

**Supplementary Information for**  
**Effects of land cover change on vegetation carbon source/sink in arid**  
**terrestrial ecosystems of Northwest China, 2001–2018**

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## Supplementary Figure

**Supplementary Figure S1.** Direct and indirect strategies for modelling scenario design.

(a) Comparison of direct and indirect strategies; (b) Differences between the results of direct/indirect strategic thinking adopted in the scenario design and the results of the original scenario. In this illustration, the direct impact of the changed factors can be obtained by subtracting the NEP of 2001 from the NEP of each year after 2001. Scenarios LC2 (fixed NDVI, EVI), LC3 (variable NDVI, EVI), and LC1 (no variables fixed) can be referred to in Table 3 of the article. Furthermore, the effect of LC2 can also be estimated indirectly as the difference between LC1 and LC3, denoted as LC2'. The effect of LC3 can also be estimated indirectly as the difference between LC1 and LC2, denoted LC3'. Thus, the combined effect of LC2 and LC3 (LC2+LC3) forms a direct strategy for LC1, and the combined effect of LC2' and LC3' (LC2'+LC3') forms an indirect strategy for LC1, such that LC1 can be considered a reference scenario for LC2+LC3 and LC2'+LC3'

