

Annex D. Detailed causal loop diagram of the Irish transport system

Figure A D.1 presents a tailored causal loop diagram (CLD) of the Irish transport system. It is a more detailed version of the CLDs introduced in Chapter 3. Each loop label (B1, R1, etc.) denotes a feedback loop. A feedback loop is either positive and reinforcing or negative and balancing. This is represented in the loop labels with an “R” or a “B” respectively.

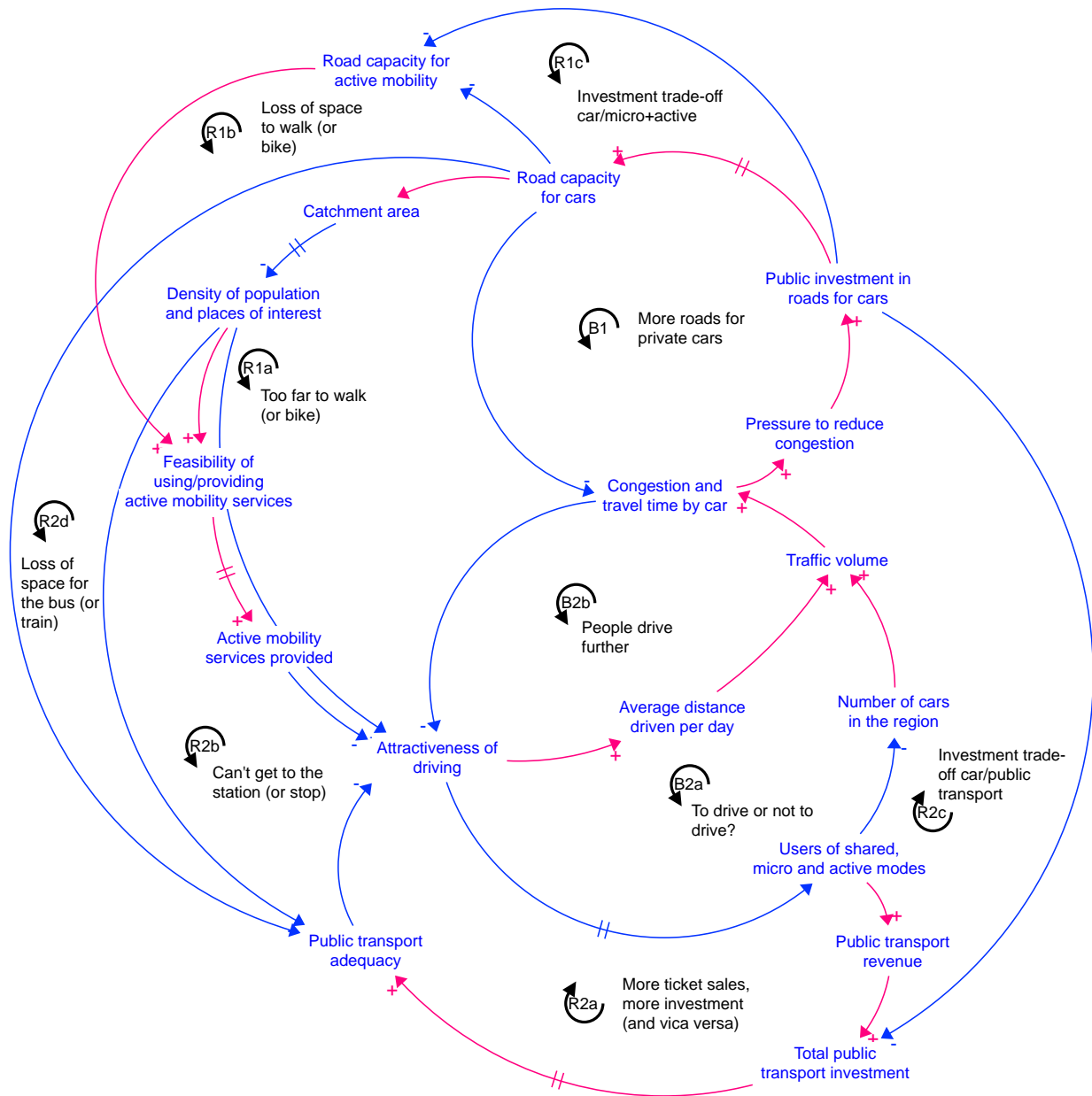
The coloured arrows show the relationship between variables. A red arrow between variables signifies that they vary in the same direction: an increase in one variable will lead to an increase in the other variable it “points” at, while a decrease in one will lead to a decrease in the other. When a blue arrow links two variables, they will vary in opposite directions: an increase in one leads to a decrease in the other.

For example, if the number of cars increases, then traffic volume will do so too, as shown by the red arrow between them. Conversely, if travel time by car increases, then attractiveness of driving relative to other modes will decrease, so they are connected by a blue arrow.

When two lines intersect an arrow, this represents a delay: a change in a variable will not affect the one it points at immediately, but after a period of time. For example, if there is an increase in investment in roads for cars, the full effect on car-purposed road capacity will only emerge after a delay, as it takes time to build roads.

By starting with a change in one variable and tracing the changes around a loop – variable by variable and link by link – back to the initial variable, the polarity of that loop (whether it is positive or negative) becomes clear. If the variable moves in the same direction as it initially did, it is a positive, reinforcing loop, while if it moves in the opposite direction, it is a negative, balancing loop. “B1: More roads to reduce congestion”, for example, is a balancing loop; “R1a: Single-use development proliferation” is a reinforcing loop.

Figure A D.1. Detailed causal loop diagram of the Irish transport system





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