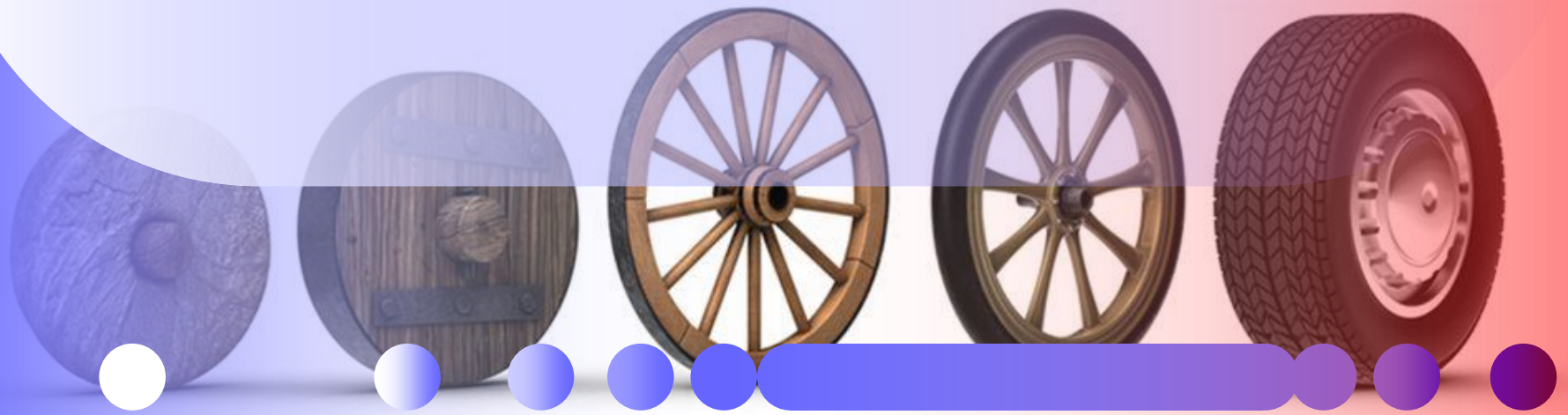
Scaling-up Innovation Working Group



Report from the Working Group

Overall Recommendations:

- Address key limitations:
  - Remove/Ease barriers:
    - Superficially, we have a small market. But the region is large, with easy communication thanks to shared language and culture.
  - Smart/less regulations:
    - They generally protect local monopolies. Trying to protect the local "big player" till "bigger players" comes from outside and takes over.
    - Don't import the "European" system of regulation. Smart regulations: Balance flexibility and precautions, empower market forces.
  - Don't be ashamed of copying, or outsourcing, as in the case of IP protection.

- Strengthen Key Regional Advantages:
  - Value-Chain that promotes small business and access to market,
    - Focus on moving from "waste the waste" to "making $ from waste".
    - There is local knowledge that could be exported. Example; hydroponics in Palestine unde unique conditions, can inform/learn from other projects started in Lebanon, Bahrain, Tunis (wastewater)…
  - Risk of "importing" waste from other countries. But there is an opportunity:
    - Example: tools and medical devices that are obsolete in the developed world only for regulatory purposes can still be useful if appropriately tested.
  - The new generation is more early adopters w/r to older generation.
    - Promote "tinkerers", not just academics.

Biotech …

1. Stem cells: Human engineering?
   - Egypt, curing diabetes. PI: Dr. Muhammad Ghuneim, Center for Kidney Diseases.
   - Low-Tech: Promoting traditional (Med) Diet / Lifestyle changes (Door-to-door thinking, also anti-depressants; work from home to alleviate commute time; decentralized school)

2. Bio-catalysis; Enzymes / organic compounds transformation
   - Specialized R&D center in Tunisia; Centre for Biotech Of Sfax: Prof Sami Sayedi,
   - Mascir foundation: Rabat

3. Sustainable agriculture;
   - LARI in Lebanon to develop Agri R&D, Agritech
   - Egypt; Agri Research Center, 10,000 researchers.
   - Morocco: Agence Dev Agri, ADA. Sustainable agri w/ OCP groups.
   - Palestine: Alternatives for Nitrate based fertilizers.
   - Develop crops / water resistant.

4. Mass-customization of pharmaceutics;
   - Local companies: copy/paste focus on local market
   - Development of local herbal medicine; diet supplements (because they don't meet quality threshold or cannot be tested).

Digital

Focus should be on leap-frogging instead of scaling up.

- Training population to be able to do "leap frogging", build capacity of "critical mass" of qualified youth with skills to join new jobs.
  - New Egyptian initiative called "next tech leaders" launched in 2016 already graduated 5000 people.
- Technoparks: No "Real Estate", Start first with innovation centers.
  - They should be "organic", no need for fancy buildings, just a "campus" model where people can communicate and cooperate "old school".
  - Technoparks: 2 in Tunisia;
- Unified standards? 5-10 years to move to mainsream, no way to find the winners now.
- Industry 4.0? Combined Big learning, AI, 3d printing.
  - Tech-Transfer: Industry & University should be more integrated.
  - Promote tinkering, no more "fear of failure".
- What do you do with "untrainable" older generation with "legacy" knowledge? What do we do with the intermediary generation; even if trainable, they may be unemployable?
  - Training is not necessarily the issue; in a "tight" job market, retrained, older people may not be able to compete with well trained, younger people.

Nanotech

1. Organic and inorganic nanomaterials, metamaterials, and memory alloys;
   - Nano-gold particles egypt; nano-particles palestine; to target cancer; iNanotech morocco;

Neurotech

1. Digital automation, including autonomous vehicles (driverless cars and drones);
   - How do the emirates manage their new taxi system?
   - How do we deal with drones? Security issues.

Greentech

- **Agriculture**: Sustainable agriculture; hydroponics; bio-based products and processing; low input processing and storage; horticulture techniques; efficient irrigation; application of biotech;
  - Water recycling in Egypt;
  - Palestine: knowhow and skills that can be exported. How to monetize those skills?

Roadmap

- Identify the main needs: geographically, socially.
  - Fundamental priorities. Example: why education, what education?
  - Map stakeholders
- Main Tech focus:
  - Identify what could be done now/later;
  - Define "bets";
  - Focus on low-to-medium tech in the immediate
  - Comparative advantages in Oil and mining? Trickle-down/spinoff effects.
- Map
  - Regional comparatives advantages:
    - Local/country/region/
  - Map:
    - Complementary strength zones across Arab region;
    - Value chains of Production/Processing/Marketing;
      - Agriculture: Olive, Dates,
      - Cosmetics: Argan, Encens,
      - Tourism, Movies
    - IP for all creations
      - agricultural food and processed food, or artisanal products;
  - Funding tools / mechanisms
    - Lebanon: circular 331 BDL promote technology.
- Integrate the mapping across the region: Develop the Value Chain for marketing across the region