



# Frameworks for Capacity Building in Renewable Energy Technology Delivery & Acculturation

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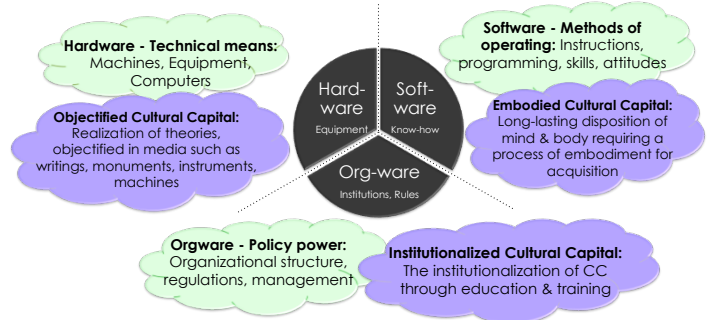
## Introduction

Capacity building in Renewable Energy Technology (RET) delivery and acculturation is necessary to facilitate a transition to a green economy ("one which is low carbon, resource efficient and socially inclusive", [www.unep.org](http://www.unep.org)). Design of a capacity building scheme should be based on a holistic view of technology as **hardware** (equipment), **software** (information, skill, knowledge) and **orgware** (institution, governance). Technology should be viewed as objectified, embodied and institutionalized cultural capital to facilitate its acculturation.

## The I3A Framework in 21 Steps

The I3A (3A, WEC 1999) framework refers to an **Implementation** of the hardware, software and orgware dimensions of RET that maintains energy service **Accessibility** (financing, skill, network, resources), **Availability** (reliability and security of supply) and **Acceptability** (social and ecological) for the host community during and beyond the initial installation project. The I3A framework can be used as a **diagnostic tool** to assess existing energy service delivery or as a **design tool** for proposed energy service delivery, and can be applied at local or national levels, and for single or multiple technologies. The objective of the I3A framework is to ensure that RET intervention leaves a target community with enhanced capacity and resources for beneficial social innovation.

Holistic View of Technology: **Hardware, Software & Orgware** (Dobrov 1979)



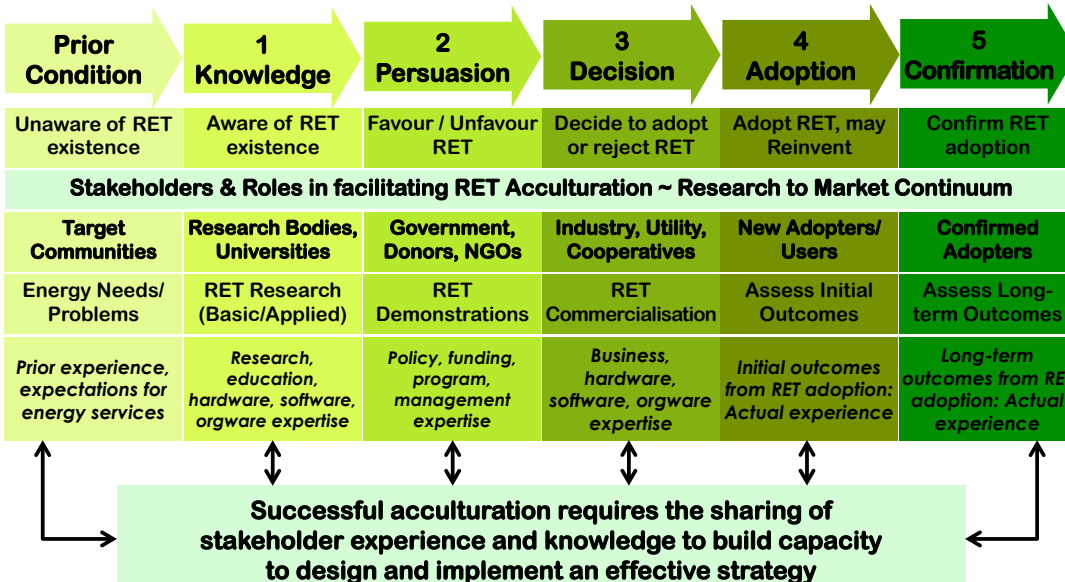
Technology as Cultural Capital: **Objectified, Embodied & Institutionalized** (Bourdieu 1986)

## The I3A Renewable Energy Sustainability Framework

Implementation of renewable energy technology hardware, software and orgware that maintains energy service Accessibility, Availability, Acceptability in the short and long run

Implementation Orgware & Enabling Factors	Accessibility Access to Financing & Resources	Availability Service Reliability & Resource Security	Acceptability Social & Ecological Improvement
<ol style="list-style-type: none"> <li>1. Orgware: Stakeholders, objectives, interrelationships</li> <li>2. Enabling factors: Policy, strategy, administration, coordination, governance</li> <li>3. External factors: Other programs, socioeconomic, political, global situations</li> </ol>	<ol style="list-style-type: none"> <li>4. Affordability – Profitability (A-P) levels</li> <li>5. Financial intervention to bridge the A-P gap</li> <li>6. Access to energy financing, market, network</li> <li>7. Access to energy education</li> <li>8. Access to energy resources</li> </ol>	<ol style="list-style-type: none"> <li>9. Primary resource availability</li> <li>10. Technical quality: Standards, safety, warranty</li> <li>11. Energy system integration</li> <li>12. Domestic manufacturing</li> <li>13. After-sales infrastructure</li> <li>14. Local capable agent</li> <li>15. User education</li> </ol>	<ol style="list-style-type: none"> <li>16. Utilization of local resources (institutions, economy, norms)</li> <li>17. RET attributes vs User needs</li> <li>18. Socioeconomic outcomes</li> <li>19. Suitability to environment</li> <li>20. Energy waste handling</li> <li>21. Contribution to climate change mitigation effort</li> </ol>

## The KPDAC Model & RET Acculturation Framework



- **RET Acculturation:** The extent to which RET diffuses into & is assimilated by a community (Retnanestri 2007)
- **RET KPDAC innovation-decision process:** Potential adopters progress from gaining **Knowledge** of RET, to forming an attitude toward RET (**Persuasion** stage), to a **Decision** to adopt or reject RET and, if to **Adopt**, to **Confirm** or repudiate the adoption decision (adapted from Rogers 2003 in Retnanestri 2007)
- RET is acculturated if Users can **continue to confirm** RET service benefits. Hardware, software and orgware must **continue to function** for RET to become community cultural capital.