Asymmetries between downlink and uplink throughput requirements are:
- Common in wireless systems, reflecting usage patterns (e.g., video streaming)
- Inherent in wireless protocols (e.g., acknowledgements, control or training)

The actual user uplink traffic may be much smaller than the given lower bound.

Not possible to adjust the resources to reflect the traffic asymmetry — significant resource waste.

- Full-duplex transmits always at max power
- In full-duplex, the transmit power of the user terminal is kept as low as possible
- For larger link distances the user terminal saturates at its max power, thus requiring the downlink power to decrease as well.

Power allocation allows full-duplex to keep a gain over half-duplex for a useful range of link distances.
- In this figure the actual data asymmetry is the same as the asymmetry constraint (1/9).
- This corresponds to the “worst” case for full-duplex in terms of the useful range over half-duplex (i.e., the point where full-duplex capacity crosses half-duplex capacity occurs in the smallest possible link distance).

- Full-duplex shows great behaviour for symmetric links, in terms of the range where the capacity is higher than half-duplex
- The benefits of full-duplex diminish as the link becomes more asymmetric
- However, when the actual uplink traffic is lower than the imposed lower bound, full-duplex can save the spectral resources that half-duplex wastes
- After this “break” point, the more asymmetric the link becomes, the better for full-duplex

Full-duplex can use power allocation as an extra knob — any constraint is “tuned down” to the actual data asymmetry, increasing the overall spectral efficiency.