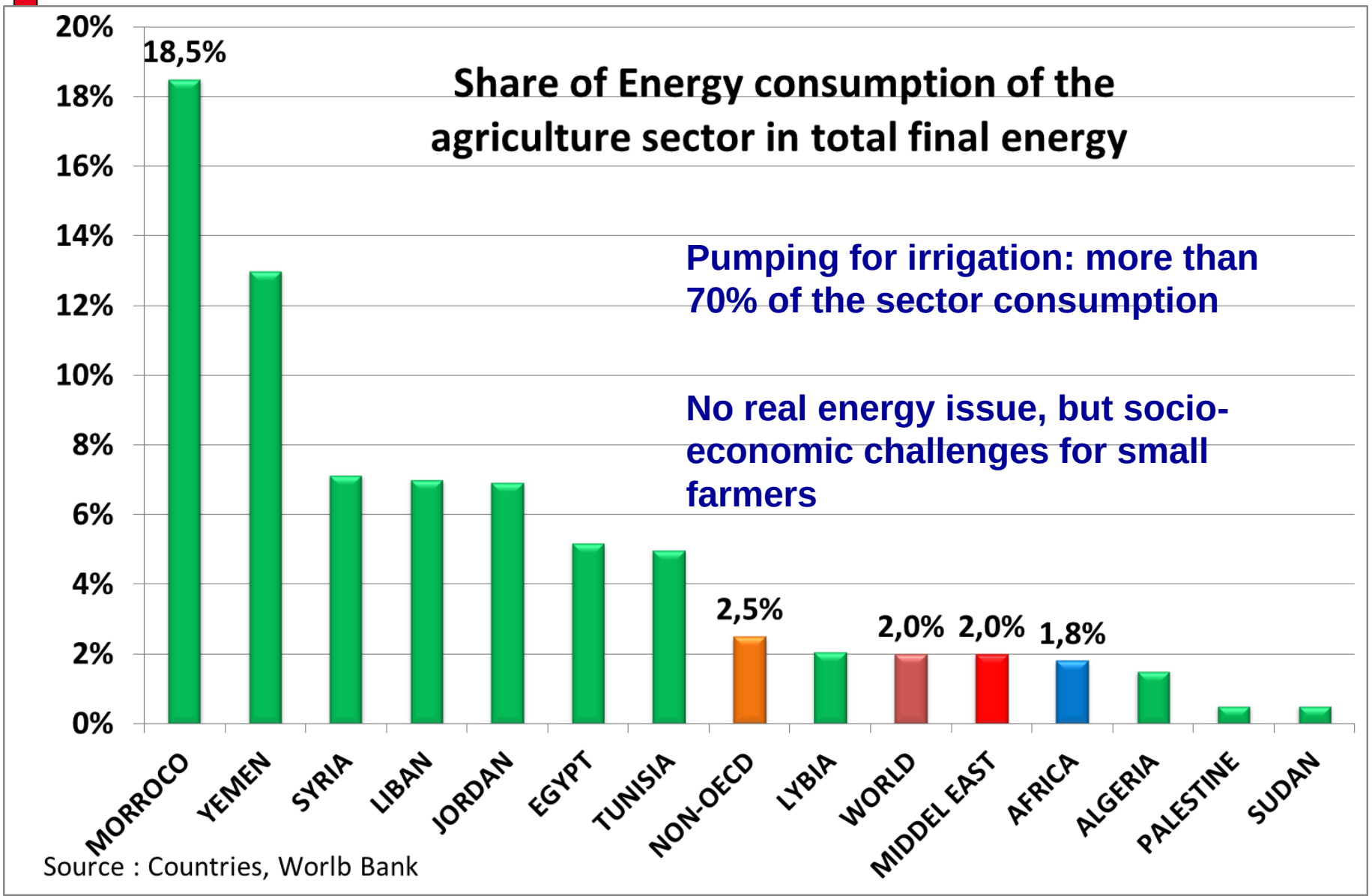
Energy issues in rural area
Supply Barriers

- High distribution cost of energy :
  - Electricity (investment and O&M)
  - Fuel (commercial distribution cots)
- Low electricity and modern fuel penetration
- Difficulties of cross subsidies
- Large public subsidies to energy supply in rural area

Decentralized renewable energy can be more economically cost effective for energy supply in rural areas.

Ex: water pumping for irrigation

Energy issues in rural area
Consumption



Source : Countries, Worlb Bank

Alternative solutions for irrigation
Technologies

- **Available technologies**
  - Electro-pumps using wind mills
  - Mechanical pumps using directly wind mills
  - Electro-pumps using photovoltaic panels
- **Application fields**
  - Low and medium depth
  - Low water flows

→Small farming (less than 2 hectares)

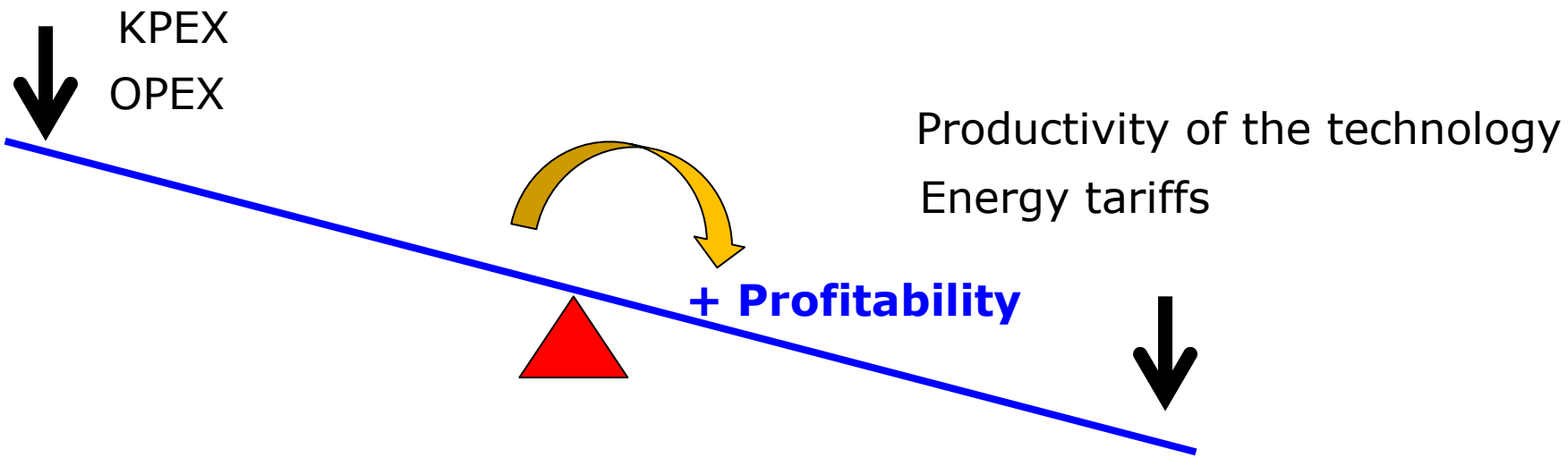
Alternative solutions for irrigation
Market barriers

1. **Low profitability for the farmer**
   - Energy tariff distorsions
   - High investment cost
2. **Investment acces barriers**
   - Low capacity investment of the farmer
   - Limited acces to bank financing
3. **Other barriers**
   - Lack of information to farmer
   - Domination of the existing commercial motopumps networks

Alternative solutions for irrigation

Profitability factors for the farmer

	Direct Wind pumps	Indirect Wind pumps	PV pumps
Investment cost (KPEX)	+	++	+++
Operation cost (OPEX)	+	++	++
Productivity of the technology (energy substituted)	Depends on the site (2000 to 3000 h/kW)	Depends on the site (2000 to 3000 h/kW)	1500 to 2000 h /kW



Financial mechanisms for scaling up the alternative pumping

Measures aiming at reducing the payback period for the farmer

- **Objective**
  - Reducing the payback period for the end-user :Improvement of RE solution attractiveness;
  - Using the measure as a communication vector;
  - Stimulating the offer by market initialization : progressive decrease of investment costs .
- **Types of measures**
  - Public investment subsidy;
  - Indirect taxes advantage (VAT, customs duties, etc.);
  - Reduction of direct taxes

Financial mechanisms for scaling up the alternative pumping

Measures aiming at reducing the payback period for the farmer

Measures	Advantages	Disadvantages	Applicability
Investment public subsidy	- Clear effect on the cost reduction - Strong signal to the market - Good vector for awareness - Stimulation effect for supply side	- Pressure on the public finances - Low sustainability - High management cost - Inflation risk	++
Indirect taxes reduction	- Easy implementation - Low pressure on public finances	- Low visibility - Low efficiency in case of informal market - Difficulty to apply on services cost	++
Reduction of Direct taxes	- Low pressure on public finances (only in case of taxes credit)	- Low efficiency in developing countries - Complexity of implementation in developing countries	–

Financial mechanisms for scaling up the alternative pumping

Measures aiming at overcoming the investment barrier

- **Objective**
  - Overcoming the initial investment barrier
  - Using the measure as a communication vector
  - Market transforming by involving the banking sector (leverage effect)
- **Types of measures**
  - Specific credit mechanisms
  - Specific credit line ;
  - Interest rate subsidy;
  - Credit guarantee systems

Financial mechanisms for scaling up the alternative pumping

Measures aiming at overcoming the investment barrier

Measures	Advantages	Disadvantages	Applicability
Specific credit mechanisms	- Reduce the capacity constraint investment '- Mobilization of the banking sector '- Good communication vector	- Exclusion of the unbanked population '- Transaction costs and default payment risk	++
Specific credit lines	- Solve the problem of down stream resources - Involvement of banking sector - Good vector of awareness	- High cost of loan distribution and management - Exclusion of non banked farmers	++
Interest rate subsidy	- Good vector of awareness - Improve the profitability for the farmer	- Currency risk coverage - Sustainability of the interest subsidy - Financial market distortion - Pressure on public finance	_
Credit guarantee systems	- easy access to the credit - Incentive for the banking sector	- Complexity of implementation in developing countries - Risk of derive	_

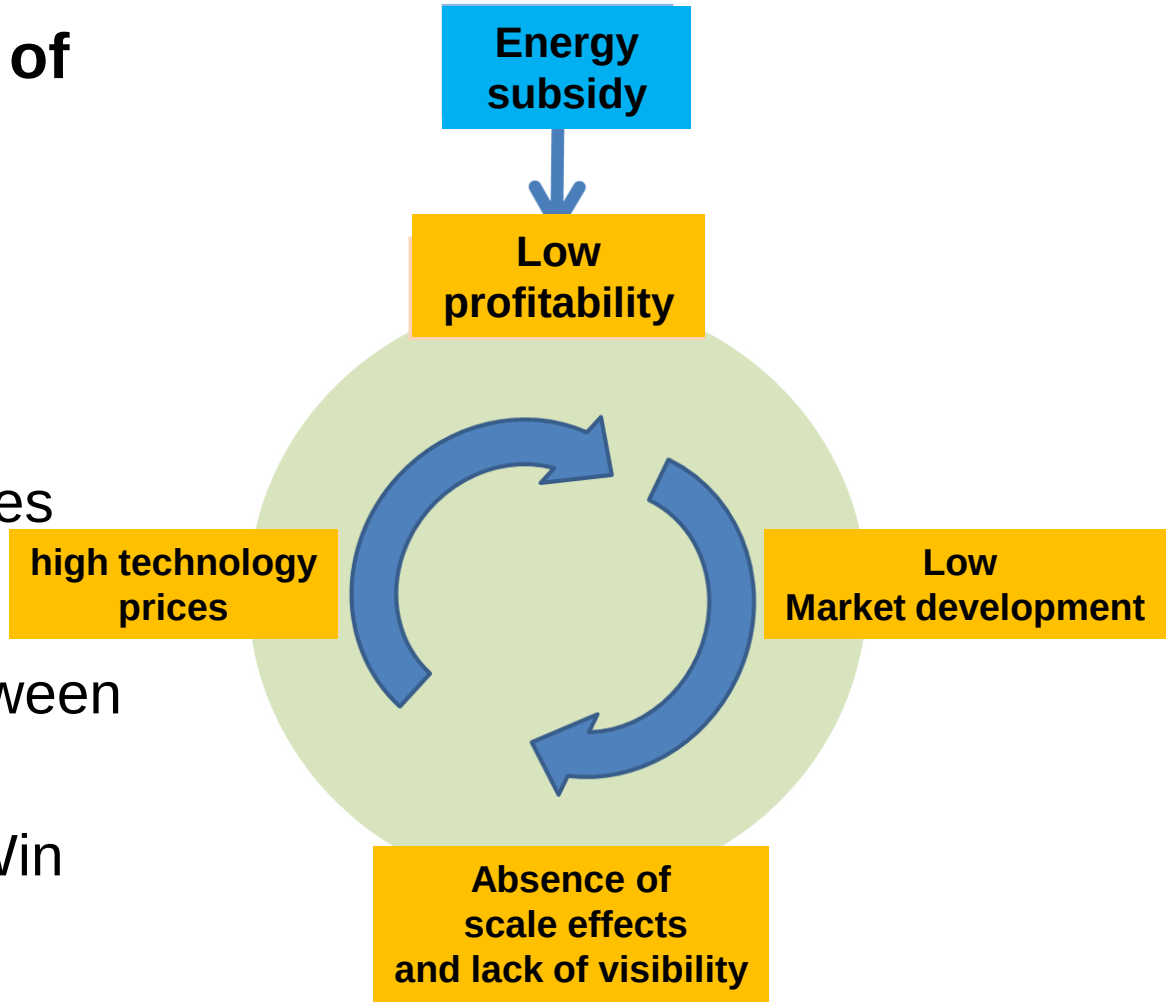
Conclusion
Main constraints

Traditional constraints of emerging markets

- Low profitability
- Limited market
- Lack of competition
- High technology prices

Break the circle

- Sharing of gains between stakeholders
- Establishing a Win-Win situation
- Consumer protection



Conclusion

Main features of supporting mechanism

Supporting mechanism modalities

- **A well seized** Investment public subsidy
- A specific loan system to farmers with easy access and adapted **reimbursement conditions** (alternative banks, micro-finance, etc.)
- Credit lines to financing institution with soft conditions to provide **stable appropriate financial resources**
- **A global service supply : energy and water optimization**
- Maintenance enterprises networks development
- Pilot programs on real scale to test and validate the mechanisms

Conclusion

Accompanying measures

Awareness

- Ministries in charge of agriculture, finance and development
- Farmers
- Banks, particularity agriculture banks
- Agriculture equipment suppliers

Capacity building

- Training of concerned public institutions
- Training of installers
- Training of the existing commercial networks of conventional pumps

Thank you