Circular economy and agribusiness development

We all need air to breathe, clean water to drink, and hospitable climate patterns. However, human activity is pushing the boundaries of what our planet can provide. Our current linear model of consumption known as the “take-make-waste” is pushing environmental limits outside which humanity can safely operate.

Food systems are at the centre of this issue: it is at the same time exposed to the effects of a changing climate; and it is direct contributor to it. The agro-industrial sector carries a strong responsibility in the environmental challenges we face. The hereafter table indicates the worldwide impact of the agro-industrial sector on the natural resources:

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From production and its inputs, to the final consumer, a circular economy practices replaces the “take-make-waste” to a circular flow that avoids pollution, prolongs material use, captures value from waste and regenerate natural ecosystem. In addition, such a model entails more innovation and creates more job opportunities than current practices.

A circular economic system implements the following three principles:

- **Eliminate waste and pollution from the system** avoiding damages to human health and the environment: Privilege the effective use of biological based material to avoid the pollution of air, land and water; petrol base and chemical products are replaced by natural products and renewable energy.
- **Preserve the value over time, reuse and recycle**: design for durability, gain value from left materials develop by products that could serve as input or open new market opportunities and recycle waste.
- **Use renewable energy and regenerate natural ecosystems**: develop renewable energy from waste and returns valuable nutrients to the sol to support natural regeneration.

In the practice of an agro-value chain it would translates by the following examples which are complementary and create opportunities for innovation and entrepreneurship along the system.
Privilege organic and bio material: plant in agro-forestry, use compost, use plants symbiose for pest control, etc.

Create by products from left materials: food, feed, cosmetic, innovate to create new business model and set up recycling system

UNIDO is supporting the transformation of agro-value chain into a circular system that creates jobs and protect the environment.

The following entry points are developed:

1. In partnership with other agencies such as FAO or IFAD, or local NGO, UNIDO promotes “close to nature” agriculture such as permaculture, agro-forestry, organic farming, periurban farming, etc.

2. On the business side, UNIDO supports the design and the establishment of new business models with:
   - business hub or Platforms for sharing assets, ex: machines, storage and primary processing;
   - sectoral support to increase information flow across the value-chain (e.g. certification, direct marketing and e-commerce based distribution models).
   - Clusters to establish agri-processing hubs where economies of scale are reached

3. UNIDO supports reduction of postharvest loss with:
   - best practices, training delivery; and
   - technology transfer.

4. The UNIDO develops by-products, linking food with non-food value chains to utilize waste; and bring value to waste food as feed, material, compost or energy.

5. UNIDO Partnership enhances public-private partnership (PPP) for where investment, risks, responsibilities and rewards are shared between the public sector, the private sector and a development partner. Defining new circular model at all stage of the value chain requires a partnership at all levels.

6. The UNIDO provides technical assistance for biomass energy solutions with:
   - anaerobic bio-digesters for humid waste processing, which creates biogas and compost
   - gasifier for dry waste burning which creates energy heat and charcoal
   - solar energy for food processing
   - other renewable energy (hydropower, wind, solar Photovoltaic) for agro-industrial process

7. UNIDO supports the application of biotechnologies in:
   - food production and preservation,
   - leather processing,
   - production of bio-based polymers,
   - construction materials or fibers,
   - Entrepreneurship and skill transfer to create materials and products from waste.

8. The Department of Agribusiness rethinks the food system towards local value chain and Urban farming with:
   - vertical farming practices
   - reverted supply chain logistics for decreased CO₂ emission and improved resource recovery

What is needed to implement a circular economy system:
- raising awareness
- identification of opportunities
- planning
- skill transfer
- entrepreneurship
- technical assistance
- technology transfer
- Market access
- Investment

Goals:
- environmental protection
- youth and women empowerment
- SME support
- Innovation
- Job creation