

Consider a rural area with an agricultural and an industrial sector. The water uses of the two sectors are rival and there are no return flows. The marginal benefit and marginal cost of the industrial sector are $83 - w$ and 3 , respectively; the marginal benefit and marginal cost of the agriculture are $60 - w$ and $2w$, respectively.

- a. What is the aggregate marginal net benefit function for this region?
- b. Assume that 80 units of water are available. What is the aggregately efficient allocation of water? What are the consequent marginal net benefits for the two sectors?
- c. What if only 40 units of water are available? What is the aggregately efficient allocation of water and the consequent marginal net benefits for the two sectors?
- d. Suppose that existing policy guarantees 15 units of water for the agricultural sector. For both the 80 and 40 unit scenarios, what are the sectoral (for each sector separately) gains and losses attributable to this policy?