



SYSTEM DYNAMICS ITALIAN CHAPTER



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I nostri associati costituiscono la nostra rete primaria di conoscenze e competenze

ed ogni nuovo membro ha la possibilità di accedere a tale ricchezza multidisciplinare verificando quale sia l'associato più vicino a casa sua o l'istituzione, cui egli appartiene, per avere un punto di riferimento cui rivolgersi per avvicinarsi alla disciplina



<https://www.systemdynamics.it>

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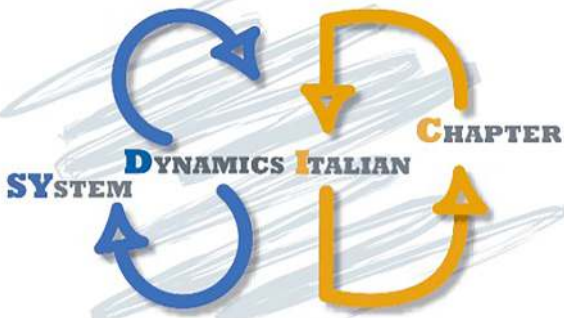
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2020 SD Conference Coronavirus Update - 26 March 2020

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Thinking in Systems

“The problems we have created in the world today will not be solved by the level of thinking that created them.”

--Albert Einstein

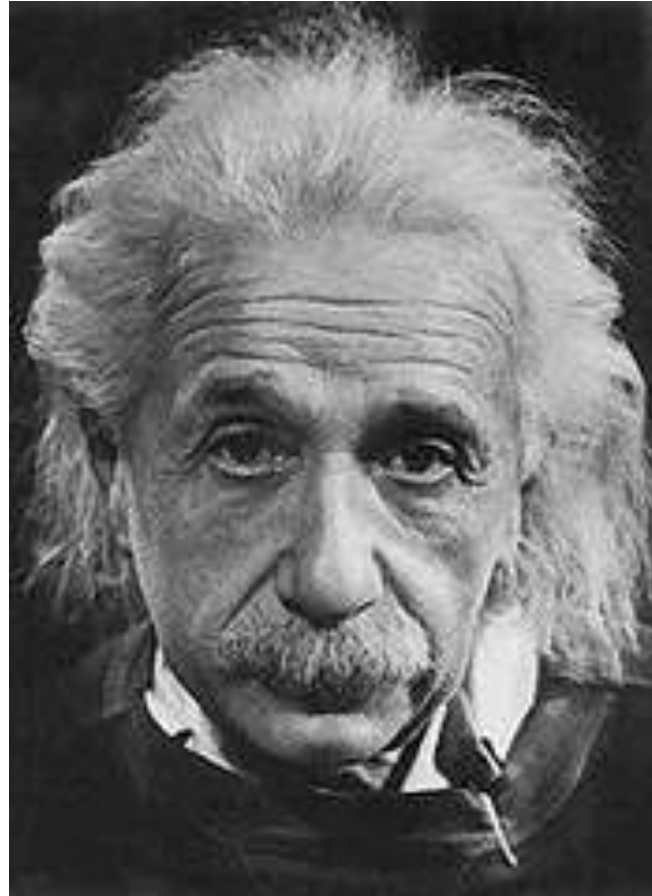


Image Source: Flickr Creative Commons, by [mansionwb](#)

The World's Biggest Problems

- Armed Conflict
- Spread of Infectious Disease
- Growing Population
- Availability of Energy
- International Terrorism
- The Economy
- Climate Change
- Poverty, Hunger, Lack of Water



Date Source: [Eurobarometer](#) survey of the EU, 2011

Image Source: [123RF](#)

Why Do These Problems Persist?

Schools Have Not Prepared Students to
Solve Them

Learning to solve this...

A car averages 27 miles per gallon. If gas costs \$4.04 per gallon, which of the following is closest to how much the gas would cost for this car to travel 2,727 typical miles?

- A. \$44.44
- B. \$109.08
- C. \$118.80
- D. \$408.04
- E. \$444.40



won't teach you to solve this.

The United States consume more than 20% (7 billion barrels) of the world's oil supply annually, yet only have 2% of the world's proven oil reserves.

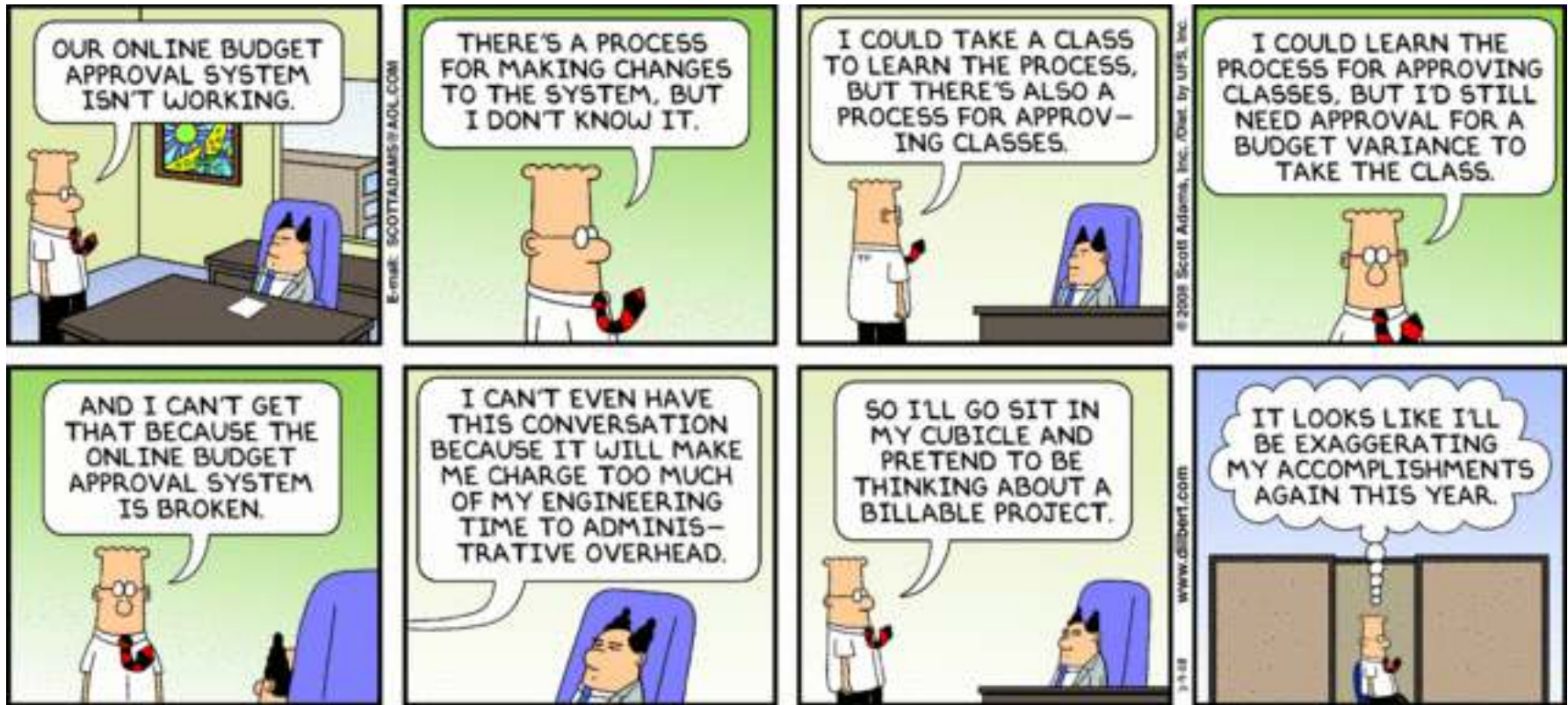
What factors will determine when we reach “peak oil”—the point in time when the maximum rate of

petroleum extraction is reached, after which the rate of oil production is expected to enter terminal decline?



Image Source: OnlineBikeMania

The Dilbert System

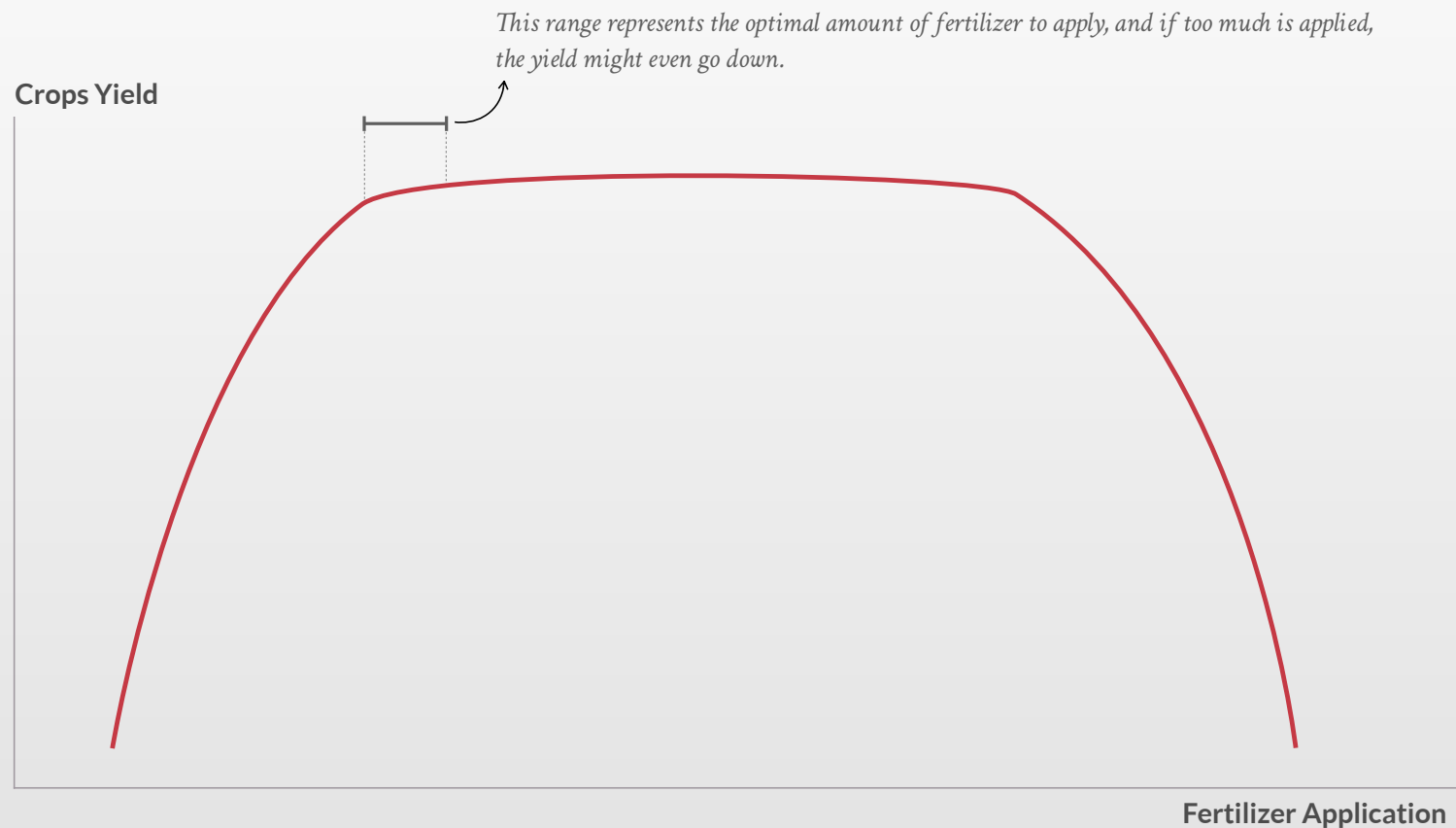


We are *linear thinkers*

in a

non-linear world.

In a nonlinear relationship, the cause does not produce a proportional effect.



Reality is made up of circles, but we see straight lines. Herein lies the beginnings of our limitation as systems thinkers.

—

Peter Senge

BOUNDED RATIONALITY

In decision making, **rationality of individuals is limited by the information they have.**

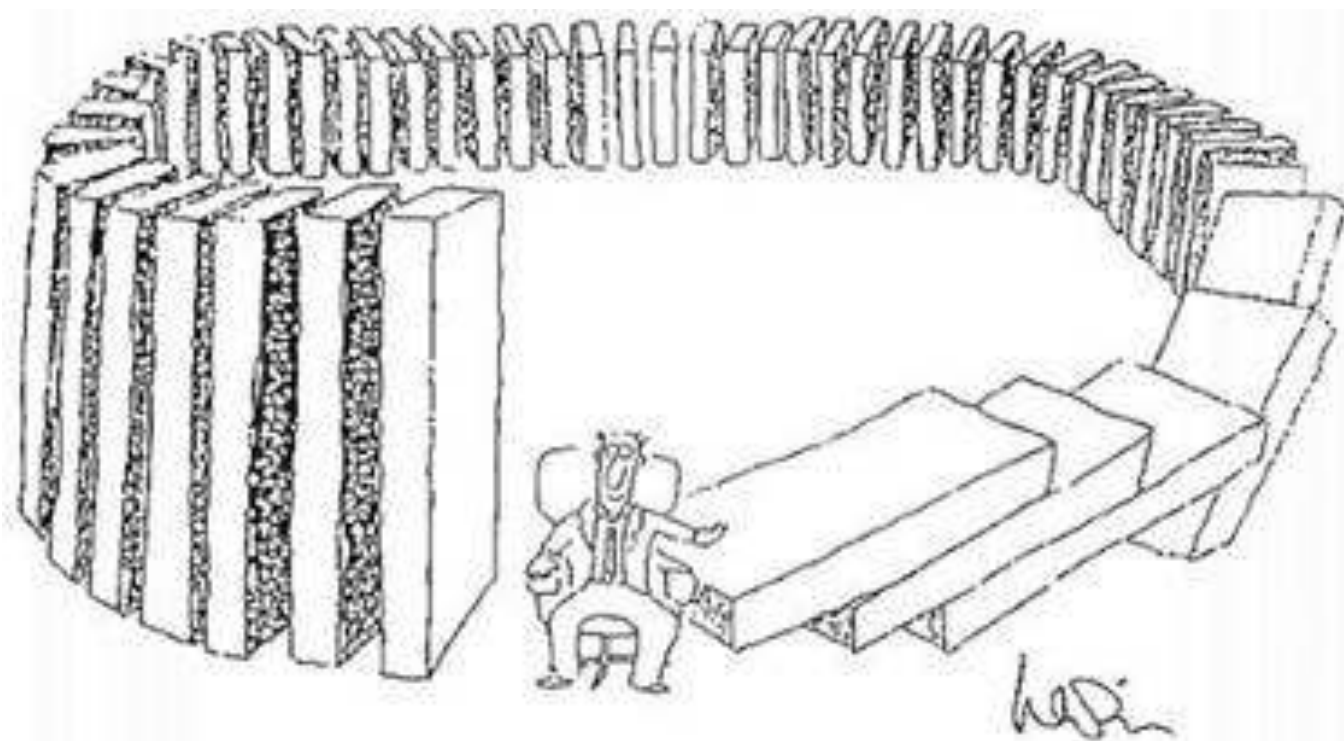


Fishermen are not aware of the total number of fish in the ocean or how many fish others harvest. This is a typical example of a dilemma referred to as "The Tragedy of the Commons" - a situation in which a group of individuals act rationally in their own self-interest and deplete a shared limited resource.

What you see is “not” what you get...



Counter-intuitive Behaviours: Misperceptions of Delays



Counter-intuitive Behaviours: Misperceptions of Feedbacks

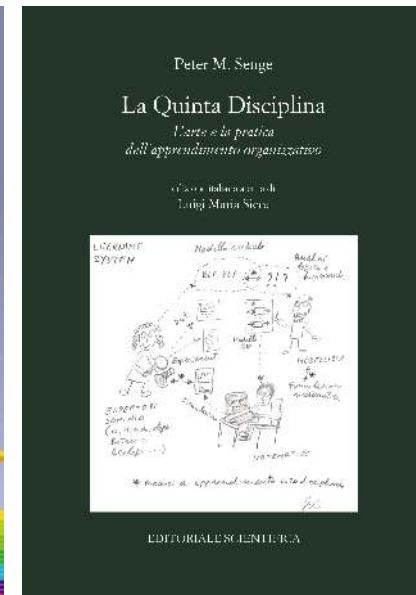


Counter-intuitive Behaviours: policy resistance



Editorial Initiatives

- Translation into Italian of the seminal book from Donella H. Meadows «Thinking in Systems» (Italian: «**Pensare per Sistemi**») - <https://guerini.it/index.php/pensare-per-sistemi.html>
- Support to the new italian edition of the book from Peter Senge «The Fifth Discipline» (Italian: «**La Quinta disciplina**») <https://www.editorialescientifica.com/materia/organizzazione/organizzazione-aziendale-e-management/la-quinta-disciplina-detail.html>
- Coordination of several **Special Issues** on top ranked journals (Journal of Simulation - to be published -, [Kybernetes](#), [SYSTEMS](#), [IJASS](#), etc.)





Alberto Stanislao Atzori

Ricercatore di Nutrizione animale (*RTDb*) all'Università di Sassari



Education

Laurea in Agraria- 2003

PhD in Scienze Zootecniche - 2008

Visiting Scholar UCLM (Spain) - 2004

Post-doc Texas A&M University (USA) – 2011

Docenza

Produzioni Animali Laurea Tecnologie Alimentari
System Dynamics Modeling Dottorato

Ricerca: aspetti nutrizionali legati all'efficienza produttiva e all'impatto ambientale degli allevamenti

Ecological footprint della produzione del latte



Complex systems understanding and System dynamics modeling

Dal 2011:

VP Secretary of [System Dynamics Italian Chapter](#)



Dal 2016:

[Special interested group in Agriculture and Food](#)



Applicazioni System Dynamics per formulare policy nel settore agroambientale

- Gestione aziende zootecniche
- Impatto ambientale degli allevamenti
- Nuovi metodi didattici in zootecnica
- Gestione delle risorse idriche



www.systemdynamics.it
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SYSTEMIC PERSPECTIVES IN COMPLEXITY UNDERSTANDING

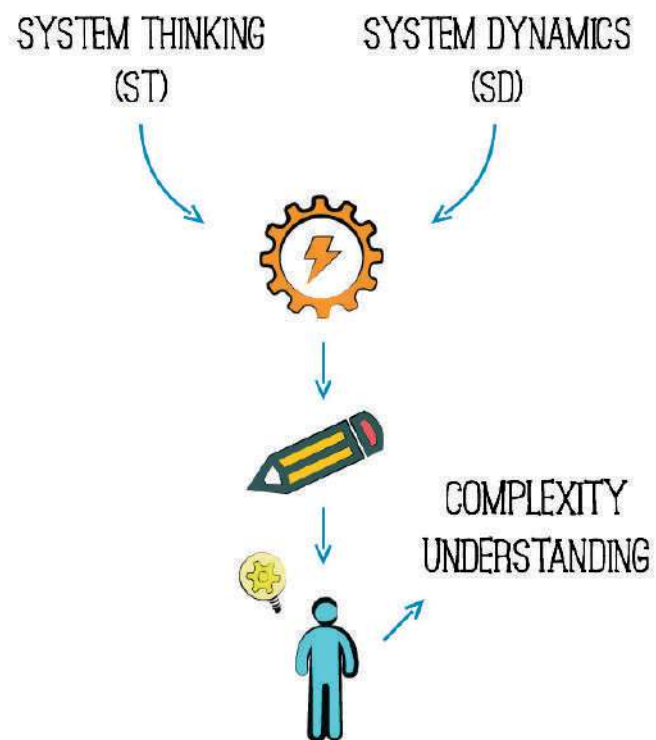
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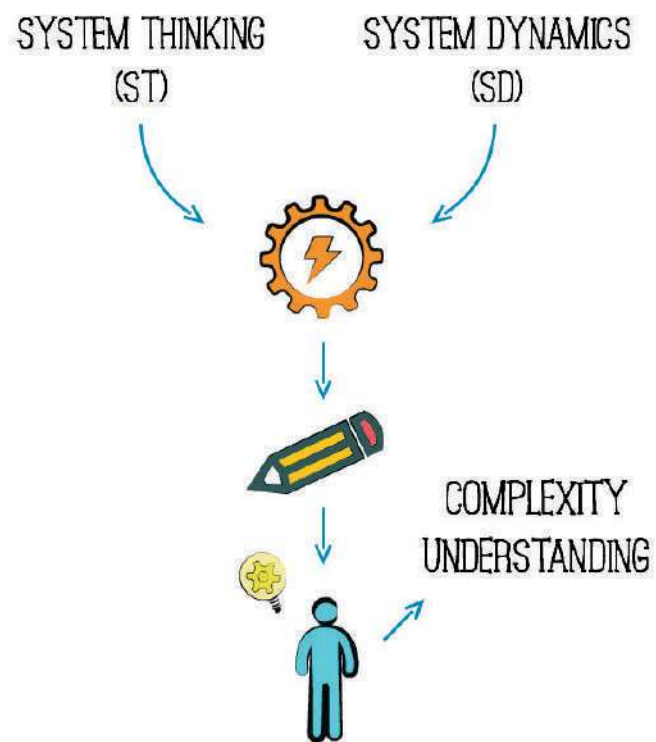
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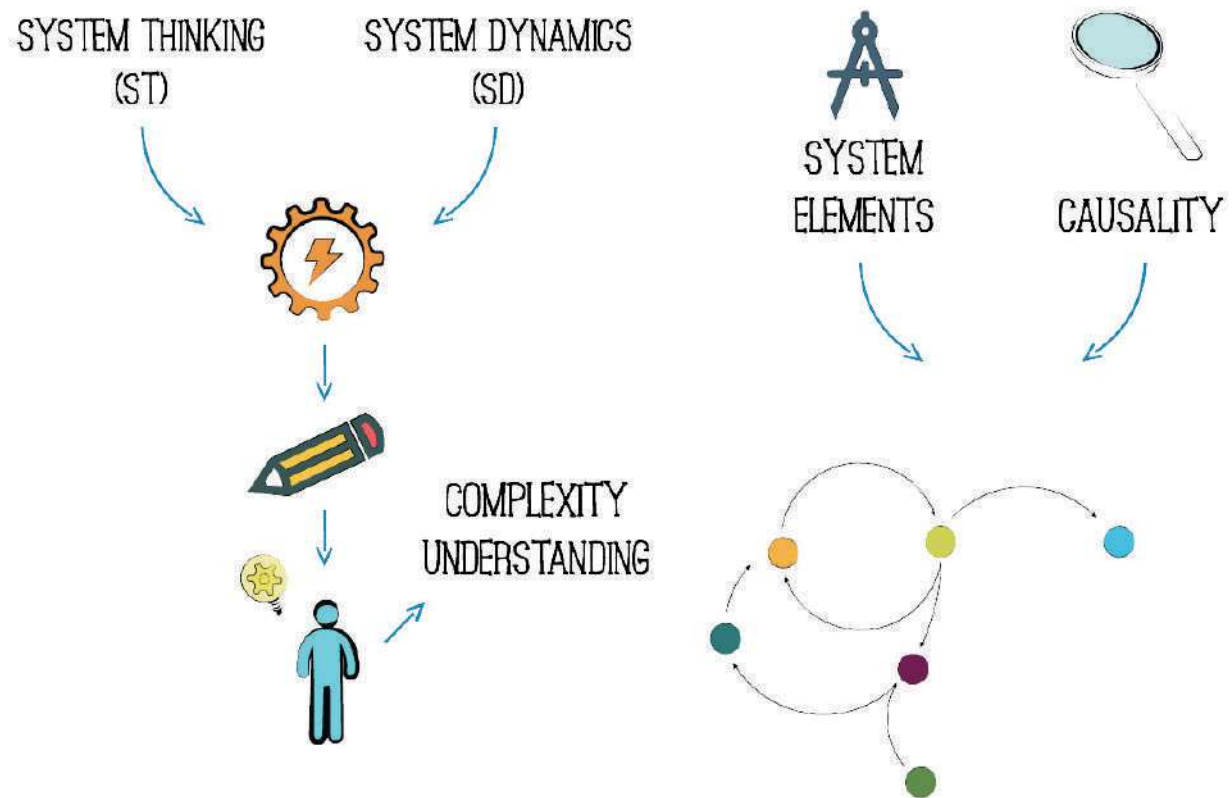
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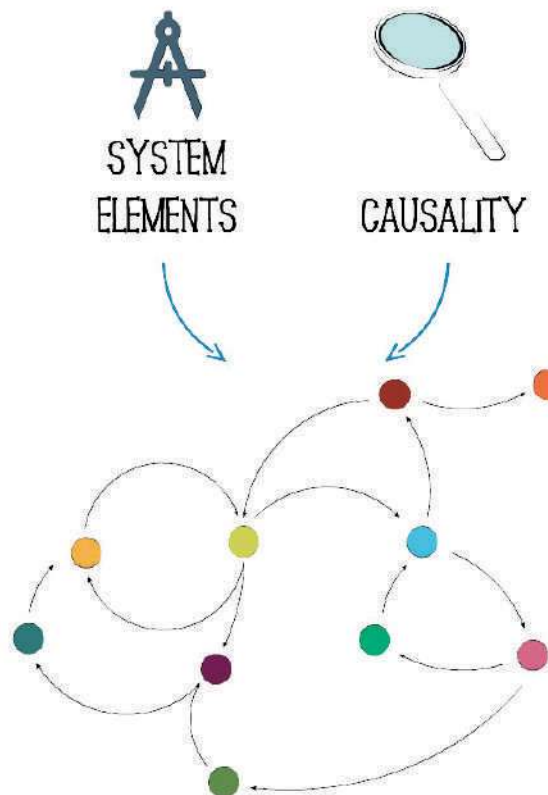
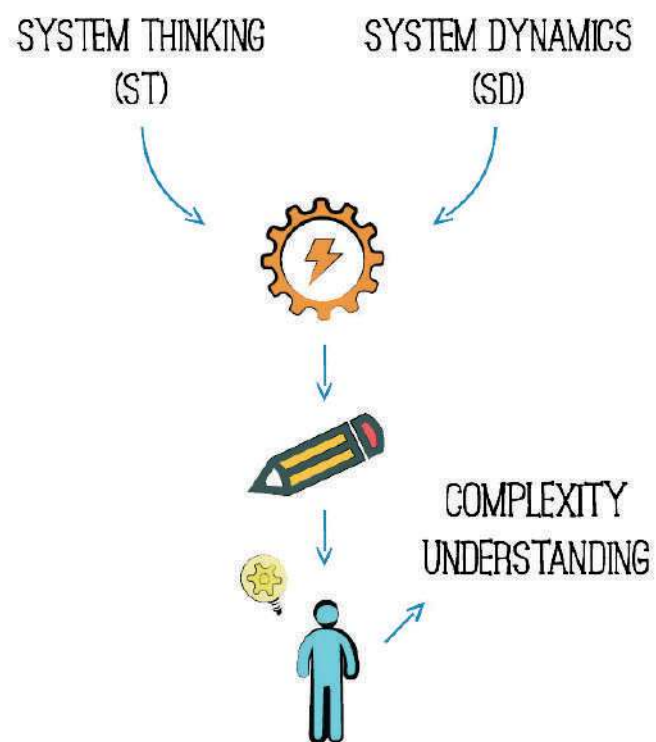
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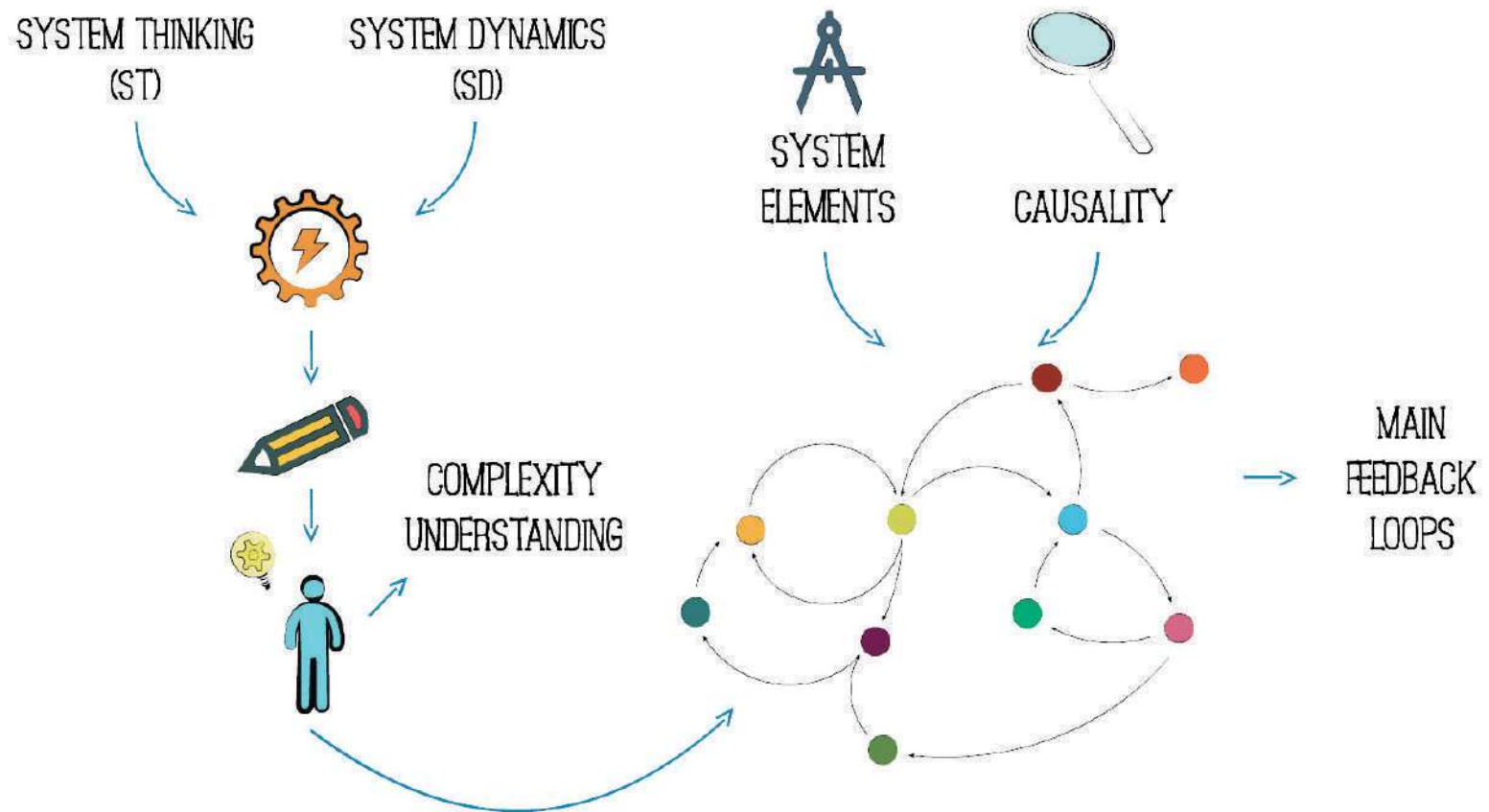
Voice over

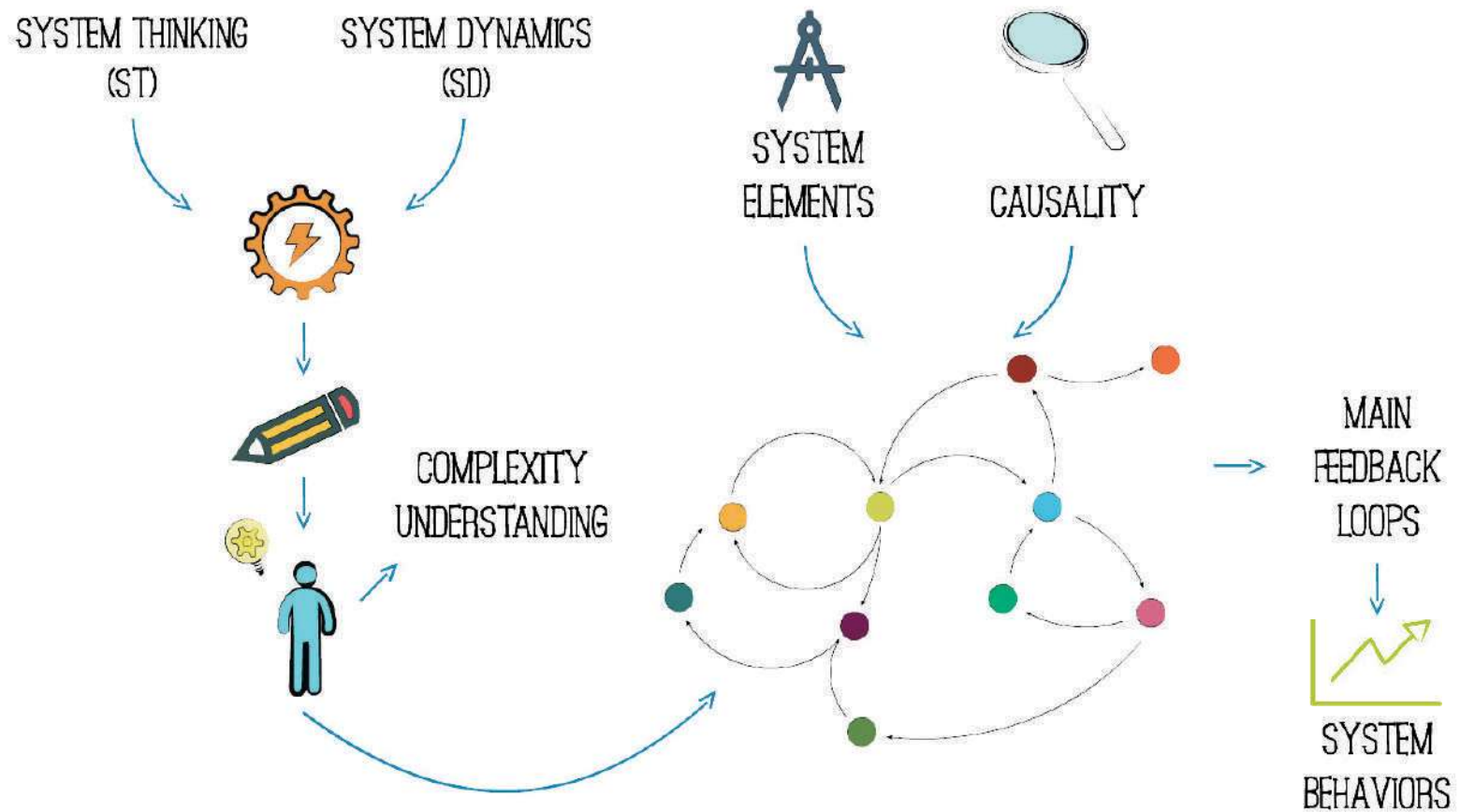


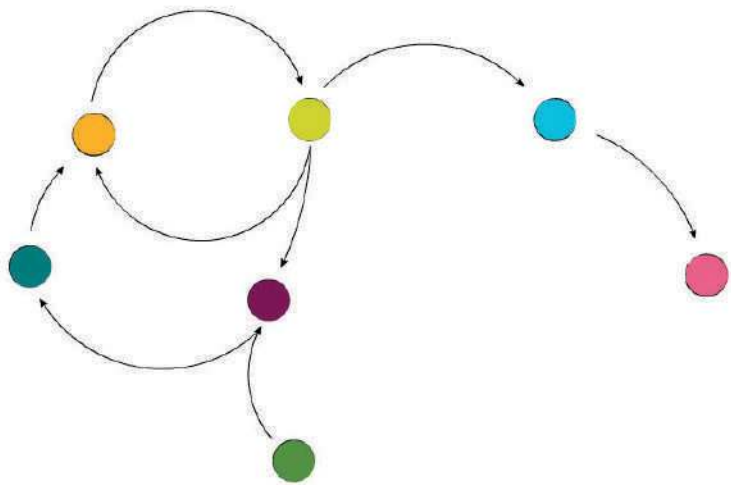


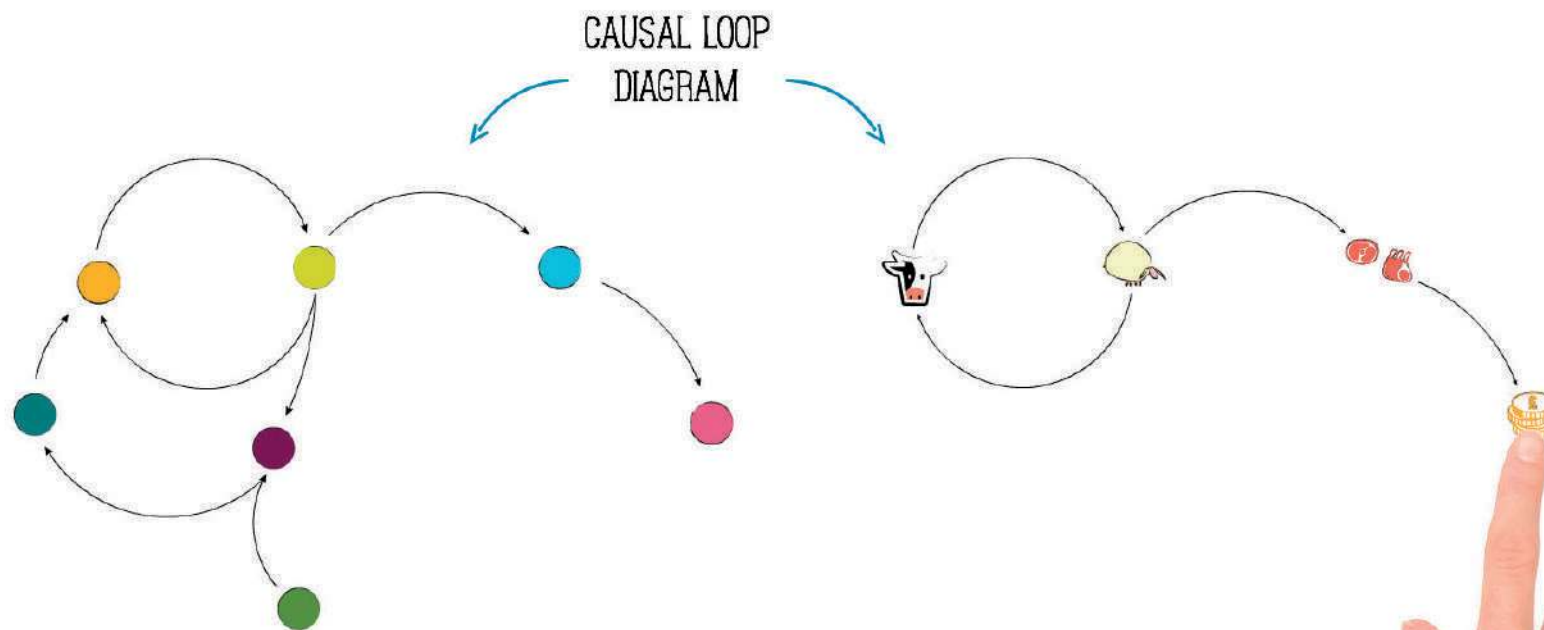


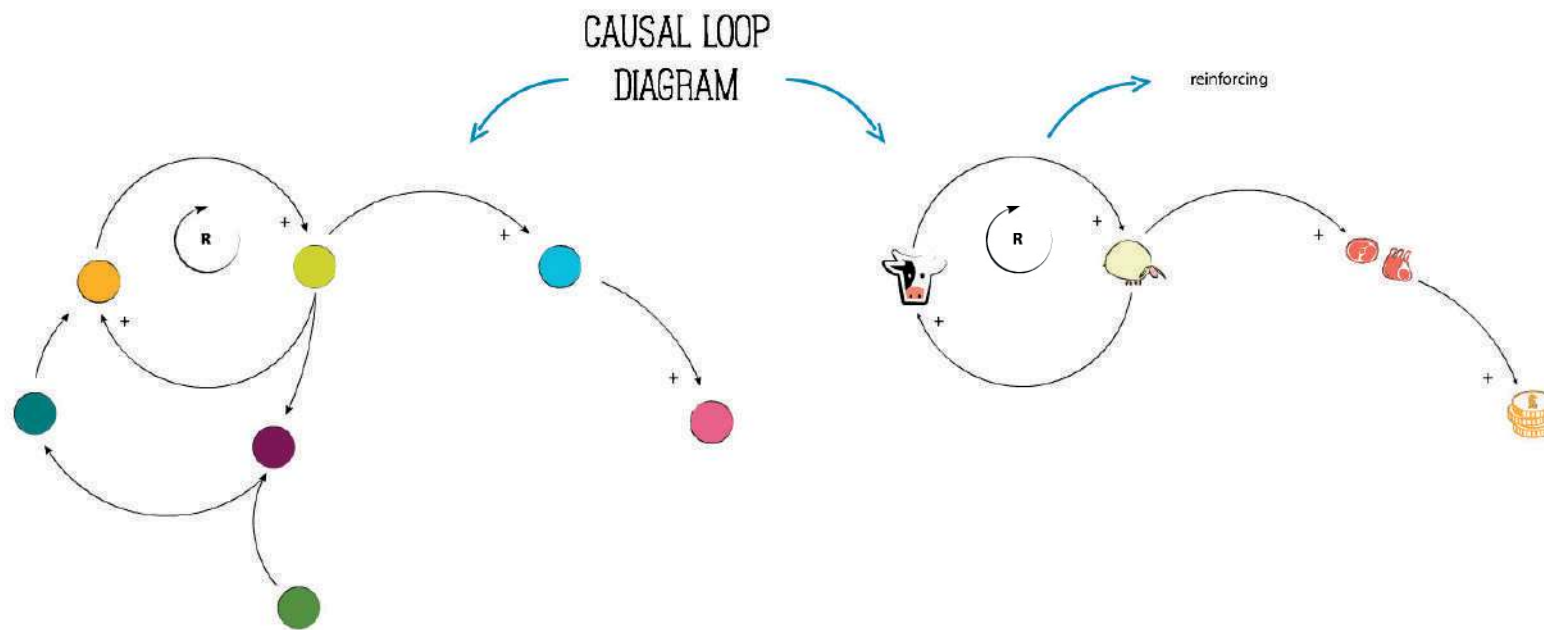


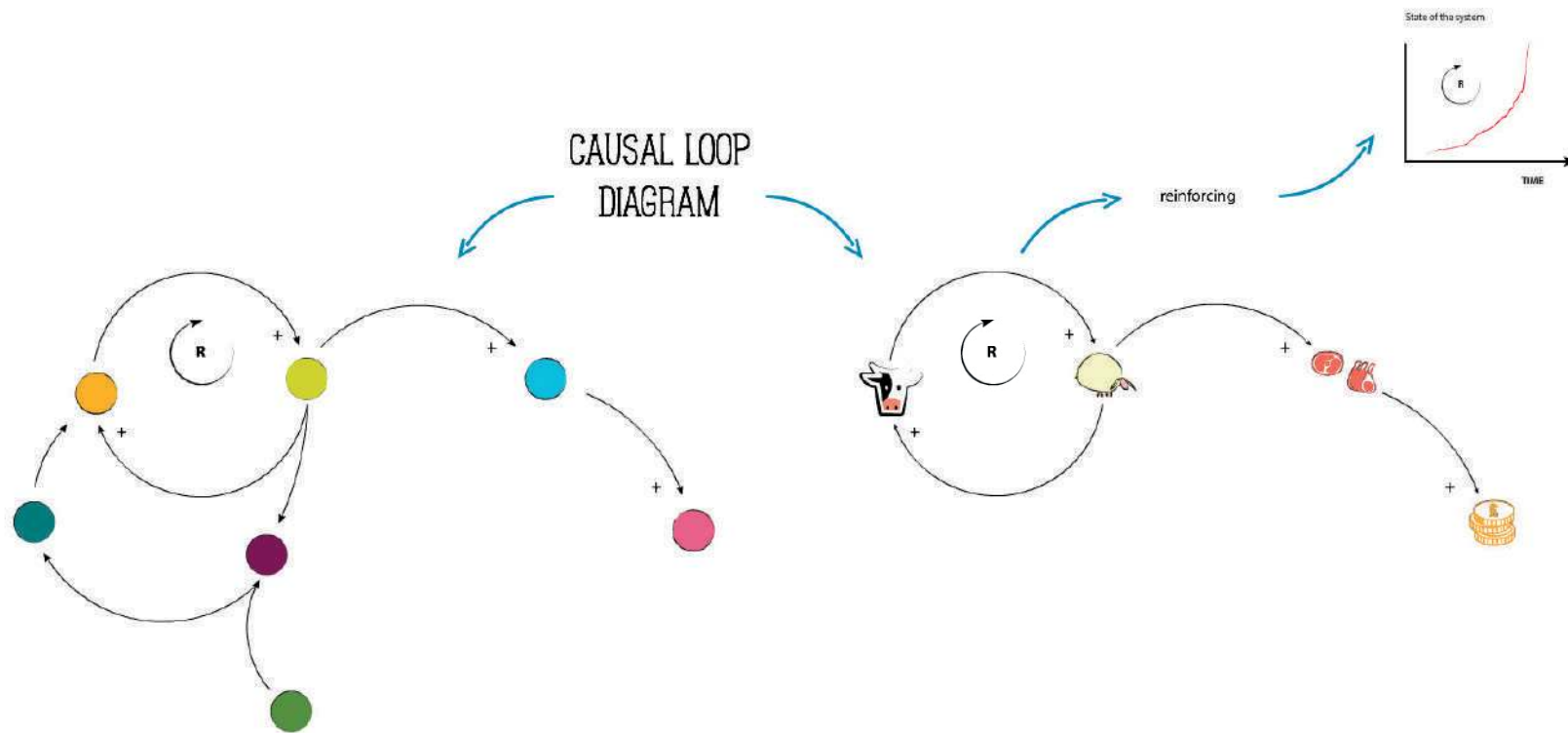


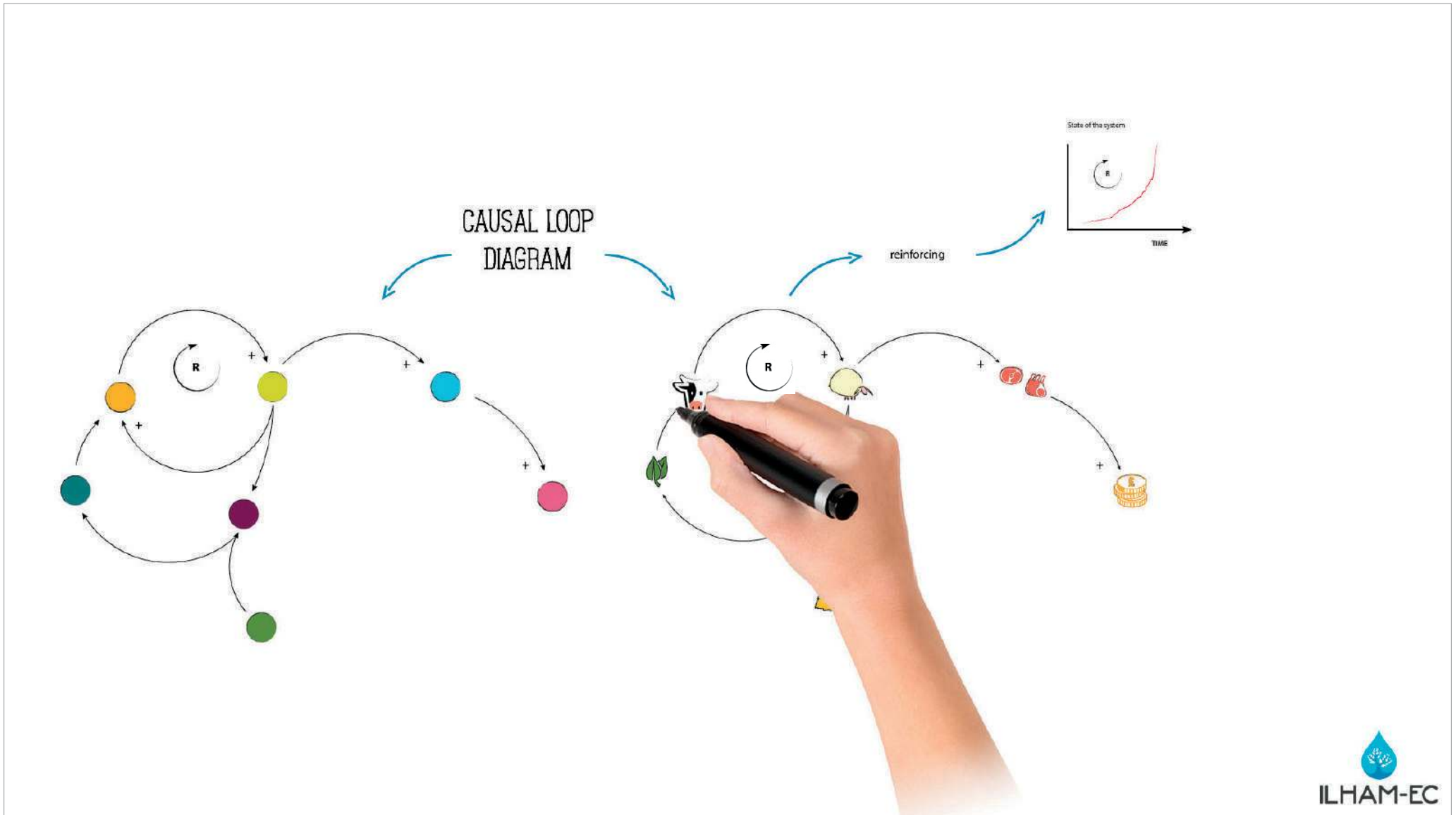


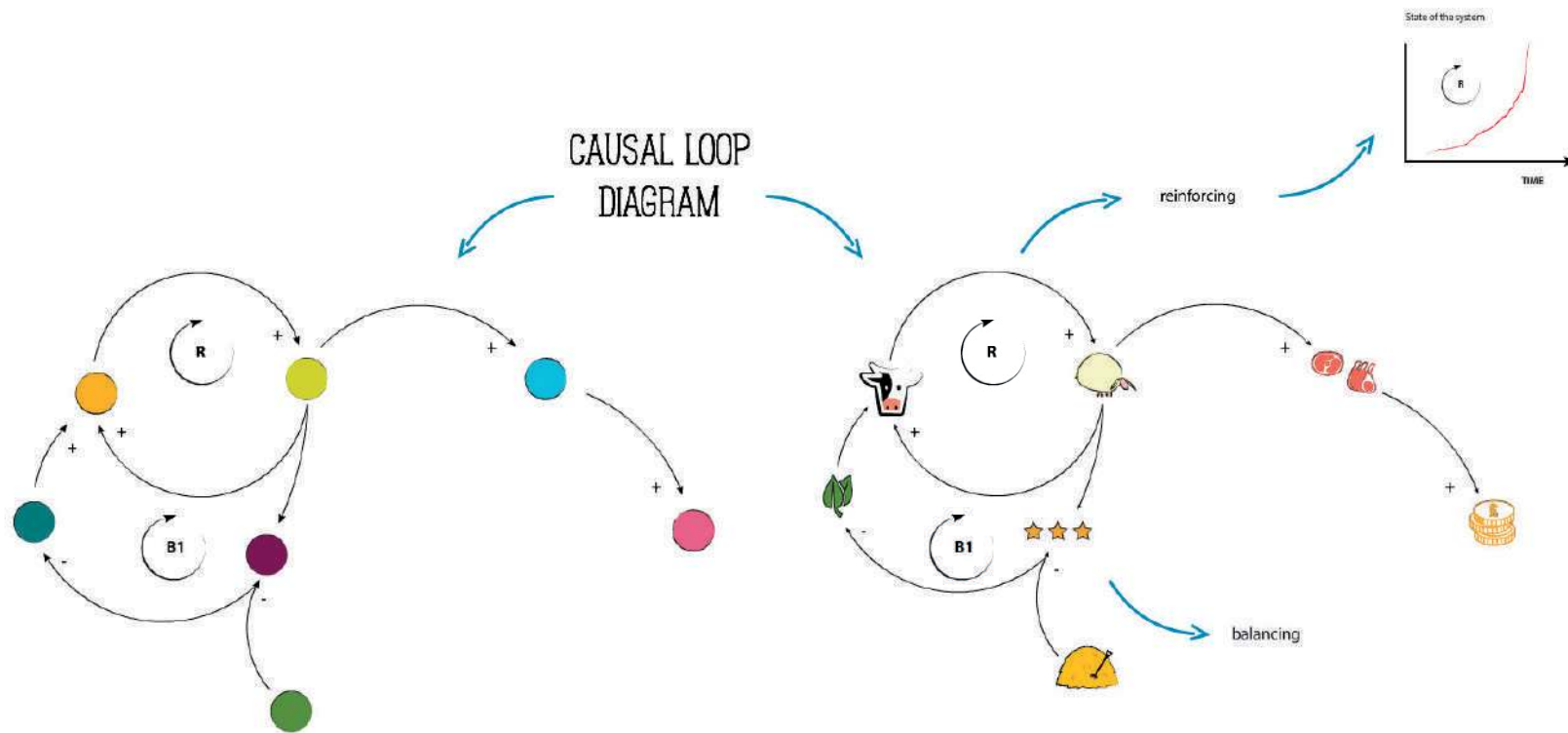


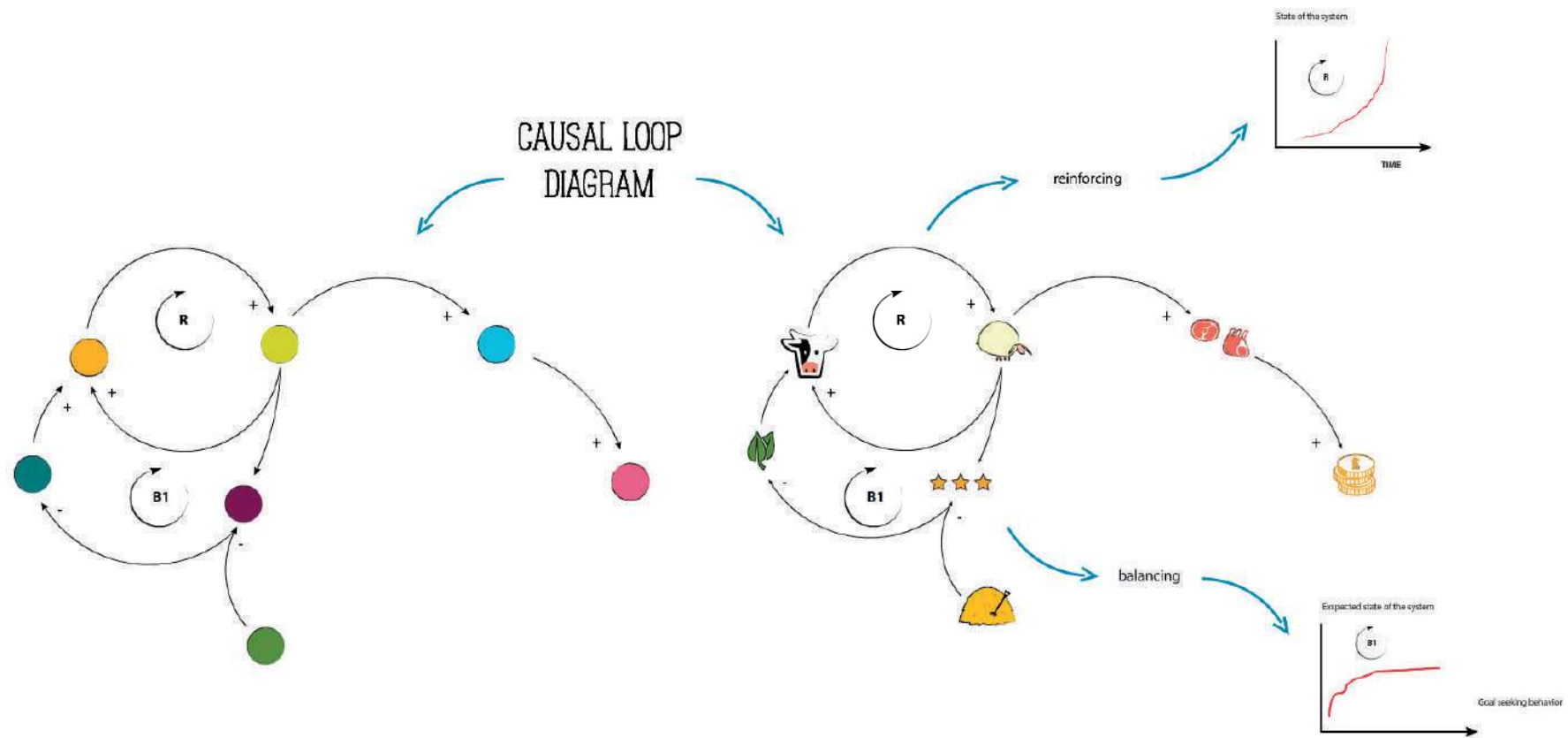


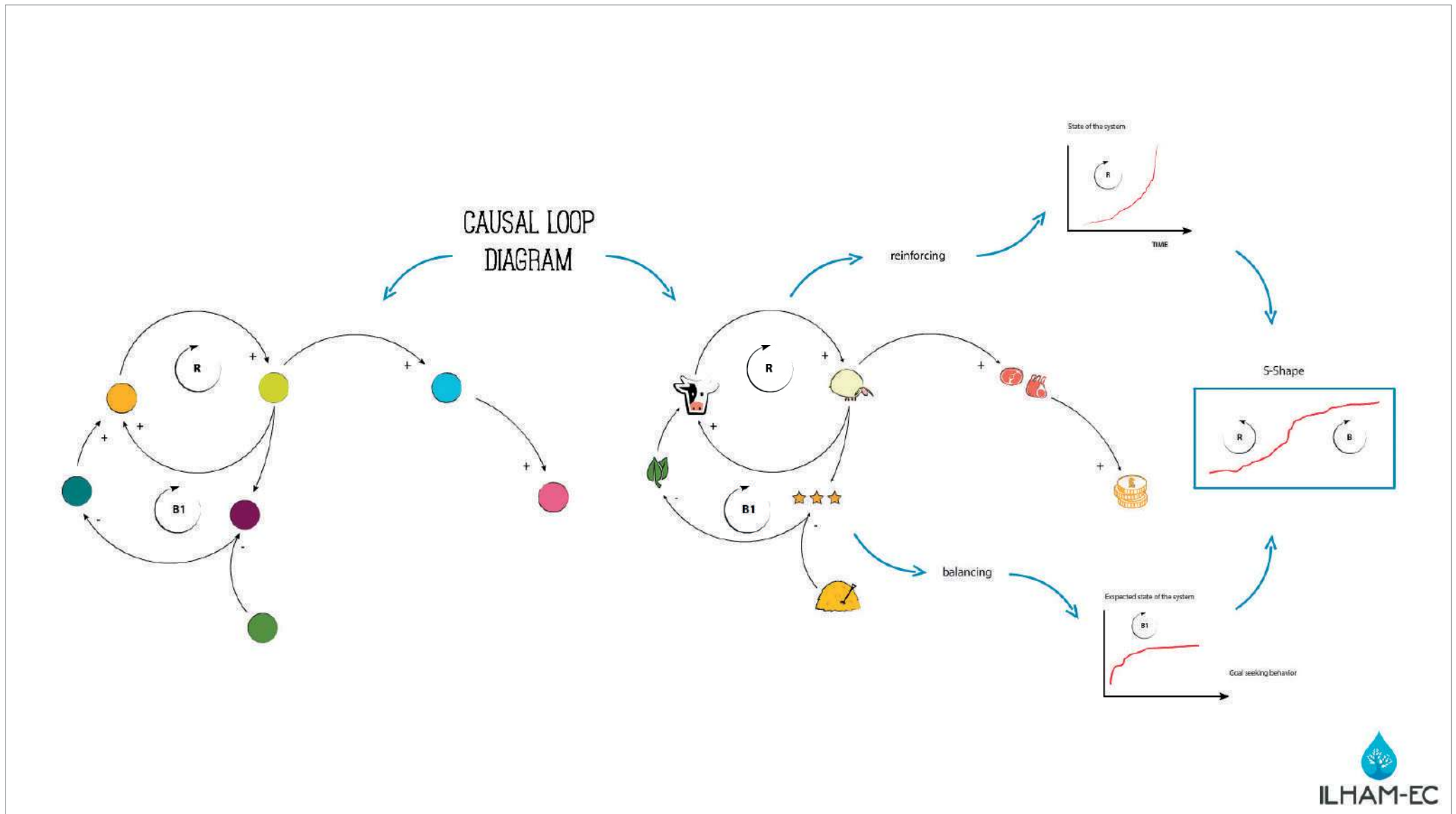












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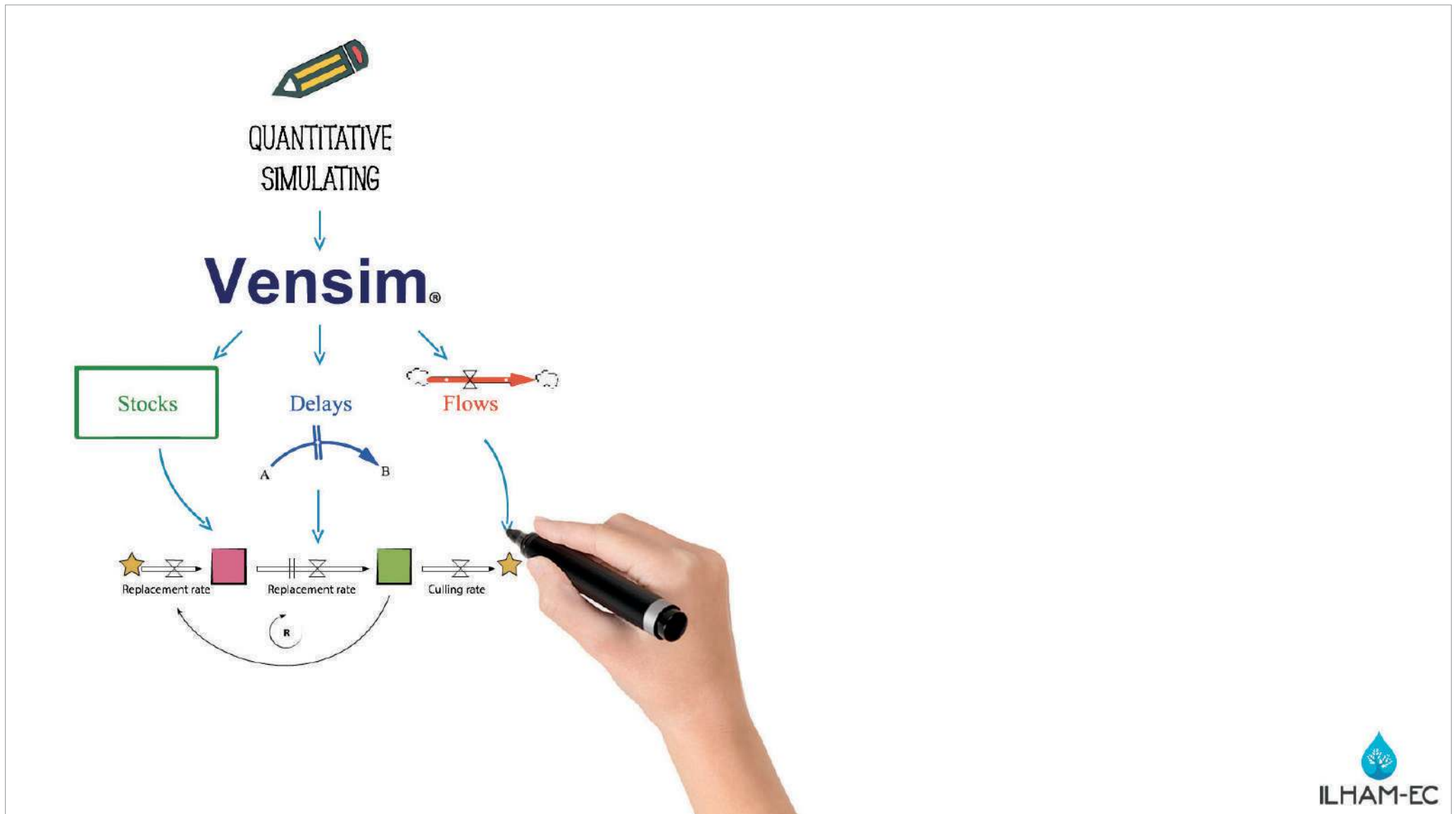
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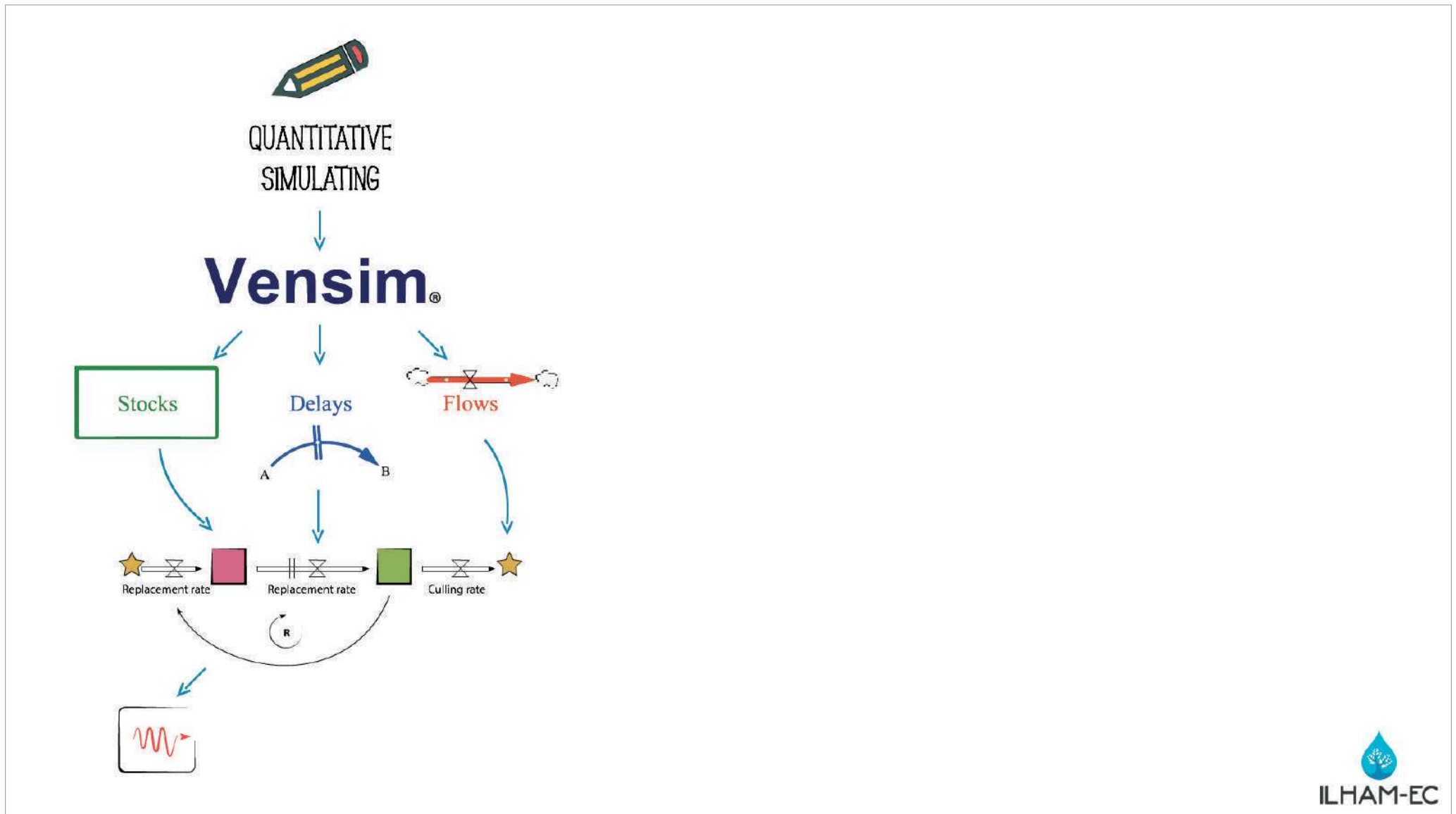
Step

25

Voice over

S-Shape growth behavior derivate from their combination



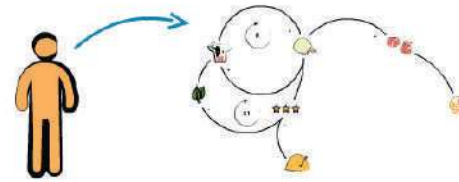
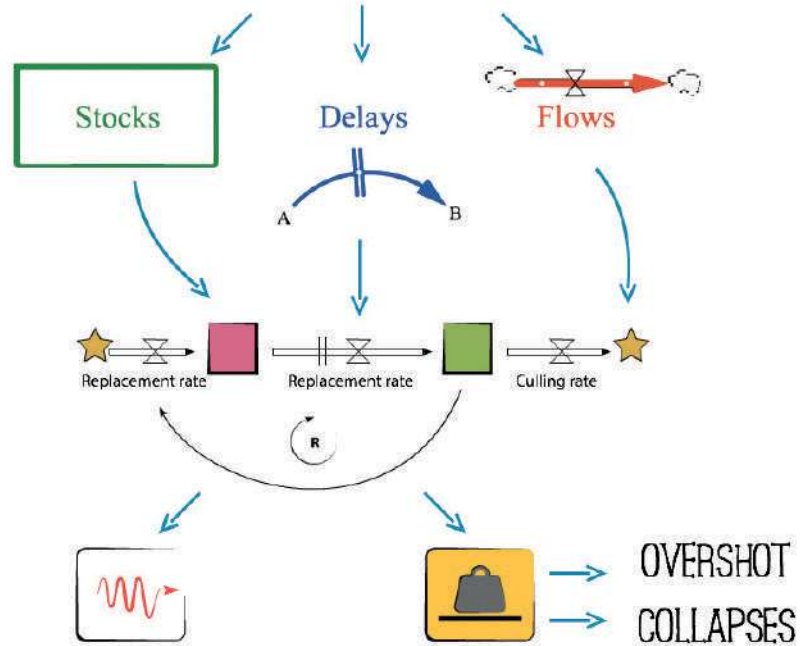


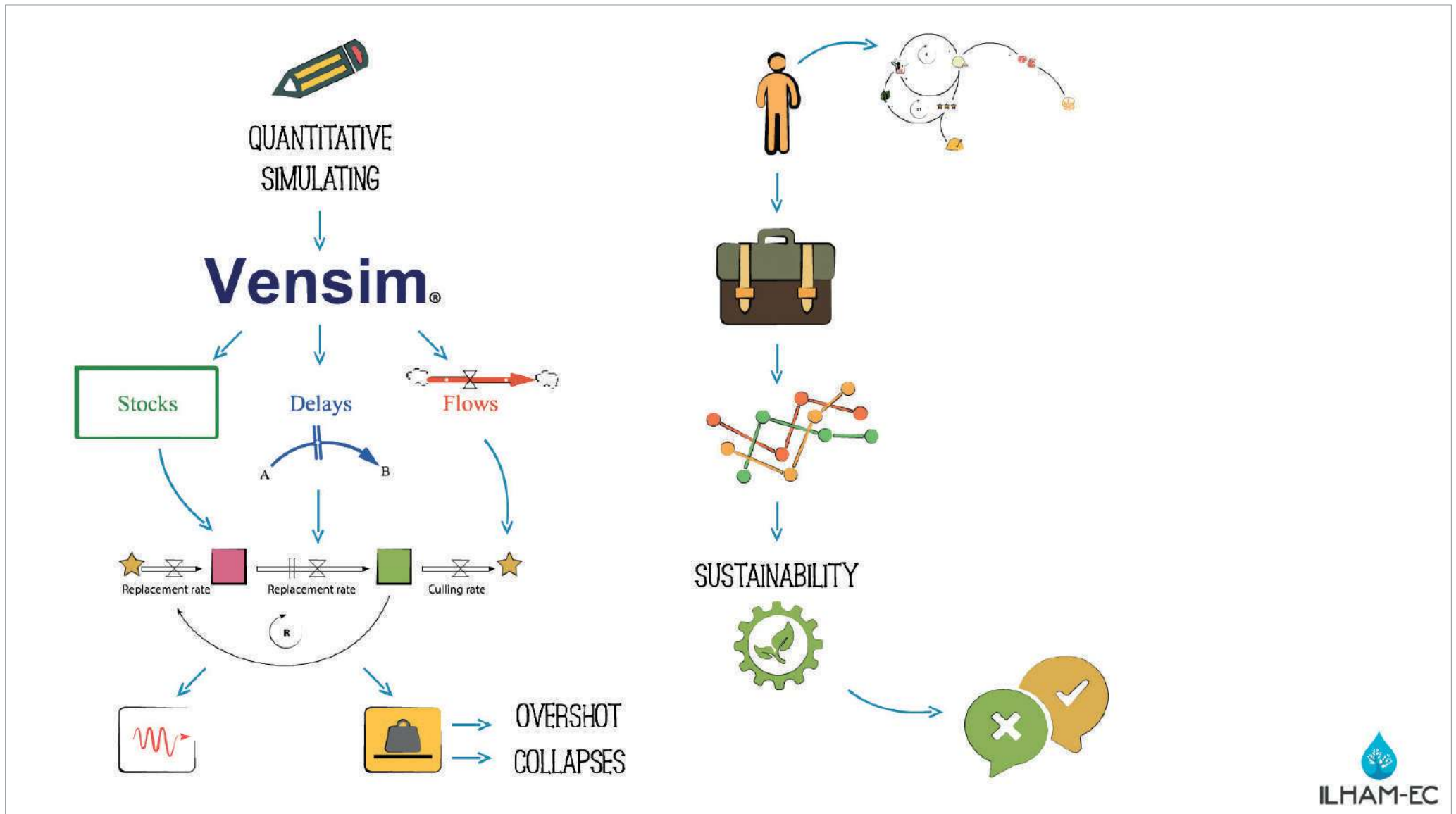


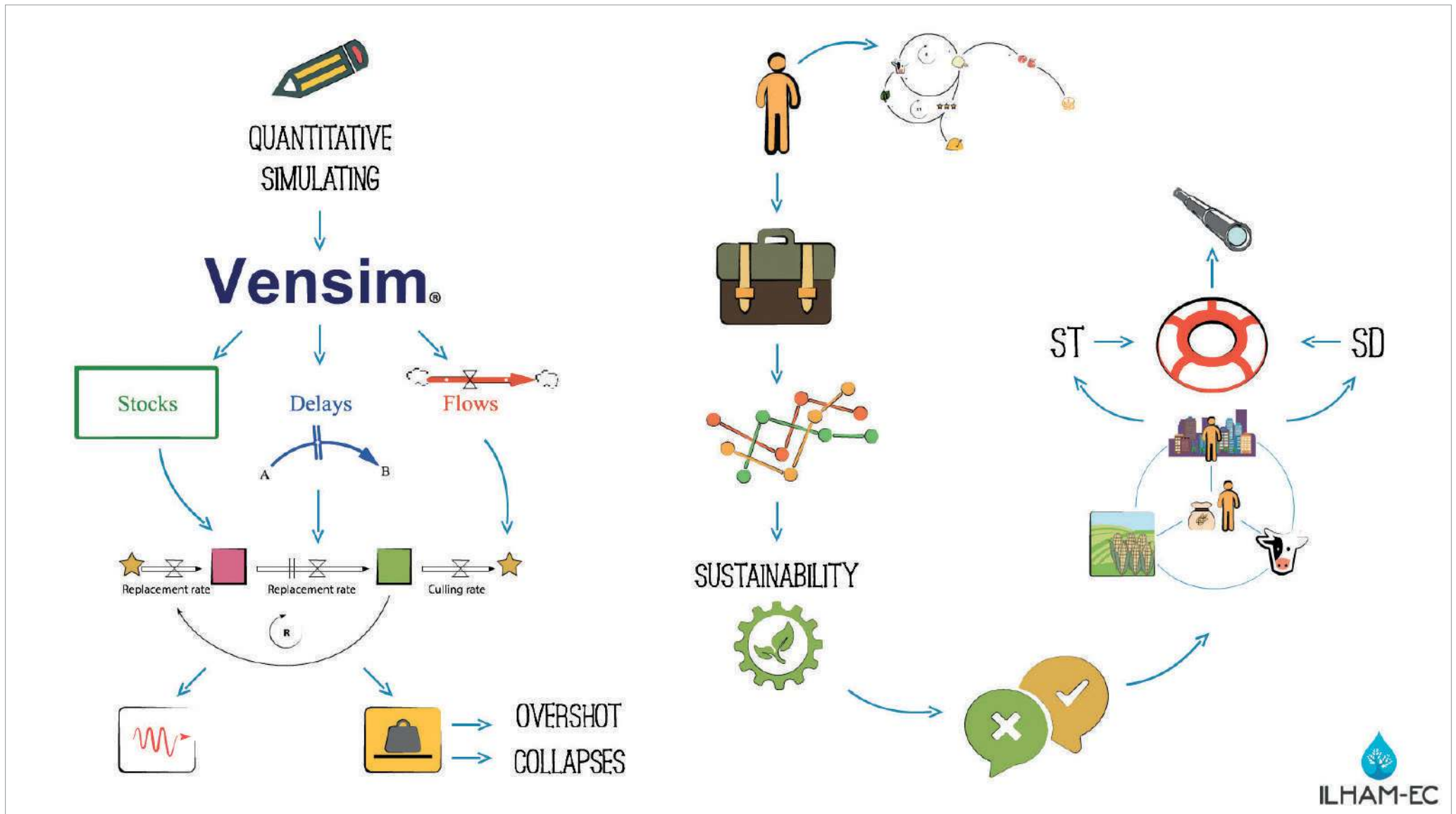


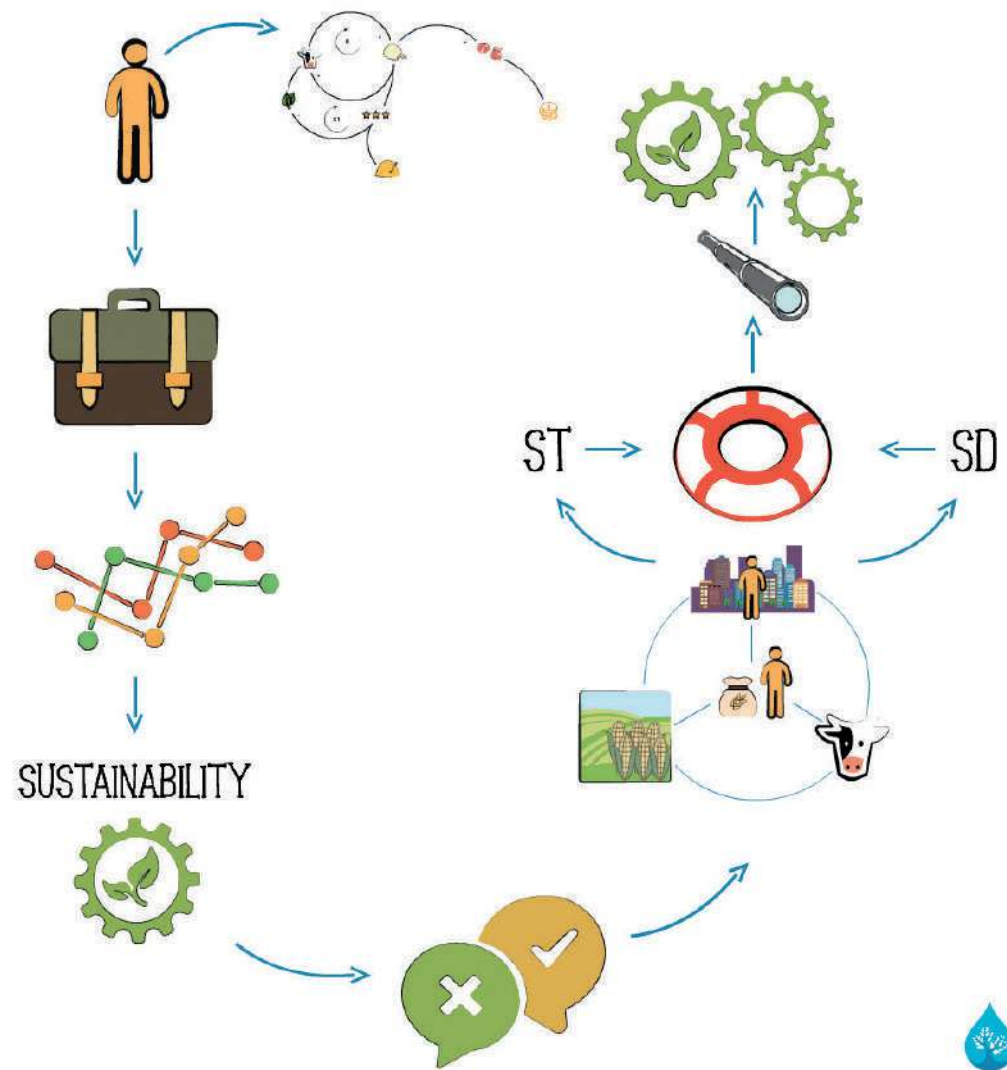
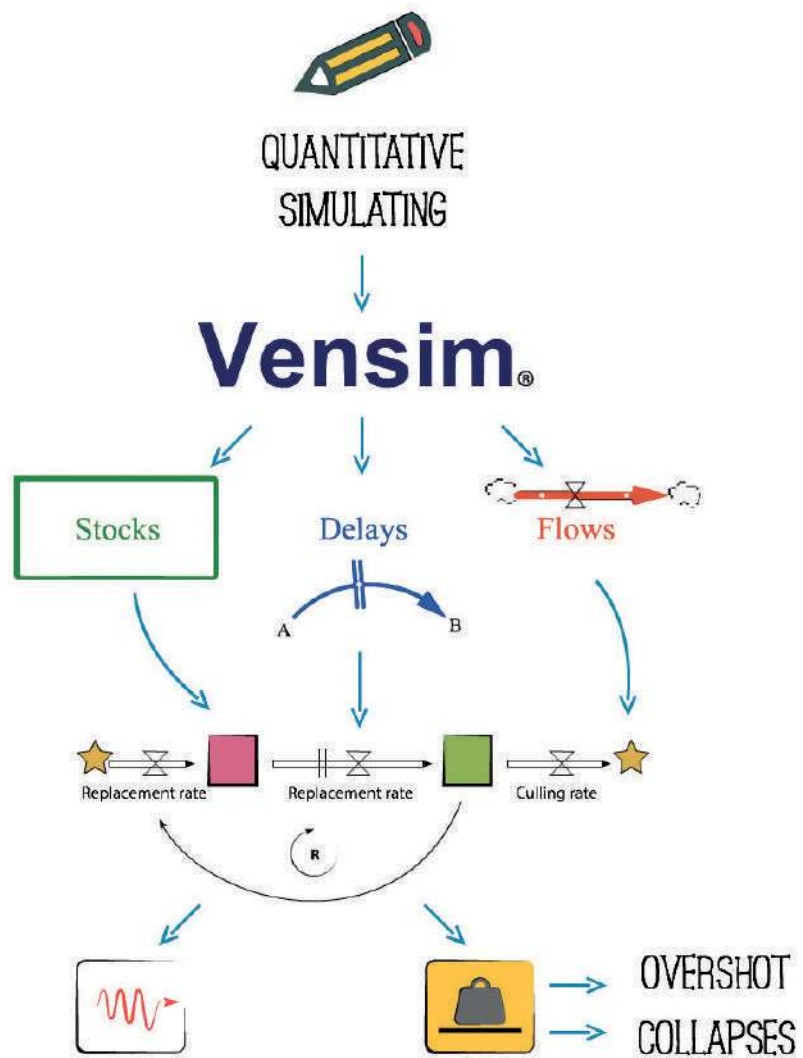
QUANTITATIVE
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SYSTEMIC PERSPECTIVES OF SUSTAINABLE FOOD-FEED LINKS

Storyboard code

10-B (Atzori)

Step

49

Voice over

Systemic perspectives of sustainable food-feed links



CROPS



ILHAM-EC

Storyboard code

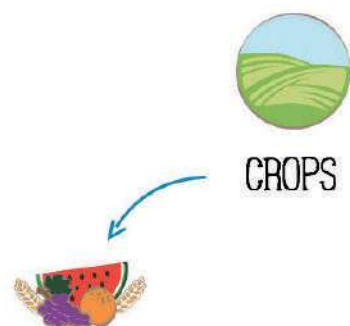
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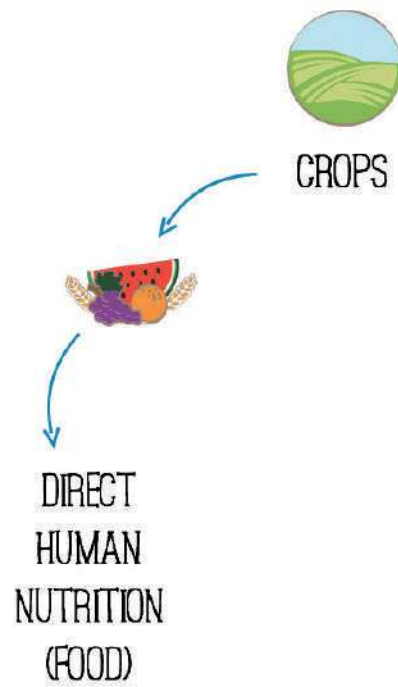
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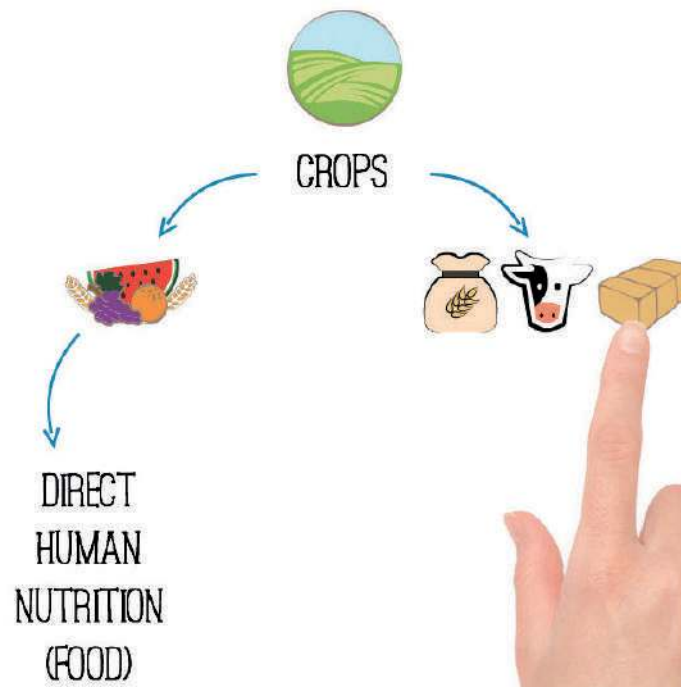
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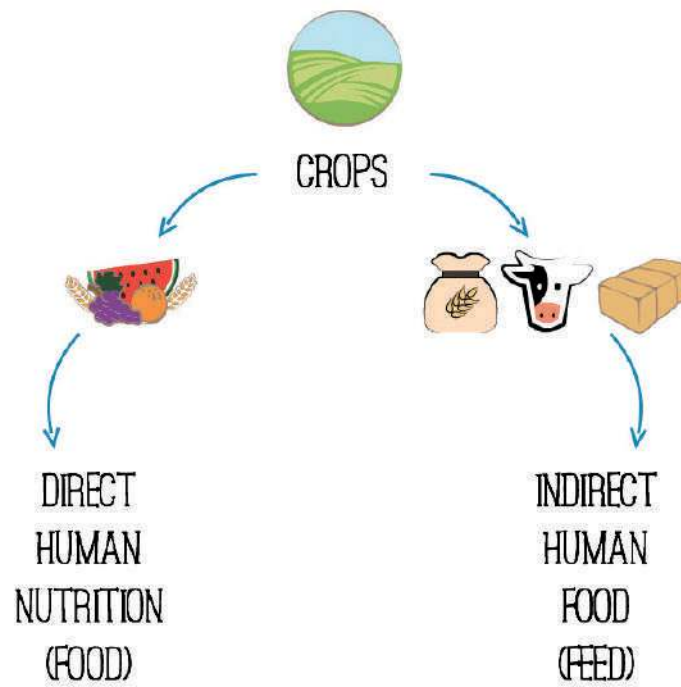
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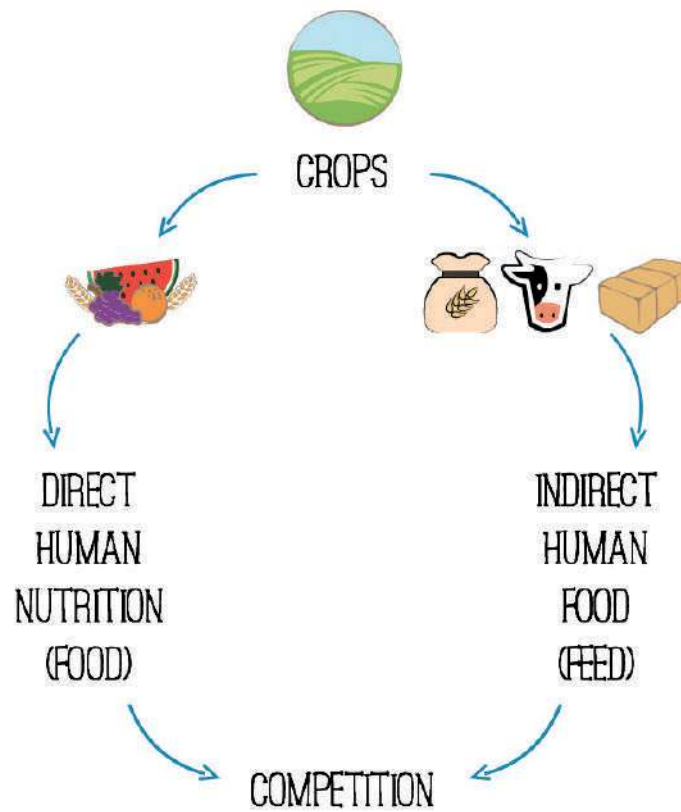
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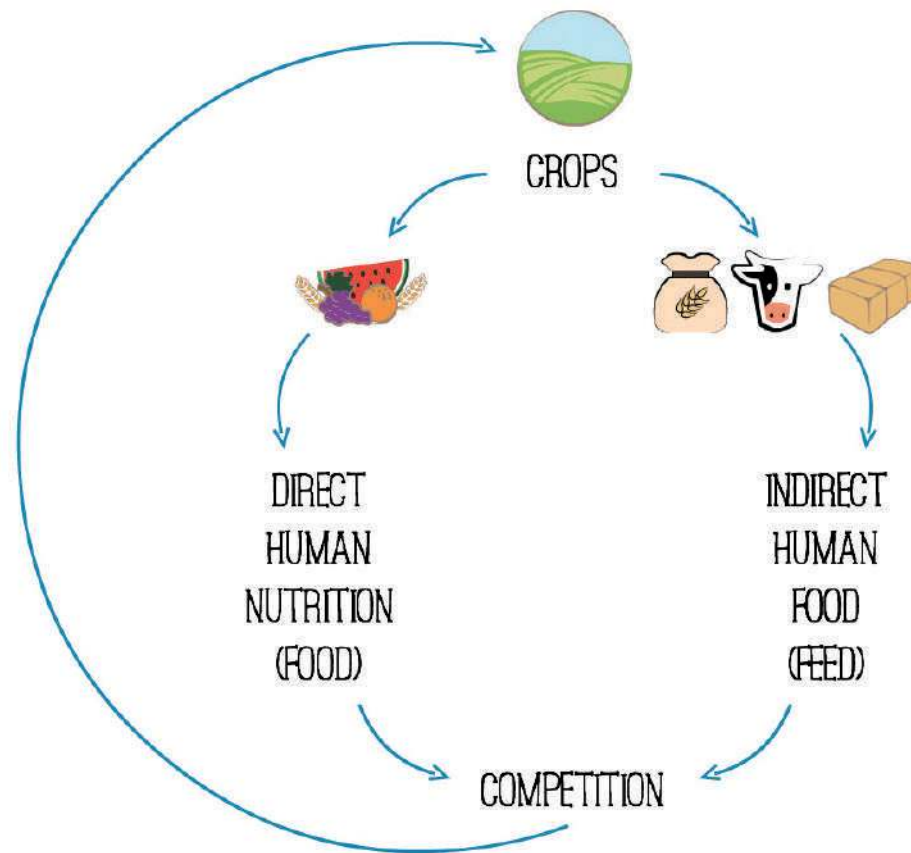






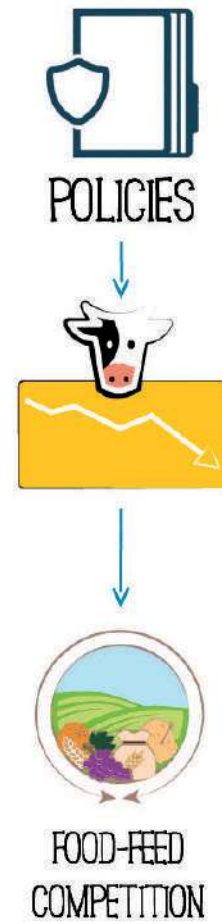


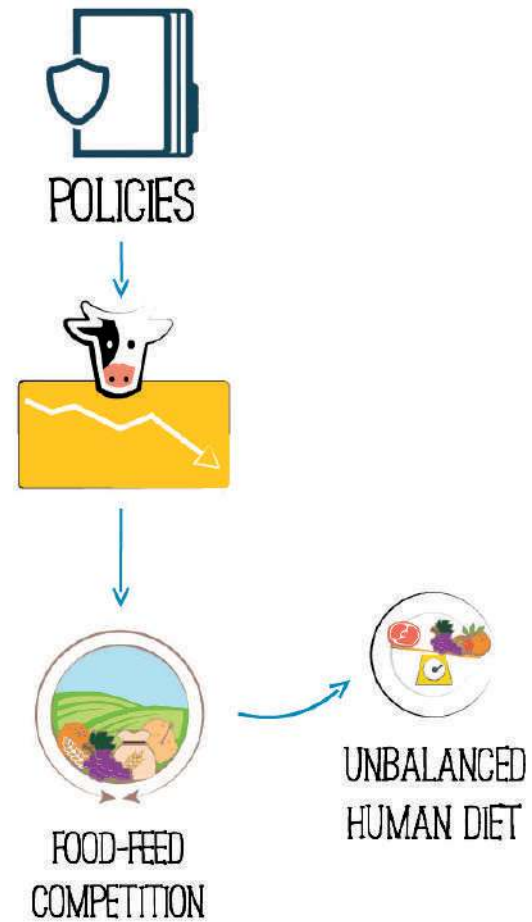


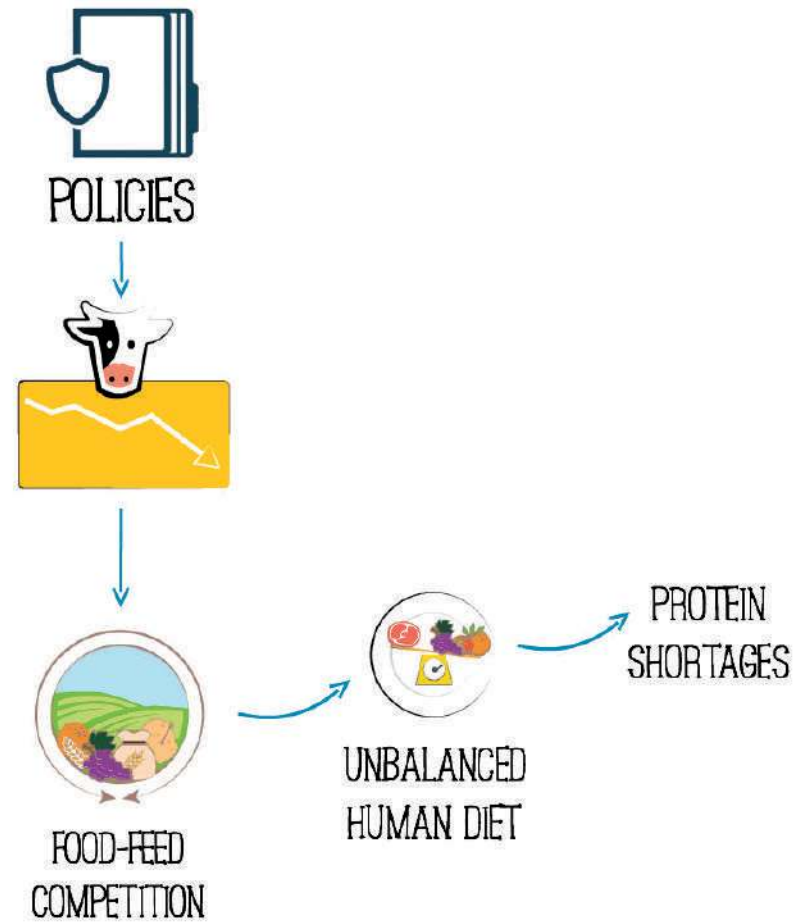


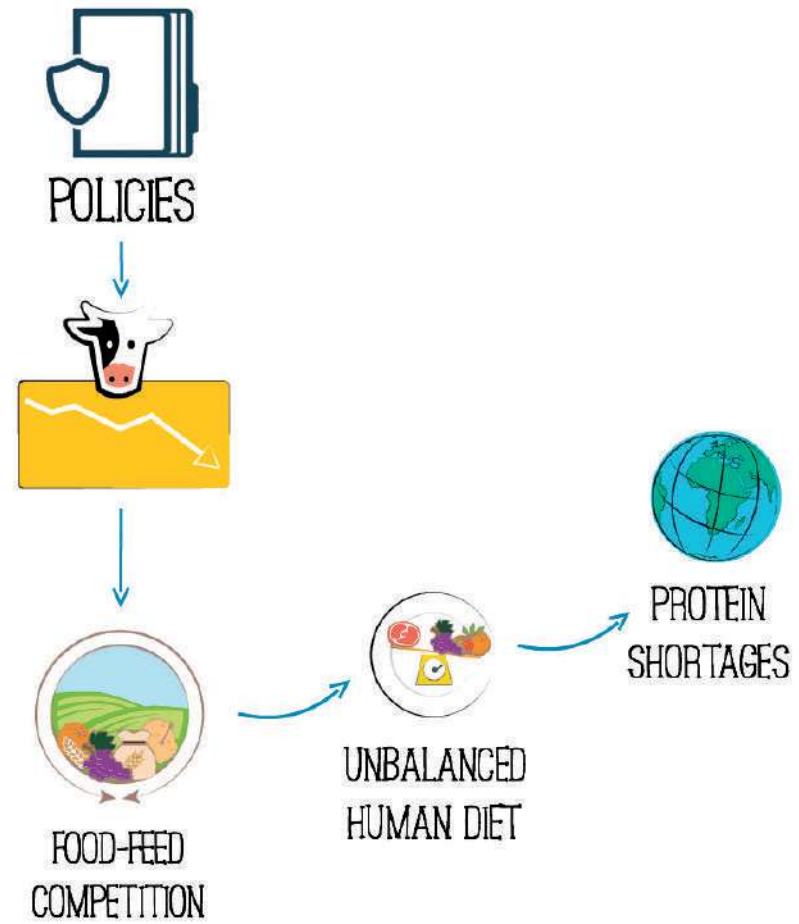


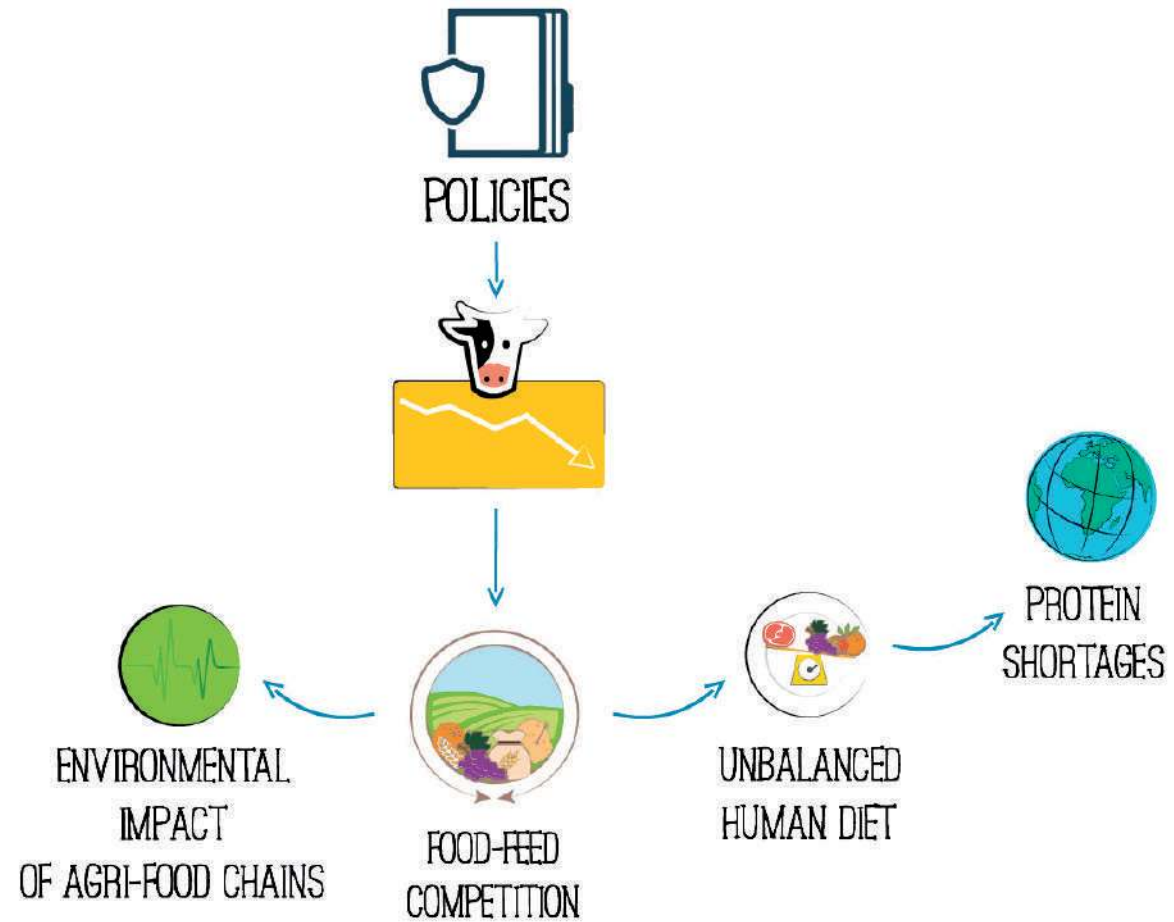


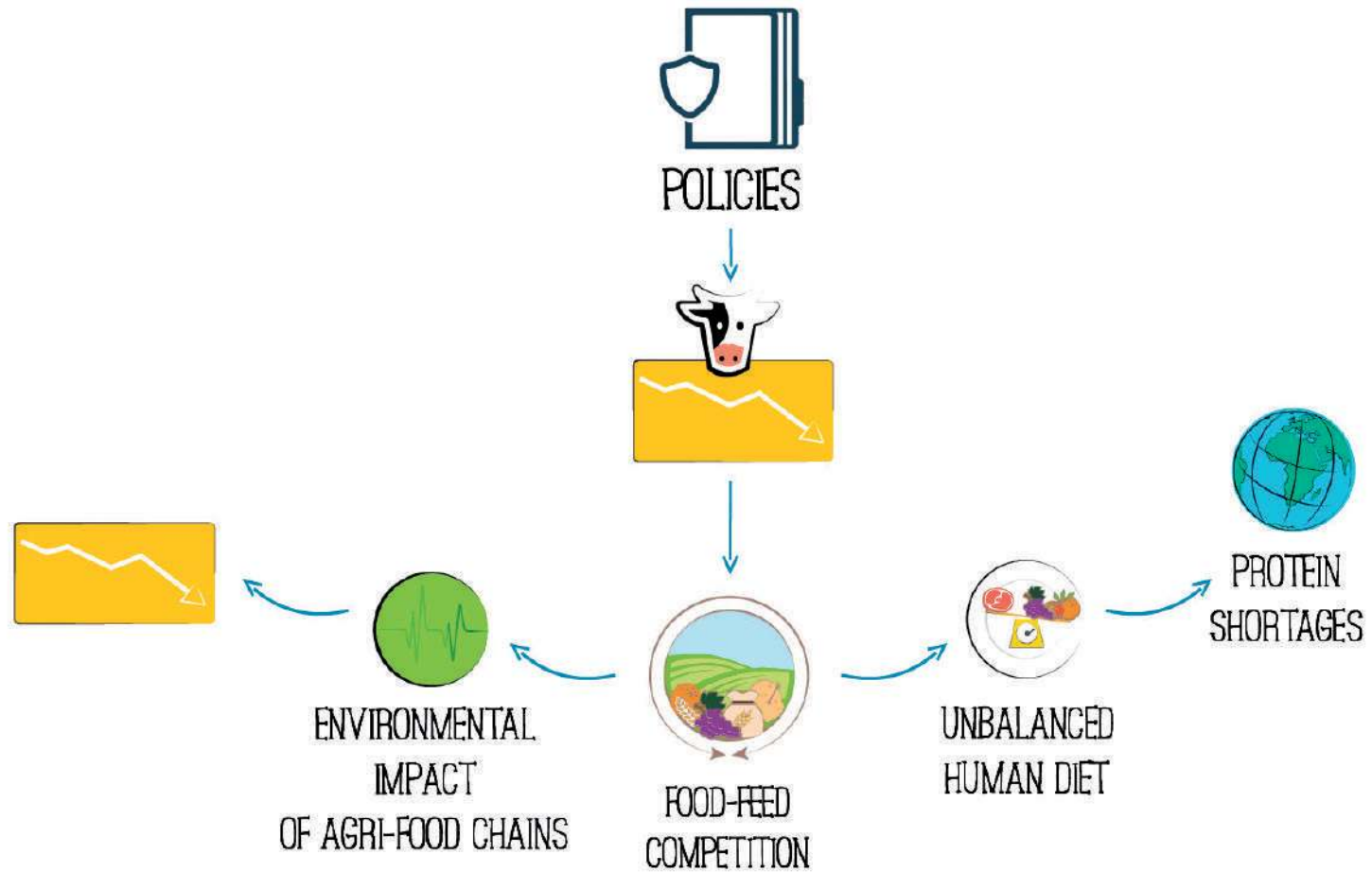


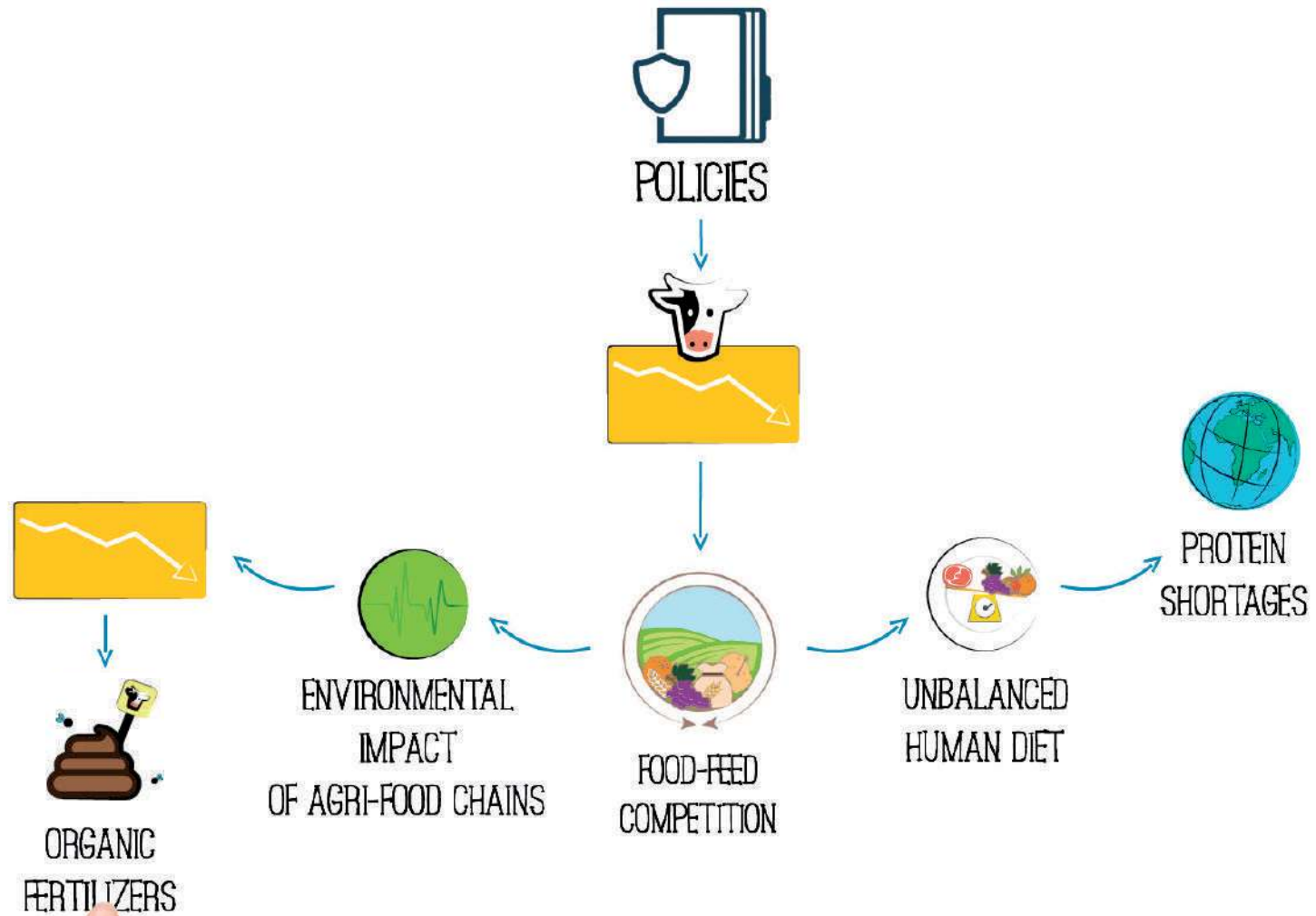


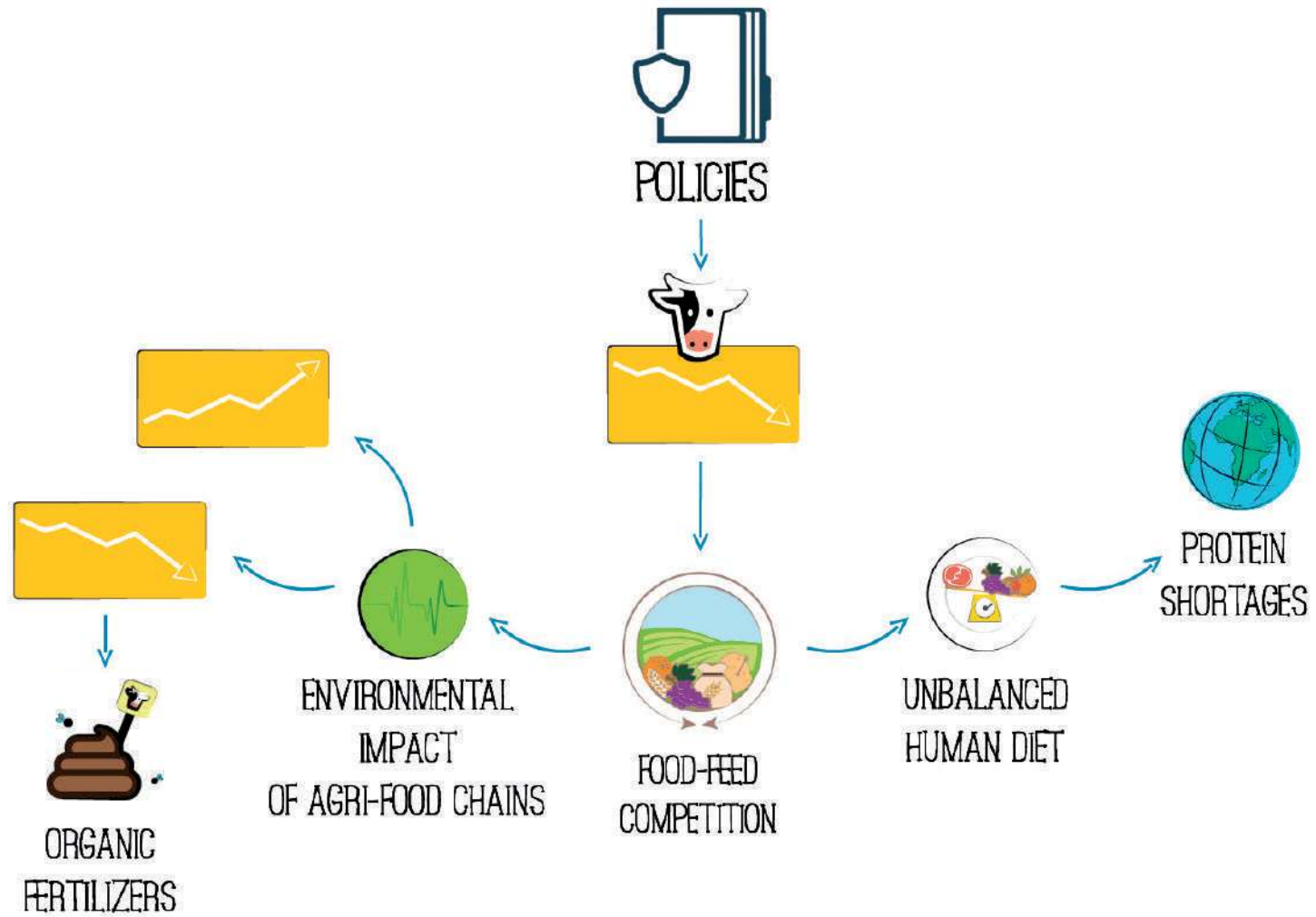


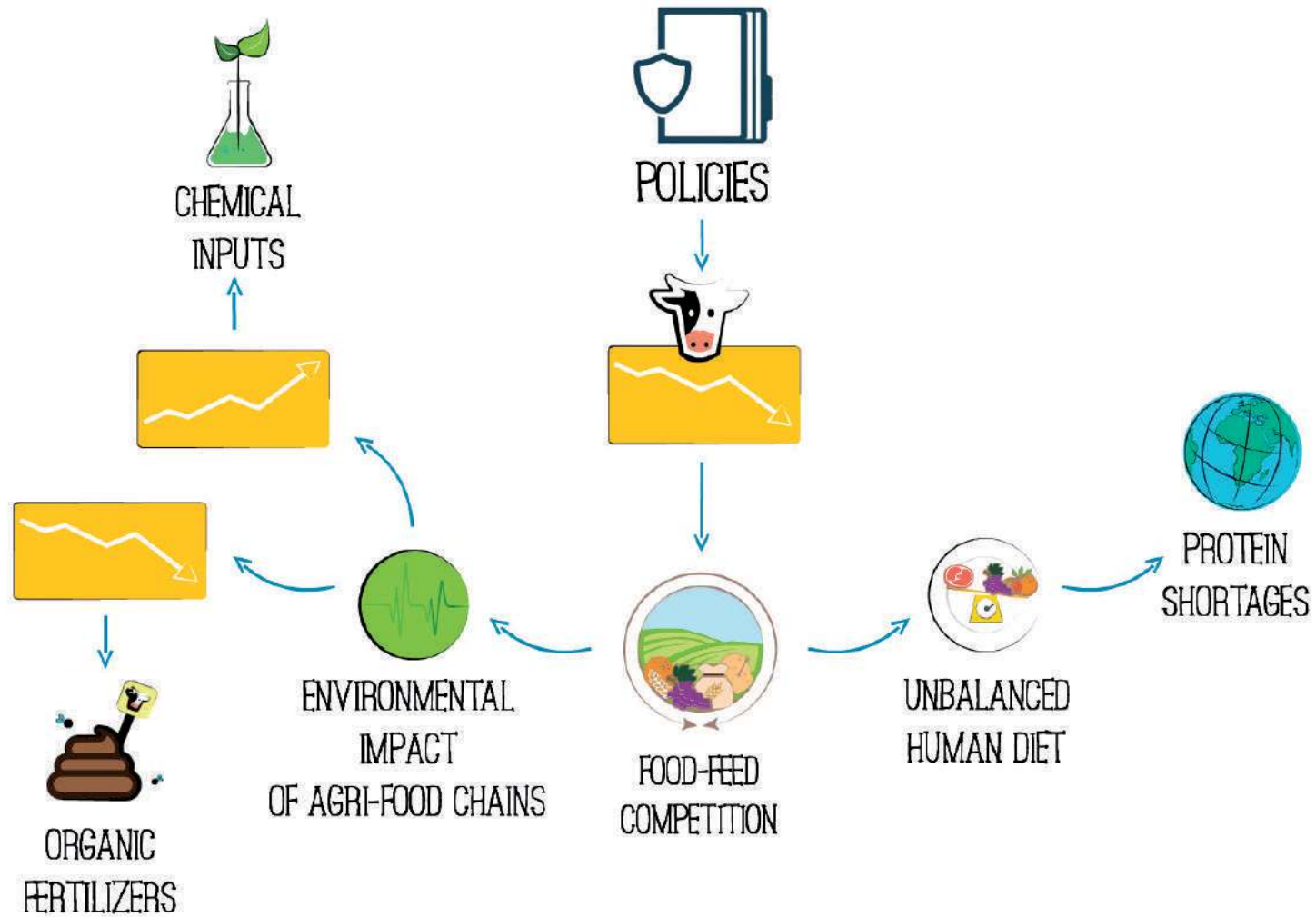


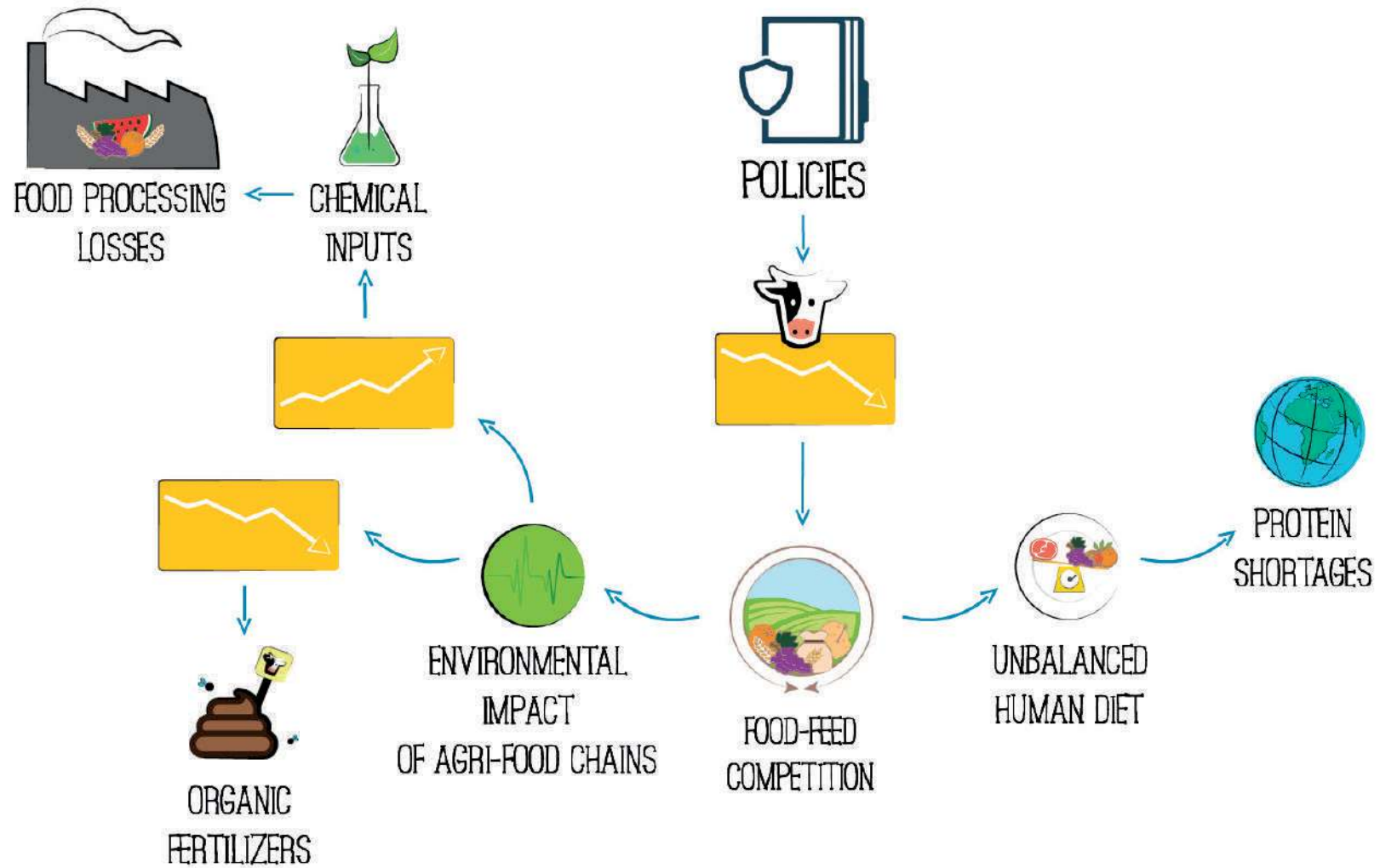








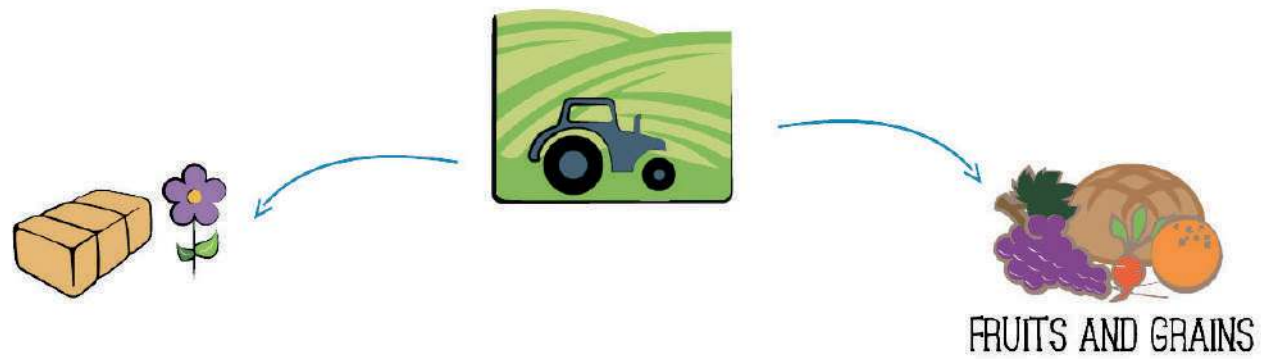


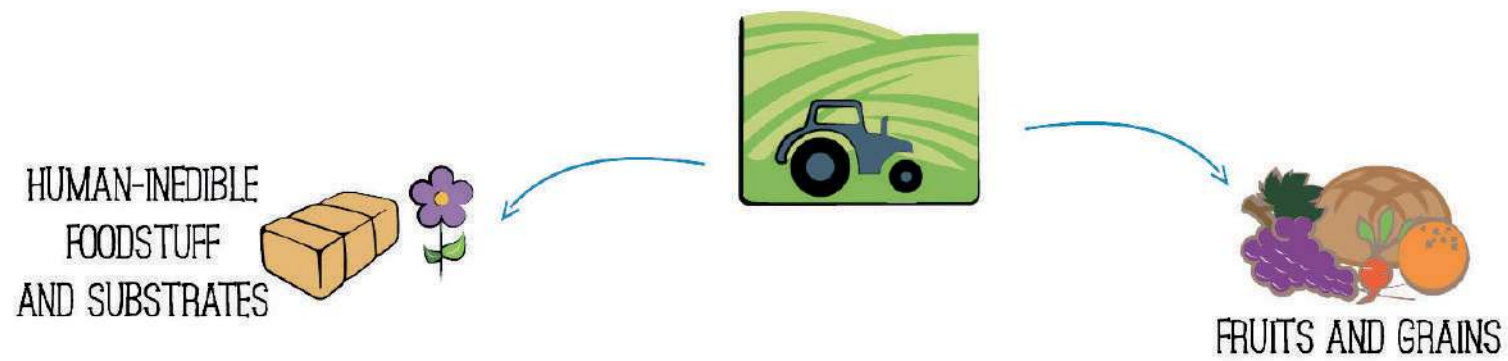


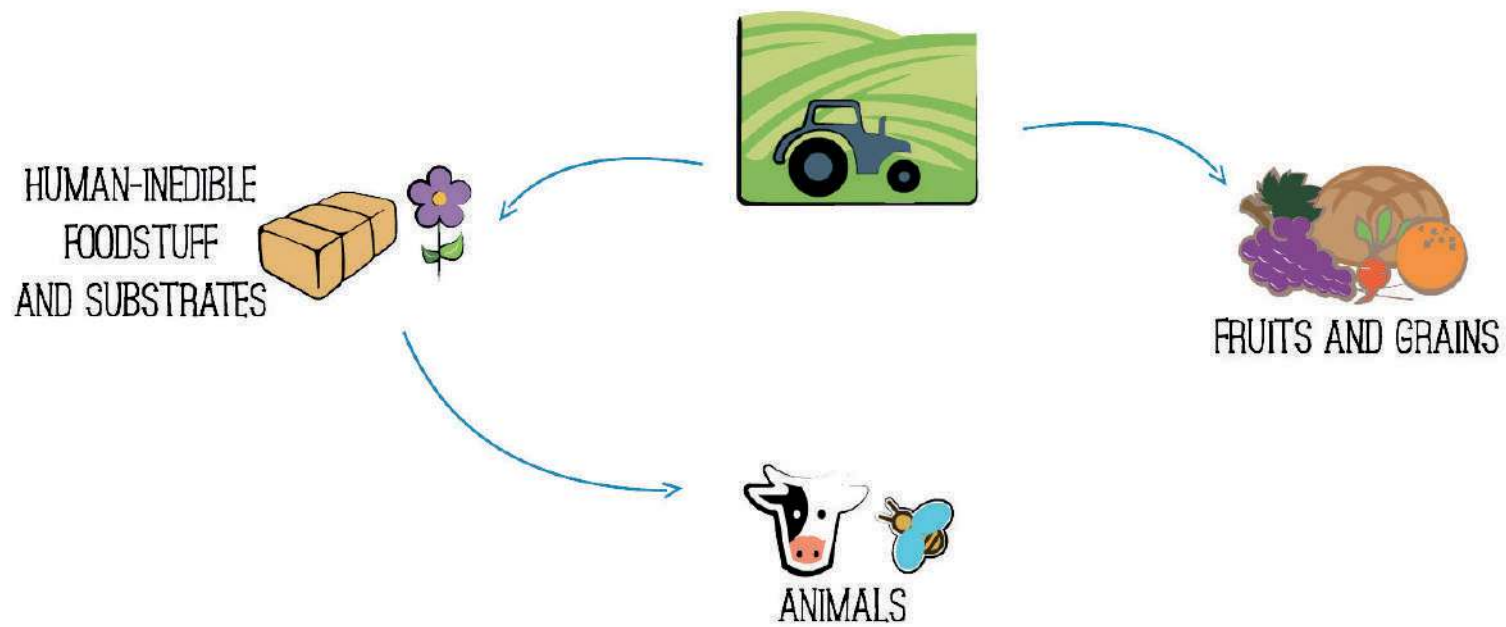


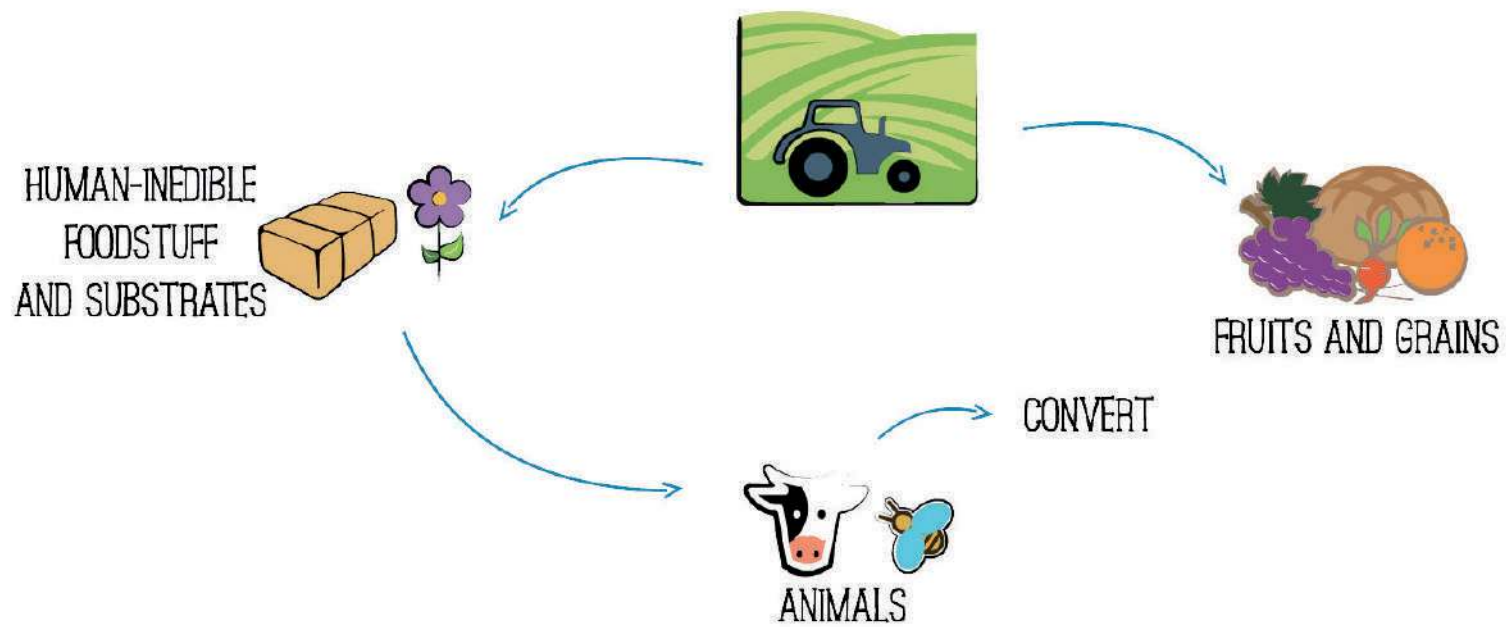


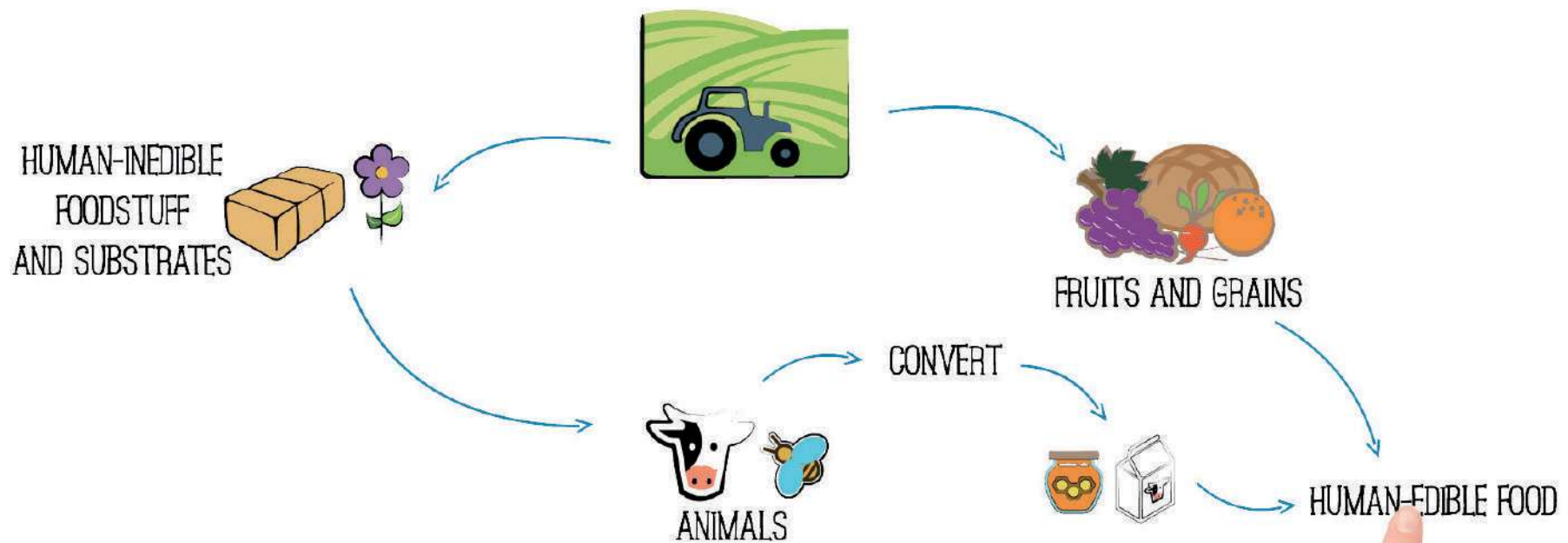
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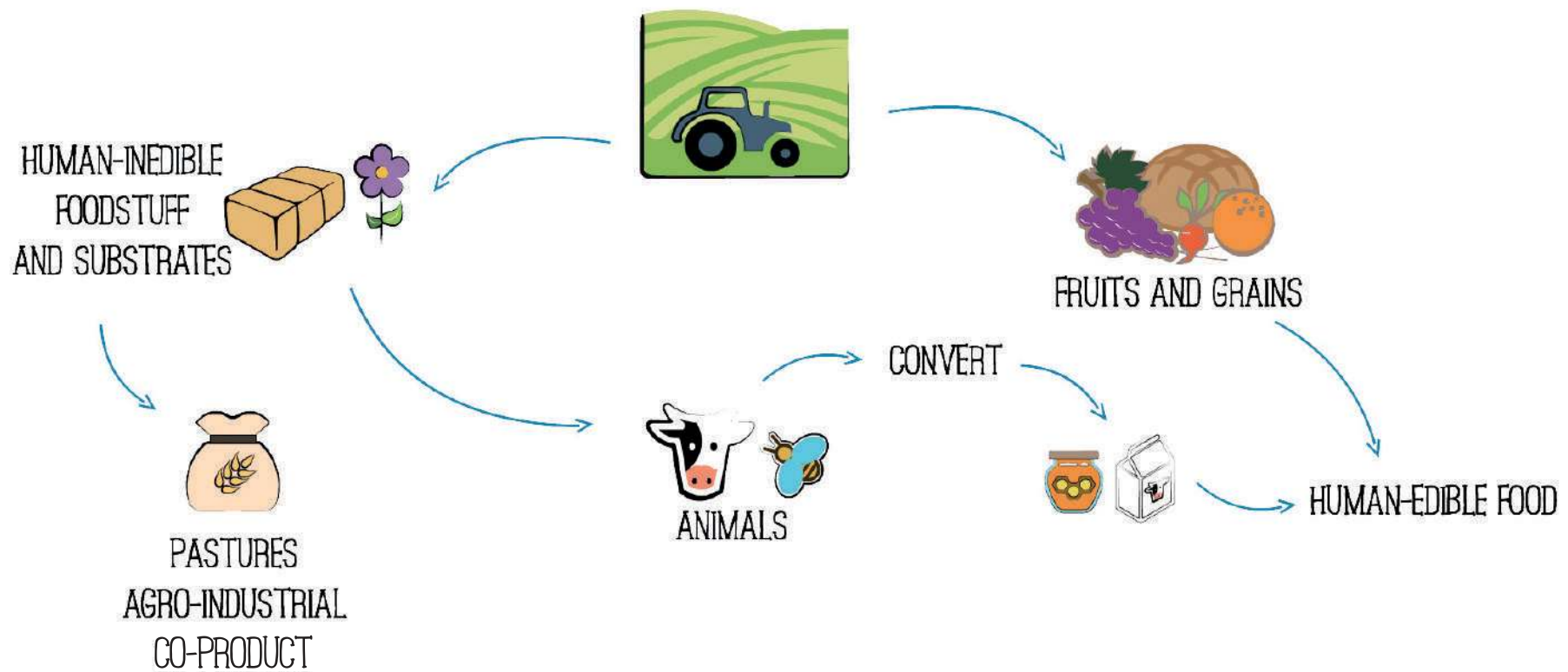


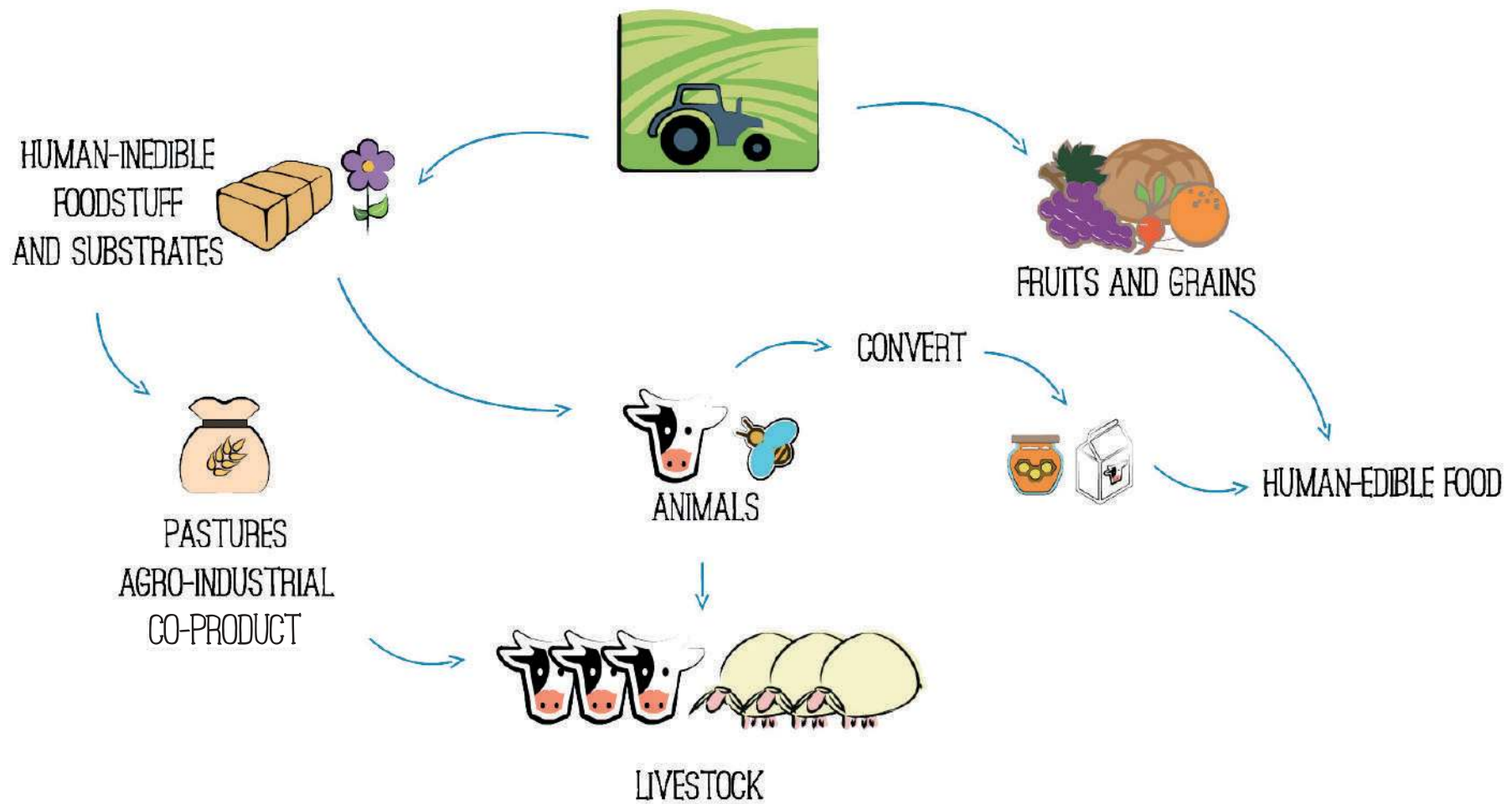


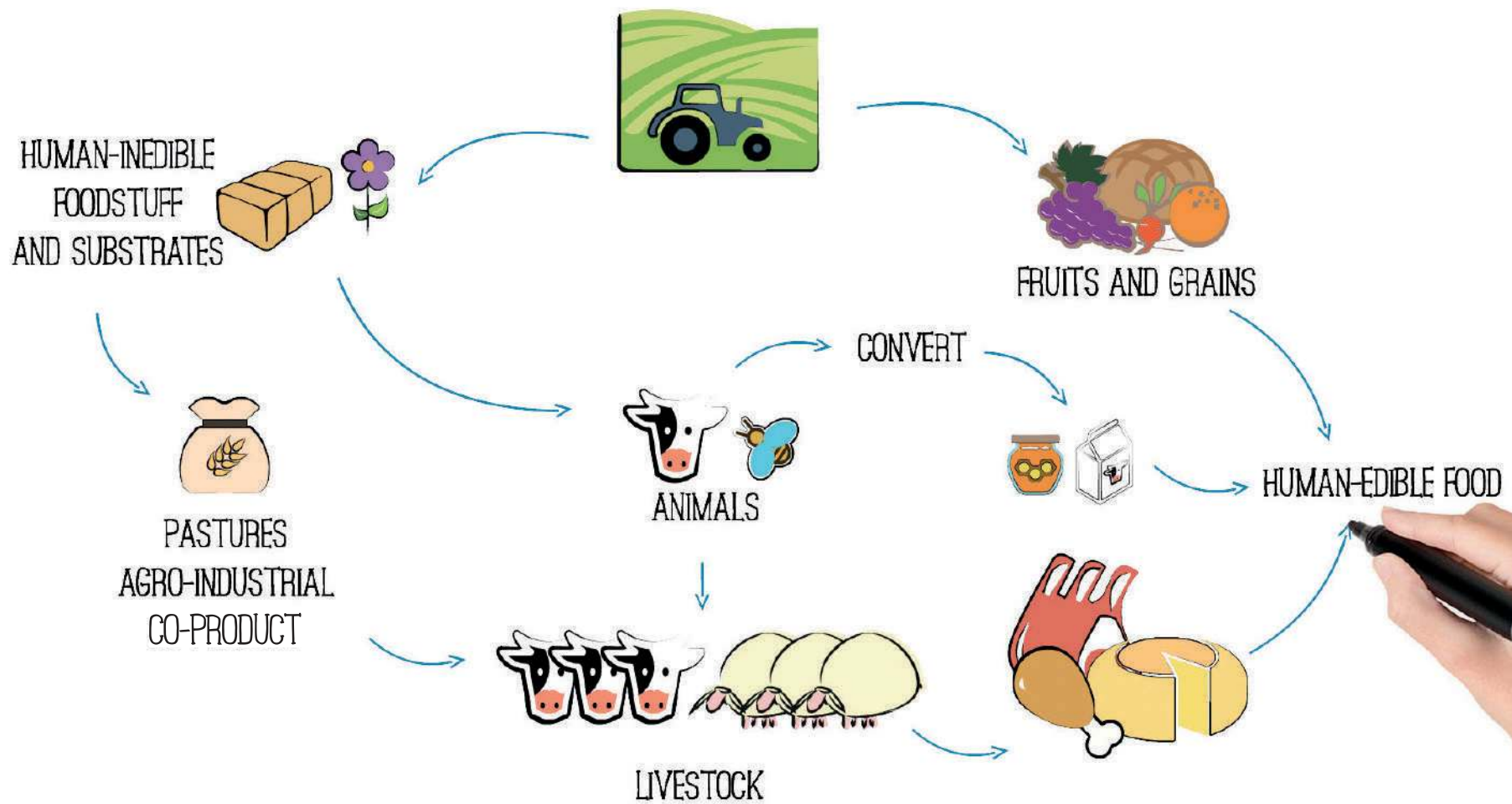


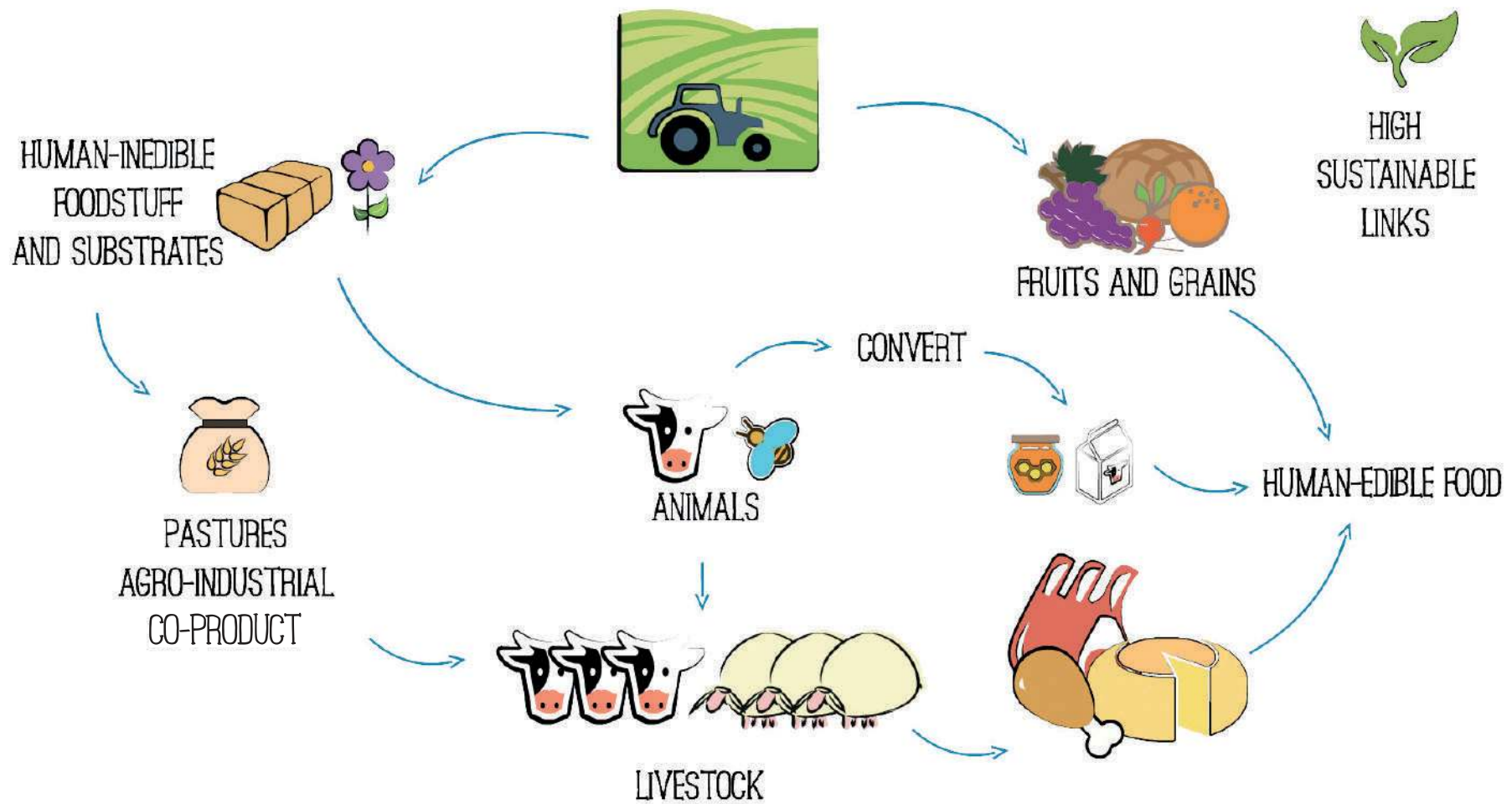


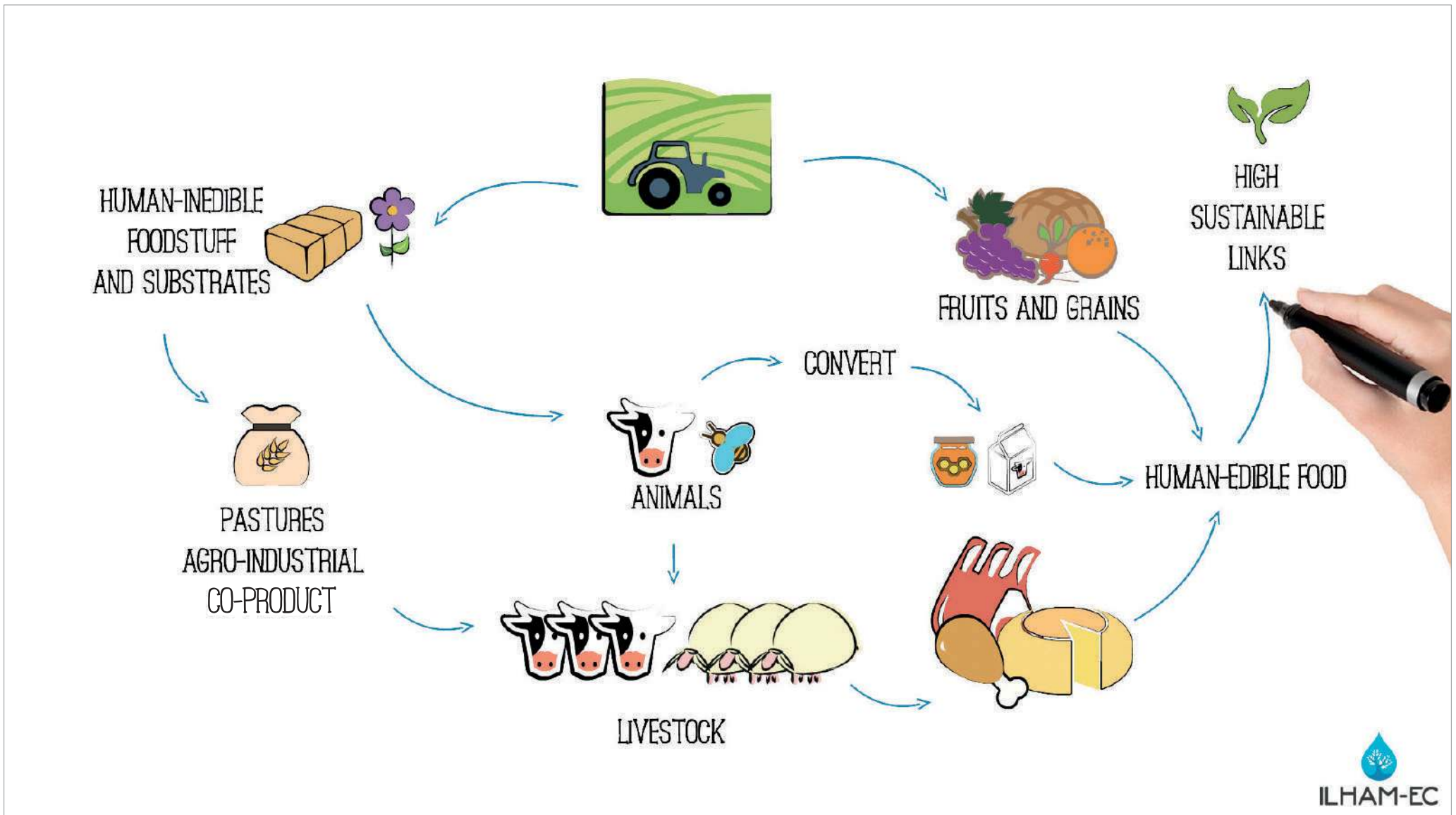


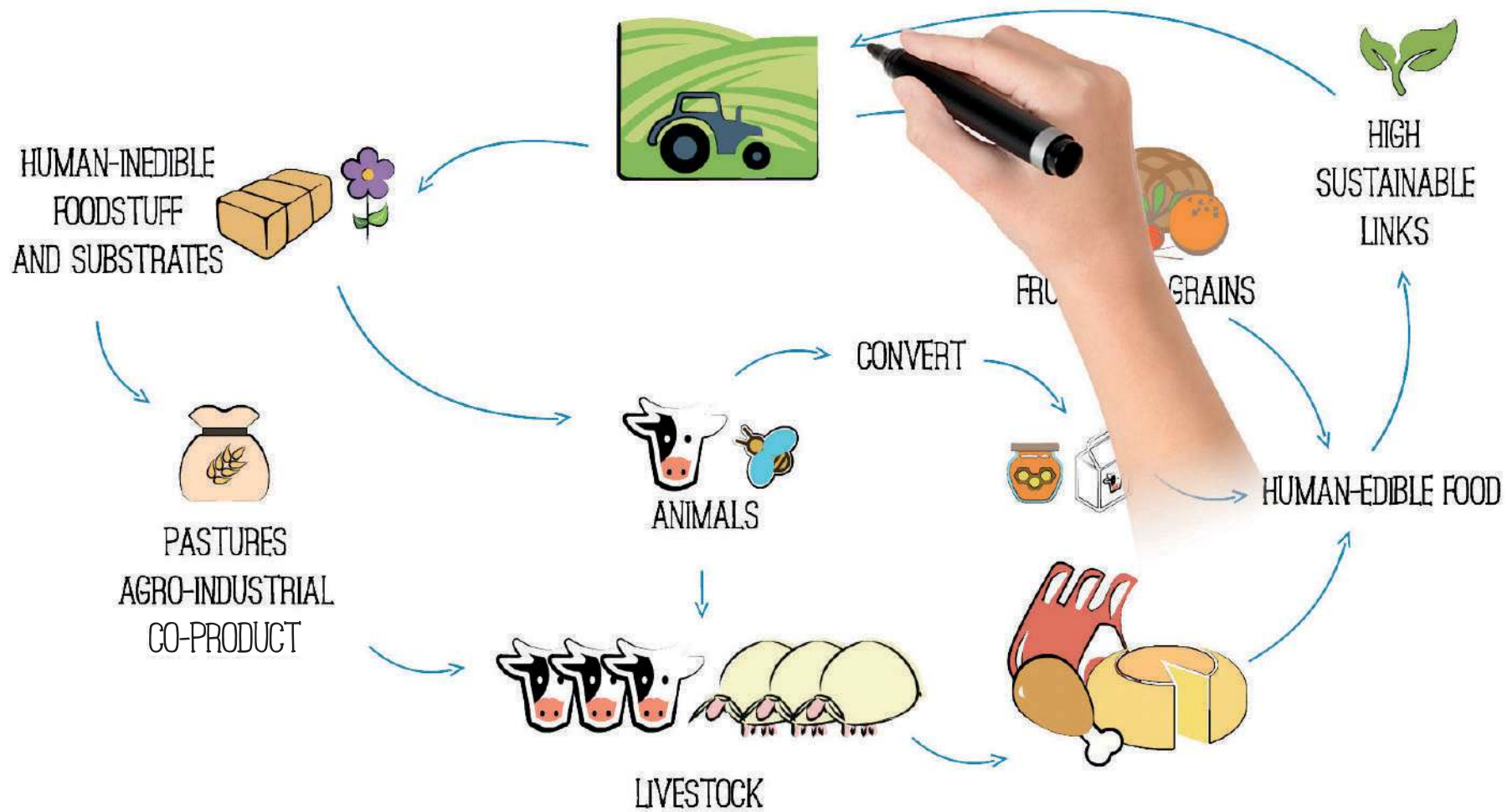












BASIC FEEDBACKS



BASIC
FEEDBACKS



FOOD-FEED
COMPETITION



LAND USE

BASIC
FEEDBACKS

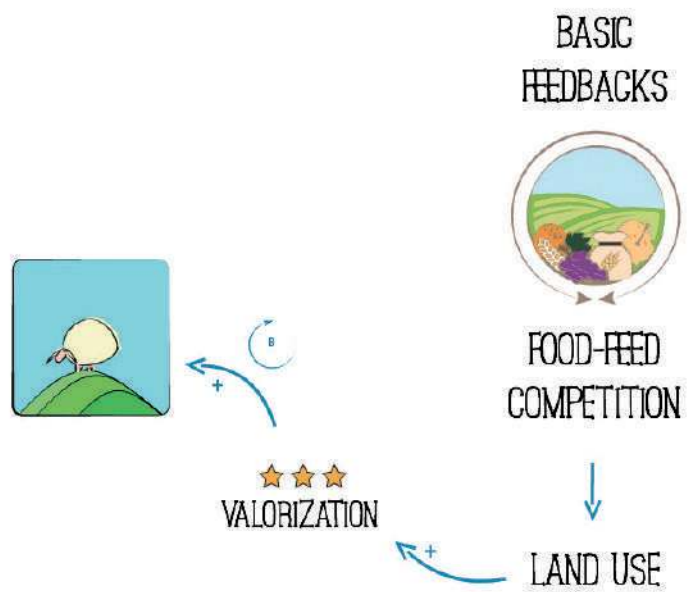


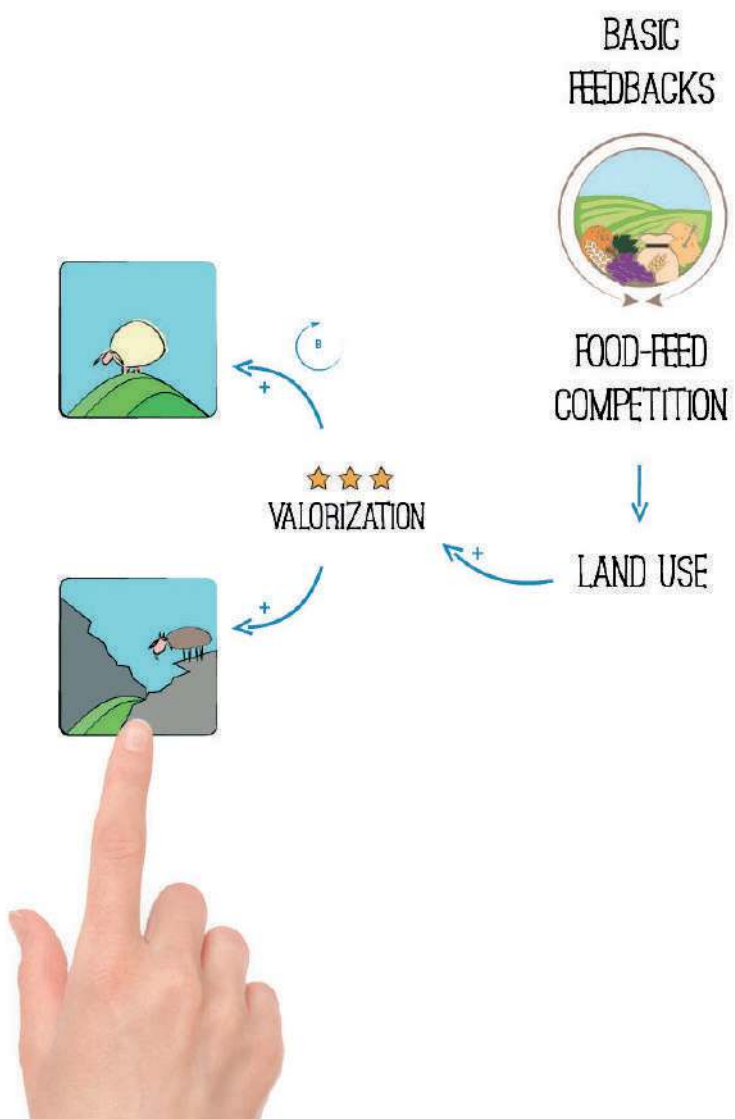
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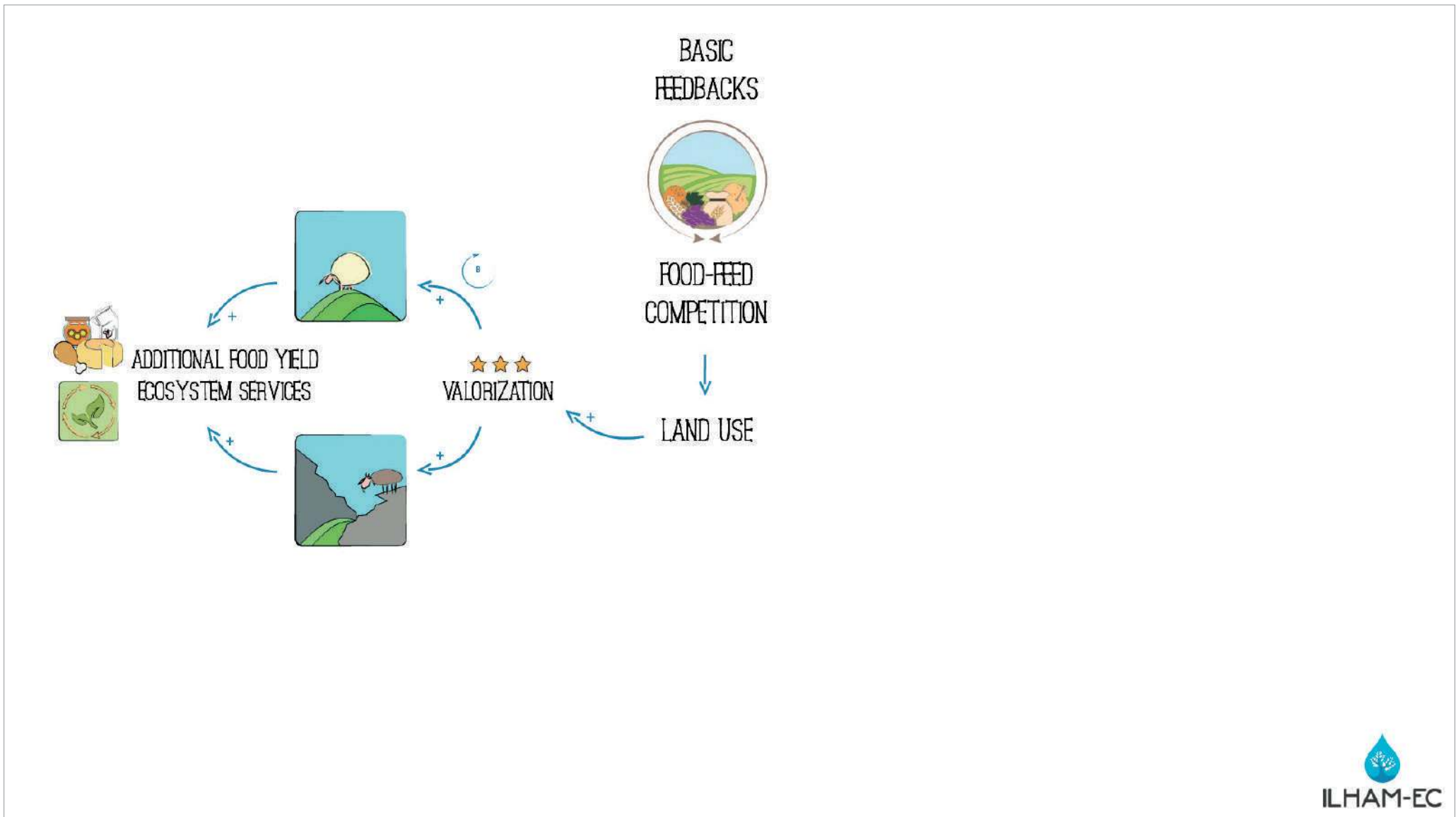
★★★
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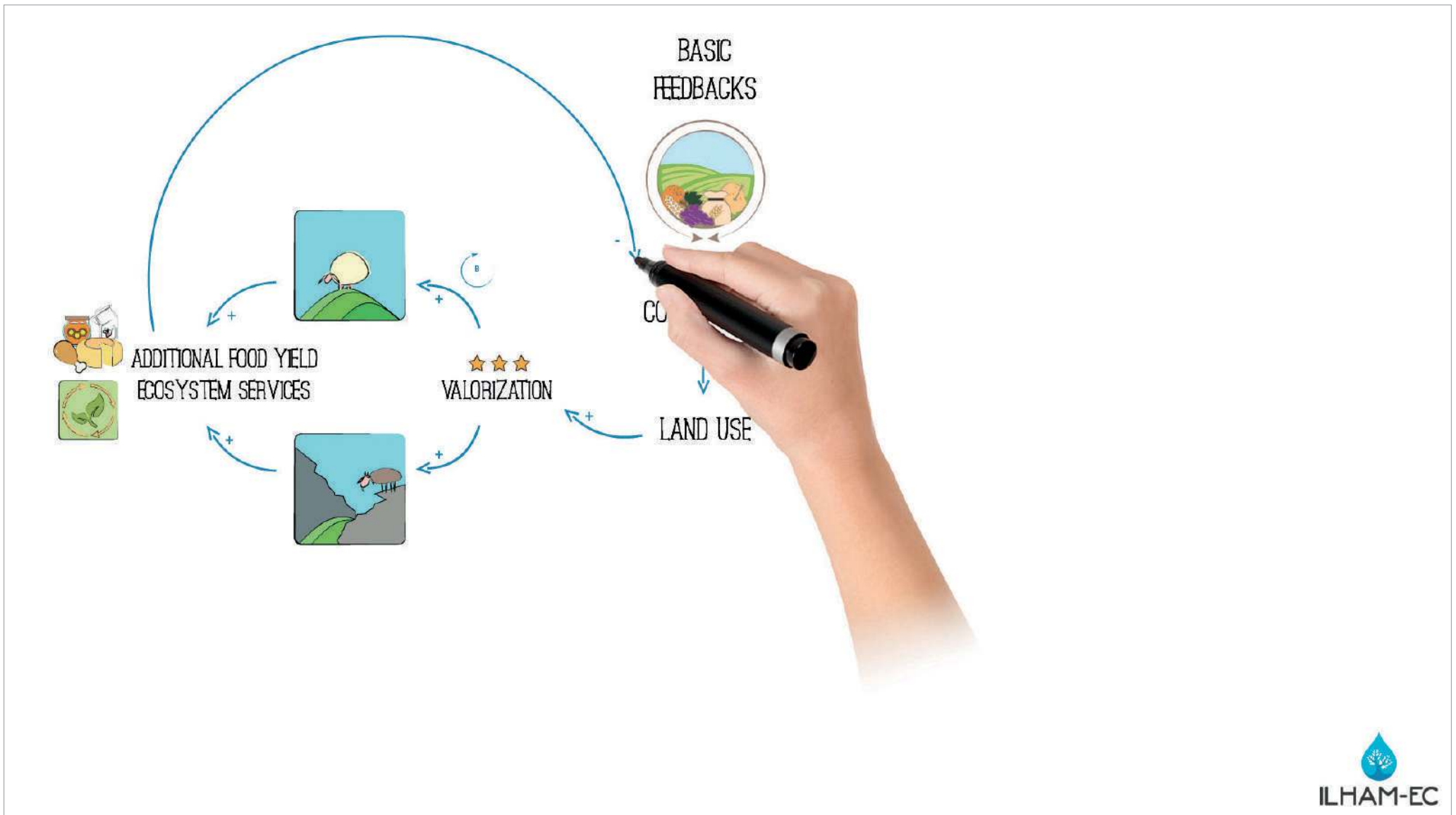


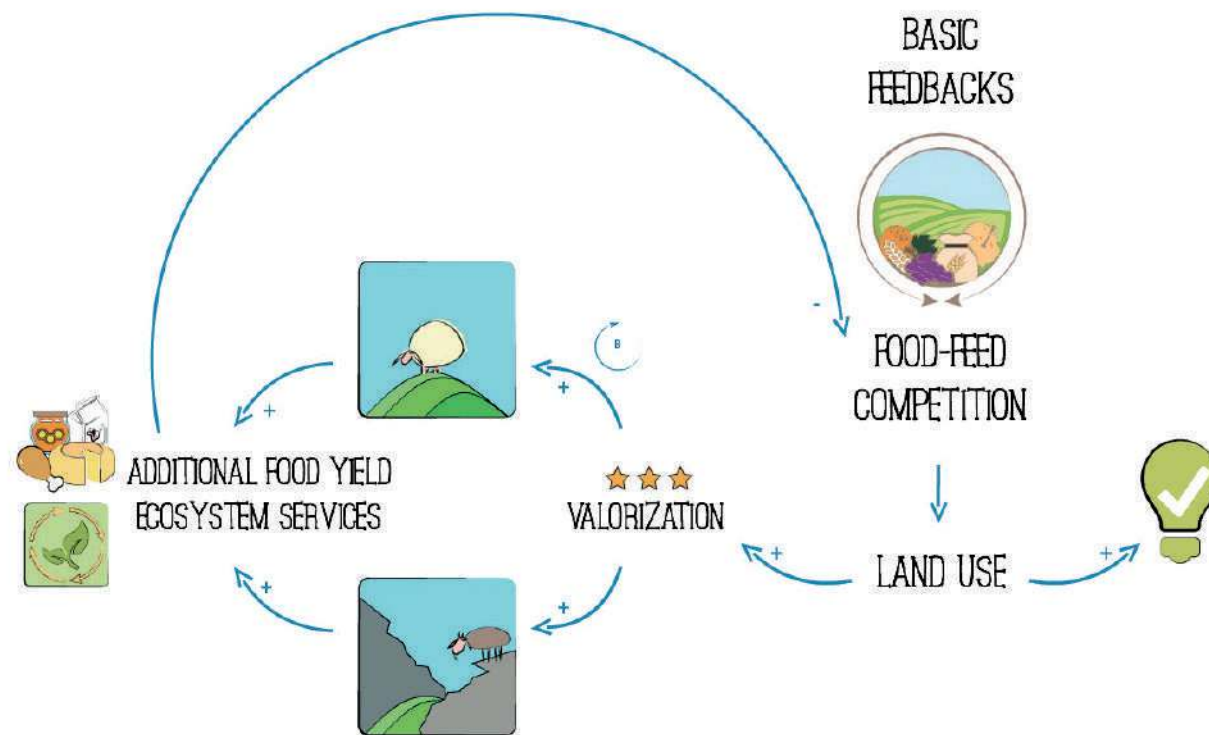
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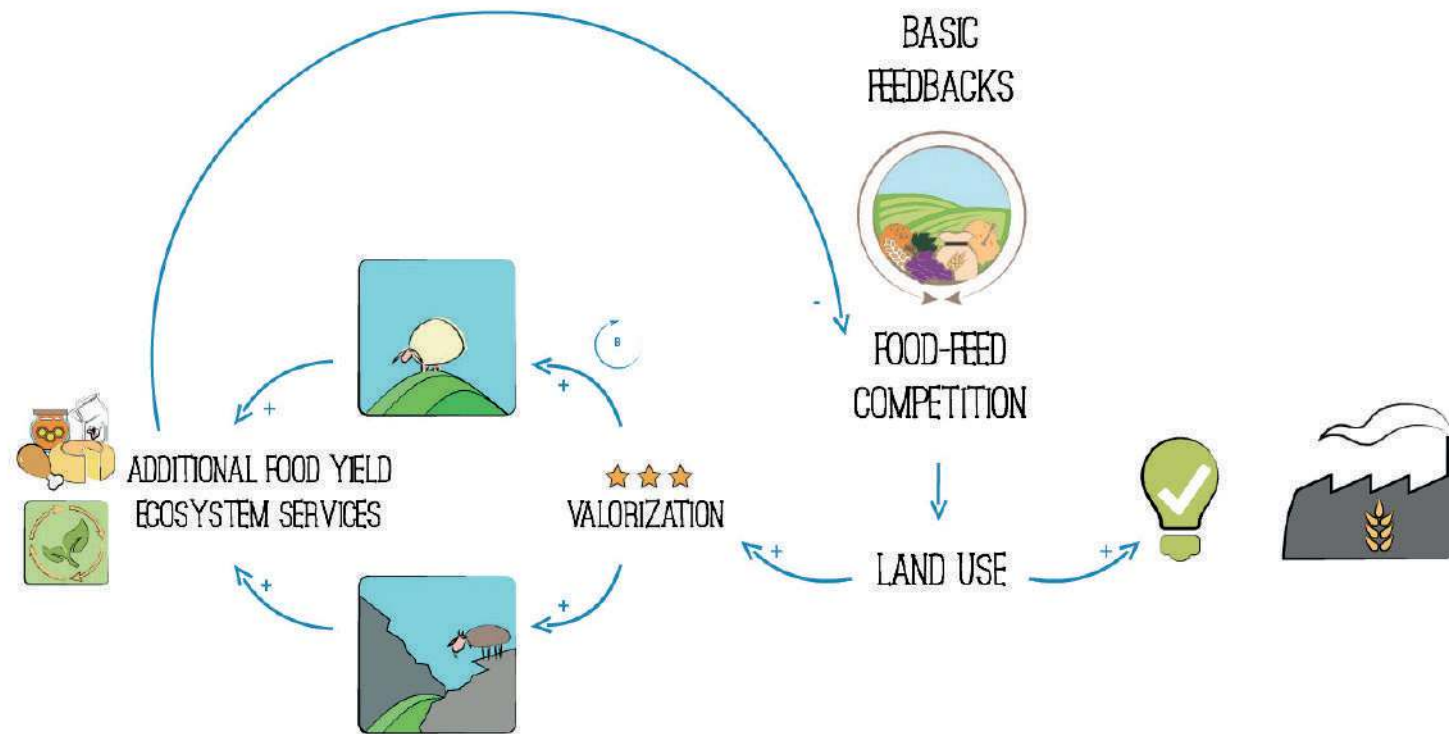


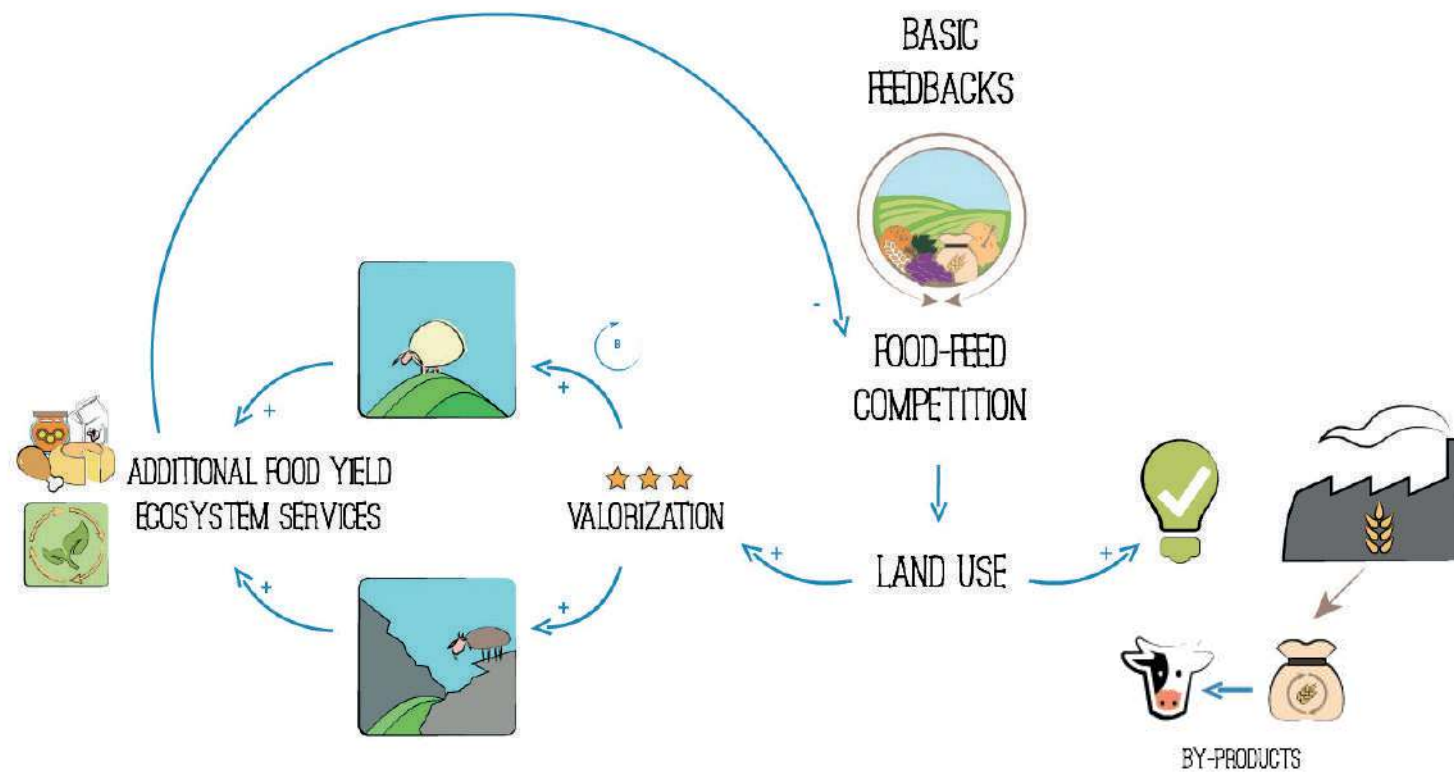


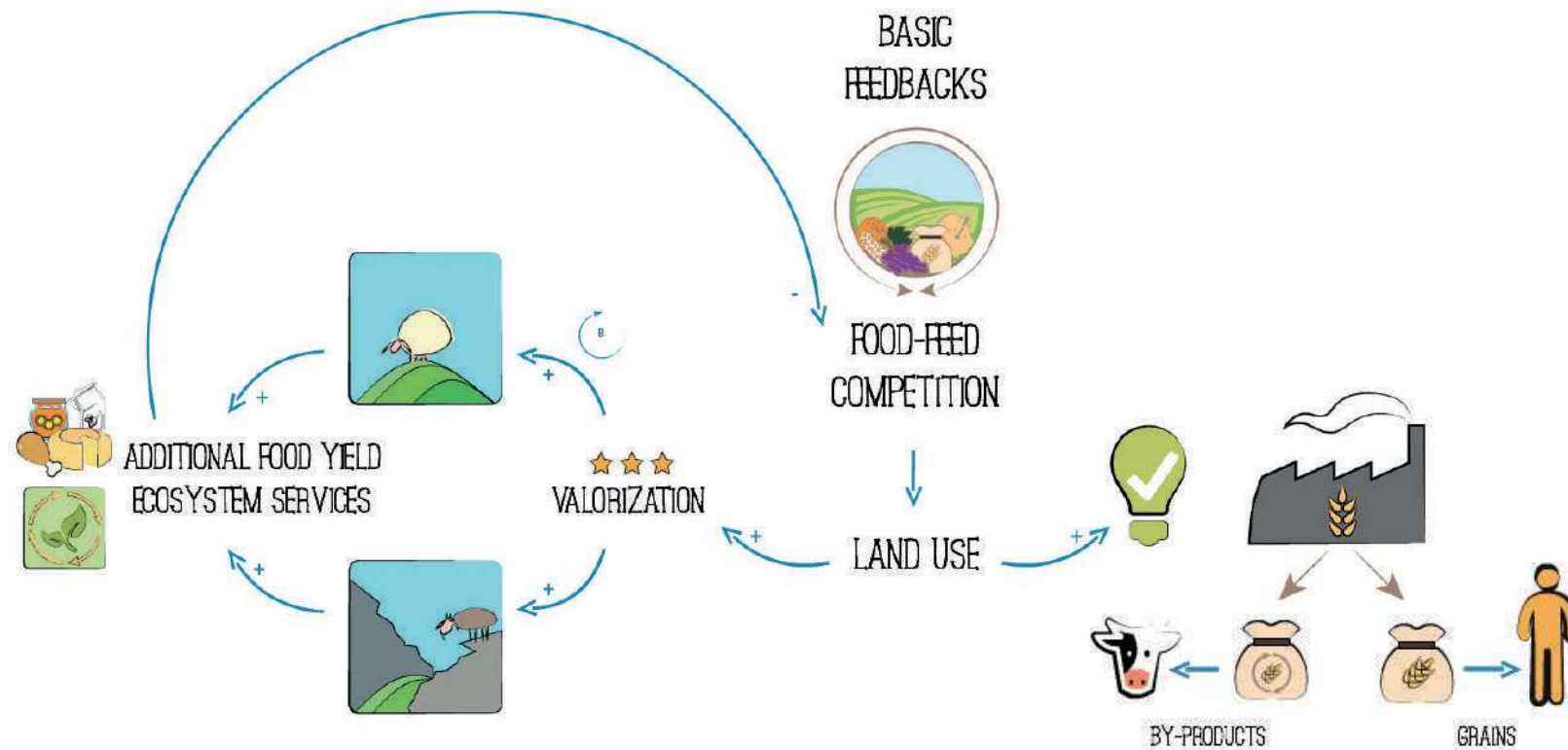


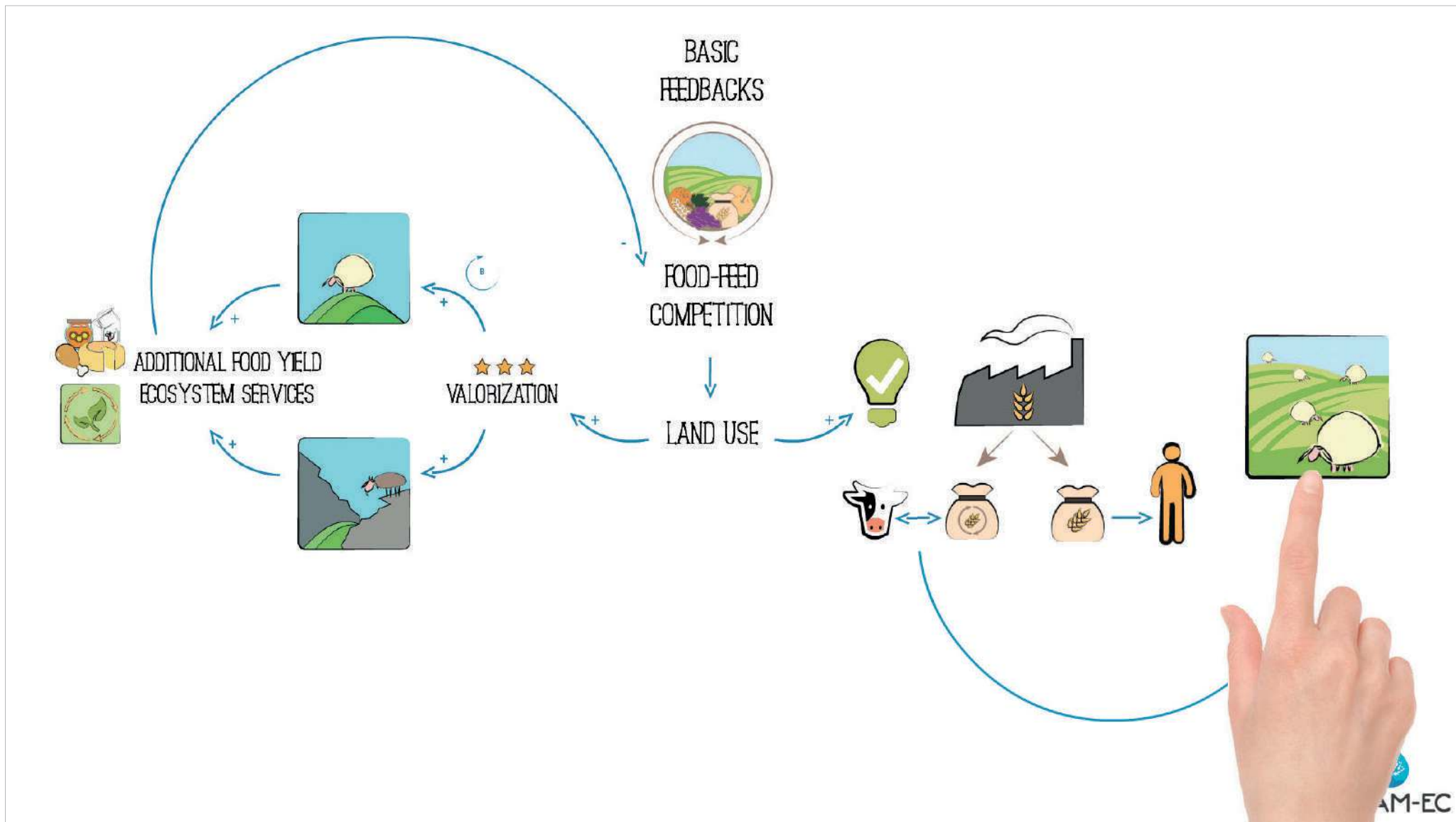












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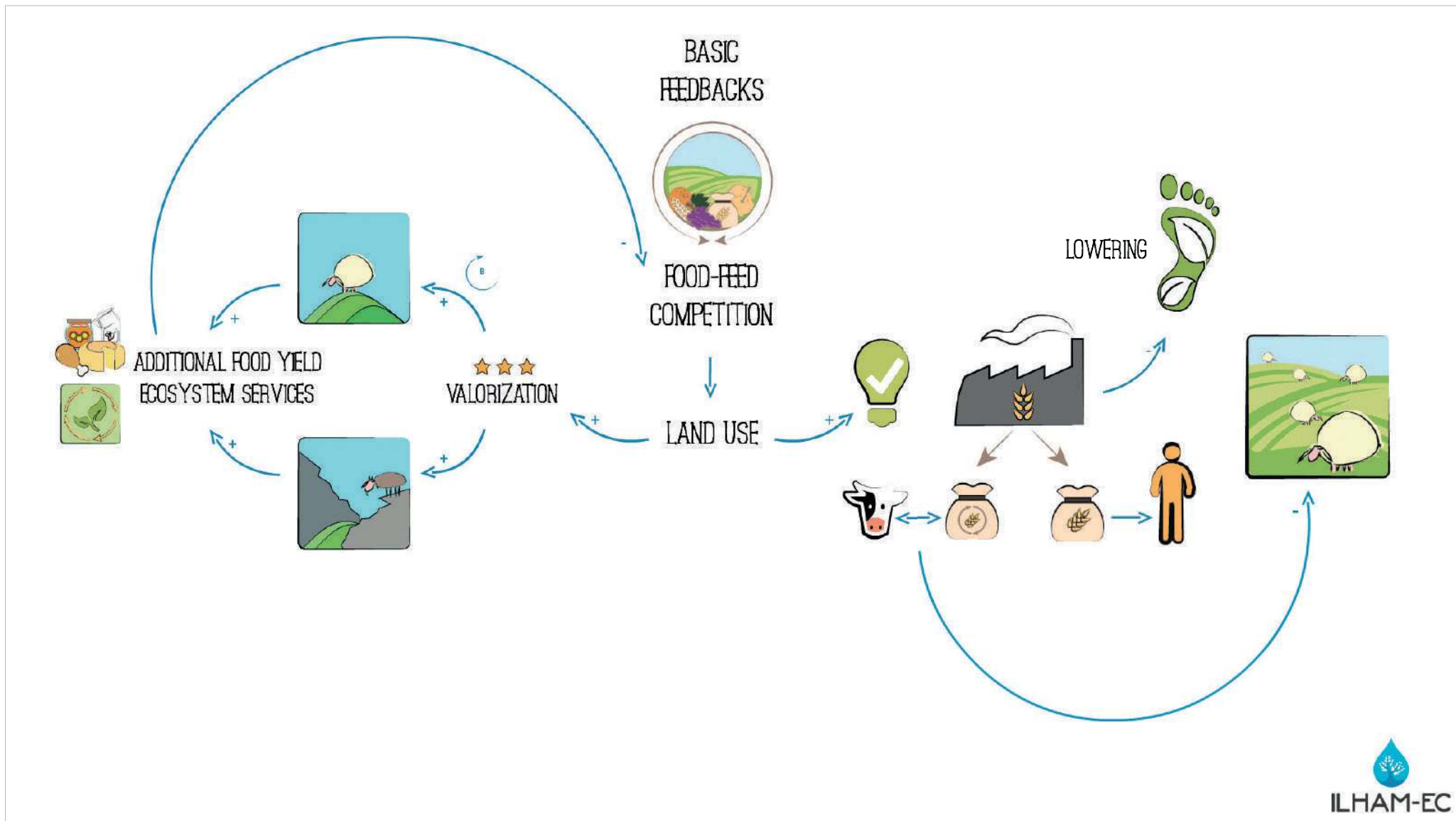
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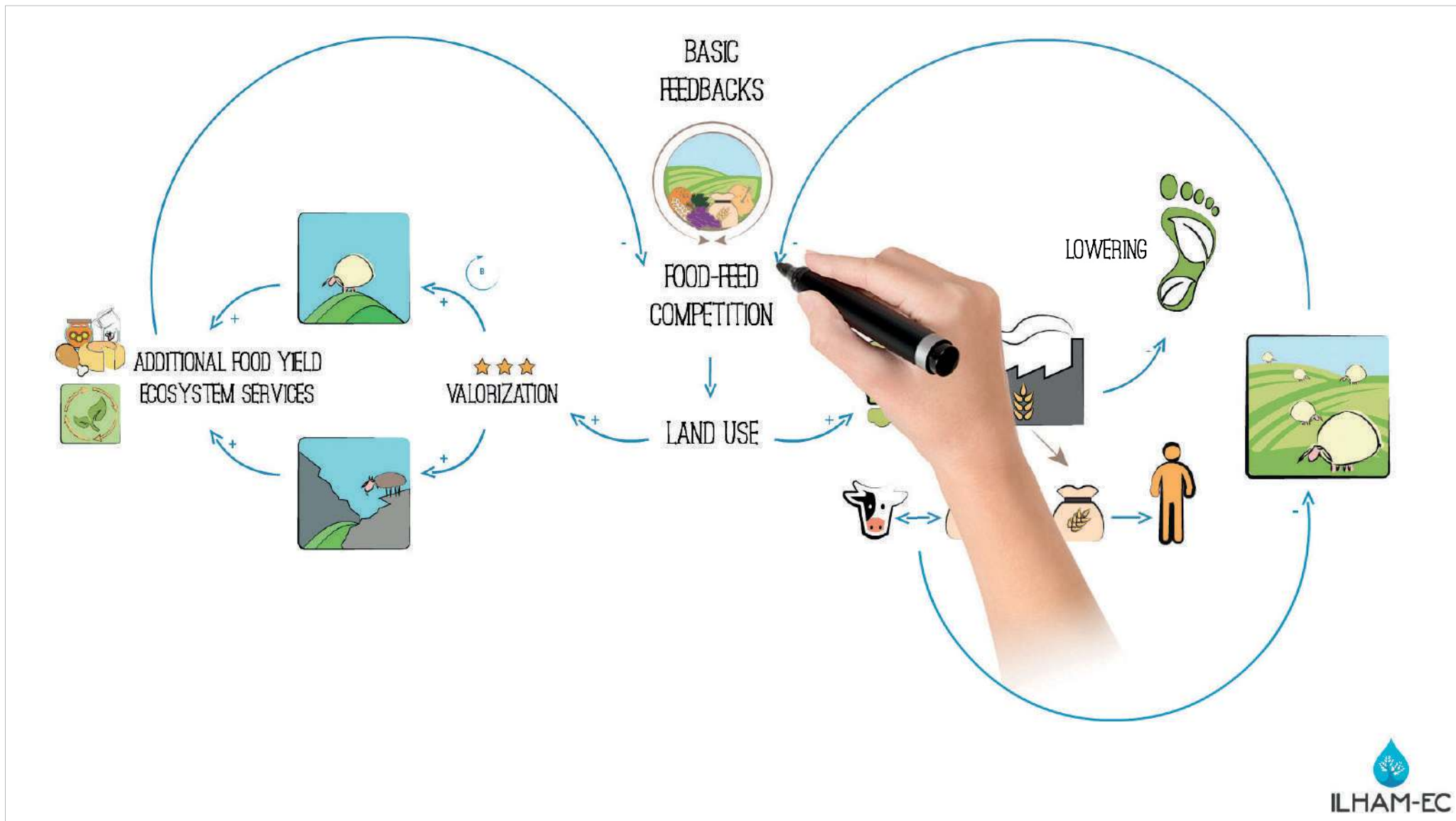
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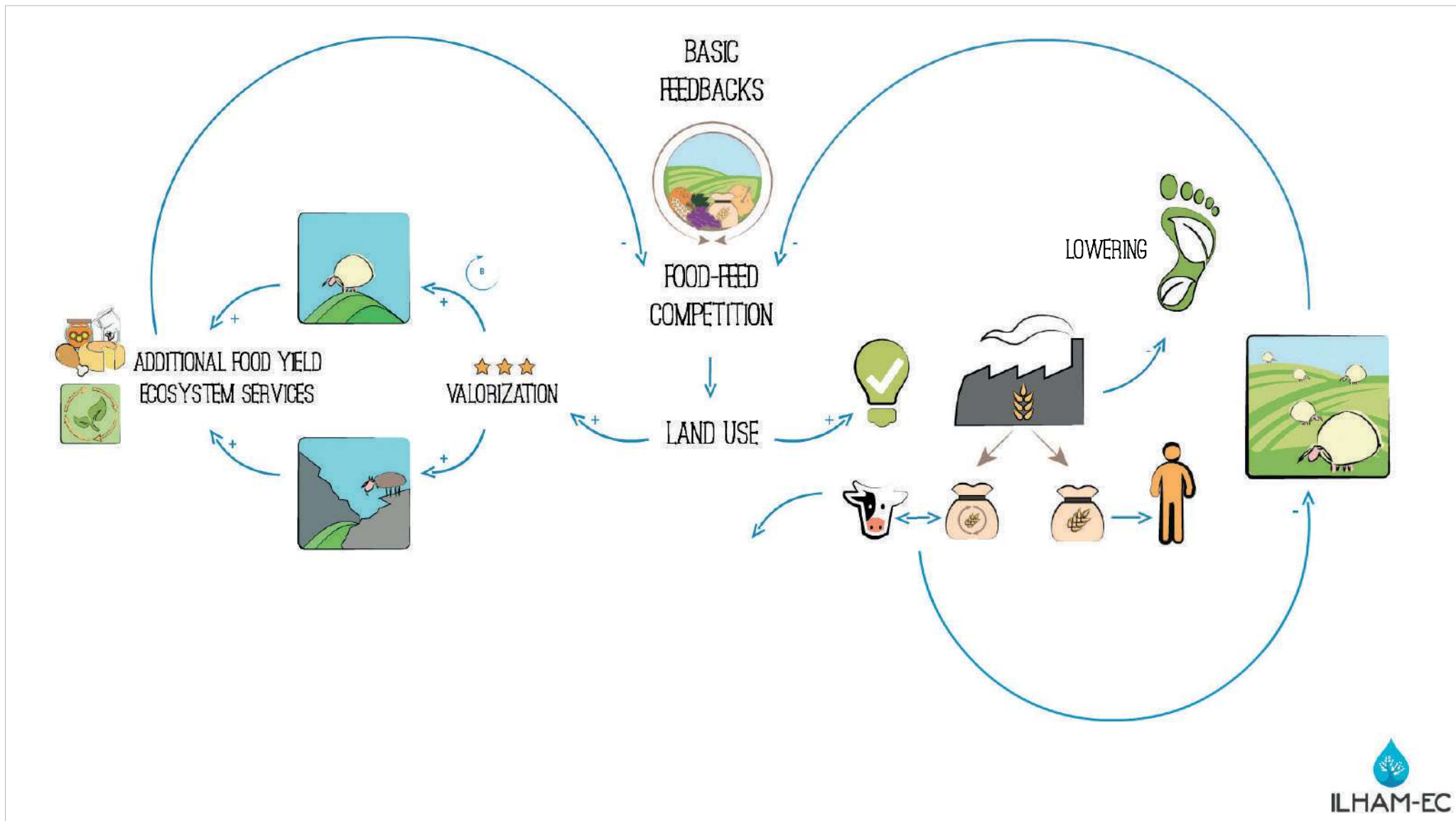
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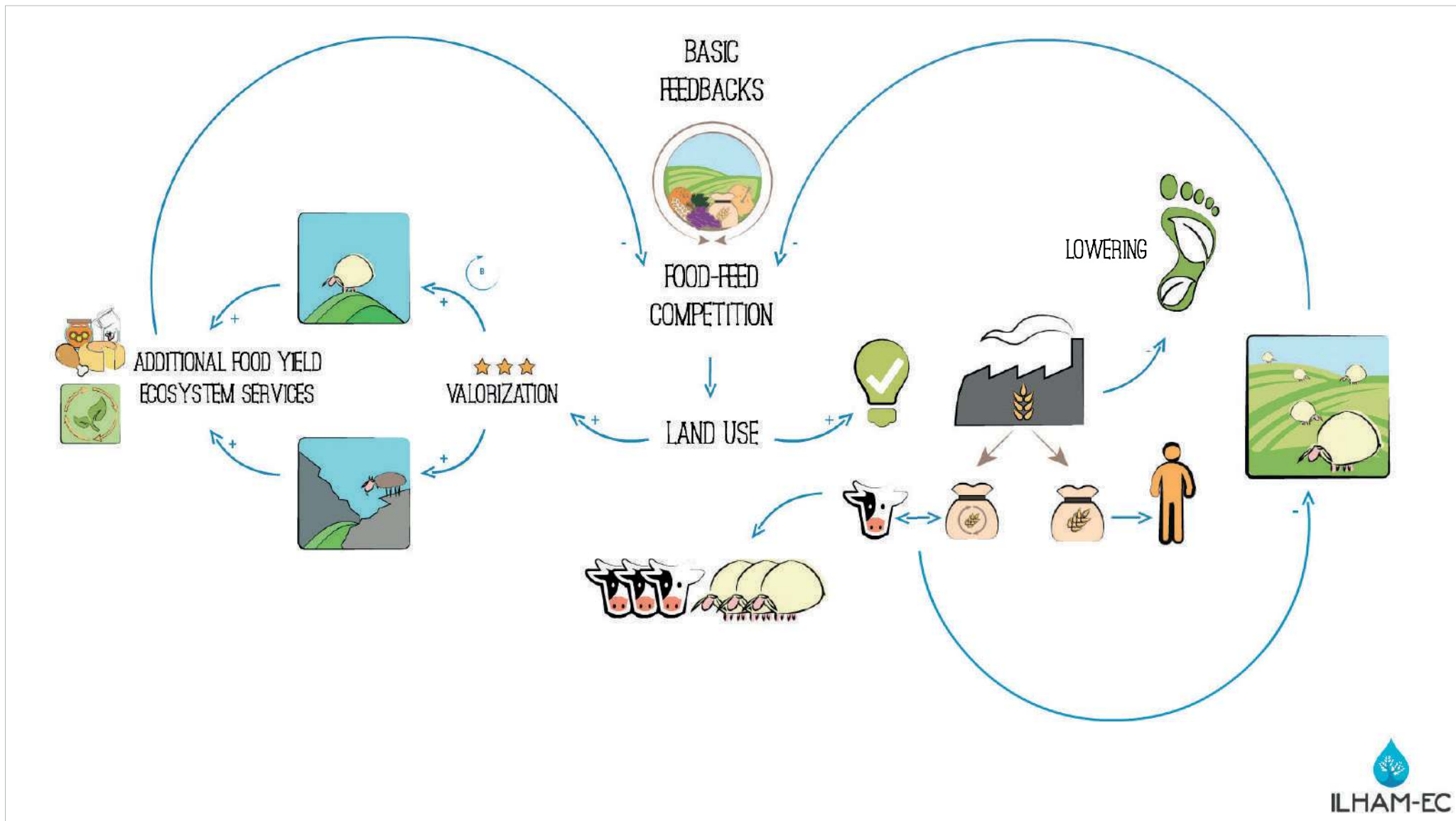
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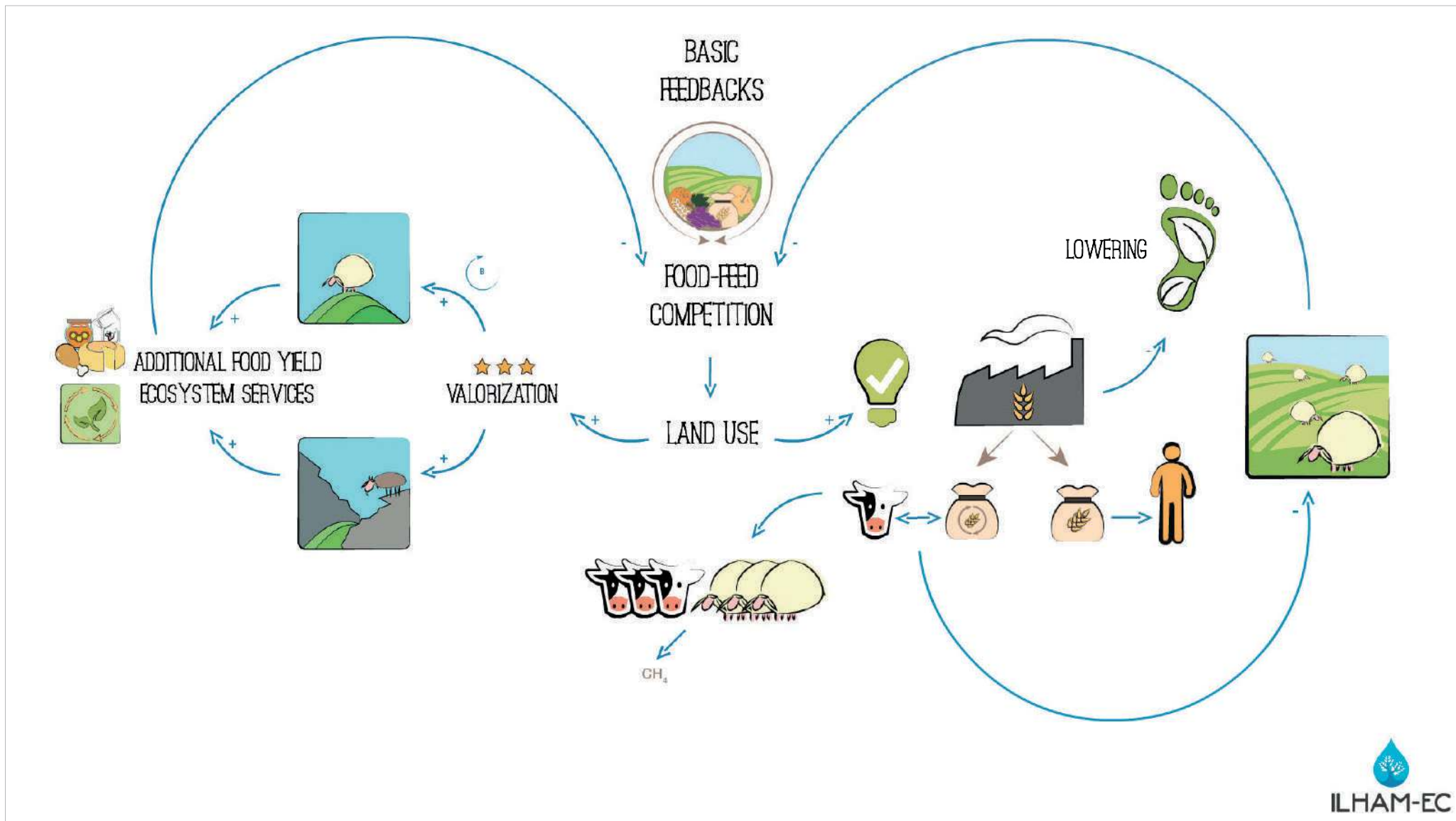
reducing land for livestock

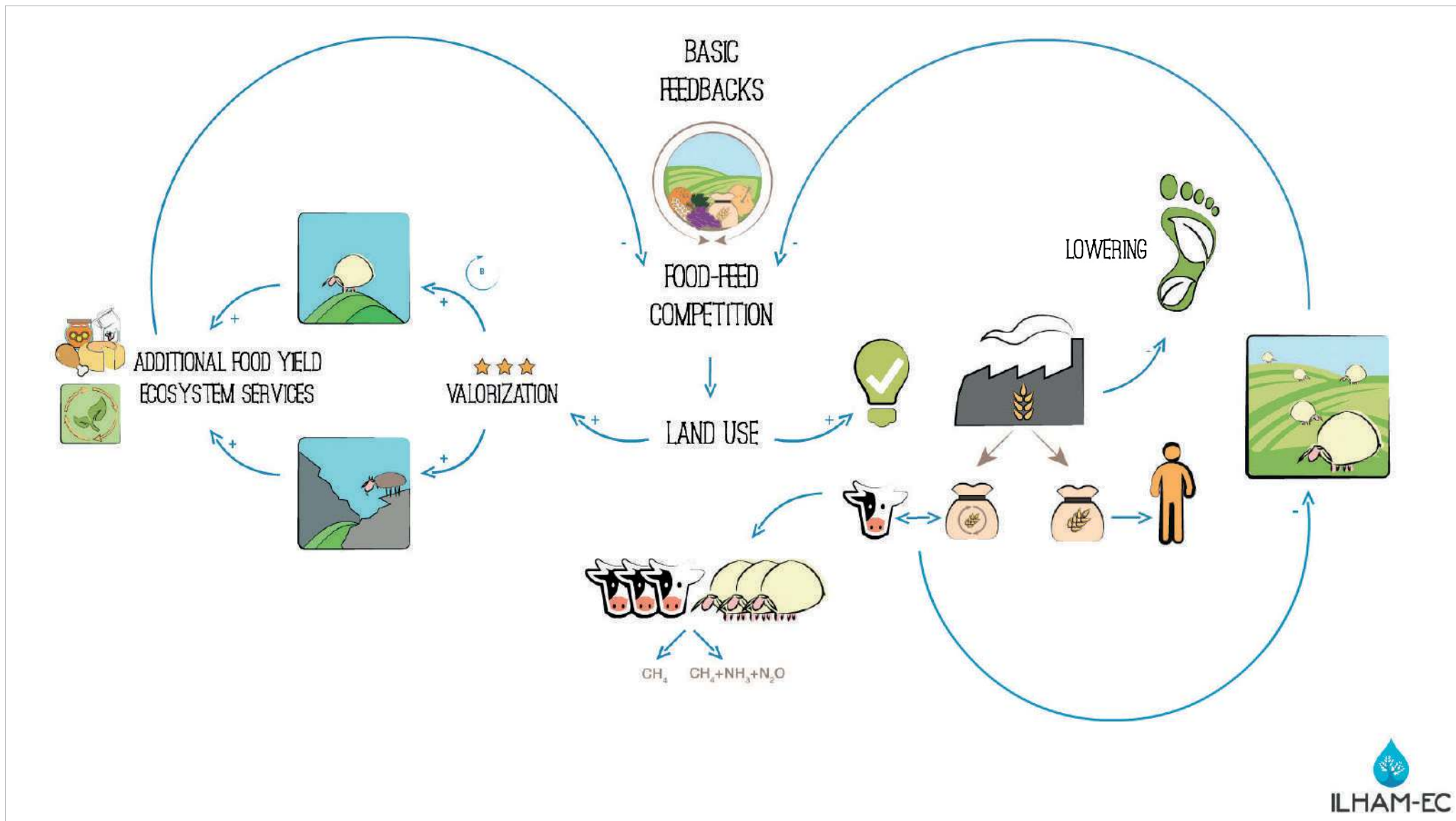


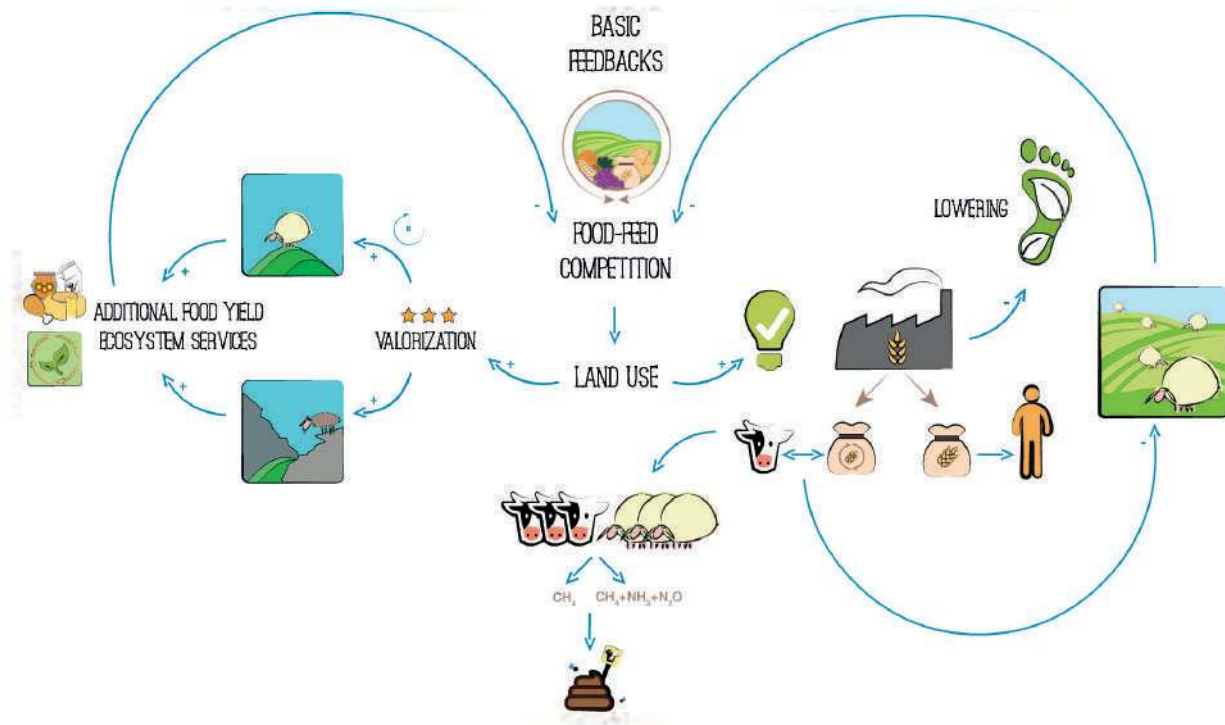




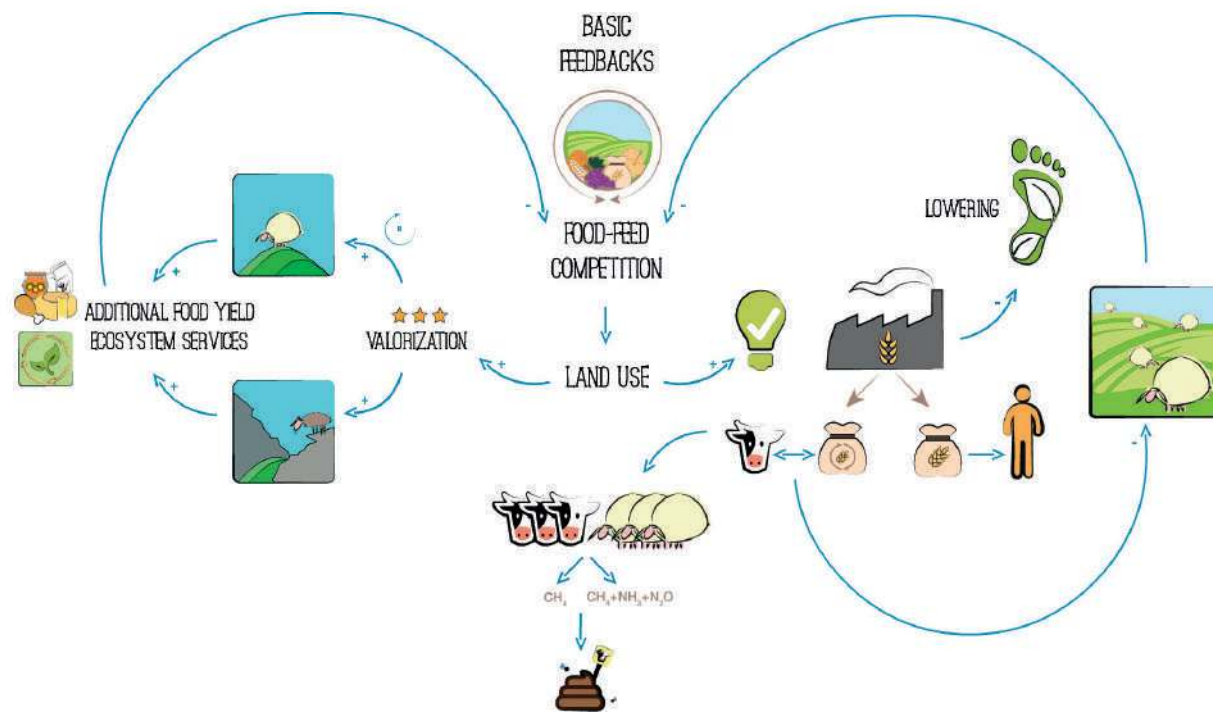




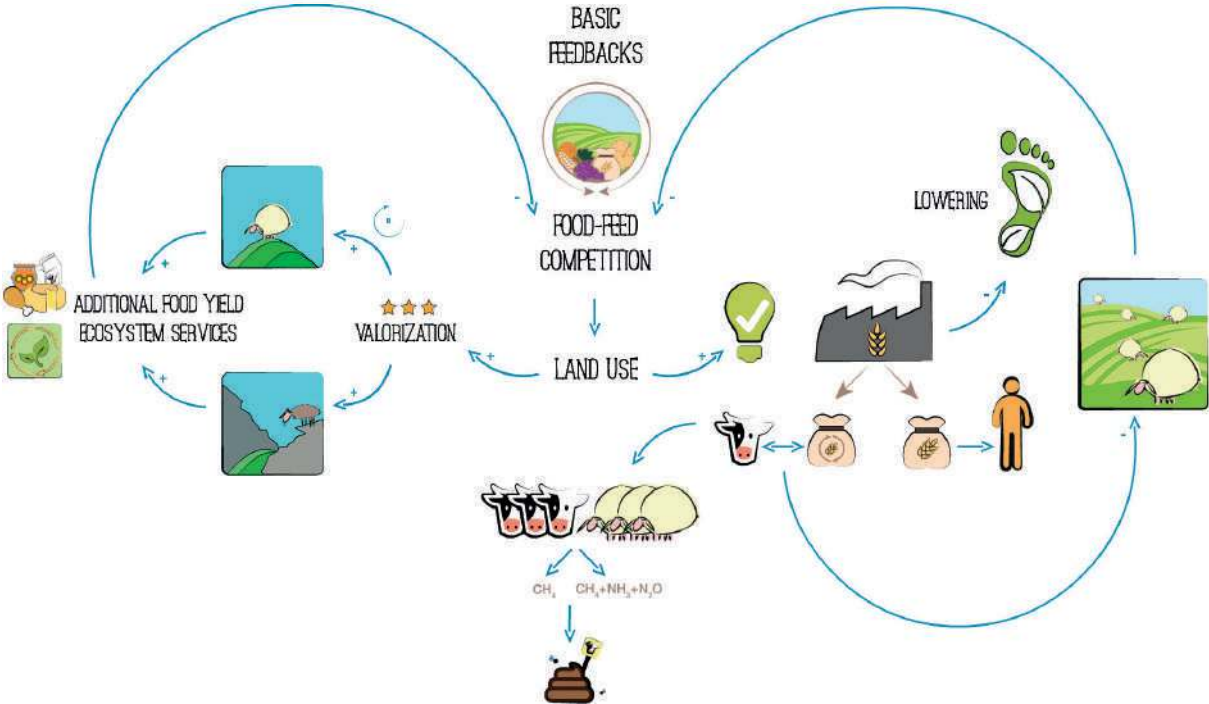




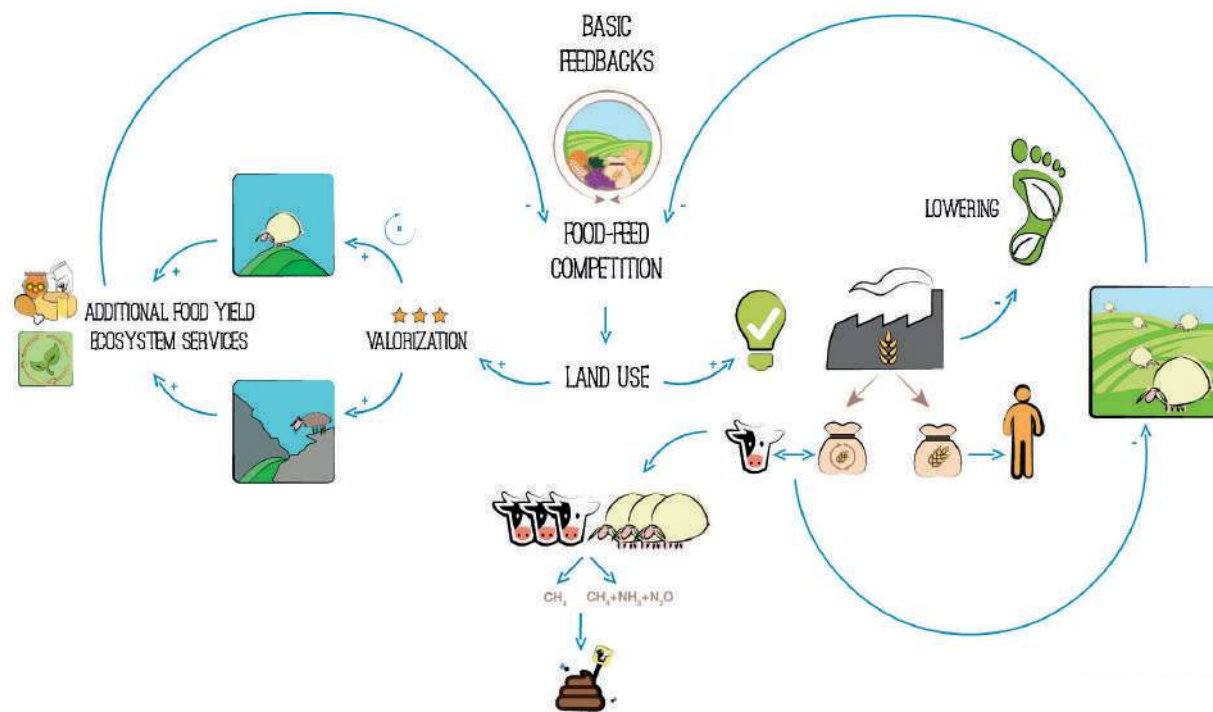
KEY POLICIES



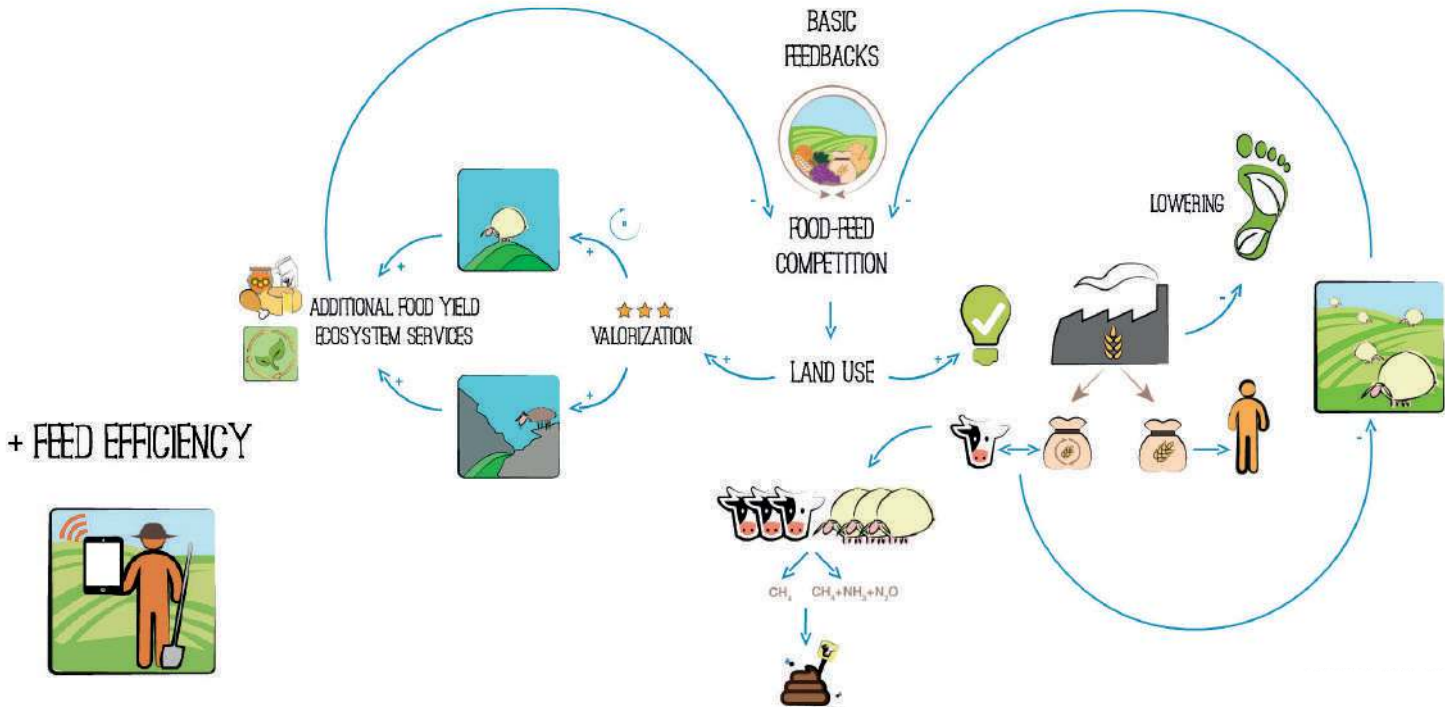
KEY POLICIES



KEY POLICIES



KEY POLICIES



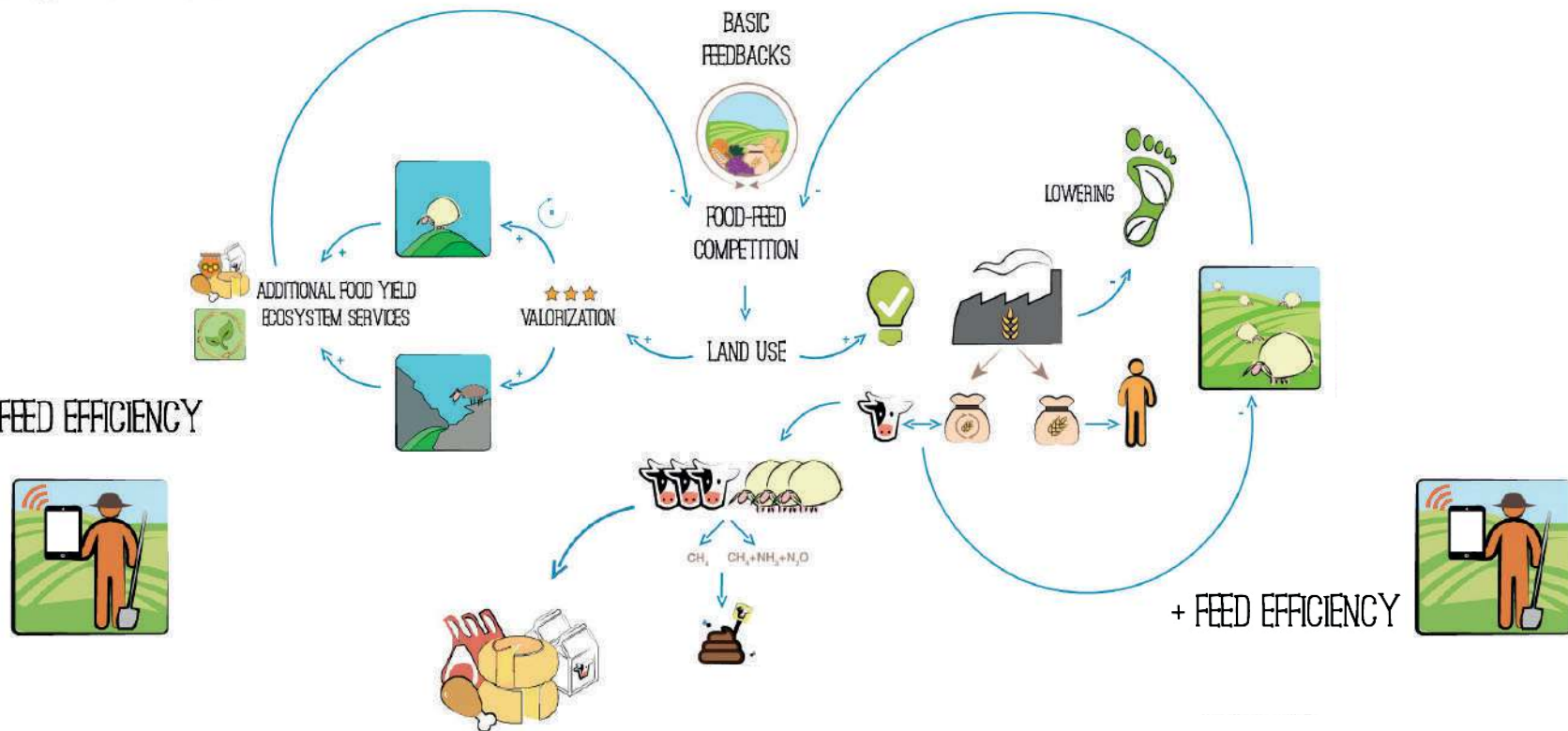
BASIC FEEDBACKS



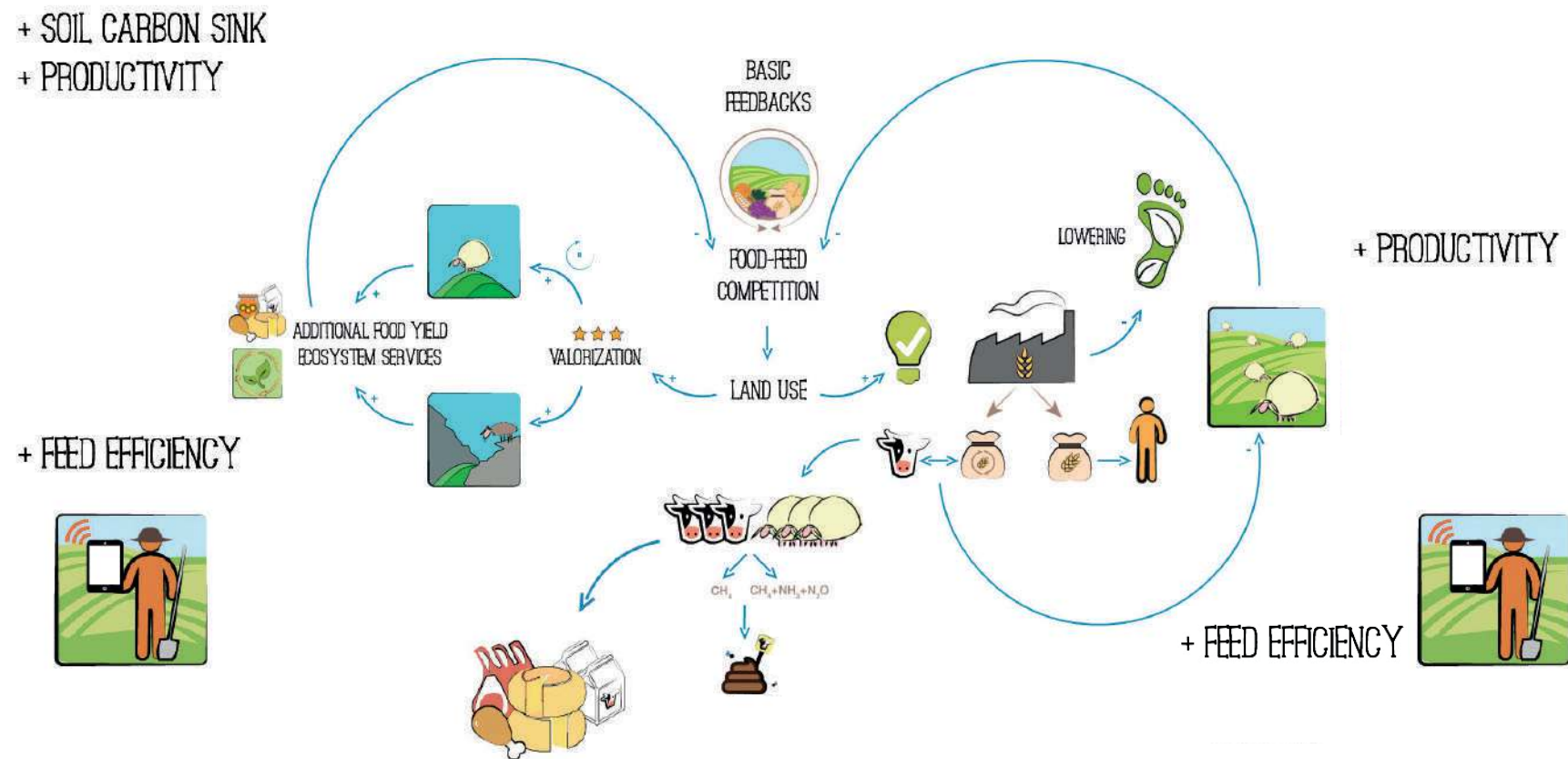
KEY POLICIES

+ SOIL CARBON SINK

+ FEED EFFICIENCY

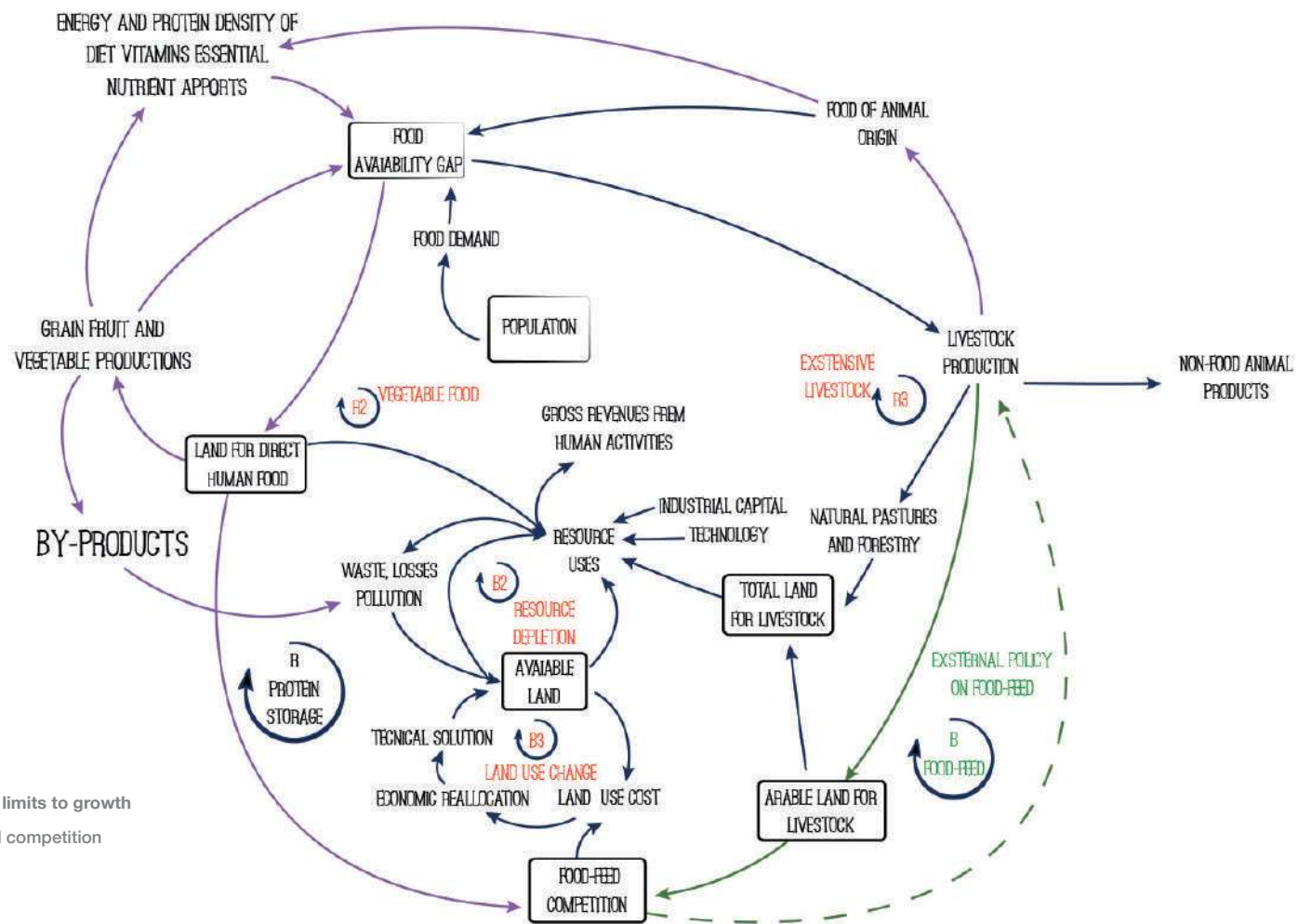


KEY POLICIES



BASIC FEEDBACKS





From: Lesson 5_Food feed systems and limits to growth

"External policy: Reduce food-feed competition by reducing livestock?"

Slide: 25

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Storyboard code

10-B (Atzori)

Step

115 (end)

Voice over

Divertitevi dialogando con System Dynamics !

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System dynamics è imparare giocando!

(...learning by doing; Sterman, 2000)

