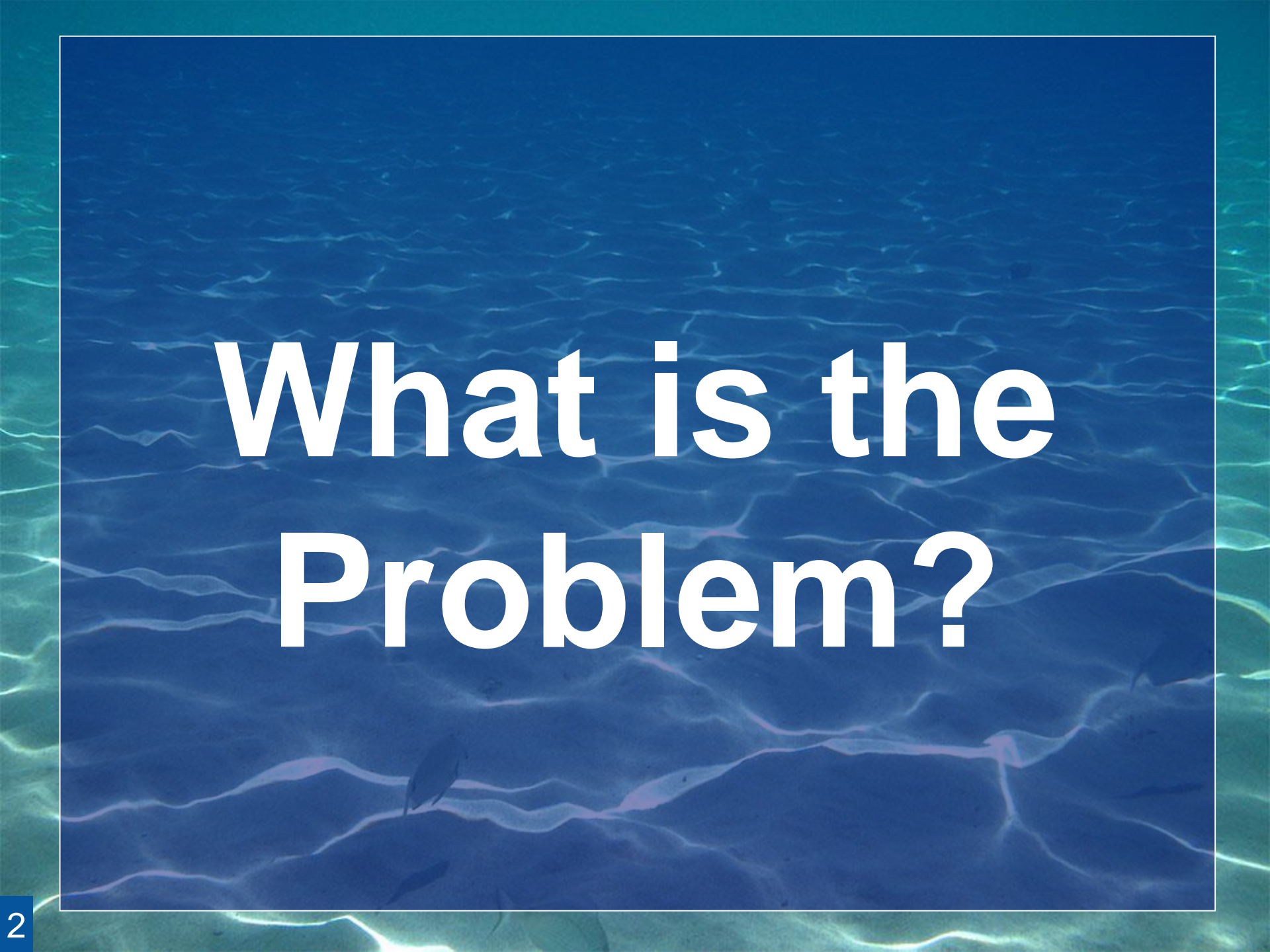


# The LoliPump

Gal, Shahaar, Simonas

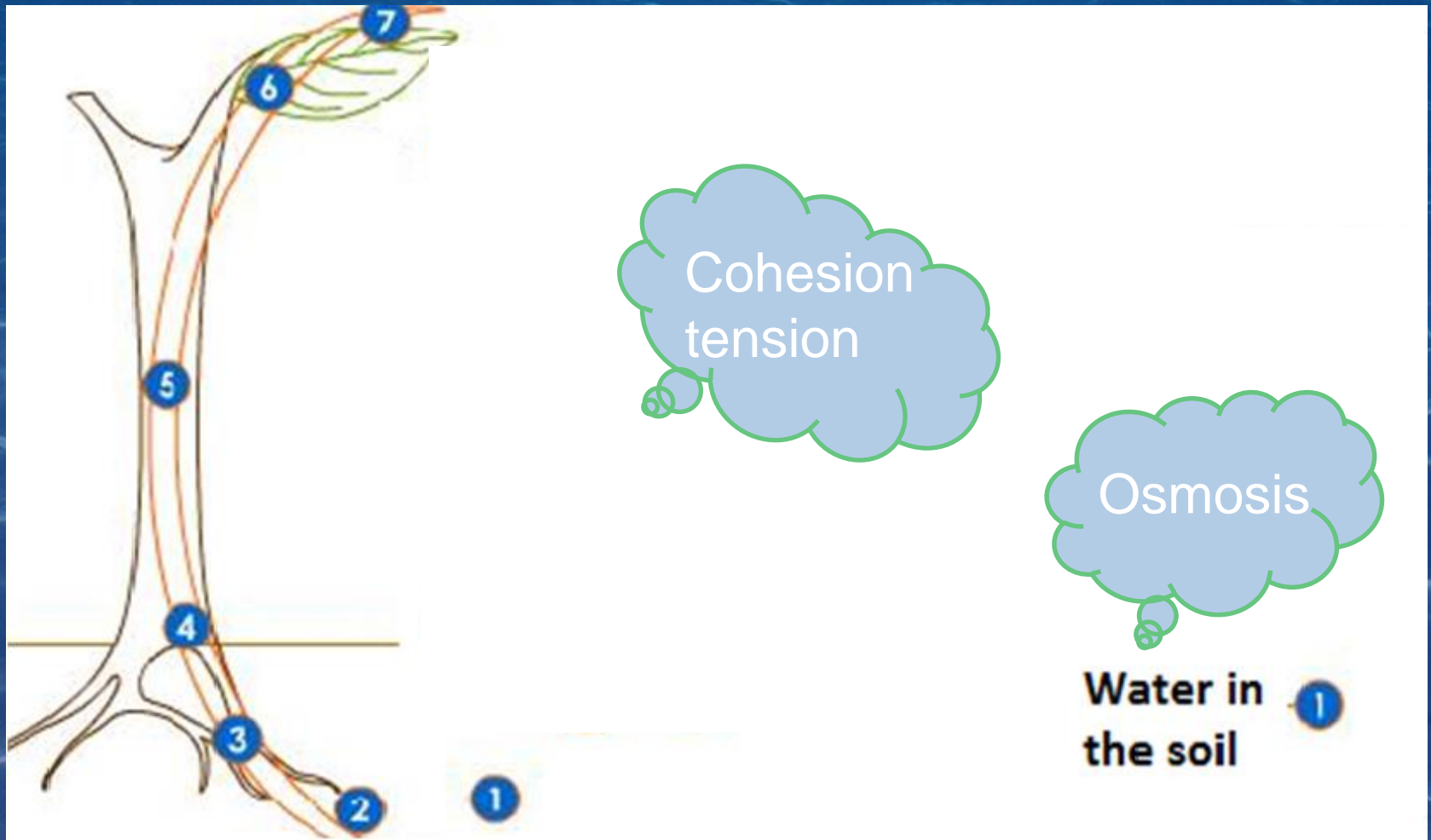


An underwater scene with blue and green water, showing ripples and several small fish swimming. The text "What is the Problem?" is overlaid in the center in a large, white, sans-serif font.

**What is the  
Problem?**



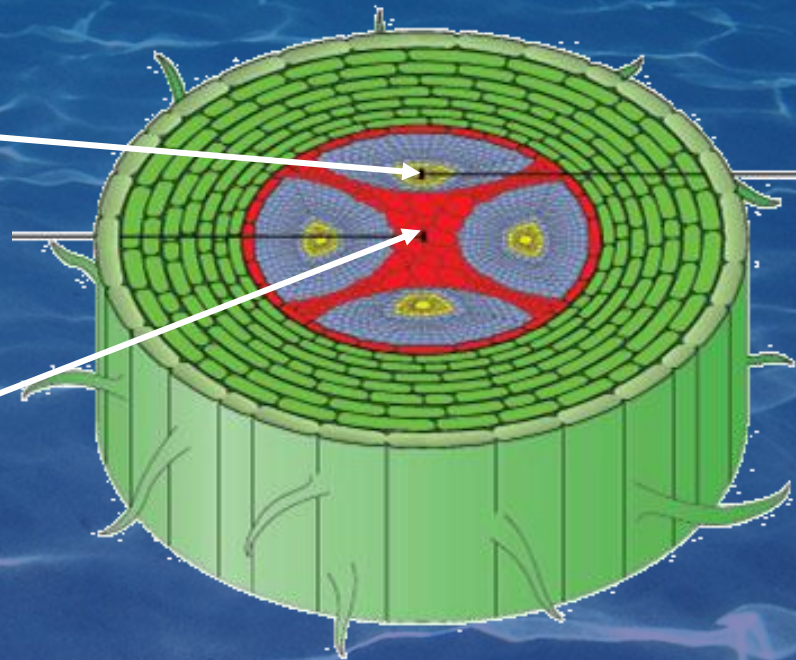
# Transpiration



# Ins and Outs of Tree Transportation

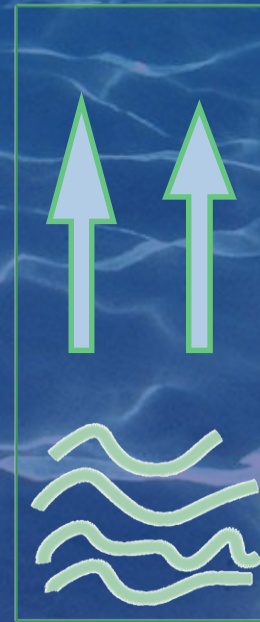
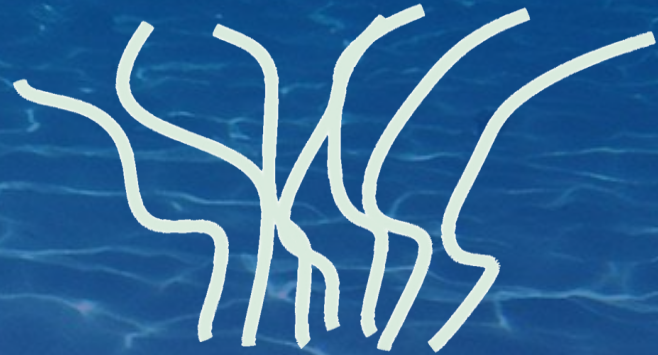
- **Phloem**

- **Xylems**



# Pressure

- Water evaporates
- Creates low pressure
- Pulls the water up

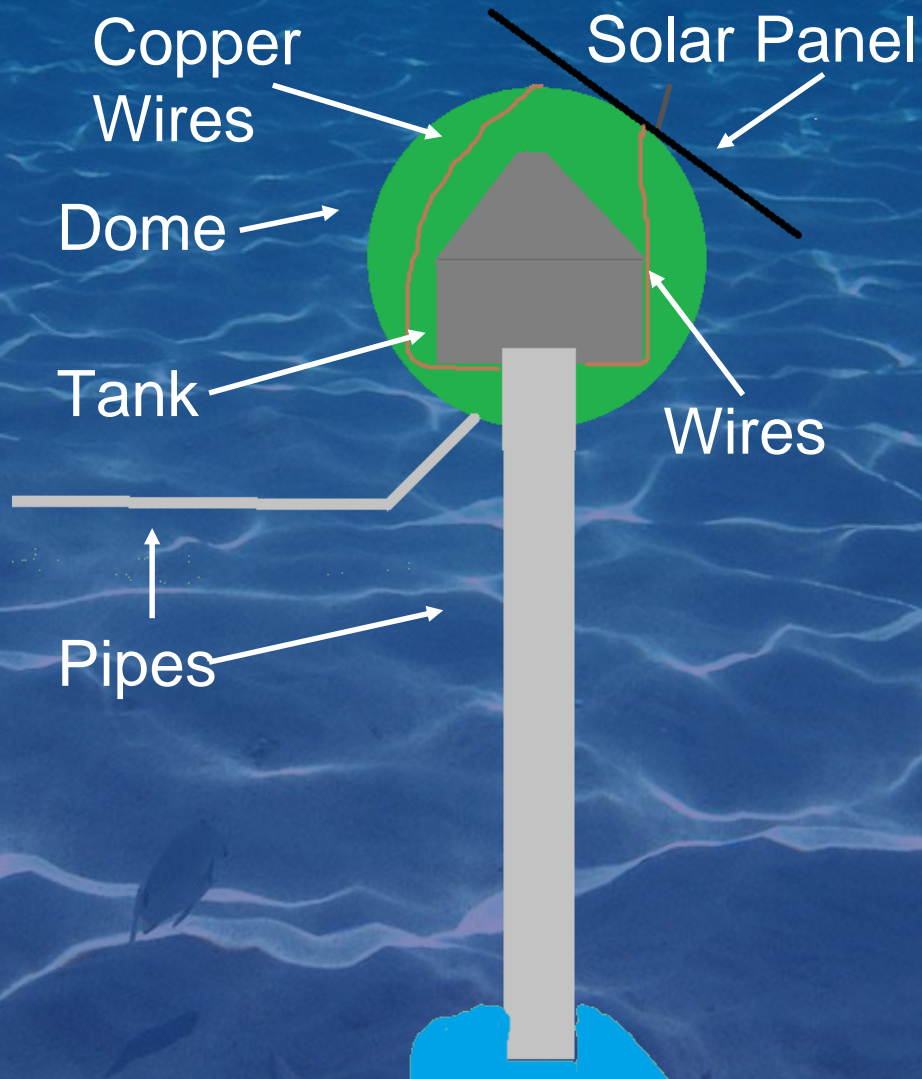


# Our Goal

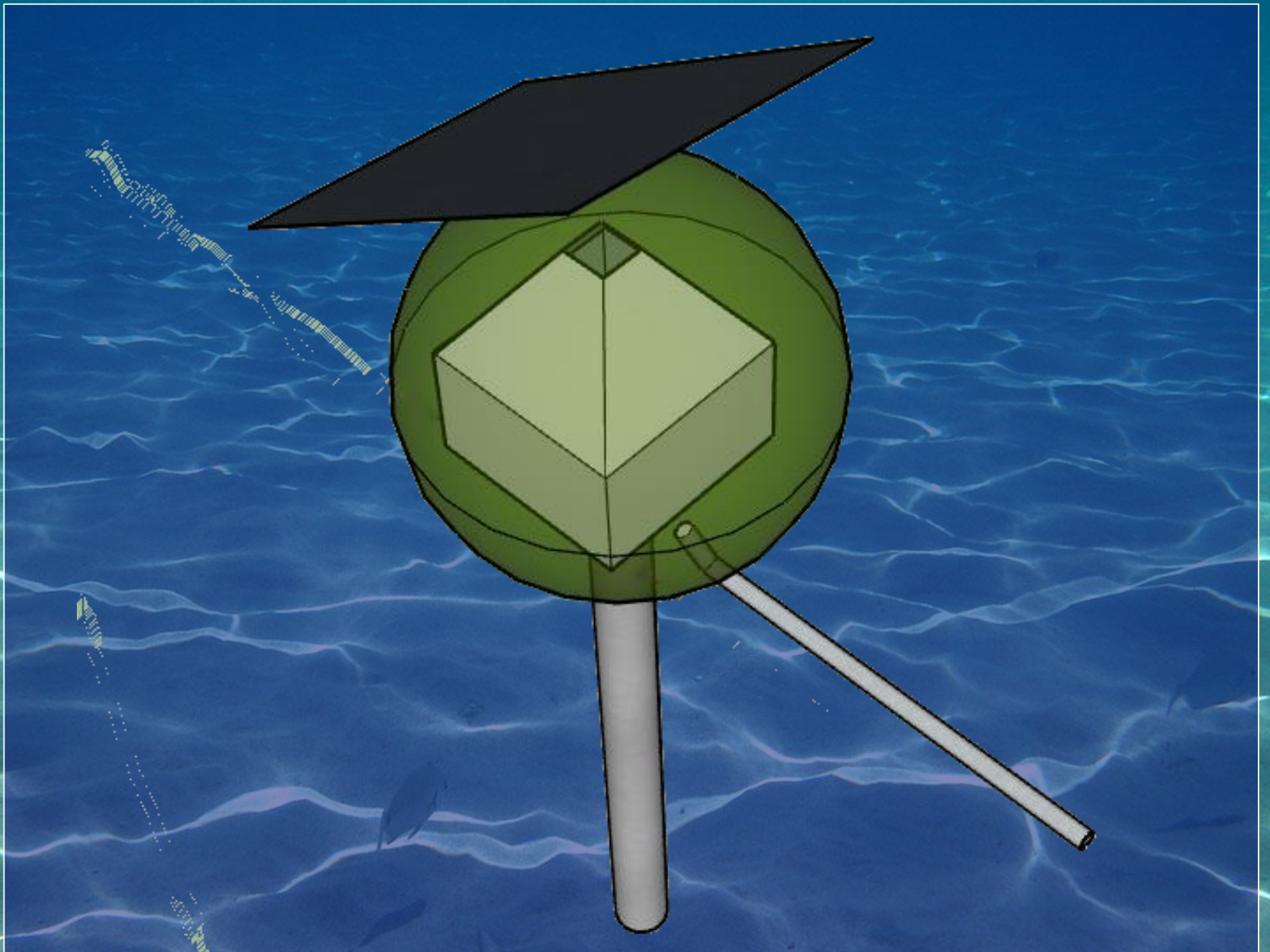
- **Distributing clean water to off-grid communities around the globe using transpiration**



# The LolliPump







# Calculations

$$Q = mC_p\Delta T + m\Delta H_{vp}$$

$m$  – Mass of the water:  $1.5 \cdot 10^{-3} L/s$

$C_p$  – Specific heat in constant pressure: 4.2J

$\Delta T$  – Temperature difference:  $30^\circ C - 70^\circ C$

$\Delta H_{vp}$  – Energy required to convert water from liquid to gas: 2260J

• **Result: 4.16 kW/h**

Solar panel  
with area of  
 $2 \text{ m}^2$   
produces  
1 kW/h

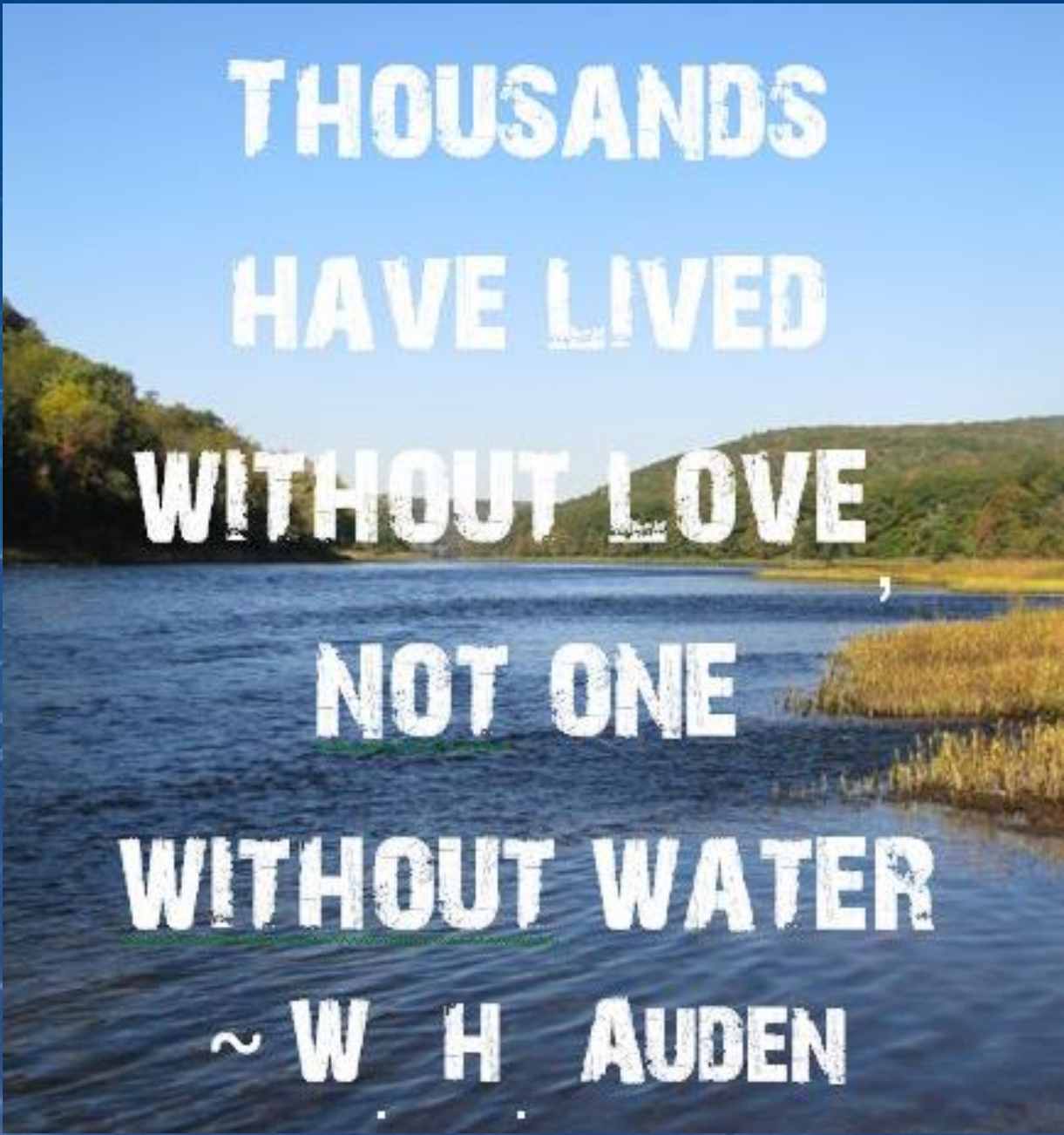
# Gas vs. LolliPump

Category/ System	Price	Danger	Pollution	Noise	Lifespan	Maintance
<b>Gas</b>	\$24 year	Flammable	High	High	2 years	Weekly
<b>Solar Power</b>	\$113 year	None	Low	Low	15-20 years	Monthly

# Costs

- Pump
- Initial cost - \$300
- Yearly cost - \$24
- LolliPump
- Initial cost - \$2000
- Yearly cost - \$0





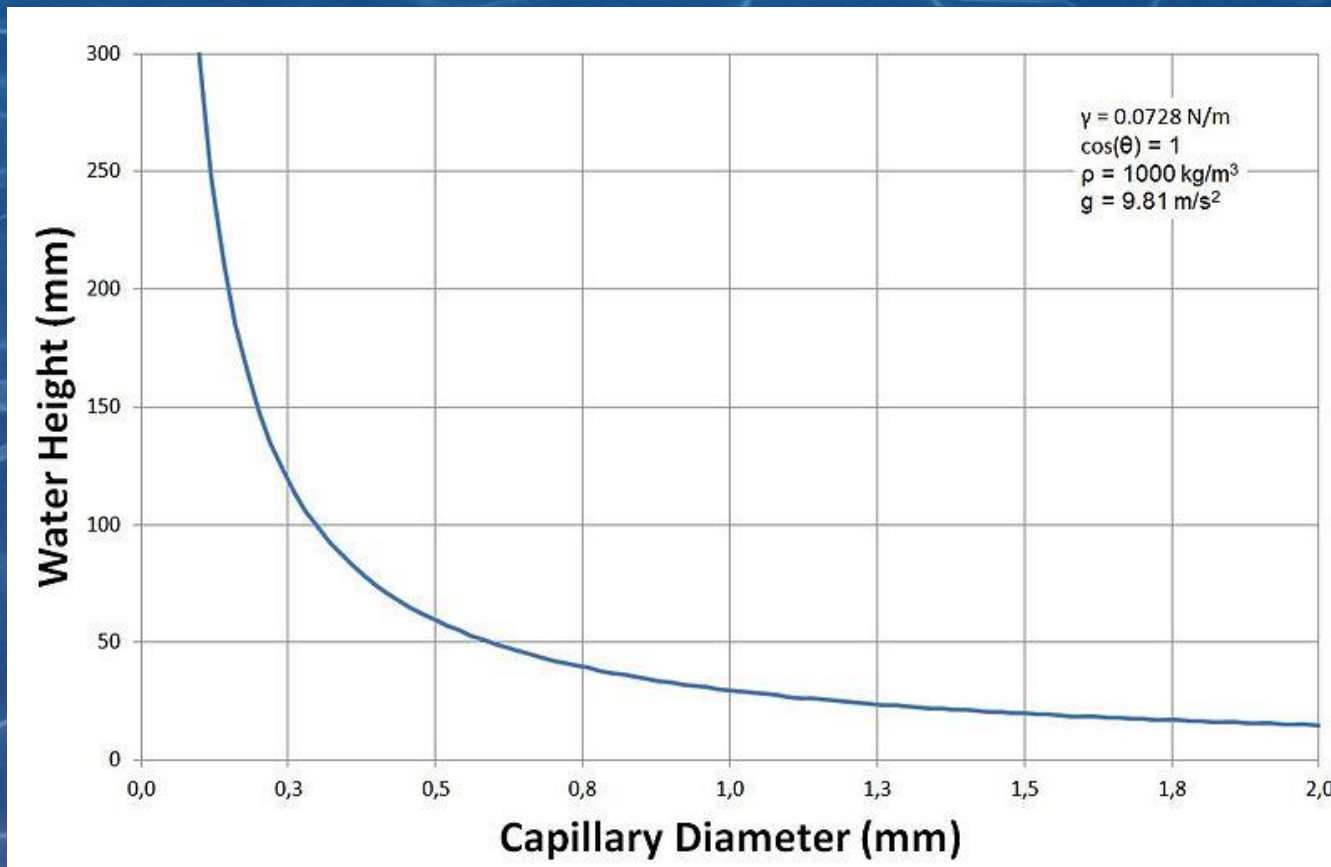
**THOUSANDS  
HAVE LIVED  
WITHOUT LOVE  
NOT ONE  
WITHOUT WATER  
~ W H AUDEN**

**If you have any questions you  
can email us:**

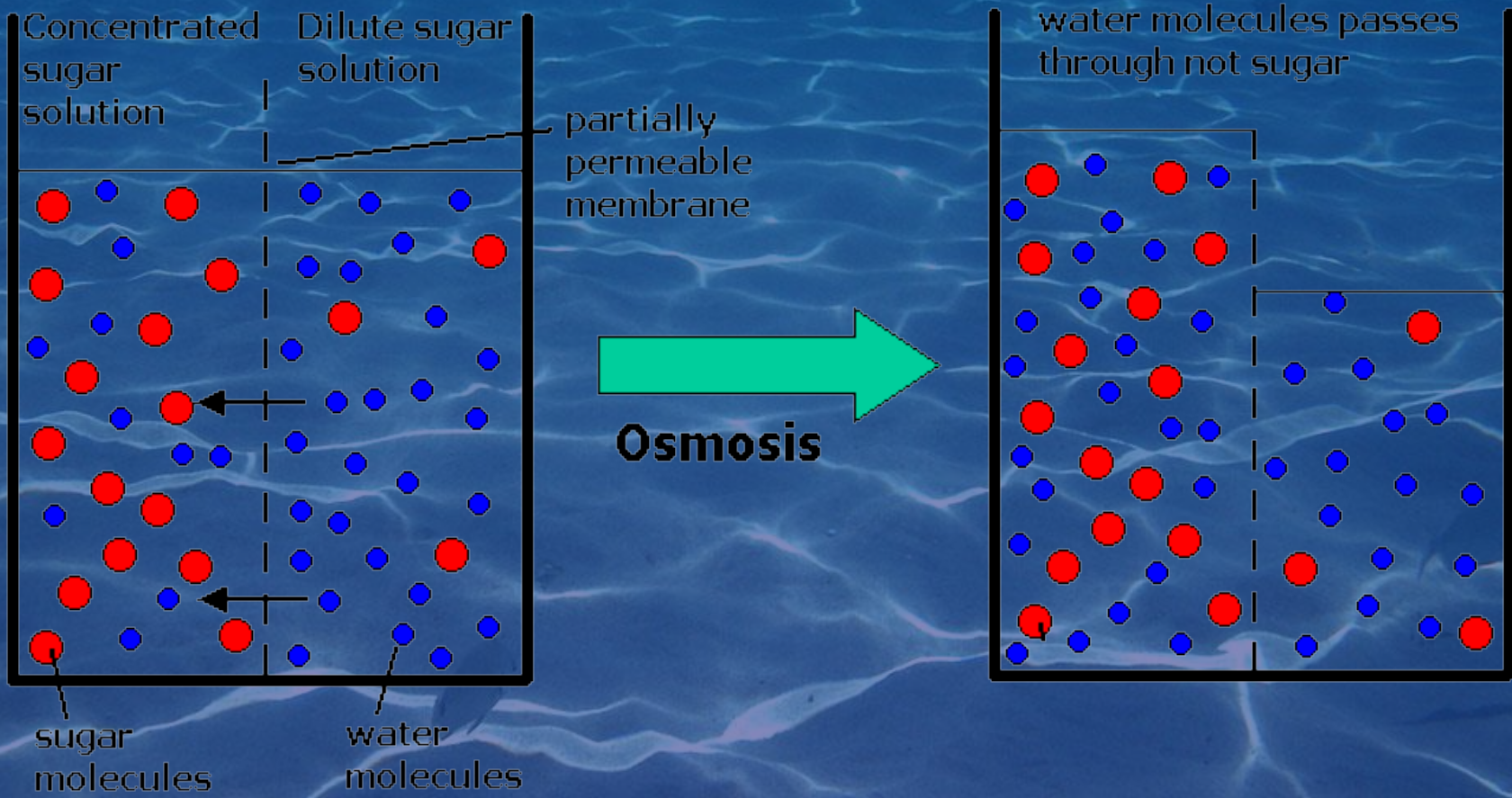
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# Backup slides

- Capillary action (Cohesion Tension)



# Osmosis





# Phloem

- In vascular plants, phloem is the living tissue that carries organic nutrients, in particular, sucrose, a sugar, to all parts of the plant where needed.

