The Food-Water-Energy Nexus Perspective: Women's Take for Fisheries Security

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Abstract. The water-energy-food nexus amid climate variability is one lens which stakeholders must develop because there exist intensifying pressures on natural resources and food production. Water and energy are necessary in the fish drying food chain in Brgy Duljugan in Palompon, Leyte. Heightening the women fish driers' awareness about the nexus and strengthening their roles within the nexus are crucial towards attaining sustainable and resilient livelihoods.

Introduction….. *There is an emerging realization worldwide about the critical role of water security in ensuring food supply in the future. There is a reason, therefore, to worry if water management is continuously done the way it is usually done. That is, without the understanding that water, as a scarce resource, is an indispensable ingredient in attaining sustainable livelihoods and inclusive economic growth. Water is linked to food and energy, such that the nexus of these three is crucial in and by itself. The World Economic Forum (WEF) Annual meeting in Davos-Klosters in 2008 underscored the need to raise awareness of stakeholders on the range of issues linked to this nexus and the interweaving connections of water, energy, food, and climate change.*

Objectives. This study interviewed thirty two (32) women fish driers of Brgy. Duljugan in Palompon, Leyte in October 2013. Sixteen (16) other women fish driers joined a Focus Group Discussion. The study aimed:

- *to ascertain the water-food, energy-food, and energy-water nexus in fish drying*
- *to heighten the awareness of small-scale women fish driers on the importance of the energy-water-food nexus vis-a-vis climate variability as it affects the sustainability of their livelihoods and the supply of dried fish.*

Significance: There is a seeming lack of awareness and understanding on the importance of the interrelatedness and interweaving connections between the supply of water, the availability of energy (may it be in the form of solar or electricity or fuel), and the capacity to sustain fish drying as a basic food source and as a primary source of incomes in coastal communities. Hence, a big push is at the core in making stakeholders recognize the nexus and take proactive steps in making fish drying resilient to water and energy shortages that may be brought by climate variability.

Fish drying requires WATER for:

- *Cleaning fish: 12liters/15k fish*
- *Sorting fish: 12 liters/15k fish*
- *Salting fish: 2 liters/15k fish*
- *Washing fishing paraphernalia and fish drying tools: 24liters*
- *Rinsing fish when it has been salted again to preserve it during a rainy day: 12 liters/ 15 k fish*
- *Soaking fish in vinegar to lengthen shelf life when it keeps on raining: 2liters/15k*

***Ice that is needed after fish catch, and/or to preserve fish (for drying) in times of climate variability requires WATER and ENERGY** : 7-10 pcs of ice/15k fish per ice box; 2 liters of water = 7 pcs of ice; ice is produced after 5 hours*

Fish drying requires ENERGY for:

- *Sun drying the fish: 4hours*
- *Longer time to dry fish when it is gloomy: plus 2-3hours*
- *Gasoline to make the fishing boats run: 4 liters*
- *Kerosene lamp at sea: 2 liters*
- *Electricity to fan-dry the fish when it rains: 5hours*
- *Operating generator sets*
- *Packing dried fish: 1hour*
- *Smoking the fish to dry on rainy days: 3-6hours*

For every drop,
a clean fish to dry.
For every ray, a dried fish.
For every dried fish,
a plateful and a penny.
For every plate and penny,
more fish to dry…

PRESSURES on WATER RESOURCES

- Wells drying up
- Unclean water from the well due to continuous rain
- More users of the well
- More fish to dry

PRESSURES on ENERGY RESOURCES

- Unpredictable weather
- High fuel prices
- High electricity cost
- Electric interruptions
- More fish to preserve
- More fish to dry

Conclusion 1 …. *Demand for water from the well and the pump, demand for energy, and for food increase with climate variability*. *Spoilage of fish that cannot be dried due to the unpredictable rains must be reduced by providing common service facilities such as dryers and cold storage. These will require more water and energy resources, but costs have to be kept minimum to enable fish driers to gain. Moreover, wastewater management must be seriously considered before wells and pumps run out of water.*

PRESSURES on FOOD/ DRIED FISH

- Market expansion
- As alternative livelihood
- Possible value addition
- As *"pasalubong"* (gift/token)
- Larger population
- Higher incomes
- Low production when it rains

Conclusion 2 ….. *Women fish driers must develop a nexus-kind-of--thinking-and-action: i.e., a nexus lens.* *They need to appreciate the interdependencies between the scarce resources needed to produce food/dried fish, as well as their roles in strengthening the nexus. Field technicians can help sketch the cost, value and pricing, particularly amid climate variability. Going thru the exercise of a water-energy supply chain is expected to establish strategies for sustainable growth.*

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