Living labs in the Mediterranean bio-economy: why and how to create a network of inspiring and interactive demonstrators around the Mediterranean basin?

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Living labs in the Mediterranean bio-economy:

Why and how to create a network of inspiring and interactive demonstrators around the Mediterranean basin?

Hugo de Vries,

19 June 2019, ARIMNet conference
Content

• What are Living Labs?
• My 3 experiences with living labs?
• Why could a network of living labs contribute to research and innovation projects in the Mediterranean?
• How would such a network help in finding solutions for agri-food-environment problems locally & transnationally?
• What are major problems and what could be key potential Living Labs?
• Could we jointly start to imagine first Living Labs?
• Could we validate the Living Labs via ‘plausible’ scenarios?

An adventure together with Florence Jacquet, Marie-Jo Amiot-Carlin, Bernard Hubert, Fabrice Gouriveau, Marie Ollagnon, Anne-Laure Le Cam and Hugo de Vries
What are Living Labs?

- A **living lab** is a research concept. A living lab is a user-centered, open-innovation ecosystem, often operating in a **territorial context** (e.g. city, agglomeration, region), integrating concurrent research and innovation processes within a public-private-people partnership.

- The concept is based on a systematic user **co-creation** approach integrating research and innovation processes > **real life use cases**.
My experiences with Living Labs (1) MELISSA Project in our division at Wageningen UR

Micro-ecological life support alternative in space

More information: https://www.esa.int/spaceinimages/Images/2015/06/MELiSSA_loop_diagram
My experiences with Living Labs (2): The restaurant of the Future “Really understanding consumer behaviour”

- Restaurant for 200 persons
- Grand café
- Research kitchen
- Sensory laboratory
- Mood rooms & Mind room

Variables:
- Light
- Odor
- Temperature, pressure
- Product offerings, etc.

- 45 video cameras
- Video analysis workstation

Partners: Wageningen UR, Sodexo, Noldus IT, Kampri Group.
My experiences with Living Labs (3)

The pyramid of biomass valorization

Pyramid, adapted from Invensys Tuchenhagen

Pharma & Cosmetics
Food & Feed
Bioplastics & polymers
Bulk chemicals and Fuels
Energy & heat (storage)

Variety of renewable resources

High Value, low volume
Low Value, high volume

Partners:
Living Labs in the Mediterranean; **WHY?**  
*Part of a coherent work plan*

**Task 1 ‘Observatorium’**  
‘Monitoring and understanding changes in Mediterranean Regions for a shared vision and prioritizing options for a joint strategy’

**Task 2 ‘Impact assessment team’**  
‘Impact on agro-ecological production systems’  
Researching impact of changes taking into account the (bio-) diversity of territories, micro-climates, water problematics, food & nutritional cultures, security & safety, job creation,..  
Impact on (non-)food value chains & diets

**Task 3 ‘Science and Innovation team’**  
‘Scientific program ‘complex bioeconomy systems’’  
Developing and running (i) a scientific program on complex bioeconomy systems and (ii) potential innovation concepts in Mediterranean territories  
Innovation concepts (technological and organizational)

**Task 4 ‘Network of Living Labs’**  
‘Real-life testing of deliverables and concepts with (local) actors at unique, locations facing different scenarios’  
Test & demonstration sites, serving as Living Labs, in the Mediterranean, with young generation

**Task 5 ‘Guiding Council’**  
‘Recommendations and collective actions’, based on the scientific and innovation outcomes of this programme (quantitative and qualitative), for food security & health and viable ecosystems in the various regions of the Mediterranean Basin, each having its own priorities.

Changing environmental conditions ($H_2O$, $T$, ...)

Changing socio-economic conditions

Changing food patterns

Changing environmental conditions ($H_2O$, $T$, ...)

Impact on agro-ecological production systems

Impact on territorial development

Impact on (non-)food value chains & diets

Scientific program ‘complex bioeconomy systems’

Innovation concepts (technological and organizational)

Test & demonstration sites, serving as Living Labs, in the Mediterranean, with young generation

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SCIENCE & IMPACT

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How would such a network help in finding solutions for agri-food-environment problems locally & transnationally?

1. It is based on what is **needed locally** according to the local experts and fitting in their local culture
2. Those projects and solutions are adopted if stakeholders are really involved in the project
3. A network will allow **exchanging best practices** in the Mediterranean, leading to locally best adapted solutions
4. **Images** (visualization) are more convincing than words (reports); appreciated by young generation
5. Images are **more inspiring in real cases** (technologies, products, production fields, manufacturing sites, logistic centers, agriparks, nature environments, restaurants, ...) & virtual designs (computer animations)
AND ... AS KEY MESSAGE
‘fully different approach’

- NOT jointly responding to a call for a project proposal with a predefined text

- BUT locally defining the core question to be addressed and tested in a Living Lab === local priorities set the scene!

- AND then sharing best practices in between Living Labs in the Mediterranean Basin (to learn from and to help each other)
What are major problems and what could be key demonstrators? (1)

- Shortage of water
- Malnutrition
- Import
- Biodiversity loss
- Climate change
- Loss of food culture heritage (the Mediterranean diet)
- Waste
- Unused by-products
- Poverty, Political tensions
What are major problems and what could be key Living Labs?

- Oasis research center,
- New life in desert center
- Mediterranean Artificial Intelligence Lab
- Mixed olive, wine, date agripark
- Pyramide of agro-value
- Hortus Botanicus for unique Mediterranean species
- Mediterranean diets resto’s
- Dry & Flooding demo center
- Biodiversity park
- Urban healthy village/cartier
- Mediterranean child canteen
- Pine tree biorefinery mountain center
- Micro-forest desert park
- The entrepreneurial Mediterranean flair & innovation center
- Clean agro-tourism center
- Mediterranean natural colors center
- The Mediterranean Design Vitrine
- Algae food & non food test center
- Mediterranean circular economy park
- Terrasse agroproduction demo park
- Trade demo island for cooperation
- Water-recycling greenhouse demo
- New high tech ‘Ponts du Gard’
- Underground production park
- 100% solar energy food system center
- Stand-alone mobile storage concept
- Mediterranean varieties library
- Mediterranean miniature agripark
- The aquaculture-algae-forest-hub
- The mobile farm
- Floating farms
- The natural fibre Partenon living lab
- The bioeconomy theatre plays
- Soil complex systems center
- ..............................................
Or in images

- The green (agro-) logistic hub
- The bio-refinery port
- The sustainable tourism center
- Virtual biomass R&D center
- Algae park
- Pyramide of bio-based products
- Green & social market
- The biosphere and tropical gardens
- The reference wineyard for all bioproducts

Based on idea sharing with Christian Sanchez, Eric Dubreucq and Marie Ollagnon, UMR IATE
Or inspirational architectural designs
However, take care: images can differently be interpreted.
Could we jointly define first options for Living Labs? Could we validate these options via ‘plausible’ scenarios?

- **Creative workshop : Living labs: Let’s create our common future!**

- **Remember: before important insights and results of agri-food projects can be appreciated and inspirational for others, they should preferably be visualized and interactively accessible. This could be achieved through a network of demonstrators spread across the Mediterranean serving as living laboratories to address key topics. Designed by whom? By yourself in this workshop!**
The Scenario Development approach*

*Adopted from Shell and Wageningen UR scenario development thinking
The goal of scenario thinking

Scenario's are made to better understand current options (= your imagined Living Labs) in the view of potential futures

To look in the future is not easy....
They really believed it ...

“Radio has no future.”

“Heavier-than-air flying machines are impossible.”

“X-rays will prove to be a hoax.”

Lord Kelvin, British mathematician, physicist, and president of the British Royal society, C. 1895
"I think there is a world market for about five computers".

*Thomas J. Watson, chairman of IBM, 1943*
“We don’t like their sound. Groups of guitars are on the way out”.

*Decca Recording Co. executive, turning down The Beatles in 1962*
They really believed it ...

“There is not the slightest indication that nuclear energy will ever be obtainable. It would mean that the atom would have to be shattered at will”.

*Albert Einstein, 1932*
Key characteristics of scenario’s

• Plausible: Logical, consistent and believable
• Relevant: highlight key challenges and dynamics of the future
• Divergent: differ from one another in strategically significant ways
• Challenging: challenge fundamental beliefs and assumptions of the reader

• All in all scenarios should provoke thinking rather than provide answers per se.

Recognize that the "real" future will not be any of the scenarios, but that it will contain elements of all of our scenarios
An overview of the scenario process

Phase I: Getting focus
1: Scanning the issues at hand
2: Formulating key question and time horizon
Phase II: Developing the scenario framework
3: Mapping (un)certainties
4: Clustering the uncertainties
5: Distilling the driving forces
6: Scoring the variables
7: Selecting scenario dimensions
8: Fleshing out the scenarios
Phase III: Building the scenarios
9: Answering the key question
Phase IV: Working with the scenarios
10: Judging the options and setting the strategic agenda / planning

Before the workshop this part has been prepared by the organisers: these slides

Your activities in this workshop...
Actions (I + II):

1. Select as a group your **preferable core question/theme, axes and scenarios** out of the list that is provided by the organizers.
   - *Note 1: the axes serve as tools to position the scenarios*
   - *Note 2: the core question provides a ‘direction’ (domain/theme) for the scenarios*

2. Discuss the **four scenarios** that are proposed and that fit in the two-dimensional plot: check if they are useful or should be changed (give them a short name!)
Actions (III):

3. **Work** with the scenarios to validate Living Labs:
   
   i. List the 4 scenarios next to each other (see next slide)

   ii. Use core question/theme to imagine *living labs*

   iii. Check if each living lab either fits very well, neutrally or is in strong conflict with the scenario (process called windtunneling)

   iv. Check if such an option (=Living Lab) would fit in your country/region

   v. Prioritize the options (=Living Labs) in order of best fit with the scenarios.
<table>
<thead>
<tr>
<th>Option 1</th>
<th>Scenario 1</th>
<th>Scenario 2</th>
<th>Scenario 3</th>
<th>Scenario 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- -</td>
<td>0</td>
<td>- - -</td>
<td>+</td>
</tr>
<tr>
<td>Option 2</td>
<td>+</td>
<td>++</td>
<td>++</td>
<td>0</td>
</tr>
<tr>
<td>Option 3</td>
<td>++</td>
<td>+++</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>Option 4</td>
<td>++</td>
<td>- -</td>
<td>+++</td>
<td>- -</td>
</tr>
<tr>
<td>Option 5</td>
<td>- - -</td>
<td>- -</td>
<td>- -</td>
<td>0</td>
</tr>
<tr>
<td>Option 6</td>
<td>+++</td>
<td>++</td>
<td>0</td>
<td>-</td>
</tr>
</tbody>
</table>

**Strategic Living Labs**

- Living Lab 1, 2, ..

**Strong fit**

- +++
- ++
- +
- 0

**Neutral**

- -

**Strong conflict**

- --
- ---

---

**Wind tunneling...**
Example

The core question:

*(for example related to the *theme/domain of internal Mediterranean Trade of Fresh Products)*

How will I get my **fresh** Fattoush Salad with Bab Ghanoush Dip from Lebanon in Portugal, today and tomorrow?
The core question: How will I get my fresh Fattoush Salad with Bab Ghanoush Dip from Lebanon in Portugal, today and tomorrow??

Tomorrow (Boat)

Shop in an affordable, green way
(Added value, as fresh and convenient as possible in Modified Air Package and conventionally shipped)

Think first about the NEXT GENERATION
(New biodegradable packaging and solar-energy-driven storage and transport containers for healthy and convenience Mediterranean Products)

Budget

Today (airplane)

Live a CONVENIENCE lifestyle
(A delicious convenience meal at your table directly at your demand)

Favour production in your OWN GARDEN
(Portugal starts to produce the fresh ingredients themselves)
Windtunneling…. > how to find relevant living labs to address core question?

<table>
<thead>
<tr>
<th>Strategic options = potential demonstrators</th>
<th>GREEN</th>
<th>NEXT GENERATION</th>
<th>OWN GARDEN</th>
<th>CONVENIENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. New agro-logistic test center</td>
<td>++</td>
<td>++</td>
<td>- - -</td>
<td>+++</td>
</tr>
<tr>
<td>2. Small mobile scale greenhouse</td>
<td>++</td>
<td>+ +</td>
<td>+ +</td>
<td>0</td>
</tr>
<tr>
<td>3. Children restaurant</td>
<td>+ +</td>
<td>+ + +</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>4. World reference market</td>
<td>+ + +</td>
<td>- -</td>
<td>- -</td>
<td>++</td>
</tr>
<tr>
<td>5. ‘salad preparation platform’</td>
<td>++</td>
<td>+++</td>
<td>-</td>
<td>0</td>
</tr>
<tr>
<td>6. New packaging innovation center</td>
<td>+ + +</td>
<td>+ + +</td>
<td>0</td>
<td>+</td>
</tr>
</tbody>
</table>

Strong fit: +++
Neutral: ++
Strong conflict: -
3. Continue to work with the Living Labs:
   
i. **Check if such an option (Living Lab) would fit in your country/region**
   
ii. **Prioritize the Living labs** in order of best fit with the scenarios.
**Program for the ateliers**

- Introduction and repetition of the process (5-10 min)
- Familiarize with and/or modify the scenarios and axes in relation to a core question (30 min)
- Propose Living Labs (= options) for each scenario; ID card for each LL filled in (40 min)
- Prioritize living lab via windtunneling sheet (25 min); include fit in your region:
- Presentation of outcomes to all participants in plenary hall

*The animators:*

Florence Jacquet, Marie-Jo Amiot-Carlin, Bernard Hubert, Fabrice Gouriveau, Marie Ollagnon, Anne-Laure Le Cam and Hugo de Vries
Now, it’s YOU!

Many thanks for your attention

And GOOD LUCK and INSPIRATION