

Roundtable 1: Water quality

The challenge of pesticides to achieve good water status

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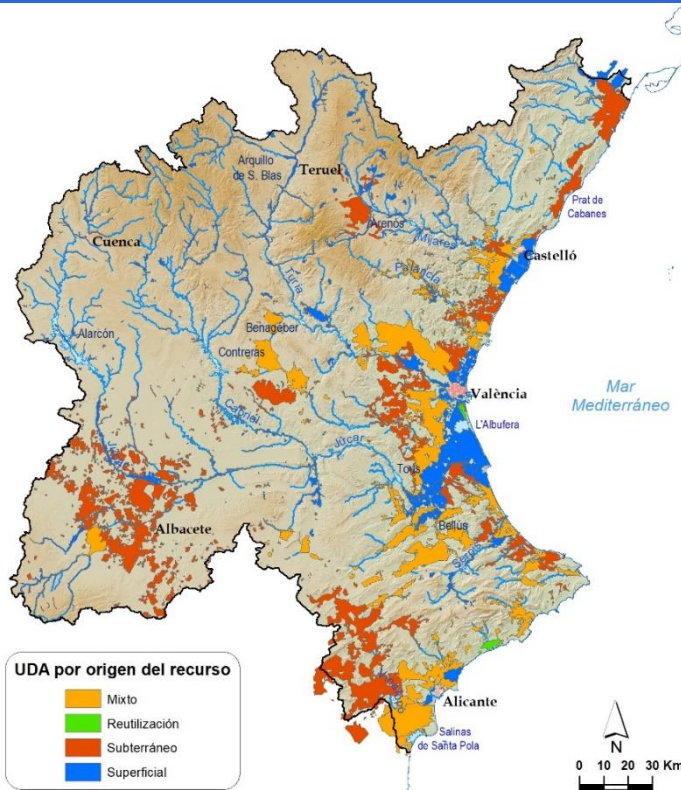
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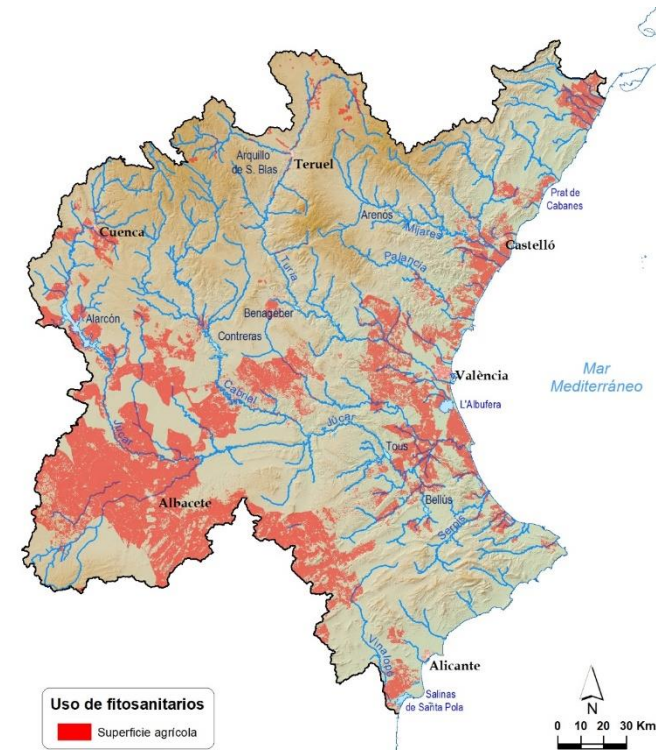
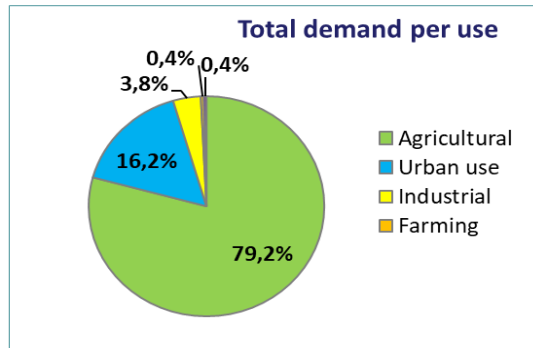
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The Júcar River Basin

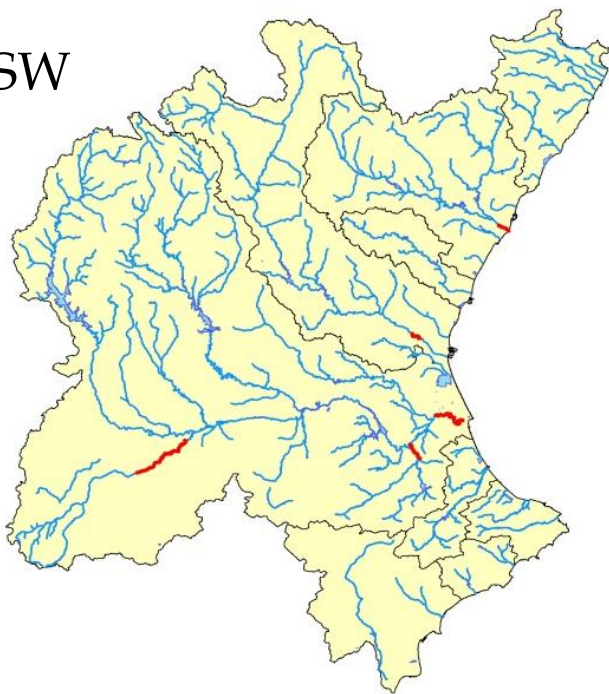


Surface (km ²)	42.735
Permanent population (2012)	5.178.000
Total equivalent population (2012)	5.697.000
Irrigated surface (ha)	390.000
Total inflow (hm ³ /year)	3.800
Total water demand 2012 (hm ³ /year)	3.240

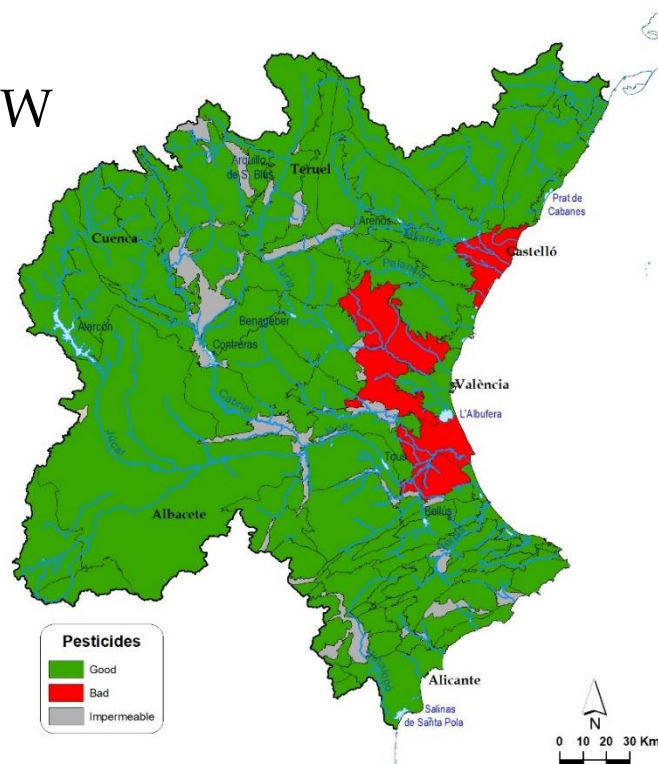


Pesticides (EQS) Non-compliance

SW



GW



WMP, 2015. 7 bodies by insecticide chlorpyrifos

Ex-post assessments:

15 bodies by chlorpyrifos (organophosphate)

2 by insecticide *endosulfan* (organochlorine)

WMP, 2015. 5 bodies:

Herbicides: bromacil, desethyl - terbuthylazine (metabolite), *terbumeton-desethyl* (metabolite)

Insecticides: *beta-HCH* (organochlorine)

chlorpyrifos (organophosphate)

Ex-post assessments tendency to disappear



Characterization of pesticide contamination



Plan Hidrológico del Júcar 2016-2021

Programa de medidas: Medida nº 08M0215

ESTUDIOS DE CARACTERIZACIÓN Y
MODELACIÓN DE PROCESOS DE
CONTAMINACIÓN POR PESTICIDAS EN LA
DEMARCACIÓN HIDROGRÁFICA DEL JÚCAR.

Informe final 2018

Confederación Hidrográfica del Júcar



- Identification of causes and processes that generate pollution
- Analysis of pesticide use in JRB
- Development of a cause-effect model of major non-compliances
- Modelling the transport of pollutants in the environment
- Origin of non-compliance and measures to achieve good status



Legal framework

Chemicals and pesticides in general:

- Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
- Directive 2009/128/EC establishing a framework for Community action to achieve the sustainable use of pesticides
- Regulation (EC) No 1107/2009 concerning the placing of plant protection products on the market
- Regulation (EC) No 396/2005 on maximum residue levels of pesticides in or on food and feed of plant and animal origin
- ...

Chemicals and pesticides in water:

- Directive 2000/60/EC establishing a framework for Community action in the field of water policy
- Directive 2008/105/EC on environmental quality standards in the field of water policy
- Directive 2013/39/EC amending Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy
- Directive 2006/118/EC on the protection of groundwater against pollution and deterioration



Current pesticide use

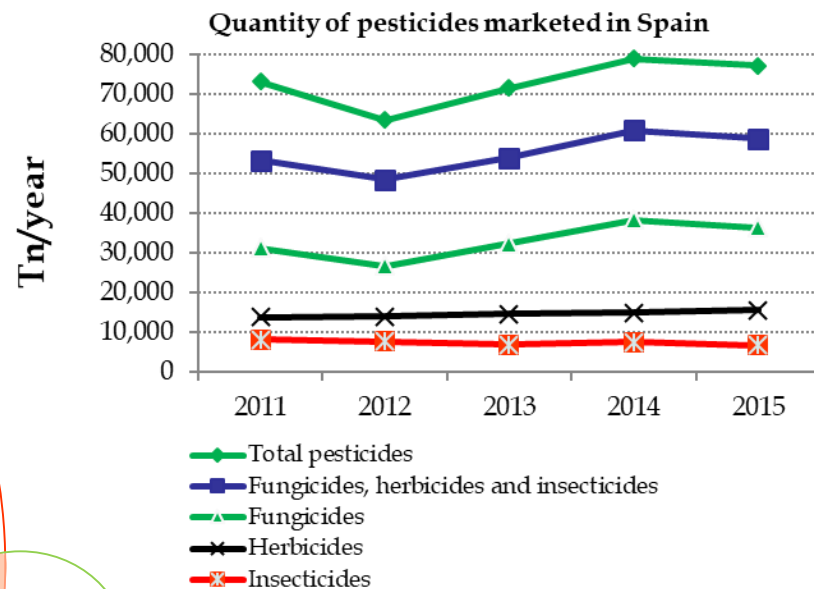
Existing pesticides

Currently, there are 493 pesticide substances being used in Europe

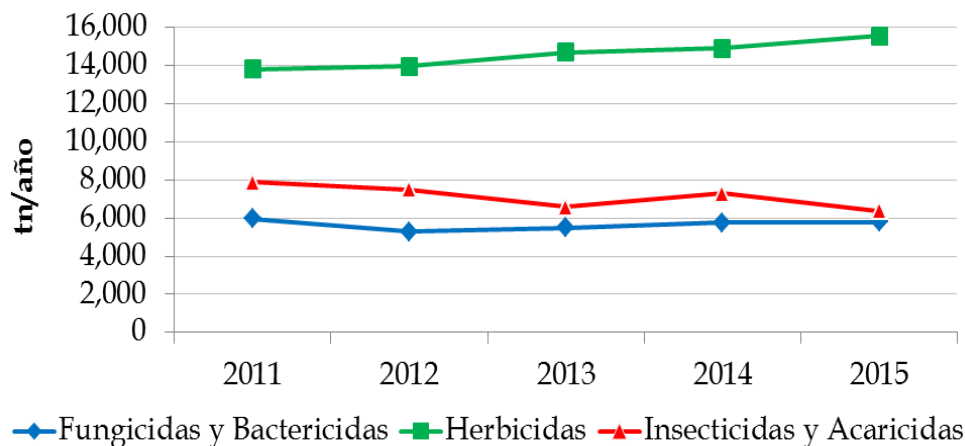
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Substances regulated by the WFD (Surface waters)



Current pesticide use

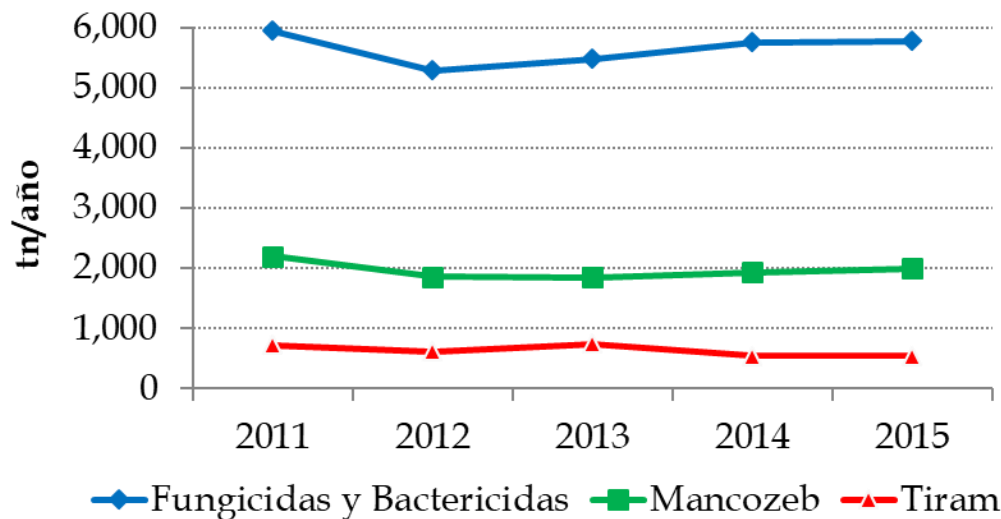


leaving out the main fungicides: sulfur and copper...

Fungicides in Spain:

Mancozeb 2,000 t/year (30%)

- Tiram 600 t/year



6 compounds (60%):

Mancozeb, Thiram, Folpet, Tebuconazole, Chlorotalonyl, Captan

Almost no use:

- Imazalil: 41 t/year
- Thiabendazole: 10 t/year



Current pesticide use

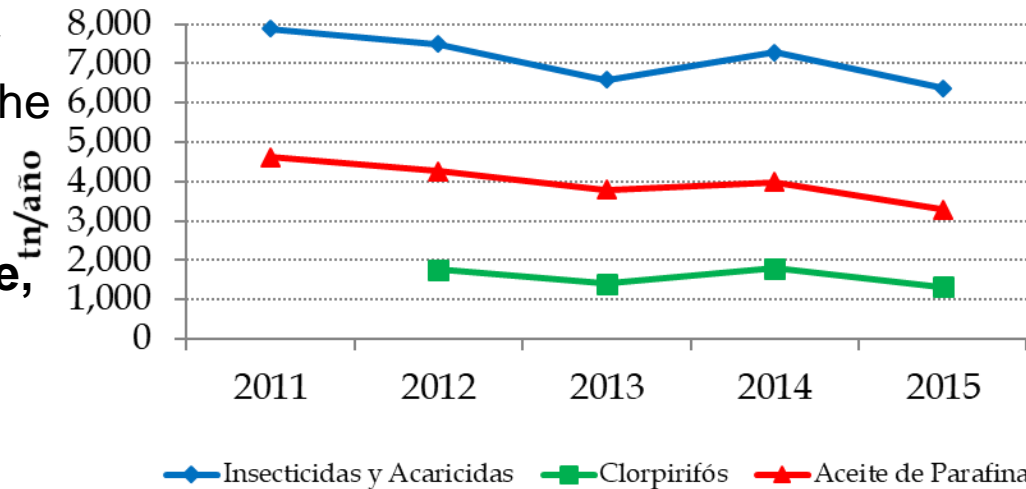
Insecticides in Spain:

Decreasing from 7,800 to 6,400 Tn/year

- Chlorpyrifos: 1,600 Tn/year (22% of the total)

5 compounds (90%):

Paraffin oil, Chlorpyrifos, Dimethoate, Cypermethrin, Imidacloprid

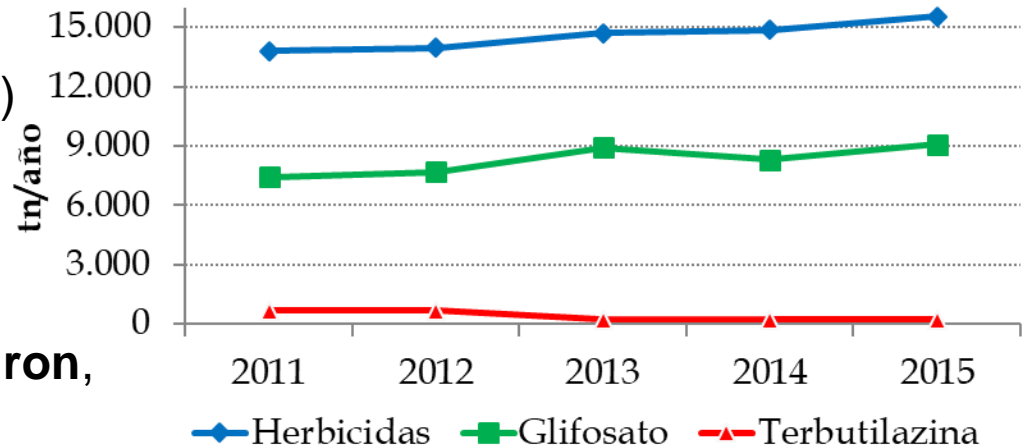


Herbicides in Spain: 15,600 Tn/year:

- Glyphosate: 9,000 Tn/year (60% of the total)
- Terbutylazine (significant decrease)

8 compounds (80%):

Glyphosate, MCPA, 2,4-D Acid, Pendimethalin, Chlorturon, Isoproturon, Dicofol, Terbutylazine



Substances detected

Degradation product

SW

GW

SW

GW

Chlorpyrifos

Terbumeton-Desethyl

SW

GW

SW

GW

Glyphosate

Imazalil

Pesticides
micrograms

- detect - 0.025
- 0.025 - 0.05
- 0.050 - 0.10
- > 0.10



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Lessons learned

- Most of the detected products are currently forbidden
- Detection of substances show a decreasing tendency
- Need to identify substances being used and to keep track of their presence in water, even if they are not regulated
- Pay attention to derivative products and metabolites, often more toxic than the original compounds
- Coordination between administrations is essential



Future challenges

- Gap between products used, measured and detected substances and substances with a legislated EQS
- Although products are becoming less toxic, the “cocktail effect ” must be taken into account, as well as the effect of the scarcely studied endocrine disruptors (EDC)

EDC are expressly prohibited by regulation 1107/2009, yet no legal criteria have been defined to identify them

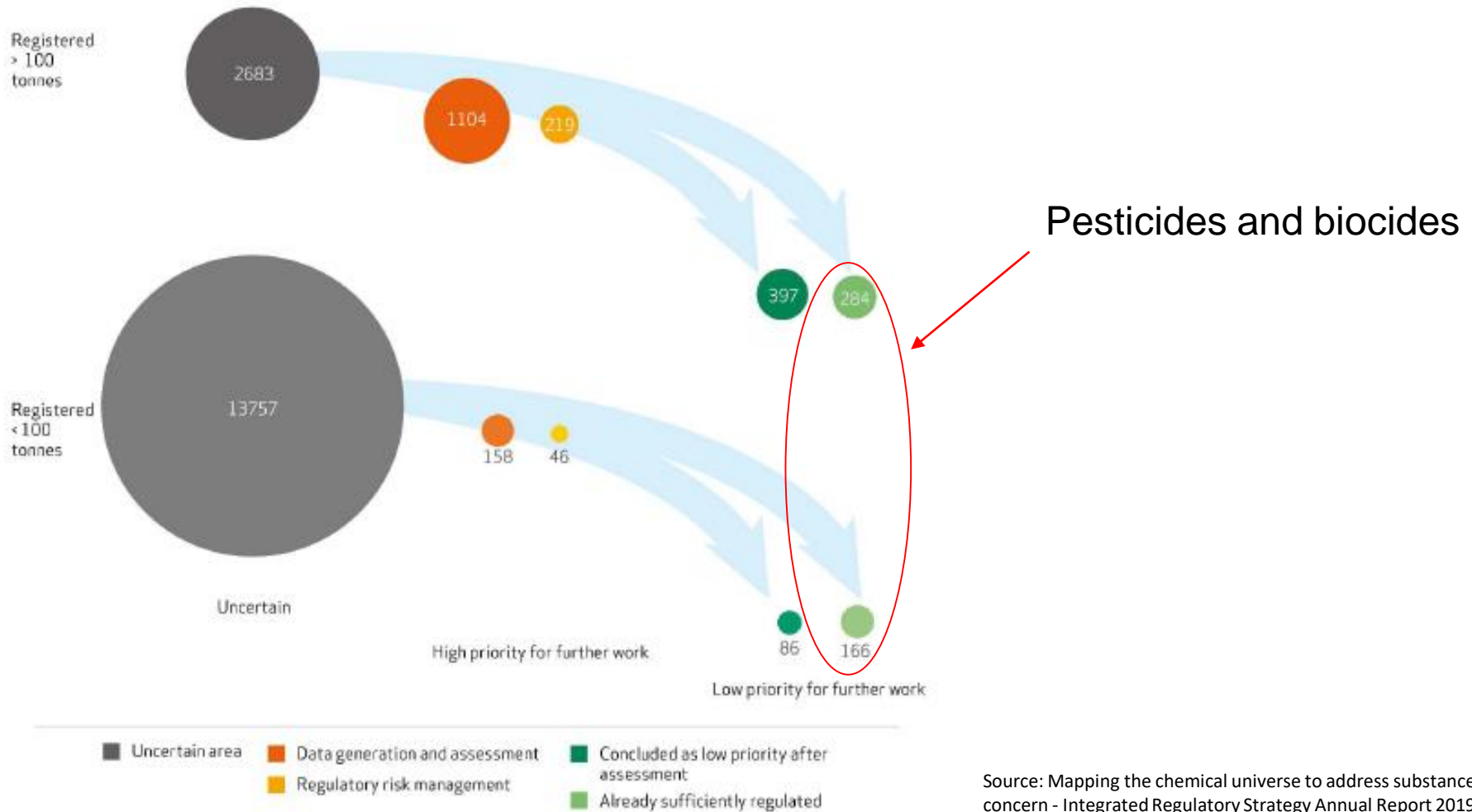
The Commission is working on the assessment of complex mixtures of chemicals (Effect-Based monitoring and assessment in the WFD)

- Legal framework should be coherent:
 - Surface water: 21 pesticides, some of them with NCA < 0,1 µg/l
 - Groundwater: all pesticides but same limit



Reasons to be optimistic?

Substances of the chemical universe (data from May 2018)



Source: Mapping the chemical universe to address substances of concern - Integrated Regulatory Strategy Annual Report 2019 (ECHA)

Figure 2: Substances of the chemical universe in their pools of different priority for further

Thanks for your attention!

Turia river



Albufera lake



Jucar river



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