

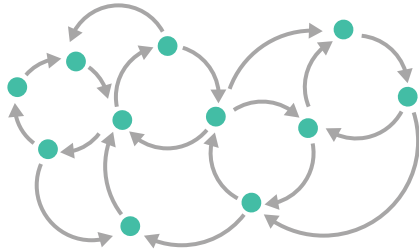


**EU
POLICY LAB**

GLOSSARY

The basic vocabulary of systems

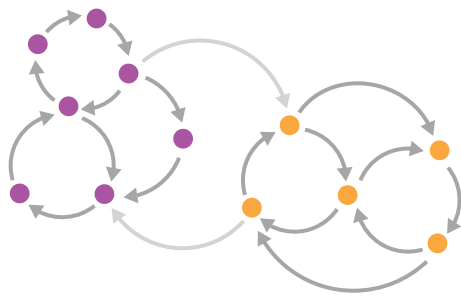
SYSTEM



A system is a **network of interrelated parts** that mutually interact. A system is a “whole”, and all the interactions among the parts make this “whole” behave in a certain way. That is why in a system, **relationships** among the parts are more important than the parts themselves.

The human body is a system, whose behaviour is caused by the interactions, flows and exchanges among different organs. In the same way, the healthcare system is the result of the different relationships among its components, such as doctors, caregivers, patients, hospitals, health organisations, health ministry and so on.

SUBSYSTEM



If a system appears to be too broad and complex to be analysed in its entirety, it is because it might include different systems or, more precisely, subsystems. A subsystem is a **coherent group** of interrelated components which performs a remarkable task within the larger system.

For instance, an organisation is a system which embraces different departments. Each of those pursues a precise goal, and constitutes a system. As being a part of a **larger system**, the single department constitutes a subsystem.

SYSTEM GOAL



The system goal consists in its **“reason for being”**. Why is the system in place? There might be a reason why a set of actors and activities are in place. Indeed they are parts of the system, running altogether to accomplish a precise, ultimate purpose. The system goal is far beyond the goals of its single components.

For instance, the goal of a regional care system might be ensuring the wellbeing of those who live in that region. In the same time, within the system there might be multiple organisations focused on other sub-goals (e.g. providing psychological support, ensuring stress prevention, monitoring pregnancy, ...).

SYSTEM BOUNDARY



The boundary defines the “**limits**” of the **system**: the demarcation between the system and its surrounding environment. When analysing a system, it is necessary to trace its boundary, as this will influence the context and object of the analysis, as well as its breadth.

The definition of a boundary might be subjective and different for all the people who are part of the system. However, its reliability lies in the involvement of as many perspectives as possible when identifying the system’s purpose and limits.

PARAMETER

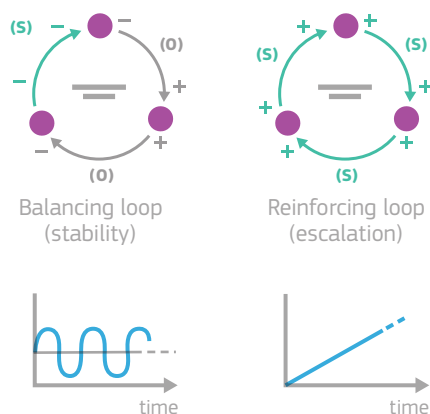
LEVEL OF
EDUCATION
investment on
INFRASTRUCTURES
employment rate
number of CHILDREN
TEACHERS motivation

A parameter is a **noun** that expresses something which changes over time.

Parameters have three characteristics:

- They are **increasing or decreasing** over time;
- They describe a measurable **quantity** (e.g. ‘number of farmers’) or a **quality** (e.g. ‘need of balanced diet’).
- They have a **neutral connotation** (e.g. ‘lack of skilled workforce’ becomes ‘amount of skilled workforce’, ‘scarcity of fertile land’ might become ‘availability of fertile land’).

FEEDBACK LOOP



Feedback loops are **diagrams** used in system dynamics to build a system model: they describe the stories in the system that show **circular causality**. The basic structure of a feedback loop is described, graphically, by a set of parameters connected through arrows.

There are two types of feedback loops:

- **Reinforcing feedback loop**, which describes a situation of positive or negative escalation in the system;
- **Balancing feedback loop**, which describes a situation of stability or “stubbornness”: it brings the system to a desired state and tends to preserve such state.

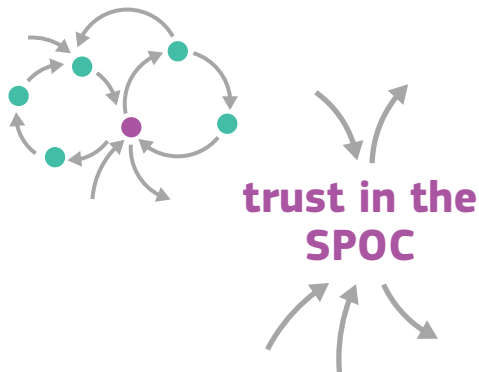
SYSTEM DYNAMICS



System dynamics is a **computer-aided approach** to policy analysis and design. The approach studies a dynamic system by describing its interdependences, mutual interactions, information feedback, circular causality. The problem is described through a model where **stocks** or accumulations, their **inflows and outflows** are represented via feedback loop diagrams. A computer simulation on the model shows the system's behaviour over time.

The computer simulation is generally used to generate model based understandings and applicable policy insights.

LEVERAGE POINT



A leverage point is a **parameter** that has a **high influence** on the system: if this parameter changes, it will determine a ripple effect throughout the system.

That is why possible interventions aimed at changing the system's behaviour should be focused on leverage points: a **little effort** can determine a **huge impact**.

In a system map, you can recognise a leverage point by looking at the arrows around the parameter: many arrows reveal that a specific parameter exerts a deep influence on the system.