

# MEANS, a user-friendly software platform for multi-criteria assessment of agricultural products



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# A platform to assess impacts of agri-food systems

## ■ Why?

- Agriculture is one of the main drivers of environmental impacts: GHG emissions, nitrogen and phosphorus emissions, biodiversity loss, water consumption (Foley et al. 2011)
- Environmental improvement of agri-food systems requires assessing their impacts

## ■ How?

- INRA is developing the MEANS platform, dedicated to multi-criteria sustainability assessment of agri-food systems
- MEANS development is supported by ADEME (French environment agency).





## MEANS platform objectives

- **Facilitate multi-criteria assessment of agri-food systems for non-specialist practitioners**
- **Capitalize and share research resources for multi-criteria assessment**
  - Data: characteristics of inputs, technical management of agri-food systems
  - Models: models to estimate pollution flows and resource use
  - Methods for multi-criteria assessment,
    - for environmental, economic and social

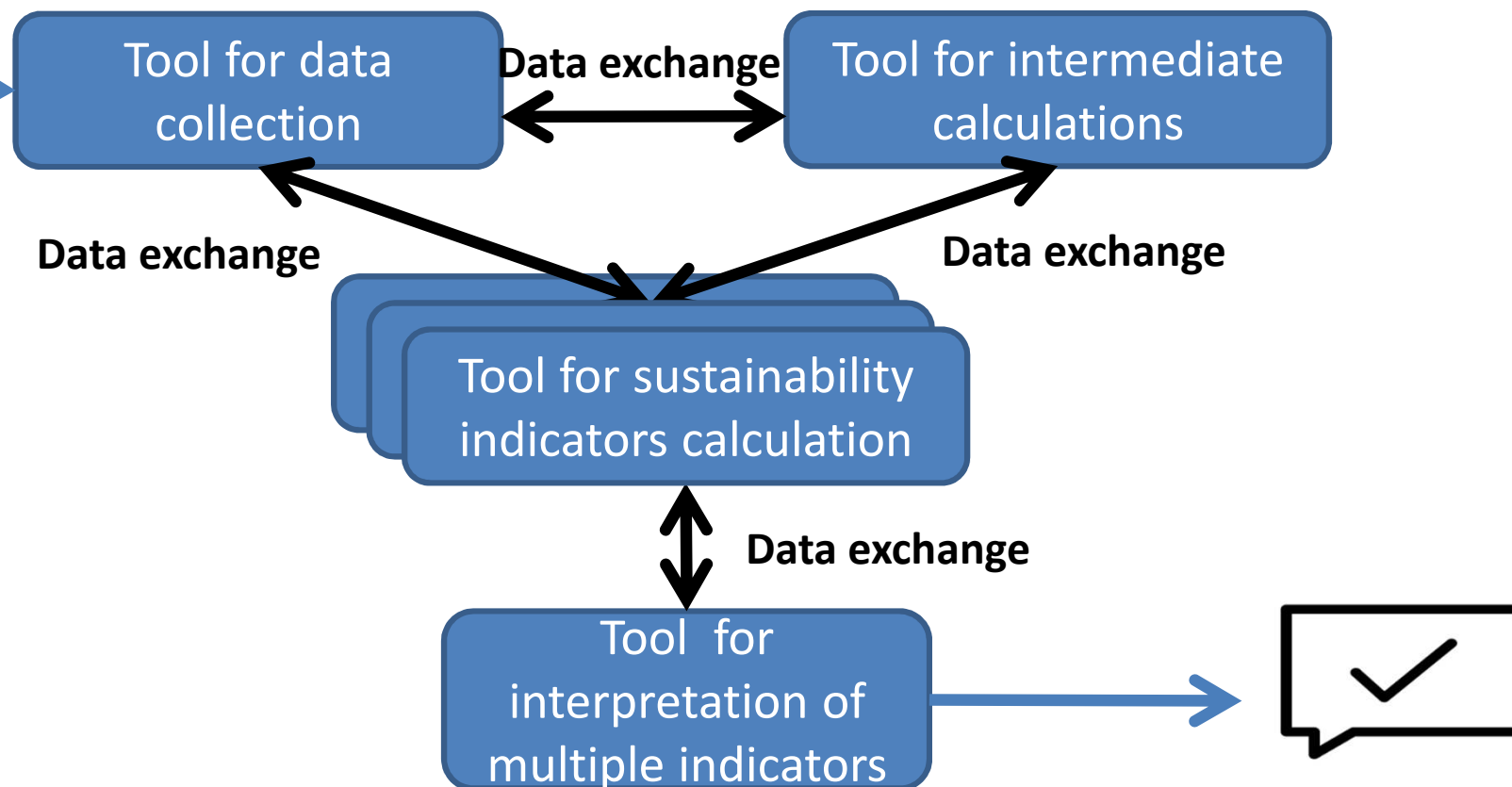


# Goal: provide a complete tool set for assessing sustainability of agri-food systems



Created by Wilson Joseph  
from Noun Project

User, with data  
about studied  
systems



Created by hans drainan  
from Noun Project



## MEANS platform today

■ MEANS is operational for environmental assessment within the framework of Life Cycle Assessment (LCA)

■ MEANS-InOut:

- User-friendly tool to generate Life Cycle Inventories (LCI)
- Dedicated to French agricultural production at the farm gate
- Web application, available online
- Available to any user after purchasing a license.

✓ Available  
since January  
2017



## Out: software for foreground

Including a reference data set for inputs of agricultural systems: fertilizers, livestock feed, etc.

Nitrate, ammonia, phosphorus, pesticides, land occupation, water use, etc.



Created by Wilson Joseph from Noun Project

User, with data about studied systems

Tool for data collection : forms

Data exchange

Tool for intermediate calculations : models to estimate direct emissions and resource use

Data exchange

Data exchange

Tool for impact assessment

■ Input lists and models adapted to French agricultural systems and conditions





## MEANS-InOut features

### ■ Modeling in MEANS-InOut is based on AGRIBALYSE methodology

- System boundaries
- Inputs and outputs considered
- Models for direct emissions and resources consumption
- Allocation among co-products...



### ■ AGRIBALYSE methodology (Koch and Salou, 2016)

- Results from a consensus among the main stakeholders of the French agricultural value chain
- Agrees with international recommendations (ISO, ILCD)
- Intended as the standard methodology for performing LCA of agricultural products in France.



## Calculate impact indicators

- A LCA software is required
- MEANS-InOut has export features

### MEANS-InOut

#### Users data:

- Collected (inputs)
- Calculated (emissions, resources consumption)

#### MEANS-InOut mapping of inputs (background data):

- ecoinvent v3.1 LCI
- AGRIBALYSE v1.3 LCI



**LCI in EcoSpold format**, ready to be imported into SimaPro

Format compatibility with openLCA under study





## Why use MEANS-InOut?

### ■ Like other tools MEANS-InOut

- Is adapted to needs of agri-food modeler
- Ensures that user do not forget any matter or energy flows
- Requires only foreground data.

### ■ MEANS-InOut has unique features

- Can be used for plant and/or animal production
- Gives details of emission and resource use calculations (transparency)
- Provides the same methodology for every productions (consistency)
- Remains independent of economic interests.



## Sharing data in MEANS-InOut

### ■ Users are invited to share their finalized data with the MEANS community

- To enlarge the MEANS database of system descriptions

### ■ Quality management and data review systems

- Under development
- To ensure that shared data is reliable and can be reused or adapted by other users.



# Perspectives

## ■ Current developments

- Model to estimate water footprint
- Adaptation of forms to collect metadata for quality management and to calculate uncertainties.

## ■ Future developments

- Integration of food processing systems.



## Conclusion

### ■ MEANS platform provides a user-friendly tool to

- Generate LCIs of agricultural production following international guidelines
- Share data describing agricultural systems.

### ■ MEANS platform

- Is a collaborative project
- Scientific collaborations are welcome
  - Supplement methods for environmental assessment
  - Integrate methods for economic or social assessment
- Aims to create a community.

### ■ Discover the use of MEANS-InOut for free for 18 days





# Any questions?

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