Business Opportunities in Sustainable Development

What is the “new context”?  
Where are the opportunities?
Main Questions:

1. **What do we want from sustainable development?**
   - What is sustainable development?

   • What are the lucrative sustainable development opportunities in Arab Countries?

   • How can we implement?

   • While we wait...
Main Questions:

1. What do we want from sustainable development? The technology and business opportunities can then be defined in this context.

A. What is Sustainable Development?
B. What are the main technologies (or types of technologies) that can be applied in the regional context?
C. What can we learn from local knowledge and the local environment, and the long experience accumulated over millennia? How do we apply it in the modern context?
D. What are the local channels for (1) technology transfer, (2) innovation, and (3) regional collaboration?

Note: Mitigation as a co-benefit of adaptation
1.A What is Sustainable Development?

1. B What are the main technologies?

**Generation**
- Available
- Reliable
- Flexible
- Renewable

**Transmission**
- Reliable
- Flexible
- Efficient

**Storage**
- Durable
- Portable
- Divisible
- Universal
Sustainability & Energy: Transportation

1. What are the main technologies?

- **Carbons:**
  - Dry Cow-dung / Camel-dung = 15
  - Wood = 18

- **Hydrogen** = 142

- **Hydrocarbons:**
  - Coal = 32 MJ/Mass
  - Oil / Diesel = 47 MJ/Mass
Main Questions:

• What do we want from sustainable development?
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2

• What are the lucrative sustainable development opportunities in Arab Countries?

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Main Questions:

2. What are the lucrative sustainable development opportunities in Arab Countries
   A. Those opportunities can be approach either on sector-by-sector basis (water tech, renewable energy, waste recycling, food, ...), or cross-sector.
   B. How have they been successfully (and unsuccessfully) addressed so far?
2.A Opportunities in specific sectors
2.A Opportunities across sectors
Knowledge Economy: “Inspiration Economy”

- “Democratization” of information
  - The “maker” movement

- Intellectual Property
  - Traditional Knowledge
  - Environmental Goods & Services

- The need for perspective:
  - Information is not knowledge.
  - The “cult of data”...
Main Questions:

• What do we want from sustainable development?
  • What is sustainable development?

• What are the lucrative sustainable development opportunities in Arab Countries

• How can we implement?

• While we wait...
3. How can we implement the Addis Ababa Action Agenda (AAAA) highlighted a clear path for deploying science, technology and innovation towards achieving the Sustainable Development Goals (SDGs)?

A. How can Arab funds best be attracted and mobilized towards promoting entrepreneurship, partnerships with MNC, innovation funds, and business incubators? What are the unique characteristics of local regional structures that can offer a relative advantage?

B. Role of youth... "si jeunesse savait, si veilless pouvait"

C. What are the regulatory changes that need to be made to facilitate such investments for innovation? And what are the structures currently in place that can best facilitate such investments?

D. What are the current channels for regional integration, both formal and informal. How do they support growth in technology implementation?

E. What is the role of startups in this context?
The different roles

- **Science:**
  - Understand
  - Speculate(?)

- **Engineering:**
  - Apply
  - Cost-Effectiveness

- **Industry:**
  - Barriers to Entry
  - Barriers to Exit

What? Why?
How? How Much?
Technology Transfer Priorities

1. Capacity Building
   • Young v/s Old: Innovate v/s Conserve OR New Tech v/s Perspective:

2. Governance & Intellectual Property
   • “open source”?
   • IP Policy:
     • Country-Level (National Needs) v/s Institution-Level (Business Needs)

3. Finance
   • Leverage “Private Finance”

4. Link: Private-Public

5. R&D
   • Educational Institutions, Industry, SME’s...Individual

...culture?

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Capital Substitutes for... Human Minds?

- Genetic Algorithms
- Deep Learning

Who will own the robots?
“We just have to understand that everything that we know how to do, machines will eventually do better than us”

G. Kasparov

• School infrastructure:
  • One-way street, Little interactive exchange.
  • Teach “How”, not just “What”: Train to “Ask” (no “sacred cows”)

• **Human+Computer**
  • Prune variations, so orient computer;
  • See where different programs disagree, and evaluate variations;
  • Time management: focus software on any given simulation;
  • The human knows the “terrain”
At the Margin: Capital Substitutes for... Resources?

• 3D Printing / Additive manufacturing
  • Nano-technologies?

• Bio-Engineering / Gene Editing
  • Gene Drives risks

• ...Nano-Manufacturing?

• New Techs:
  • Low Barriers to Entry
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