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D-lab 0: Sustainable Innovations in Food Systems

Client Background

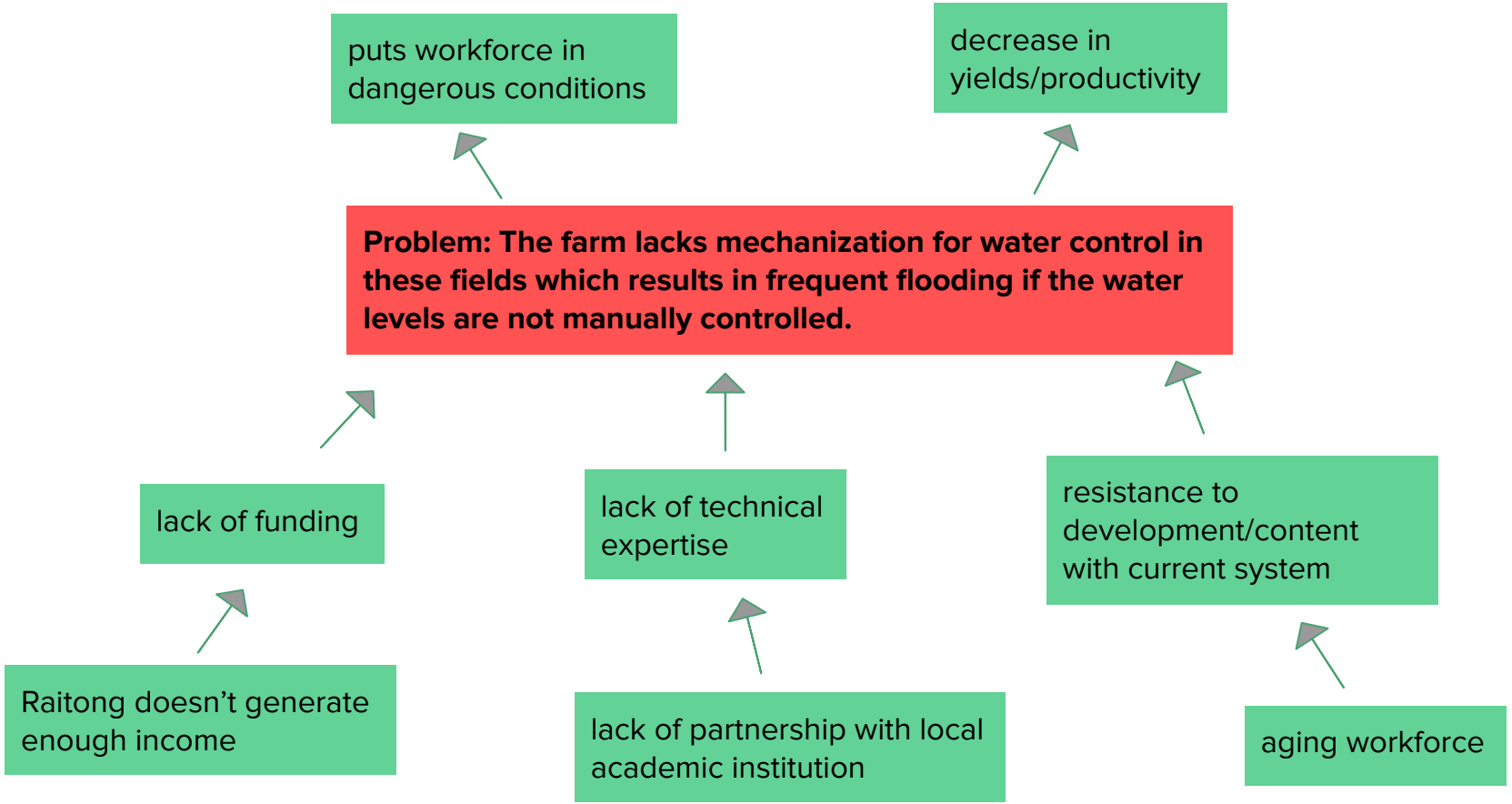
http://bk.asia-city.com/sites/default/files/imagecache/item_image/gin1.jpg

https://upload.wikimedia.org/wikipedia/commons/thumb/4/44/Thailand_Sisaket_locator_map.svg/1200px-Thailand_Sisaket_locator_map.svg.png

http://www.tayastarling.com/2015/03/25/raitong-organic-farms/

http://th.ipick.com/media/article/ad1b711b729bb204aa1f7870ddc1599df4b3eaf7.jpg

Problem Tree



Prior Art

http://ceephotos.karcor.com/tag/sluice-gate/

- Sluice gate: set in sides of a waterway to control water levels and flow rates
  - Flap gate: automatic gate, moves due to pressure differential
  - Vertical rising gate: plate sliding vertically

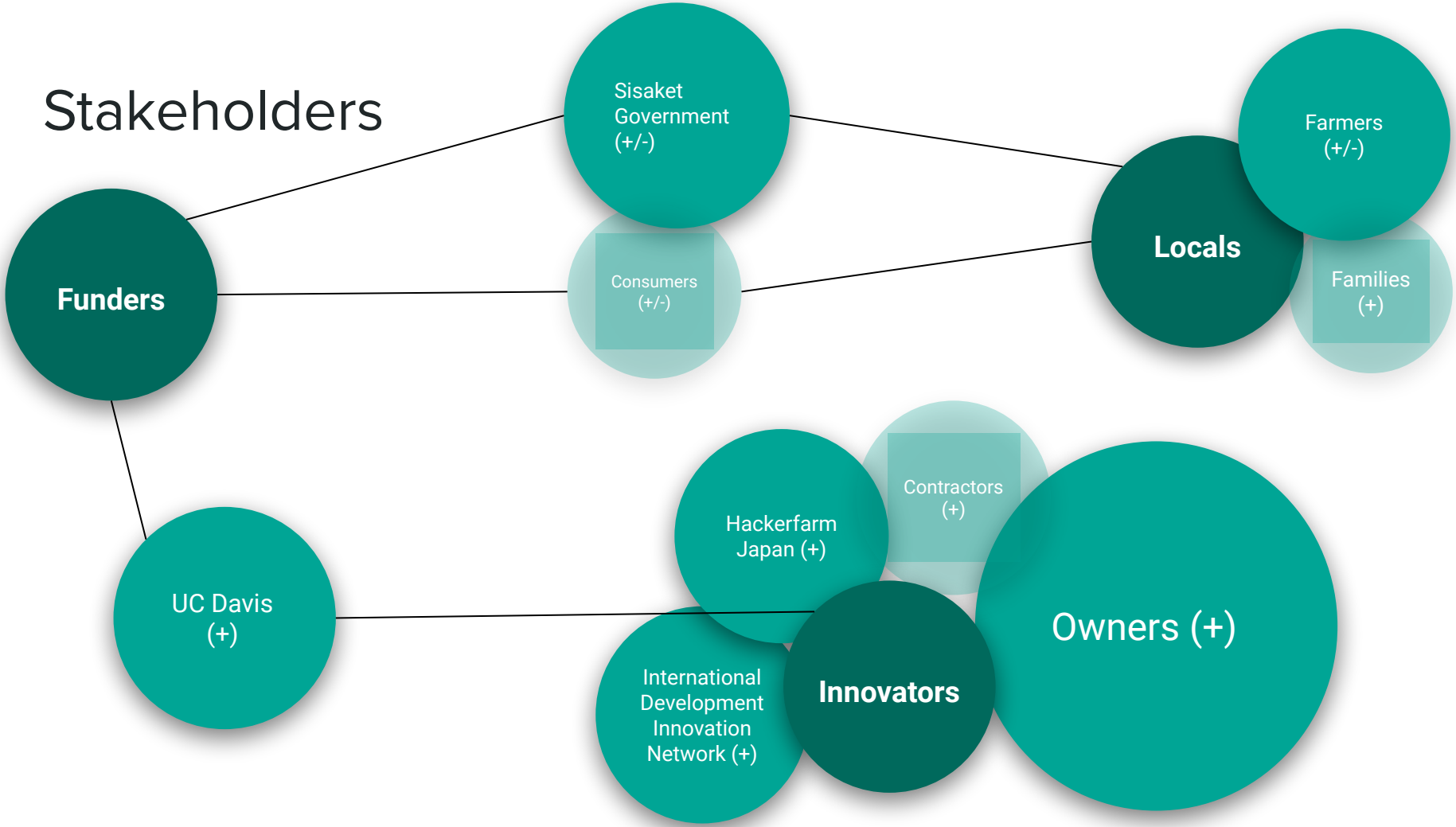
hacker-farm-bricoder-dans-le-bled/

- Hacker Farm's Techrice
  - System that allows farmers to remotely and immediately check field status
  - Customizable sensors can detect water level, T, humidity
  - Information sent to the cloud and accessed online

http://jotarofootsteps.blogspot.com/2014/06/gallery-scenic-sekinchan-padi-fields.html

- Field flooding control: app-friendly water depth monitoring system, automated sluice gates
  - Water depth sensor connected to long-range wifi network/meshnet ➔ availability of real-time information
  - Farmers can activate gates

Stakeholders



Policy ID

Sustainable Development Policies and Achievements in the Context of the Agriculture Sector in Thailand

"**Thailand has aggressively pursued the policy of accelerated agricultural growth** by promoting export-oriented, inorganic input based agriculture since the 1960s, where the farmers have been provided with subsidies for the purchase of improved varieties of seeds, inorganic fertilizers and pesticides, **as well as credit and irrigation water systems."**

Agricultural development policies adopted during the 1980s and 1990s emphasized the improvement of production efficiency to attain higher returns per unit of land and labor.

http://onlinelibrary.wiley.com/doi/10.1002/sd.467/epdf

SWOT Analysis

Strengths	Weaknesses
- Wide-ranging projects (soil testing, etc.) - Social, financial and labor backing from community - Sustainable farming practices (project expansion to combine sustainable water management)	- Farmer workforce aging - Comfort with lack of mechanization?
Opportunities	**Threats**
- Partnership with UCD BAE capstone team - Partnership with local universities - More sustainable water usage/land management - Ability to cater to green market - Increase productivity - Remove farmers from dangerous conditions	- Change in market demand for products - Harsh weather conditions - Change in community leadership

Insights and Next Steps

Boom Has Steep Environmental Cost

- Will sluice gates have an environmental impact? If so, what?

http://e360.yale.edu/features/in_mekong_delta_rice_boom_has_steep_environmental_cost

between shrimp and rice farmers in Vietnam

- How will sluice gates affect downstream water users?
- Do sluice gates lead to intensification of land? Good or bad impacts

Further consultation with Raitong Organics Farm for specifics:

- **Role of various stakeholders**
- **Funding**
- **Farm specifications (size, current system, etc.)**

http://www.iwmi.cgiar.org/Publications/Success_Stories/PDF/2013/Issue_17-Resolving_water_disputes_between_shrimp_and_rice_farmers_in_Vietnam.pdf

Questions?