Use of Sentinel images for fairer control of the Common Agricultural Policy

EFGS –
10-11 October 2019
Plan

• New CAP monitoring process
  • Introduction to CAP
  • Drawbacks of current process
  • Sentinel images
  • Smart monitoring approach

• NIVA project
  • Overview
  • Monitoring related Use Cases
  • Challenges

The theory

The practice
New CAP monitoring process
CAP management

• Common Agricultural Policy
  • Payment from European Commission
  • Managed by Member States
    • IACS : Integrated Administration and Control System
• Different kinds of payments, most depending on the cultivated areas
  • Agricultural activity
  • Agriculture greening
• Farmers declare
  • Parcel geometry => eligible area
  • Agriculture practice (e.g. crop)
Current monitoring process: principles

- **On The Spot Checks**
  - Based on sampling
    - 5% of farmer declarations
  - Using
    - (human) photo-interpretation of images
      - Few dates in a year (e.g. 4 dates in France)
    - Visits on the fields
Current monitoring process: drawbacks

• Farmers
  • Only a few ones are checked
  • But exaggerated penalties
  • Fraud still possible (if among the lucky 95% not checked!)

• Members States
  • “conflicts” with European Commission
  • If national control system considered as not efficient enough

Some mistrust
Control process not very fair and not totally efficient
Sentinel images

• Earth Observation satellites
• Within Copernicus program (European Commission)
Sentinel images

- Image characteristics:
  - **Frequency**: 5 days
  - **Resolution**: 10 m
  - Radar (Sentinel-1) and optic (Sentinel-2)
  - **Free**

**Time series of Sentinel images enable continuous monitoring of land cover**
New monitoring process

- Principle: use potential of Sentinel images
  - Systematic monitoring (100% parcels)

Temporal profiles of vegetation index enable crop identification (previous projects Sen4CAP, Sen4Agri, ....)
New monitoring process

• Process

Earth Observation Monitoring

Farmer is paid

Farmer is not paid

More information to be found
New monitoring process

• Expected benefits
  • Continuous monitoring
    • Farmer may (quickly) provide alternative proofs
    • Farmer might be offered to withdraw his/her declaration
  • Systematic monitoring
    • Everyone checked
    • => more proportionate sanctions

The purpose is not to chase the red lights, it is to make them disappear (DG AGRI)
NIVA project
Context

• New smart monitoring approach to be applied on whole (political) Europe in 2022
• Some preliminary activities
  • European projects about exploitation of Sentinel images
    • Automatic processes (machine learning)
  • Some national implementations
    • Limited scope (type of aid)
    • Limited geographic extent

Need for “large scale” solutions
NIVA project

- NIVA: New IACS Vision in Action
  - IACS: Information System for CAP administration

- Objectives:
  - Provide **common tools for the new smart monitoring approach**
  - Modernise CAP administration
  - Open IACS data to other domains (e.g. environment)
NIVA project

- Calendar
  - 3 years
  - June 2019 – May 2022
- Partners:
  - Paying Agencies (9 MS)
  - Technical partners
- Budget: 10 M €
Monitoring related Use Cases

Sentinel images | Farmer declaration

EO monitoring and traffic lights

Geotagged photos

Machine data

Check agricultural activity (culture)
Monitoring related Use Cases

- Open IACS data to other domains
- Agro-environmental monitoring
- Farmer performance
Technical challenges

• Processing of Sentinel images
  • Big data (volume, velocity)
  • => need to process lots of images in short time

• Limits of Sentinel images:
  • Resolution : not fine enough
    • For checking eligible area
    • For checking cultures on small parcels
  • Relevance for CAP monitoring depending on
    • Geographic extent (clouds)
    • Type of agricultural activity
      • Grazing in permanent grassland
    • Type of aid
Human challenges

• Some fears from farmers
  • Reluctance to provide machine data
  • Taking (valid) geotagged photos might be not so easy
  • Big Brother feeling

• Mitigation actions in NIVA
  • A few Farmer organisations being in the project
  • Involve farmers (workshops ....)

Issues mainly in case farmers should provide alternative proofs
Conclusions
New CAP monitoring

• Sentinel images provide good opportunity for better CAP control
  • Fairer
  • More efficient

• More trust between European Commission, Member States and farmers is expected

• But still a lot of challenges to migrate from (nice) theory into real practice!
Thanks for your attention