Figure 4-44   Power availability by geographic area, 1964–1965
Source: PSAC 1967, vol. 3, p. 177.

Thus we assumed that a sixfold (twentyfold) increase in world average agricultural inputs per hectare would lead to a doubling (tripling) of the 1963 global average land yield. We also established that a tenfold increase in agricultural inputs per hectare would lead to a doubling of the 1966 nonindustrialized world average land yield. To be able to use both these estimates in the construction of an average relation between land yield and agricultural inputs, we had to make assumptions about the relative size of the 1963 global average land yield and the 1966 developing country average land yield—and similarly relate the average global and developing world agricultural inputs.

We chose to express the land yields in multiples of the inherent land fertility ILF (equal to 600 vegetable-equivalent kilograms per hectare-year). We assumed that the 1966 average land yield of the developing world was 1,300 vegetable-equivalent kilograms per hectare-year (PSAC 1967, vol. 3, p. 174) and that the 1963 global average land yield was 2,000 vegetable-equivalent kilograms per hectare-year (on the basis of

Input	Average Global Use in 1963	Inputs Needed to Double Yield above the 1963 Value	Inputs Needed to Triple Yield above the 1963 Value	Multiple Needed to Double Yield above the 1963 Value	Multiple Needed to Triple Yield above the 1963 Value
Fertilizer (kilograms per hectare-year)	28	170	560	6	20
Pesticide (kilograms per hectare-year)	0.53	3	10	6	20
Power (horsepower per hectare)	0.36	1.3	2.1	3	6

Figure 4-45   Inputs needed to increase average yield
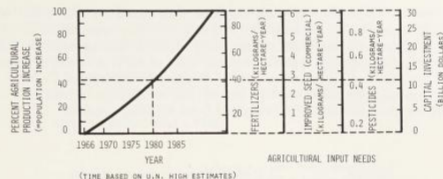Sources: Compiled from Figures 4-6, 4-35, 4-36, and 4-41.

Figure 4-46   Proposed future yield and input consumption for the developing world
Source: PSAC 1967, vol. 3, p. 174.
Note: The 1966 production corresponds to an average yield of 1,300 kilo-grams per hectare-year on 700 million hectares of land. The area includes Asia (except mainland China and Japan), Africa, and Latin America.

Figures 4-35, 4-36, and 4-41). These yields are, respectively, about two and three times the inherent land fertility ILF. Further, we assumed that the 1963 global average agricultural inputs per hectare AIPH was four times the 1966 average agricultural inputs per hectare AIPH in the developing world. The multiple of four seems reasonable, considering the indicated differences in fertilizer and pesticide use, assuming that the other agricultural inputs are used approximately in the same proportion. Using all these figures, we were able to draw a general relationship between agricultural inputs per hectare (expressed in multiples of the 1966 developing-world value) and the resulting land yield (expressed in multiples of the inherent land fertility) as shown in Figure 4-47.
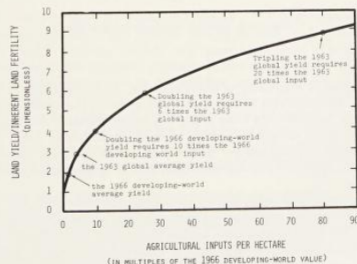

Figure 4-47   Relation between land yield and agricultural inputs per hectare