

Roundtable 1: Water quality

The challenge of pesticides to achieve good water status

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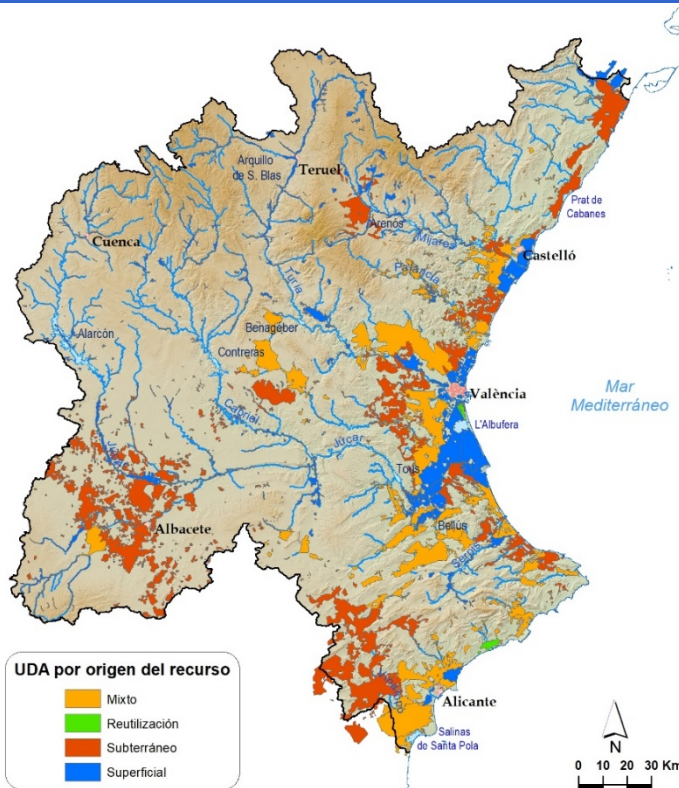
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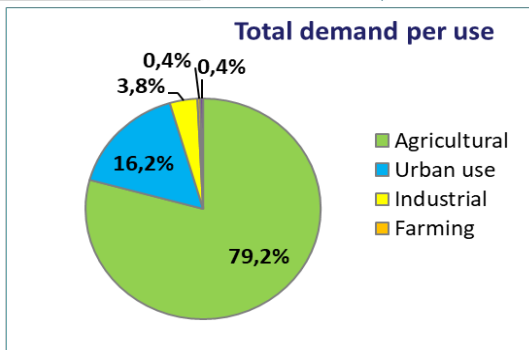
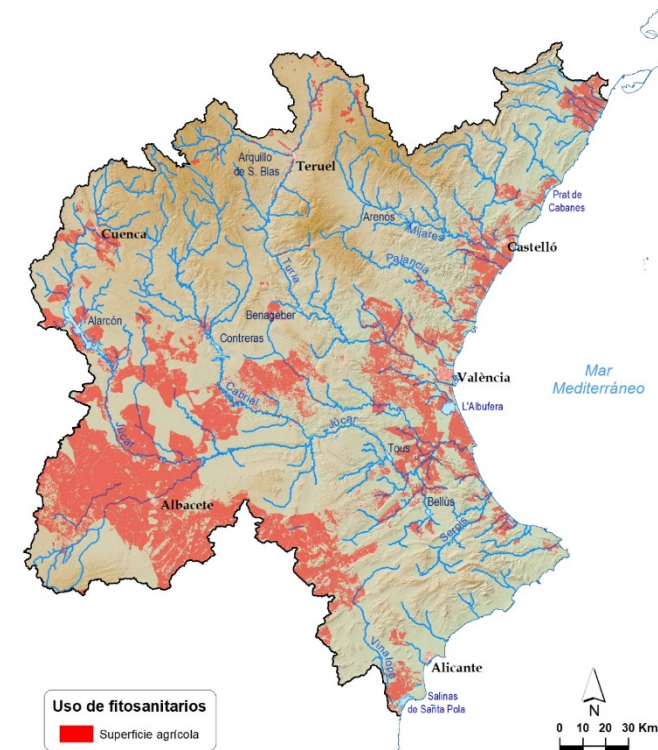
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The Júcar River Basin

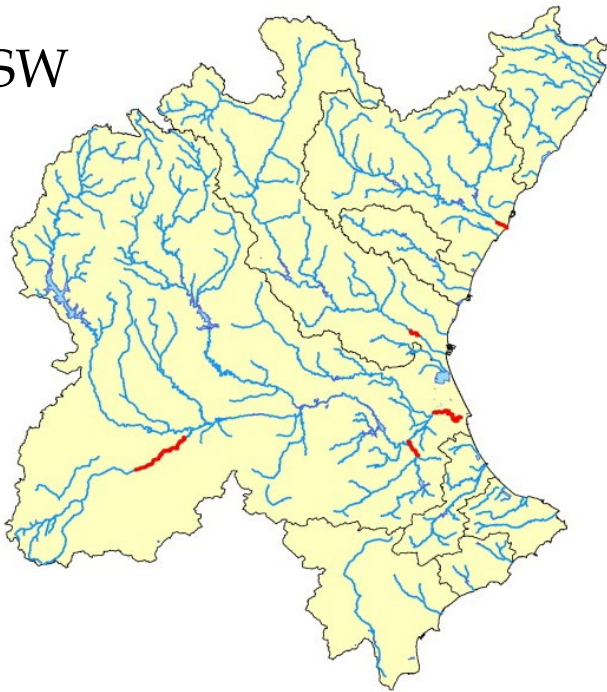


Surface (km ²)	42.735
Permanent population (2012)	5.178.000
Total equivalent population (2012)	5.697.000
Irrigated surface (ha)	390.000
Total inflow (hm ³ /year)	3.800
Total water demand 2012 (hm ³ /year)	3.240

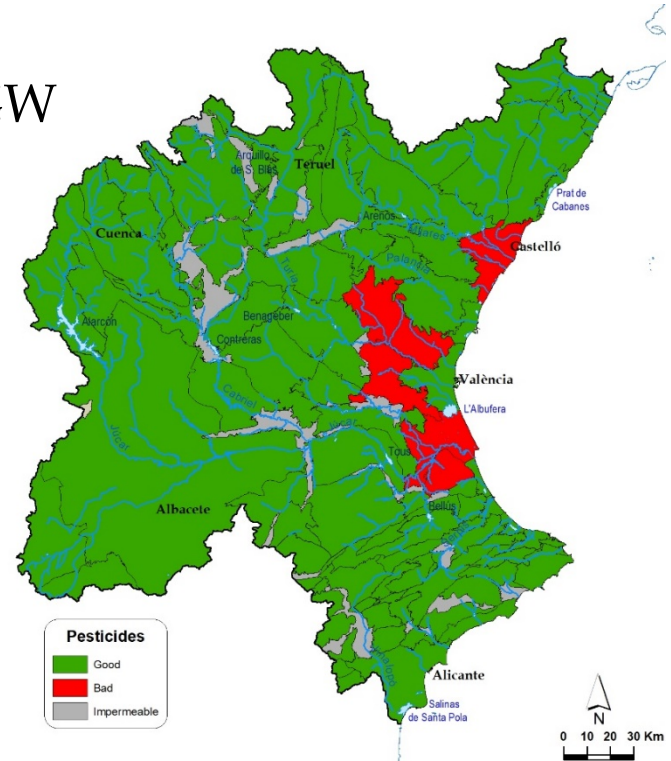


Pesticides (EQS) Non-compliance

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



Instituto de Ingeniería del
Agua y Medio Ambiente



evaluación de recursos
naturales SLP

- 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



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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

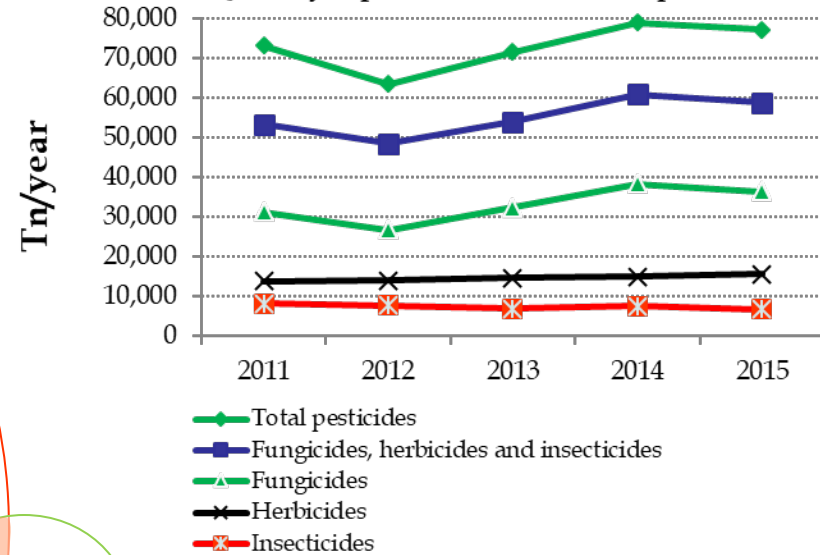
Existing pesticides

Currently, there are 493 pesticide substances being used in Europe

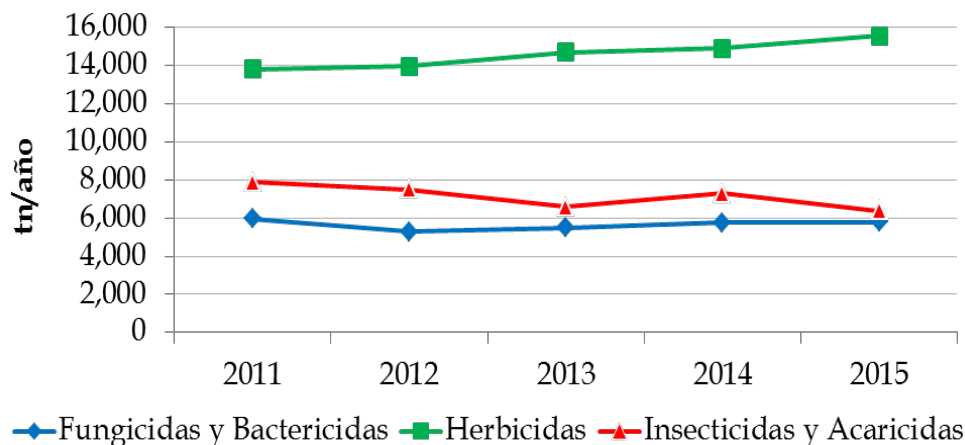
21 50

Sustances regulated by the WFD (Surface waters)

Quantity of pesticides marketed in Spain



Current pesticide use

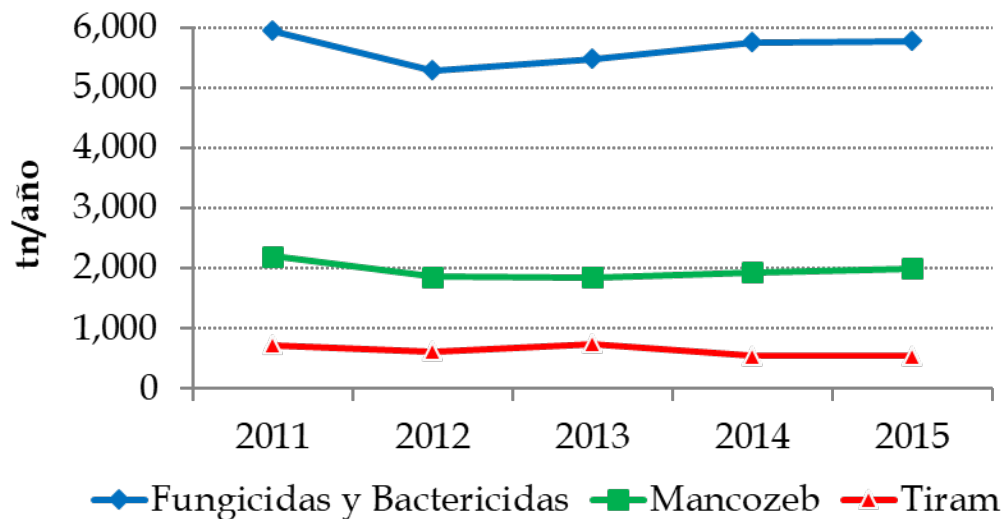


leaving out the main fungicides: sulfur and copper...

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

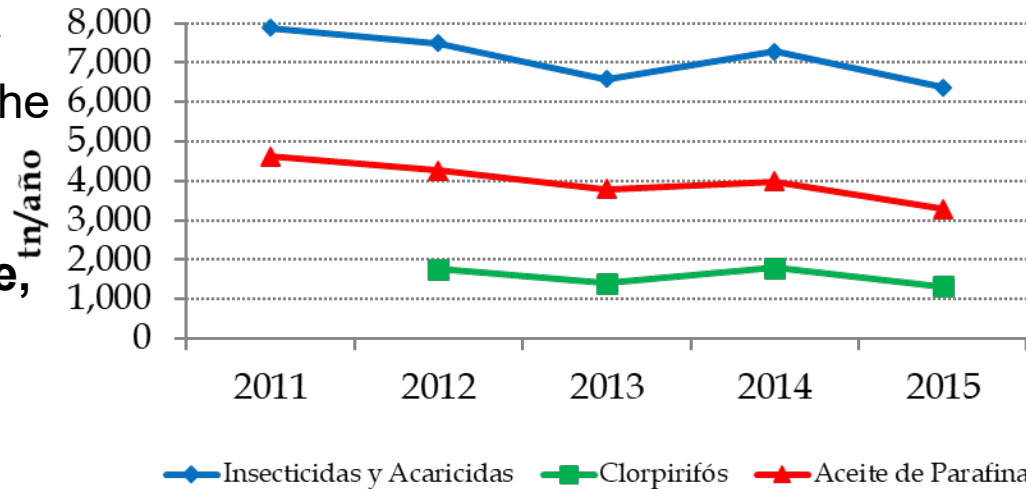
Insecticides in Spain:

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

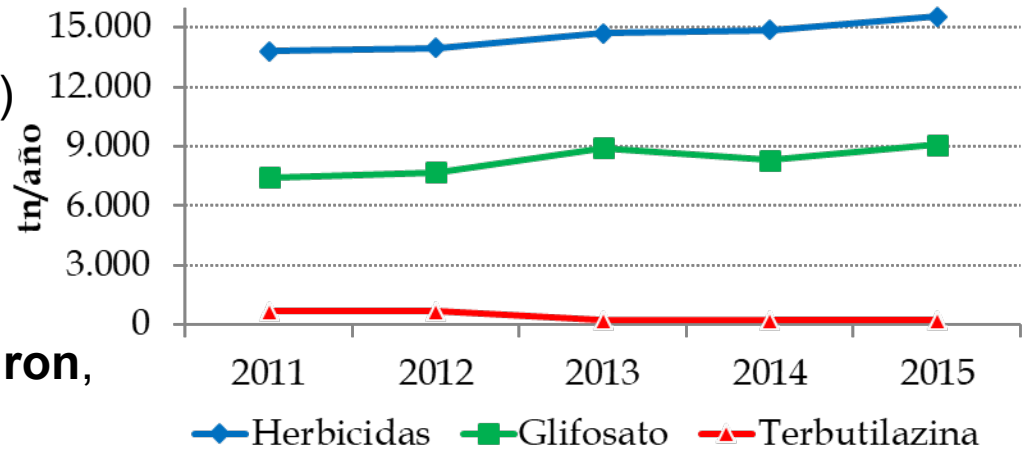


Herbicides in Spain: 15,600 Tn/year:

- 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

Terbutometon-
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

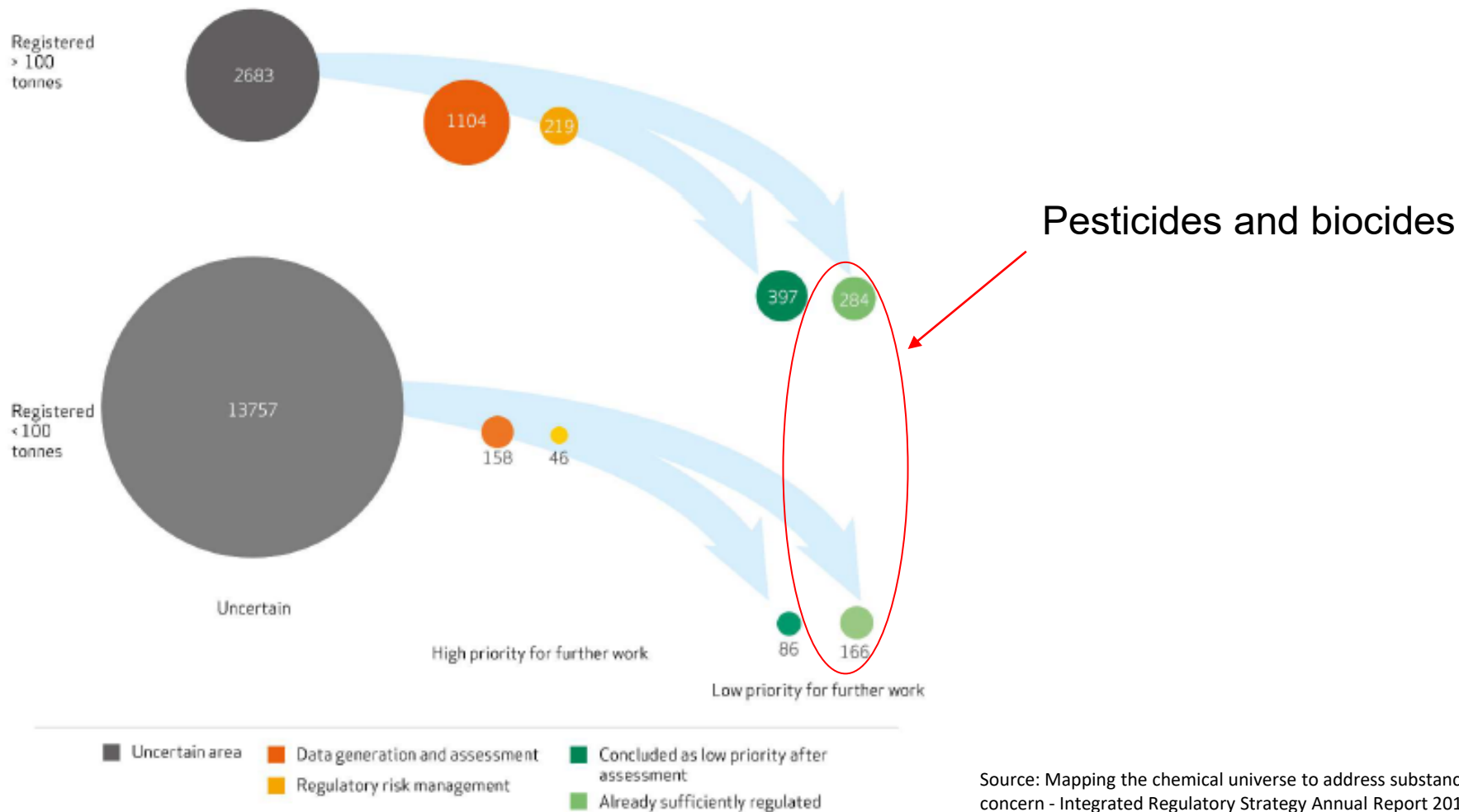
The Commission is working on the assessment of complex mixtures of chemicals (Effect-Based monitoring and assessment in the WFD)

- 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



Turia river



Thanks for your attention!



Albufera lake



Jucar river