FDIS – FINAL DRAFT…

ISO 59 004 – Circular Economy – Terminology, principles and guidance for implementation

ISO 59 010
Circular Economy – Guidance on business models and value networks

ISO 59 020
Circular Economy – Measuring and assessing circularity performance

ISO 59 040
Circular Economy – Product Circularity Data Sheet

ISO 59 014
Environmental management and circular economy – Sustainability and traceability of secondary materials recovery– Principles and requirements

ISO TR 59 031 – Circular Economy – Performance based approaches
ISO TR 59 032 – Circular Economy – Review of business model implementation

Relationship between ISO 59004, ISO 59010 and ISO 59020
(59014 Secondary Materials and 59040 Circularity Data Sheet)

In this family of standards, ISO 59004, ISO 59010 and ISO 59020 are interconnected as shown in Figure 2 and support organizations in implementing a transition towards a circular economy.

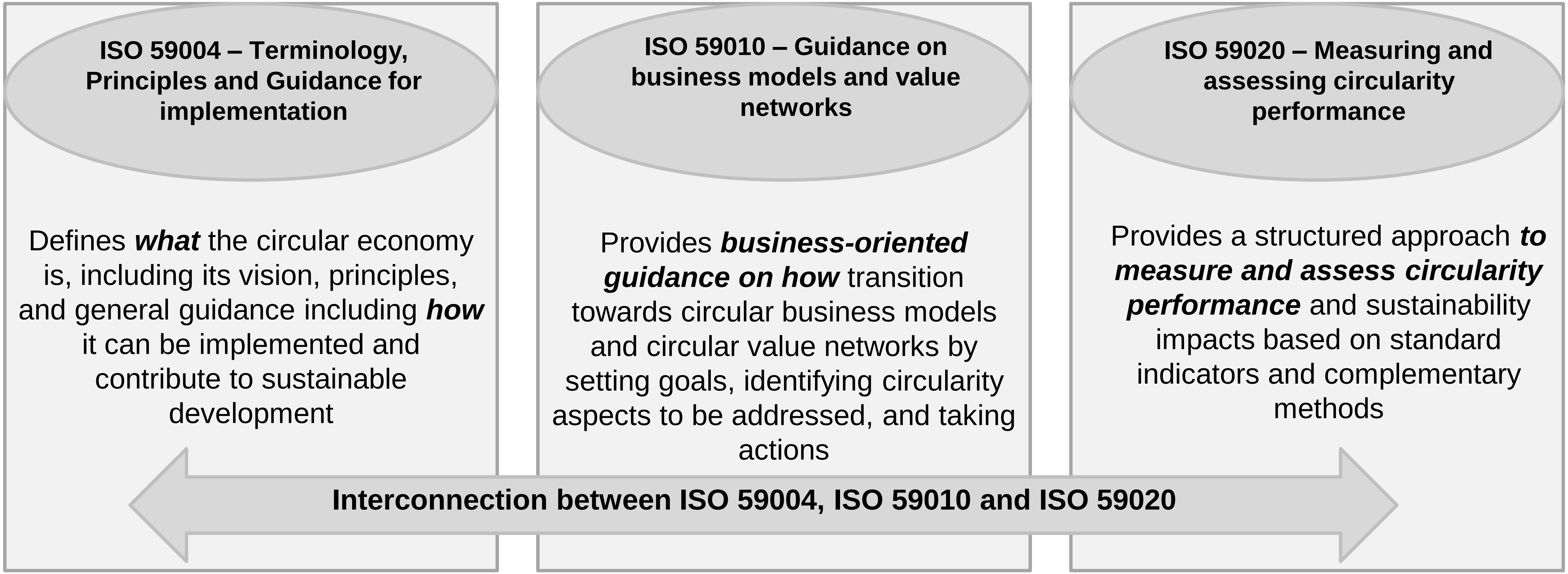


Figure 2 — Relationship between ISO 59004, ISO 59010 and ISO 59020

3.3.12

Residuo

recurso (3.3.11) que ya no se considera un activo ya que, en ese momento, proporciona un valor insuficiente al titular.

Nota 1 a la entrada: El titular puede optar por retener, desechar o transferir los residuos.

Nota 2 a la entrada: Se puede asignar valor a un residuo como resultado de una necesidad de otra parte interesada, momento en el que el recurso ya no se considera residuo.

Nota 3 a la entrada: La asignación de valor a los residuos como recurso está vinculada, en parte, a la tecnología disponible (por ejemplo, la minería en vertederos).

Nota 4 a la entrada: Algunas regulaciones requieren que el poseedor se deshaga de ciertos tipos de residuos, mientras que otras asignan valor a los desechos.

Nota 5 a la entrada: Debido a que los recursos incluyen el contenido de energía o el potencial energético de los materiales, dicha energía, cuando se libera durante un proceso y no se recupera para otro uso, puede considerarse un residuo.

Figure 4 — Circularity measurement process step

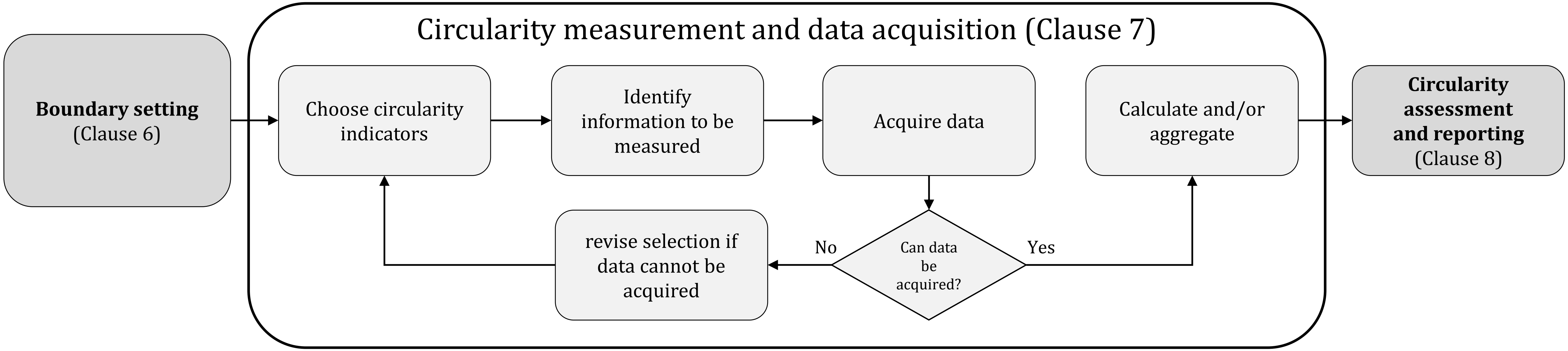


Figure 5 — system to be measured and its relationships

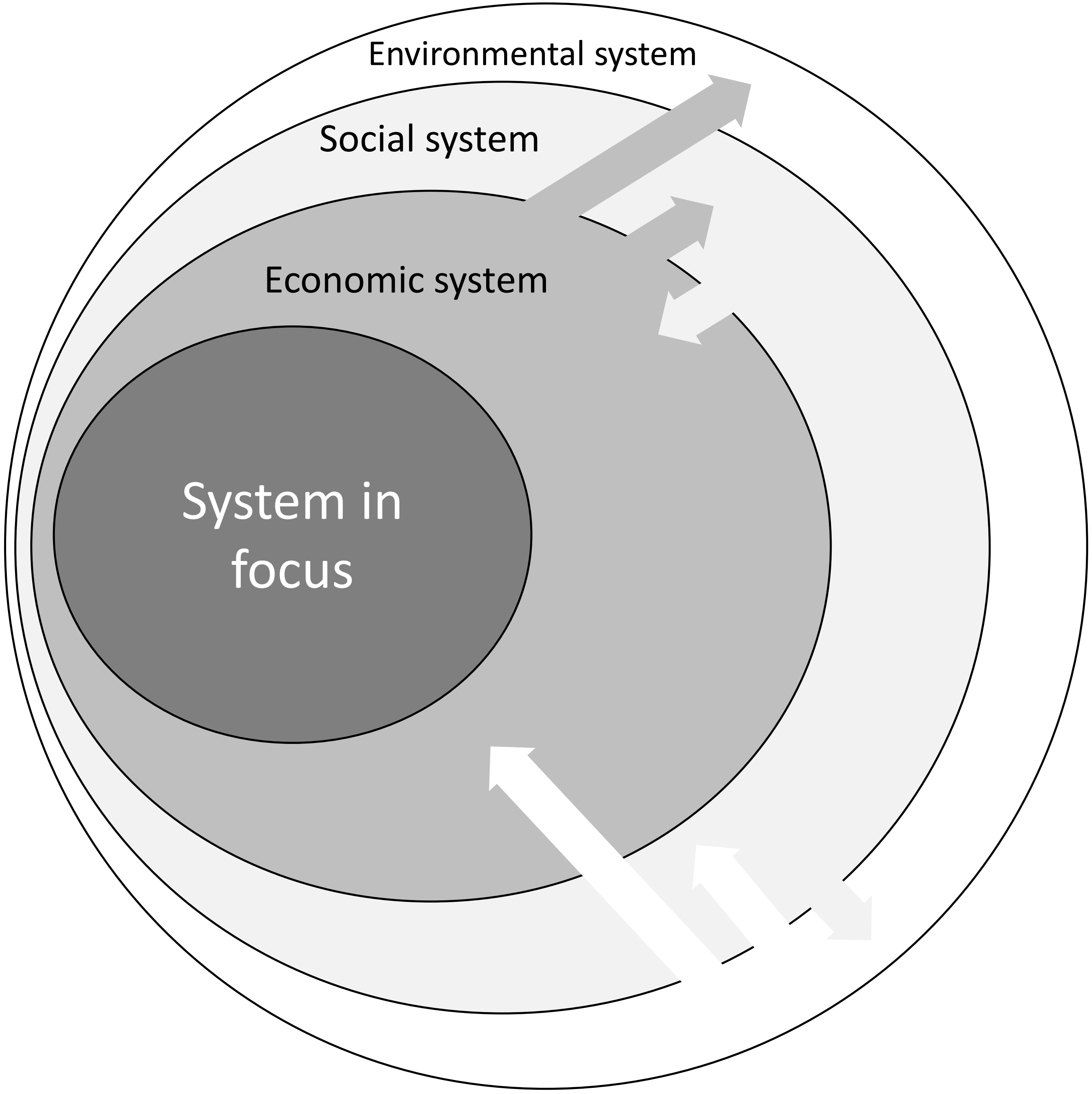


Figure 6 — system in focus and its boundaries

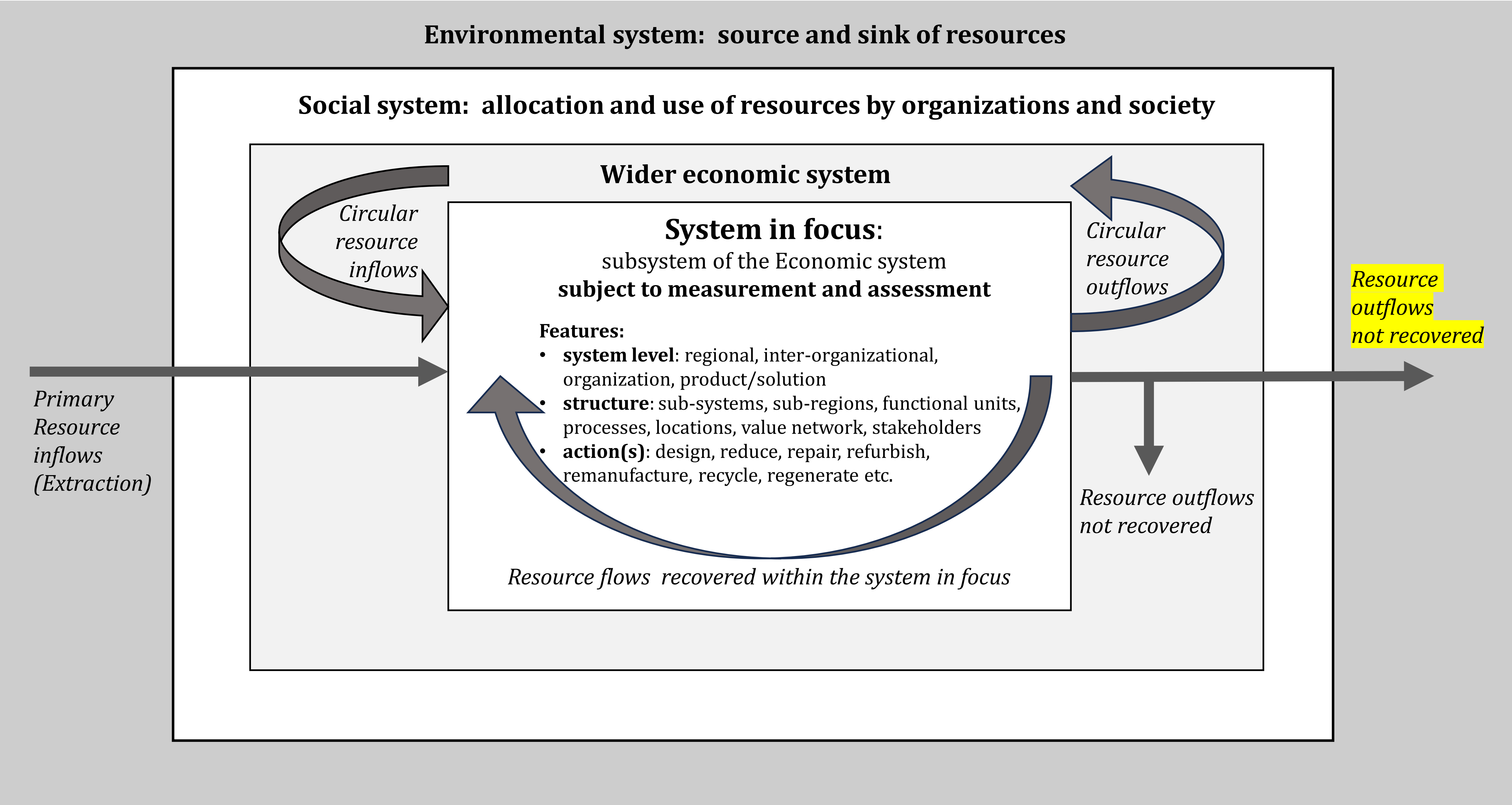


Figure 7 —Circularity measurement taxonomy

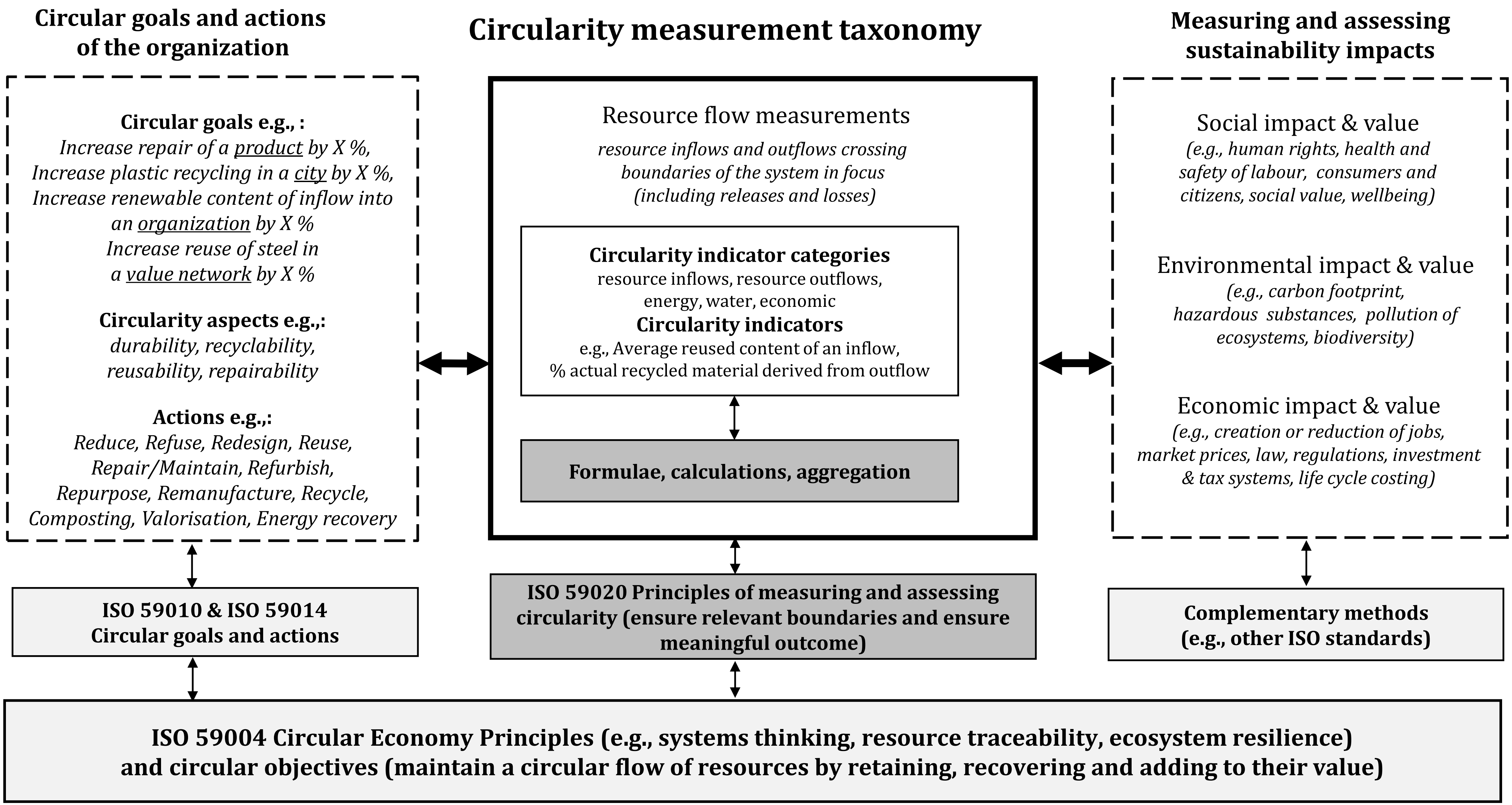


Figure 8 — Data acquisition process

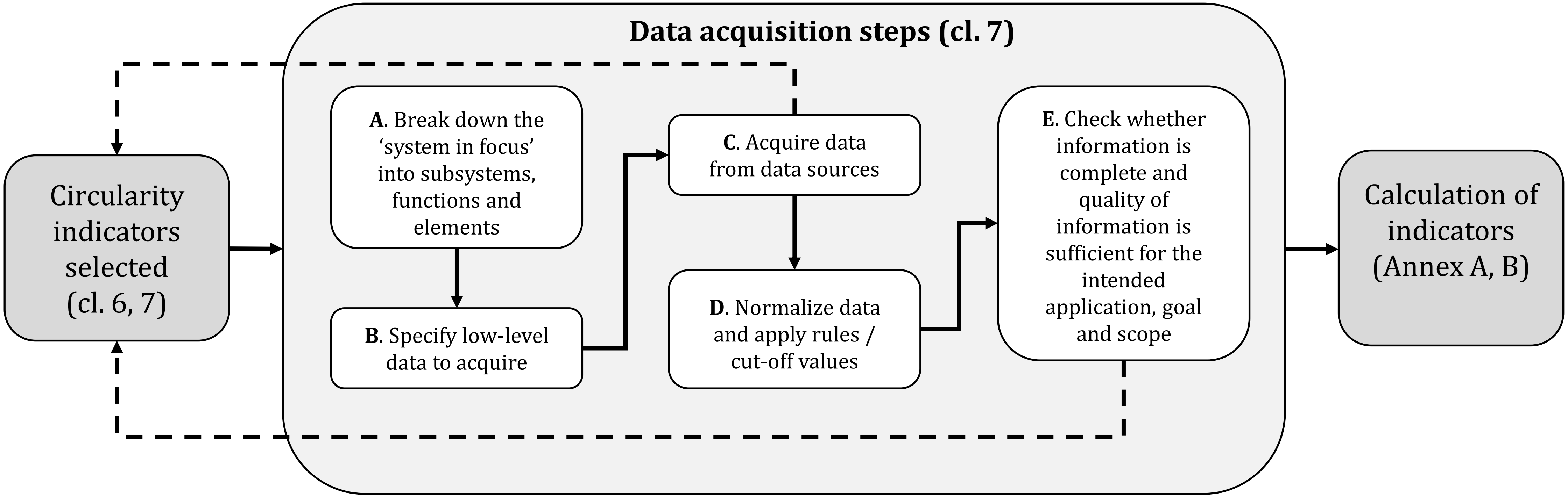


Figure 9 - Documentation to assess the quality

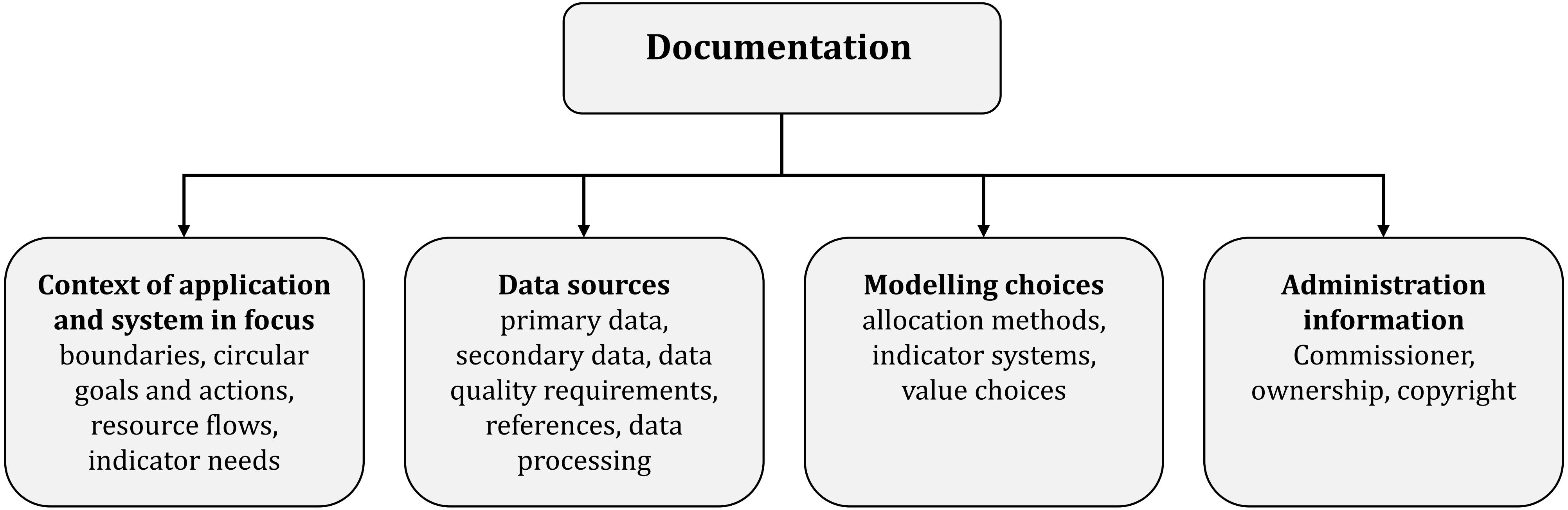
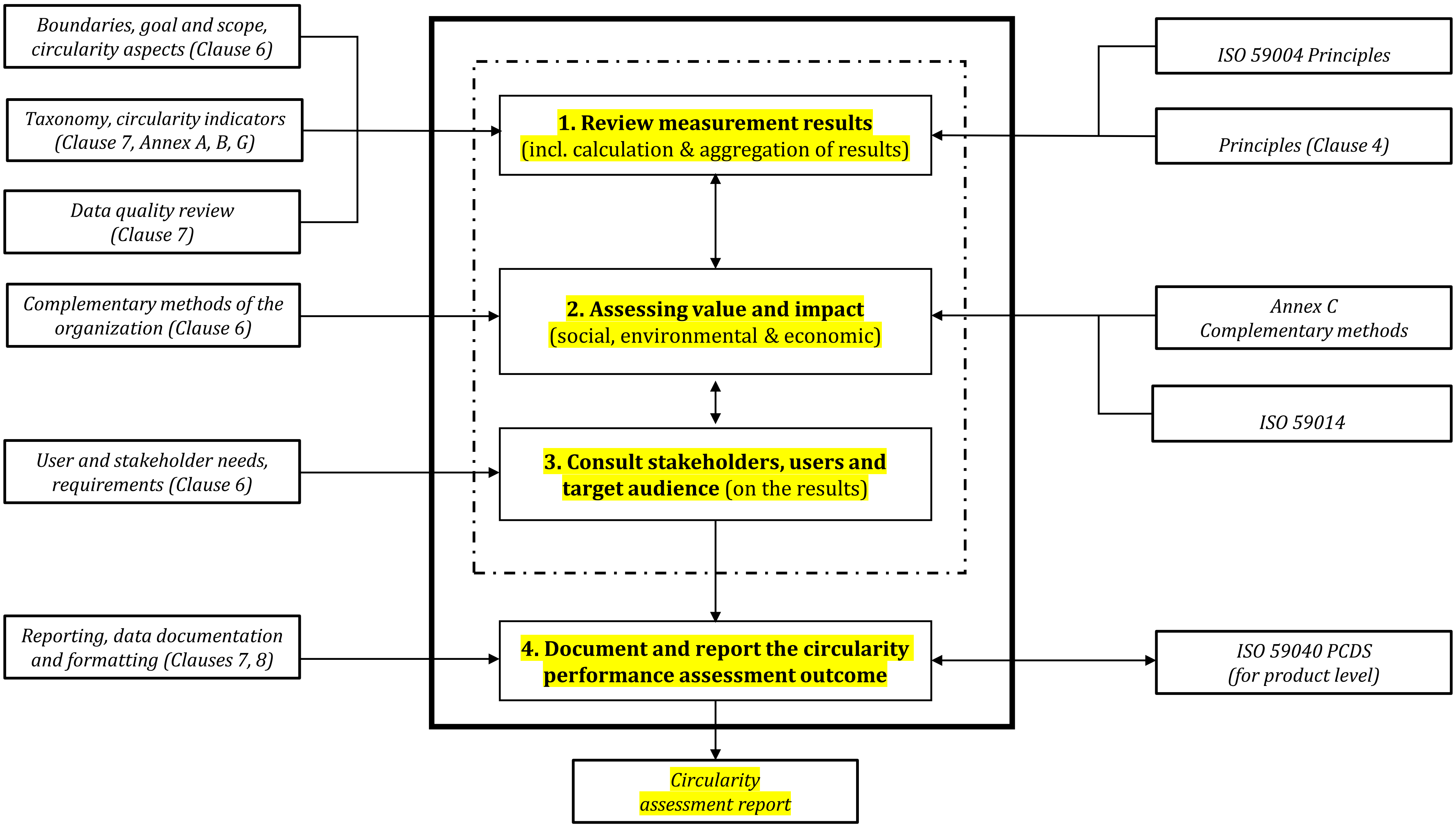


Figure 10 – Steps for assessing circularity performance



ANEXO A. (Normativo)

Indicadores “Core” obligatorios

Figure A.1 – 100 percent resource inflow formula

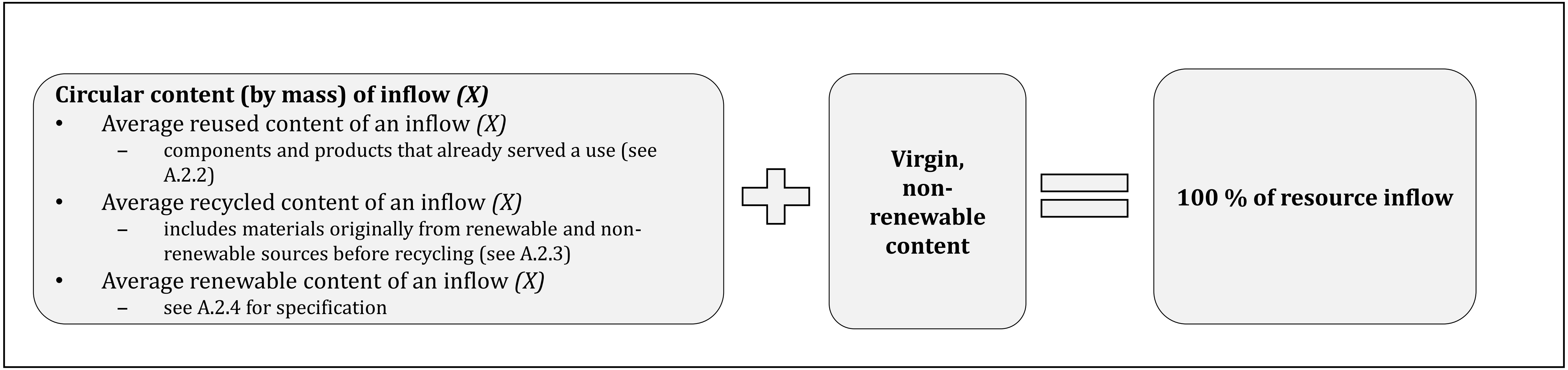


Figure A.2 – 100 percent resource outflow formula

Percent (by mass) circular content of outflow *(X)*

- Percent actual reused products and components derived from outflow *(X)*
  - components and products from outflow that are recovered and reused (see A.3.3)
- Percent actual recycled material derived from outflow *(X)*
  - includes recycled materials originally from renewable and non-renewable sources (see A.3.4)
- Percent actual recirculation of outflow *(X)* in the biological cycle
  - see A.3.5 for specification

+

Percent non-circular outflow (e.g., waste, releases, losses, products and resources that will not be recovered)

=

100 percent of resource outflow

Figure A.3

- Water from a non-virgin source, including reused or recycled water from a third party.
- Water from a renewable freshwater source, such as surface, ground and harvested rainwater that is consistently and completely renewed by precipitation and the natural water cycle and once used by the facility, be discharged back directly/indirectly to the original source upon treatment.

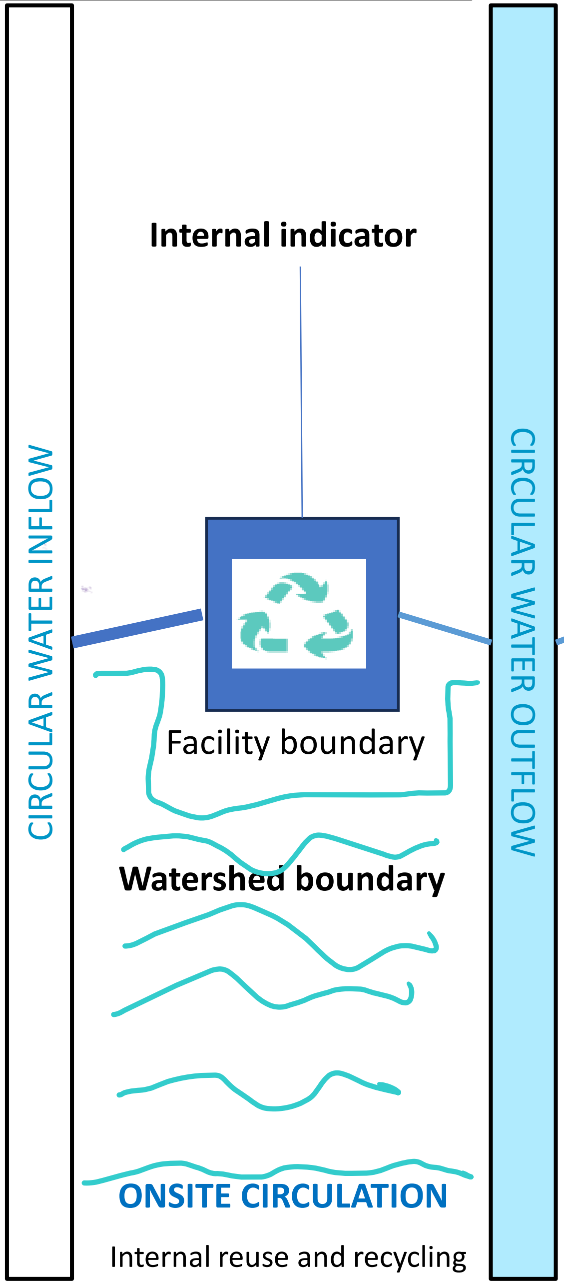
Collected rain water - conserving water.
Rain replenishes water bodies. Water which evaporates tends to return to the surface of the earth in the form of rain. Circularity depending on catchment replenishment cycles (supposed to be replenishing catchment).

See water - Evaporated water. Process of saltworks, where seawater goes through natural evaporation and crystallization in shallow basins. Processing of Seawater Brines from Saltworks for Recovery of Valuable Raw Materials – Slide 3. and 4. Water can be replenished as the steam condenses.

Water from the local watershed.
Surface water (rivers, ponds, lakes, reservoirs) and ground water wells. Circularity depending on catchment replenishment cycles.
Conserving water: usage of dams, drip Irrigation like Bamboo Drip Irrigation system (this practice helps conserve the region's water resources, it also helps in irrigation of local farms and fields. People use bamboo pipes for tapping the waters of streams and springs.) – Slide 5

Third party (reclaimed water). Recovered or reused water. wastewater reuse, the process of turning wastewater into clean water. Water regeneration is an ideal way to replenish and reuse water supplies or for other uses later. Recycled water can be used in agriculture for garden irrigation, which helps to replenish both surface and groundwater. Recycled water can also be treated and used for drinking water, cooking, or other uses in residential centers, business complexes, and industries. Another way to replenish the reservoir is to redirect treated water to the freshwater supply.

$$\%\ \text{circular water inflow} = \frac{Q\text{total circular water withdrawl}}{Q\text{total water withdrow}} \times 100$$



$$\%\ \text{circular water outflow} = \frac{Q\text{total circular discharge}}{Q\text{total water withdrow}} \times 100$$

All water NOT returned to the local watershed.

Linear: e.g., evaporation, consumed water, shipped water, wasted as byproduct

Water **returned** to local watershed. **Circular** when **quality is equal** to watershed quality (***restored internally or by 3rd party***)

Linear for **quality is lower** than sourced water.

ANEXOS Informativos

Anexo B – Indicadores opcionales
Anexo C – Métodos complementarios
Anexo D – Circularidad y SDGs

ANEXOS de ejemplos

Figure H.1 - Beverage container manufacture system and boundaries

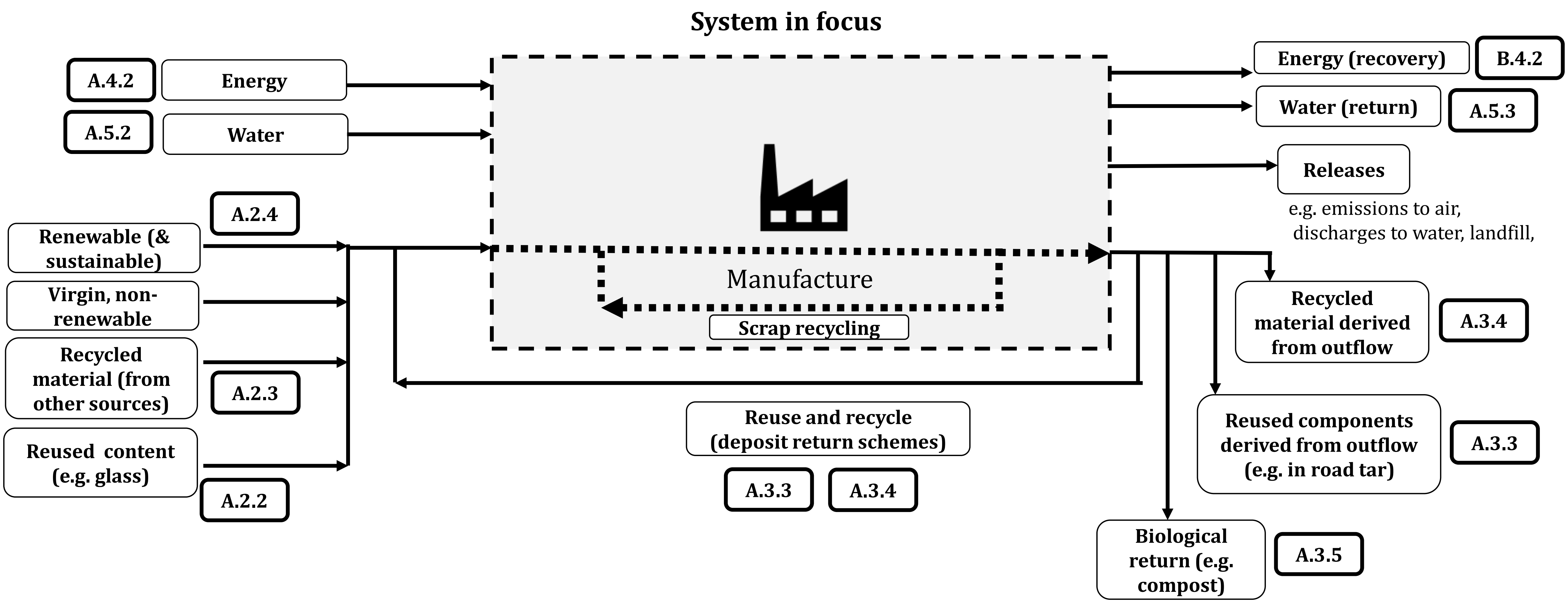


Figure H.2 —pickle production system and boundaries

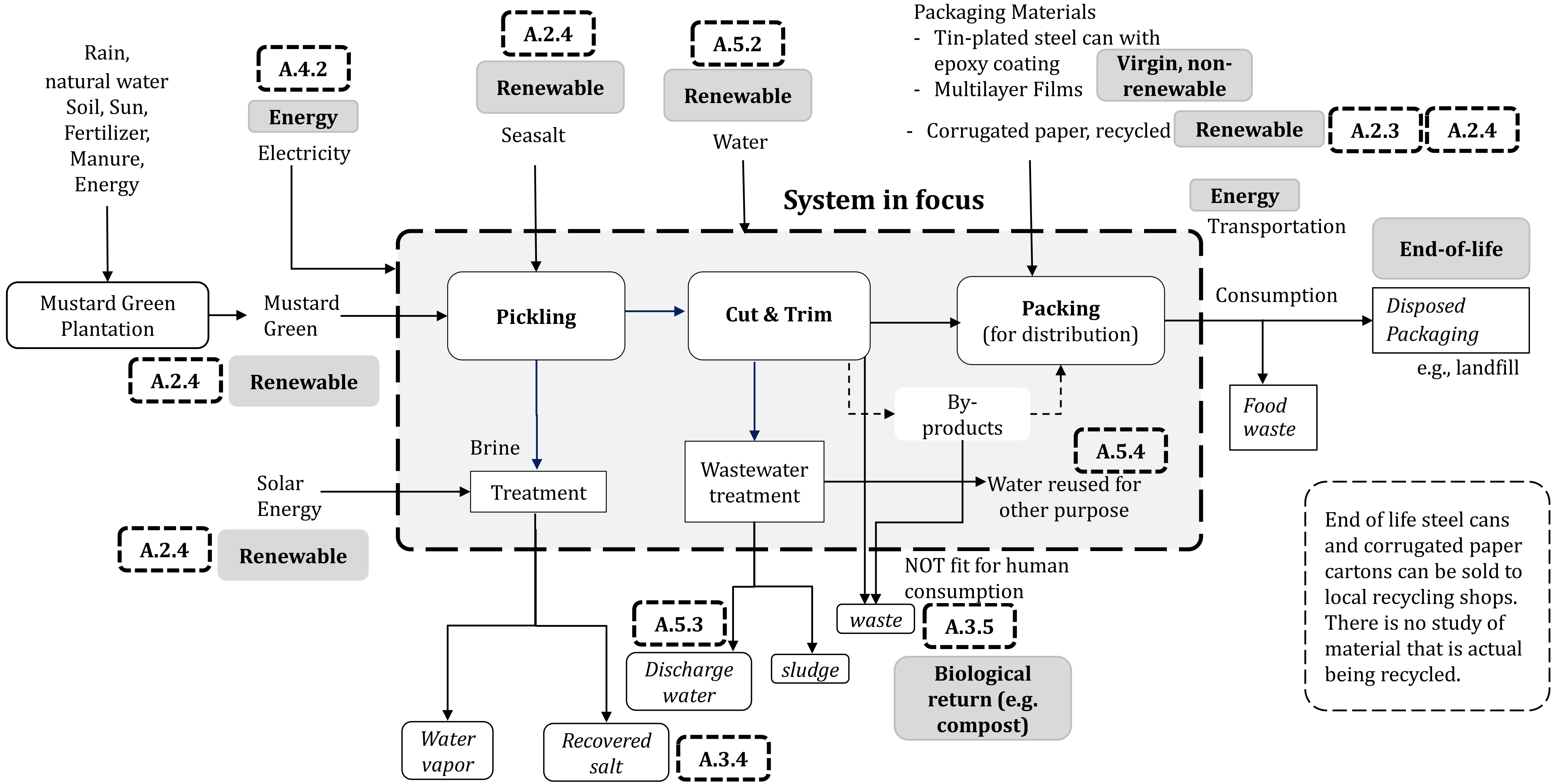
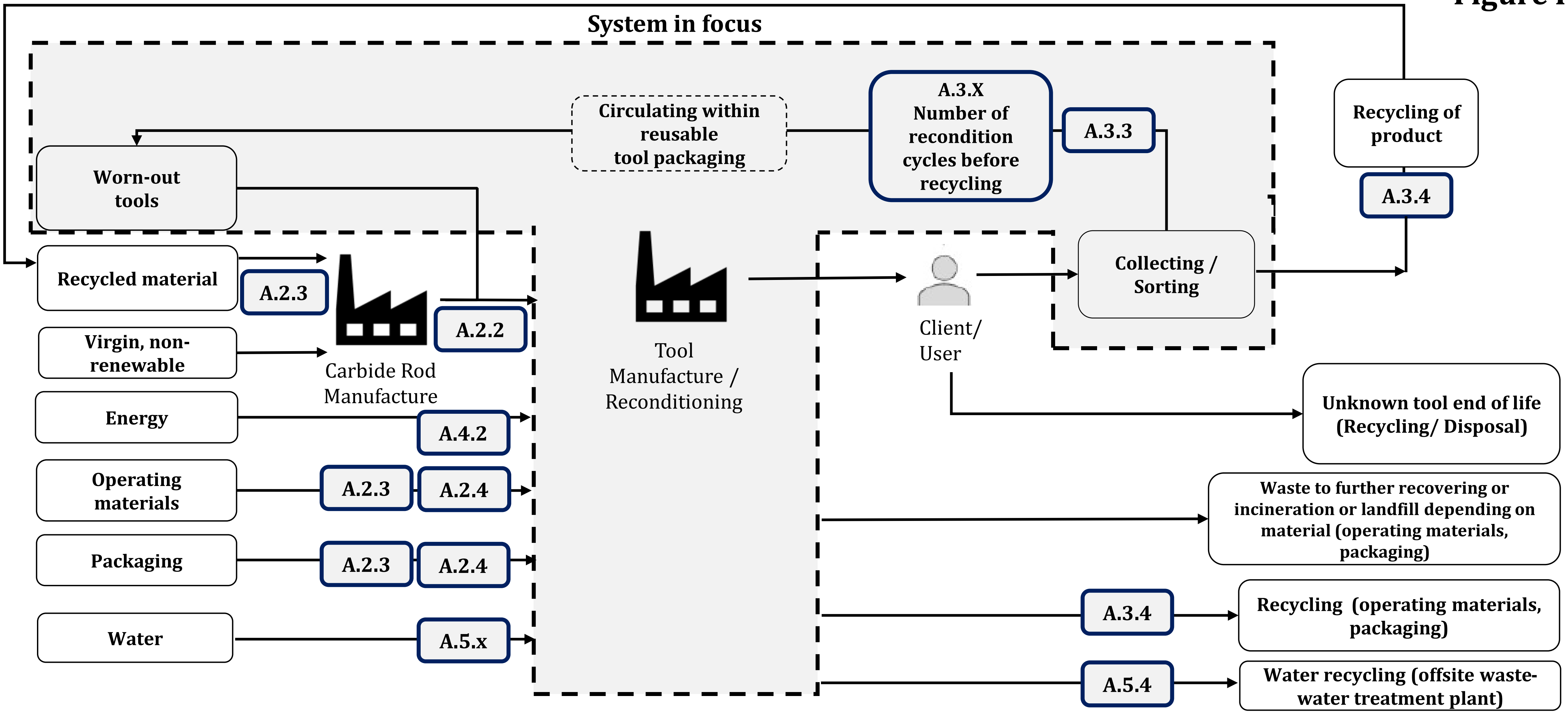


Figure H.3



Indicator legend

Resource inflows:

- A.2.2 share of used tools processed (= reconditioning) of total tools produced
- A.2.3 share of recycling content (= tool: recycled wolfram carbide) in carbide rods
- A2.4 Average renewable content of inflow

Resource outflows:

- A.3.3 % actual reused products and components derived from outflow
- A.3.4 % actual recycled material derived from outflow
- A.3.5 % recirculation of outflow in the biological cycle (no renewable material in inflow, therefore not applicable)
- A.3.X number of recondition cycles before recycling (additional indicator)

Energy:

- A.4.2 Average % of energy consumed that is renewable energy

Water:

- A.5.x % water reduction in process (additional indicator)
- A.5.3 % water discharged in accordance with quality requirements

Economic: No indicator used

Figure H.4 - resource flows within one system

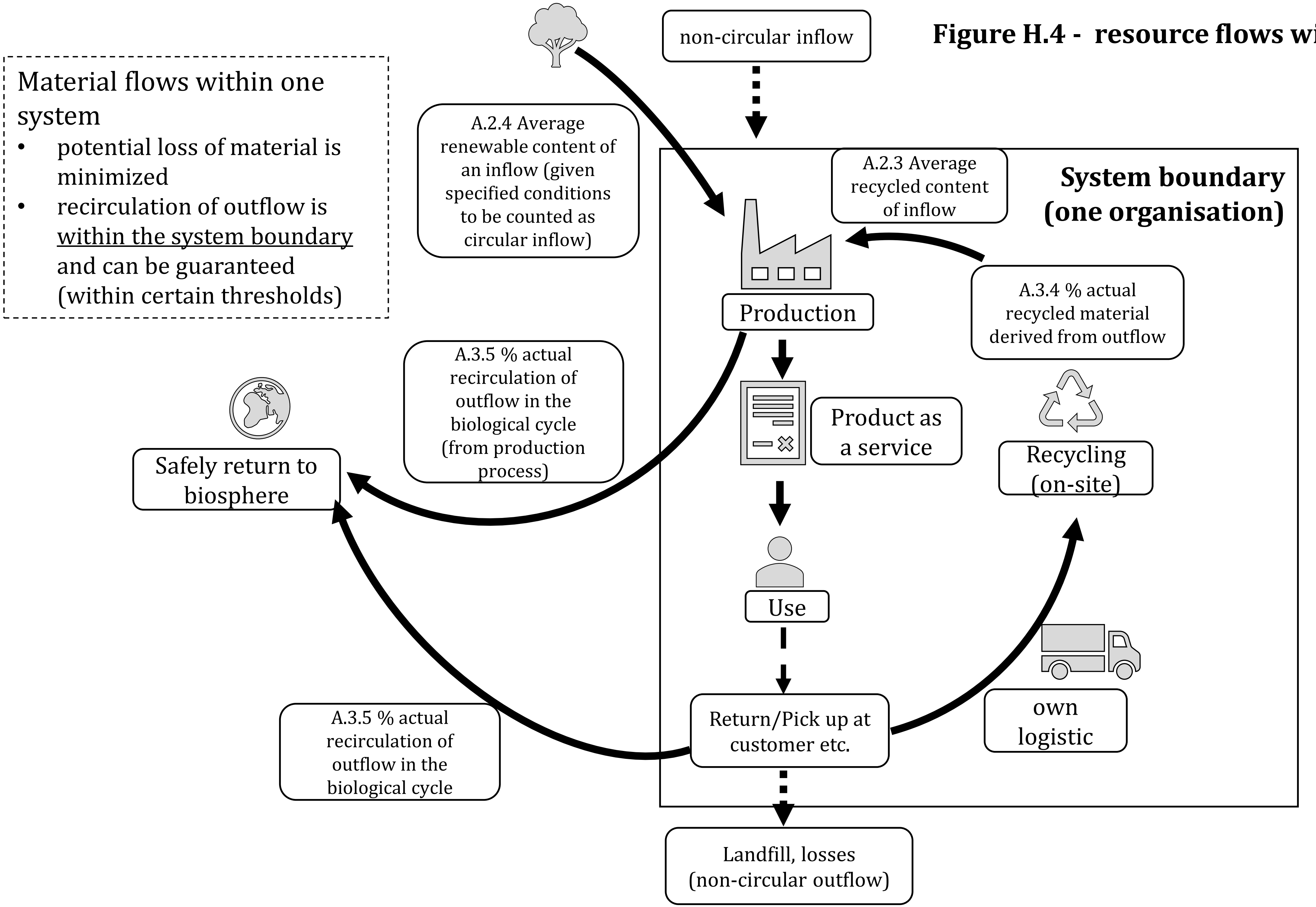


Figure H.5 - resource flows between systems, not closely linked

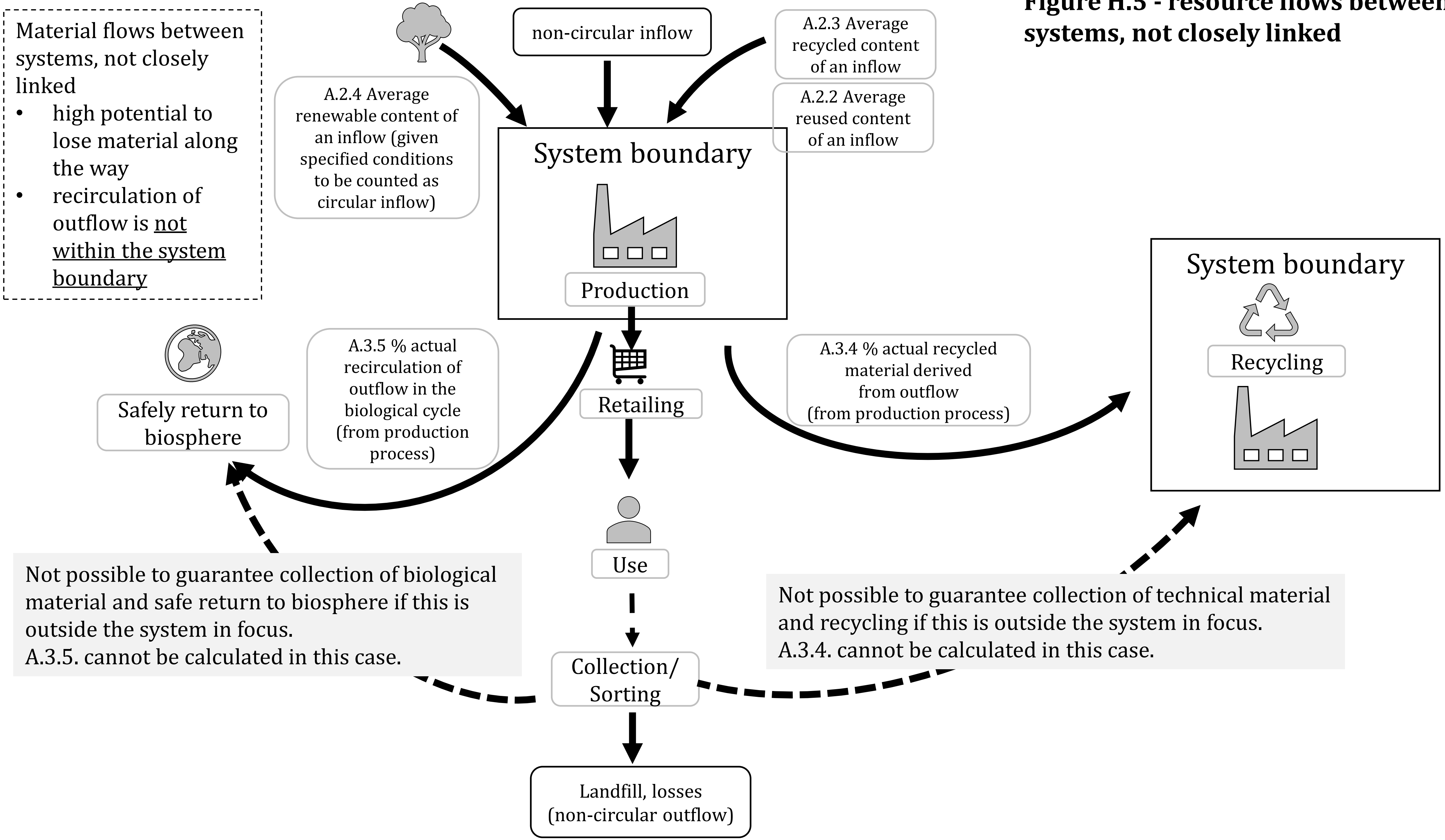


Figure H.6 - resource flows resource flows between systems, linked as a network