Sarg As & CLD

Environmental impacts of ***Sarg****assum* leachates due to **A**r**s**enic and **C**h**l**or**d**econe: quantification, mitigation and social perception

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Summary

- The consortium
- Aims / Objectives
- Management of the project
- Research questions addressed
- Expected Results
- Added value/dissemination/perspective for development

The consortium

- Brgm
  - Coordinator (FR, Orléans)
  - Field work (Brgm Guadeloupe)
  - Lab studies on As removal (Brgm Orléans)
  - As location in/on *Sargassum* (Brgm Orléans)
- Univ. Antilles (Gdp, ecotoxicity)
- Univ. Guyane (HSS)
- IT2A (FR, Bordeaux: As speciation)
- Univ. Orléans / CNRS (FR; activated carbon)
- TAMUG, USA; ecotoxicity
- Stakeholders: Conservatoire du littoral (GDP) + Carbet des Sciences (MAR)

Aims / Objectives

***Sargassum* « leachate »**

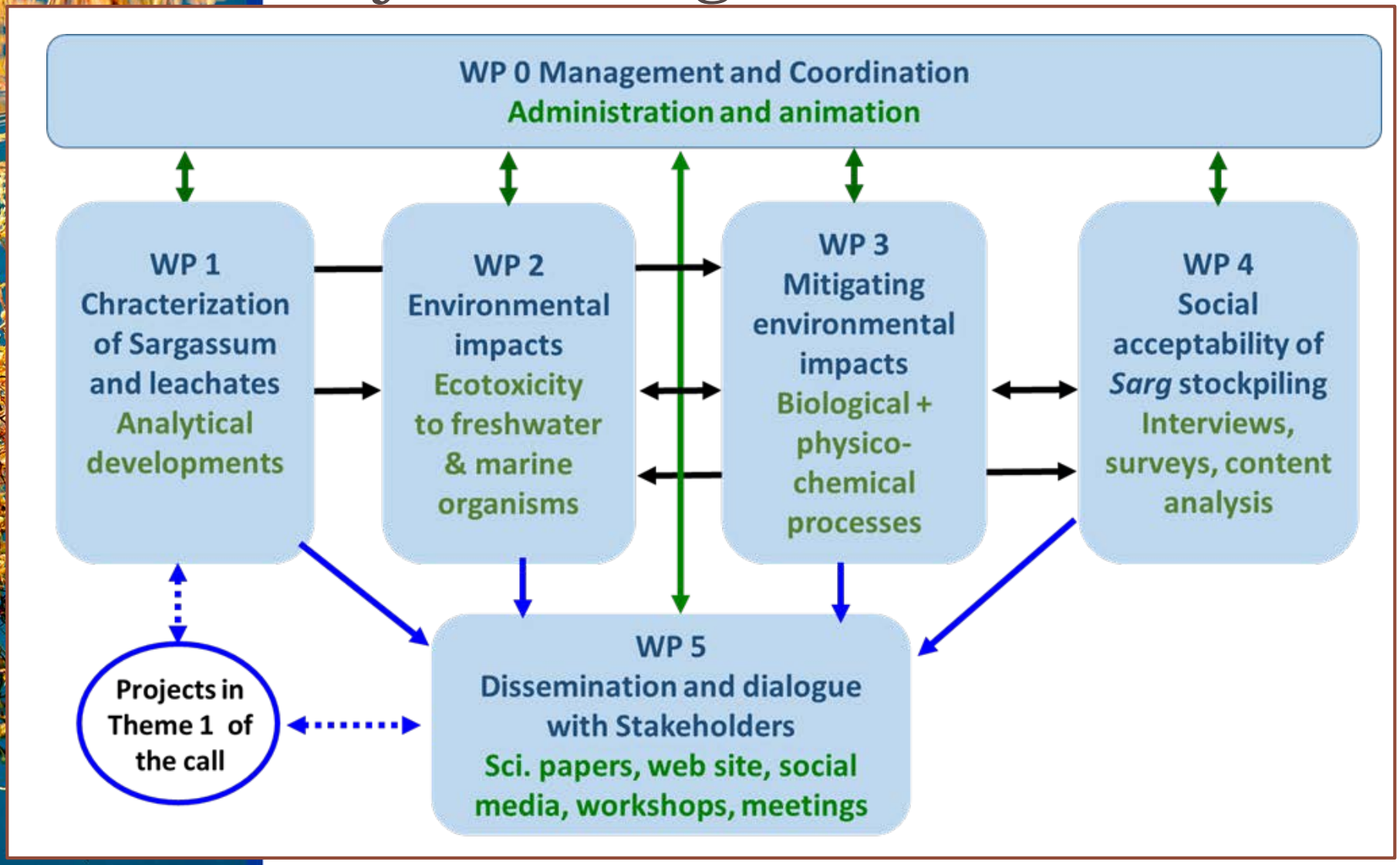
Total As: up to 8 mg/L (n = 3)

+ Chlordecone

Aims / Objectives

- Improve knowledge on *Sargassum* contamination by As (marine origin) and chlordecone (CLD; terrestrial origin)
- Assess the ecotoxicity of *Sargassum* leachates, with a focus on As & CLD, to a range of representative test organisms,
- Develop durable remediation processes for As & CLD in leachates
- Assess the social acceptability of *Sargassum* stockpiling
- Dissemination of results and dialogue with stakeholders

Project management



Research questions addressed

- **As & CLD: how much, where, & under what form? WP1 Characterization of *Sargassum* and their leachates**
  - Microscopy observations of *Sargassum* (BRGM)
  - Speciation (inorganic AND organic) and analysis of As in *Sargassum* and *Sargassum* leachates (ADERA-UT2A)
  - Analyses of chlordecone (Brgm + tender)

- **Environmental impacts ? WP2 Environmental impacts of *Sargassum* leachates**
  - *Macrobrachium rosenbergii* (crustacea) bioassay; lab + field (ecotox + body burden)
  - *Crassostrea rhizophorae* (oyster) bioassay; lab
  - *Danio rerio* (zebrafish) bioassay; lab

Research questions addressed

- **What can be done? WP3 Mitigation of leachates impacts**
  - Arsenic (Brgm); *µbiology-based process; lab + field*
  - Chlordecone (partner ICMN); *activated carbons + other means; lab*

- **How about the people? WP4 Social acceptability of *Sargassum* stockpiling**
  - populations knowledge, perceptions and positions ; *questionnaires using surveys*
  - feelings of people living close to the stockpiling sites : NIMBY ? *qualitative survey*
  - inclinations of the French Caribbean population to come out in protest ; *online, printed, audio-visual material + semi-structured interviews*

Added value + Dissemination and dialogue with stakeholders

- Added value
  - See interdisciplinarity of consortium
- Dissemination
  - European Union rules on dissemination by Open Access for the most important outputs
  - Protection (patent) of results prior to any external communication; intellectual property rights (IPR) incorporated in the Consortium Agreement.
  - peer-reviewed publications + scientific conferences.
  - project website + social media + Flyers/Factsheets (Le Carbet des Sciences Martinique).
  - to stakeholders: BRGM in various policy and decision-making bodies

Impact and engagement

- For stakeholders and end-users
  - shared assessments of the risks associated with Sarg stockpiles.
  - For public policy-making,: hard facts to be used in developing possible regulations
- The economic impact
  - optimization of the compromise between the cost-effective management of the stockpiled algae and the environmental impacts of Sarg leachates
  - private partner: extension of the range of marketable analyses and deepening of partnerships

Impact and engagement

- For the scientific community
  - the interdisciplinary of the project + the high level of expertise => results with strong impacts in analytical chemistry, ecotoxicity tests and remediation processes, all three rarely directly linked with each other, and human and social sciences.
- Link with ongoing initiatives,
  - Eco3Sar project (launched by ADEME) in its WP2 (Securing & valorization of storage), WP3 (Toxico-kinetics of micropollutants) and WP5 (Provision of recommendations).

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- P. Ollivier (Brgm; finish line)
- Others…

Budget

Partner	Man-months	Personnel cost	External expenses	Overheads	Total cost	Funding requested
BRGM	35	155 000 €	70 000 €	89 385 €	314 385 €	157 191 €
ADERA/UT2A	14	86 955 €	30 800 €	61 285 €	179 040 €	80 568 €
ICMN	29	74 230 €	27 000 €	9 280 €	110 510 €	44 280 €
Univ. Antilles	20	76 200 €	63 800 €	5 680 €	145 680 €	76 680 €
Univ. Guyane	27	91 800 €	22 600 €	4 688 €	119 088 €	36 288 €
TOTAL	125	484 185 €	214 200 €	170 318 €	**868 703 €**	**395 007 €**