1. Vision-based
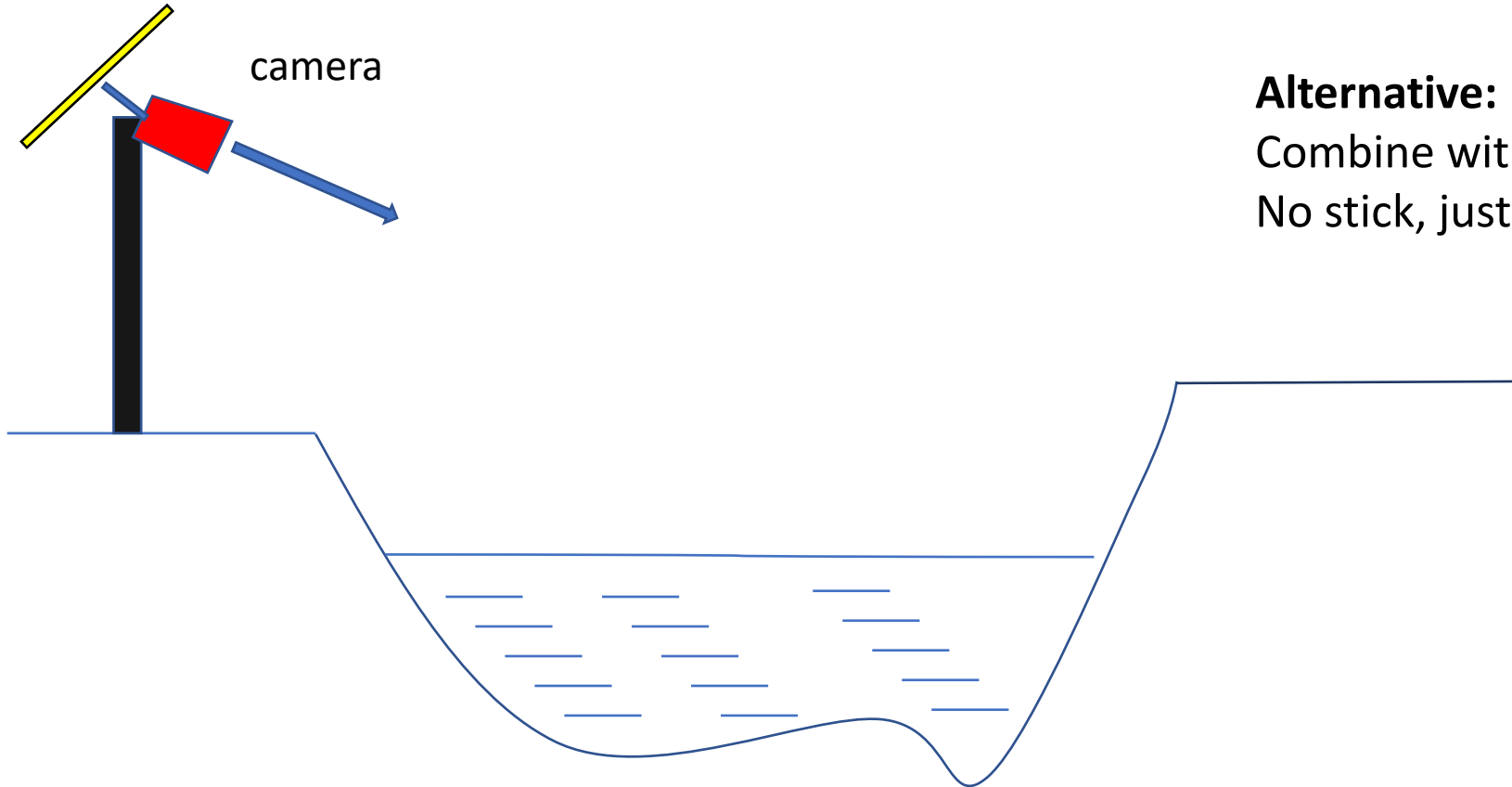
Pros:
Simple
Photo + flow evidence
Cons:
Visible
Only for regular flow, not for rocky riverbeds

Alternative:
Combine with data about power output
No stick, just a tree

solar panel
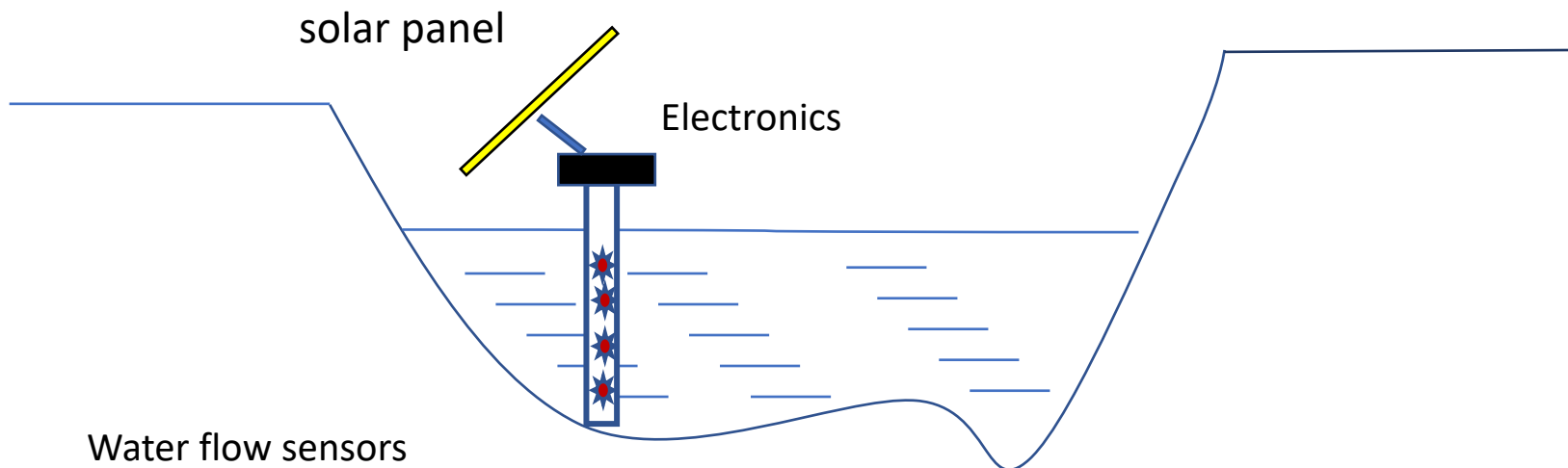
camera

1. Direct sensor
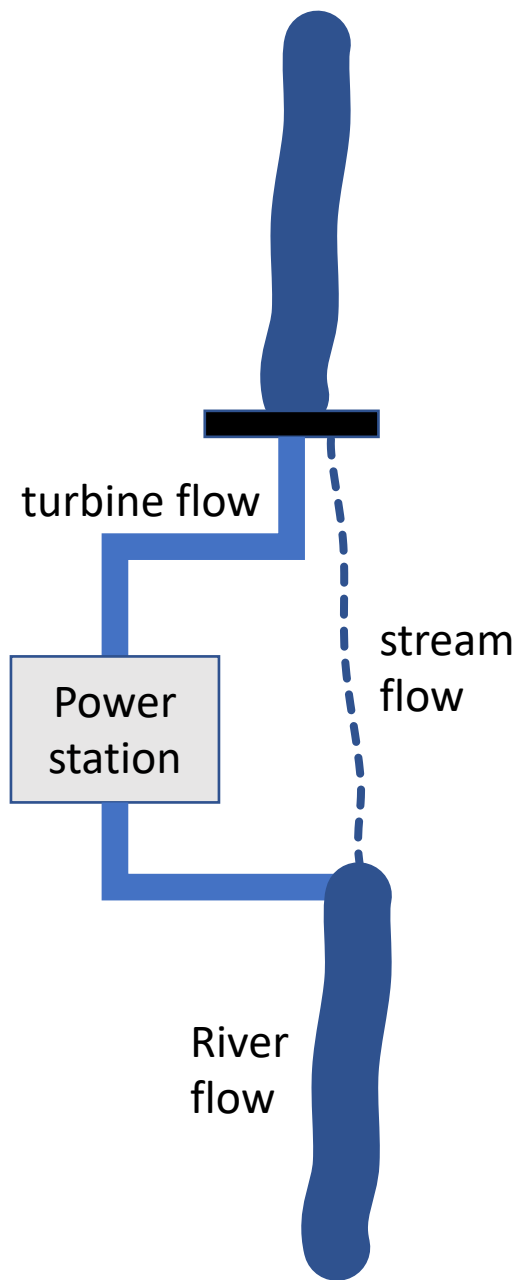
Pros:
Cheaper
Still simple
Easier to hide
Does not depend on video
Cons:
Very sensitive to placement if measuring flow

solar panel

Electronics

Water flow sensors

turbine flow

stream
flow

Power
station

River
flow

Can we calculate one from other two? Yes!

turbine flow

stream flow

Power station
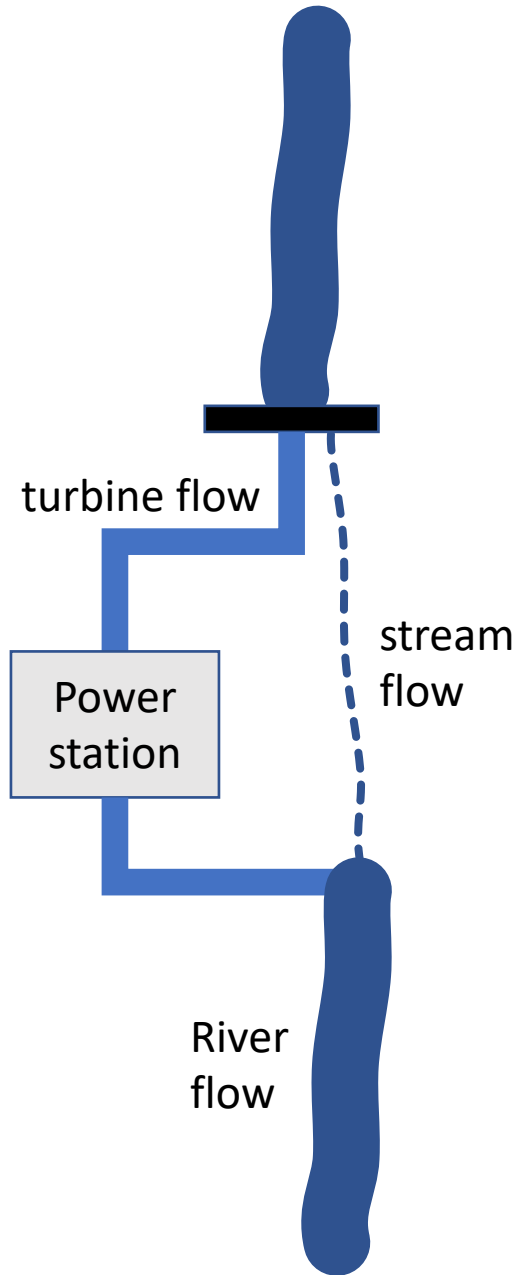
River flow

Stream flow = river flow – turbine flow

Can we measure just one and use
open data for the rest? Yes!

turbine flow

stream
flow

Power
station

River
flow
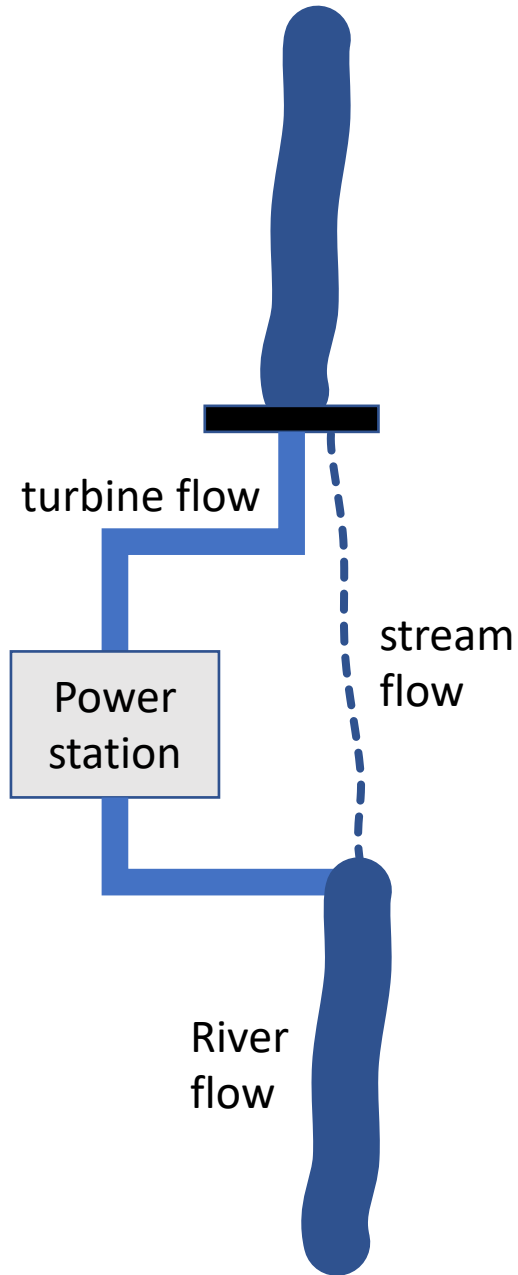
Power [W] = Net head [m] x Flow [l/s] x g x e

Flow [l/s] = Power [W] / (Net head [m] x g x e)

Avg. power [Wh] = (Yearly Power [Wh] / 365x24)

Avg. flow [l/s] = Avg. power / (Net head x g x e)

Yearly flow [l] = Avg. flow x 365x86400

Power Plant Tracker (PPT) –
https://github.com/jariarkko/powerplanttracker

```
% ppt_flowcalculator.sh —country serbia
      138 hydro power plants
      211 power plants with energy production data
        1 hydro power plants with net head data

      For hydro power station црквине (Serbia, 2017):

      Yearly power              2951585.600 KWh
      Net head (height)              60.900 m
      Average power                 336.939 KW
      Average flow                    1.128 m3/s
      Yearly flow              35571450.867 m3
```