



# Industrial Bioeconomy: How to measure progress ? An OECD perspective...

Third Stakeholders Conference on Bioeconomy, Turin, October 8-9, 2014

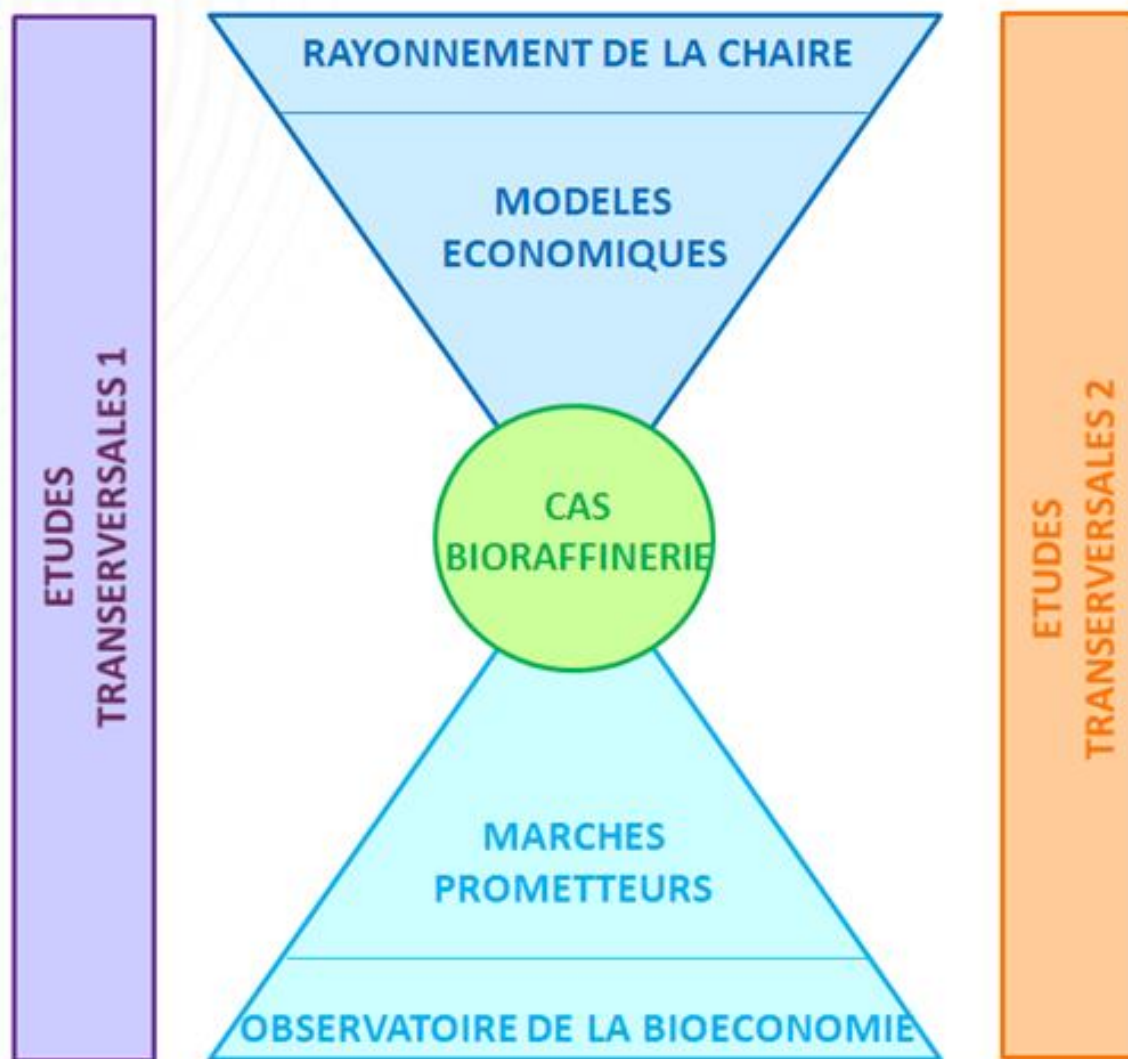
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NEOMA Business School..

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# I. The NEOMA BS Industrial Bioeconomy Chair

- Launched in 2012.
- Part of CEBB with two other Chairs: Ecole Centrale Paris and AgroParisTech.
- Initially funded by the public local authorities
- A team of 5 staff with associates from the NEOMA BS Faculty.
- Mission: research on emerging markets, on assessment of technologies/projects, on economic models, on challenges, roadmaps to the bioeconomy..



## II- What is at stake ?

- New sectors are not yet covered by national statistical offices (NSOs)
- NSOs under current circumstances have no funding to cover new sectors (INSEE, ISTAT, Census..)
- Therefore neither Eurostat, nor OECD, nor UN agencies can cover the new sector in a consistent way

*Implications: lack of data means « non comparable» data, means lack of trust in the sector by investors, governments, parliaments, analysts..*

# III- Definitions, indicators, process

- Bioeconomy: according to the OECD Bioeconomy 2030 report (OECD 2009) covers red (health), green (agriculture), white (industry) , blue (marine) applications *of biotechnologies and progress in engineering.*
- Industrial bioeconomy: white biotechnologies applied to biomass to produce « food, fuel, feed » able to replace the oil barril, as well as molecules for the chemical industry (surfactants, solvents, fibers, biomaterial..)

*Bioeconomy at large: a potential to provide a new Krondatieff wave such as steam, electricity, digital economy...*

## Differences in core definitions:

- EU definition: covers agriculture and industrial applications
- UK: the use of biological resources for producing and processing materials, chemicals and energy
- Germany: renewable resources and biotechnological processes as a basis for food, industry and energy

### Issue UK/Germany:

Industrial Bioeconomy (white biotechs) and/or biobased economy (biological resources) ?

*Louise Staffas, INRA Seminar, October 2013.*

## The OECD process (bau):

- A number of member countries identify themselves as « champions », usually 6-8
- Location of the first meeting gives the name of the « group »: Frascati, Oslo, Canberra etc..
- They meet regularly until they agree on the core definition and key indicators
- Other member countries and IGOs join the « club » »
- Measurement Handbooks are created and updated regularly

*Will big data replace old fashioned statistics in the near future ?*



# What users/ experts say they need ?

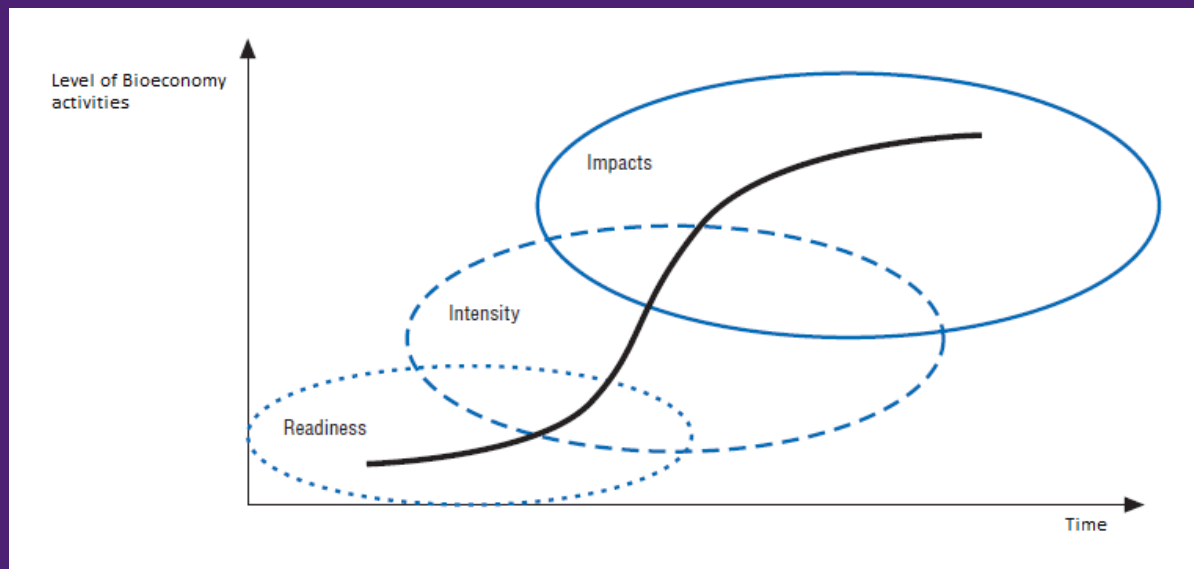
Dirk Carrez: investments in R&D, pilots, demo-plants, number of biorefineries, of spin offs, jobs, biomass for each applications, new products...

Hans van Meijl: value added, trade flows, emissions, land use, cost structure, learning curve, net employment, input-output at different level and to different industries..

Jan van Esch: how can we cross raw material, production flows with import-export trade flows ?

*Bioeconomy Observatory: first stakeholders roundtable, Brussels, November 26, 2014.*

# OECD Process: the life cycle of new (high tech) sectors...



## IV: Readiness factors:

- GBAORD: Government Budget Appropriations or Outlays for R&D, but categories of NABS: Nomenclature for comparison of scientific programmes and budgets are too large to identify detailed applications in biotechnologies
- Private sector R&D expenditures: no such databases.
- Human capital: number of research personnel, PH.D students
- Number and trends in patents
- Regulatory framework (how open and favourable ?)

Acceptability by markets and populations

## V- Intensity: activities and outputs

- Manufacturing, production activities
- Sales revenues by companies, countries, location in the value chain
- Market shares
- Import-export trade flows
- Profits and losses
- Assets, investments
- Services, maintenance, insurance..

*Usually covered partly by NSOs and industrial*

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*associations, analysts*

## VI- Impacts: assesment of the sector

- CBO: benefits, customer satisfaction, productivity gains versus cost of deployment
- LCA
- Risks (industrial, financial, social..)
- Environmental impacts
- Net job creation

*Can be done by direct market evaluation, indirect methods (cost of replacement) or survey-based techniques.*

## VII- Conclusions

- Bioeconomy at large and the industrial bioeconomy have not yet received enough attention on a multi-lateral basis (OECD countries) to launch a group on definitions, indicators, data bases...
- Will the private sector decide to take the lead ?
- Measuring progress is therefore limited to ad hoc sources: on/off industry reports or national reports, press releases and collection by the EC Observatory until 2016..

*Bioeconomy stakeholders self-interest is to join forces until critical mass is reached..*

# Latest publication by the Industrial Bioeconomy Chair:

*Bioraffinerie 2030: une question d'avenir,*  
L'Harmattan, Paris, Septembre 2014, 245  
pages.

English version: first quarter of 2015 (to be  
announced)

Thank you for your attention

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