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# BIOECONOMY AND THE CHALLENGE OF COMMUNITY CENTRED DESIGN

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# An overview

- Why bioeconomy projects need to focus on local communities?
- What challenges?
- What strategies?
- What UCD does in support?



# Bio-economy and local communities

## issues

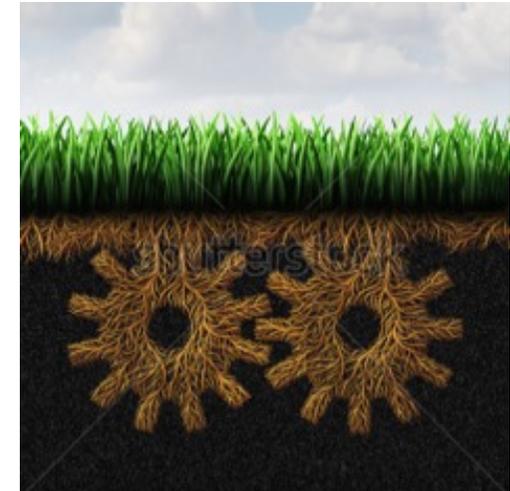
- Despite its great promises, the development of the bio-economy is controversial
  - while the transition to a more sustainable society is urgent, and the socio-economic benefits potentially large, the risks, pitfalls, and uncertainties are many (Kornerup Bang et al., 2009, p. 2)
- Wide spectrum of attitudes among stakeholders about the desirability of such an economy (Schuurbiers, Osseweijer, & Kinderlerer, 2007)
- The debate on the bio-economy tends to be characterized by a polarization between proponents and critics (Hansen, 2012)
- Many of these controversies will likely not be resolved through more science, as fundamental differences in value and paradigm are at play, also in the scientific disputes themselves (see e.g. Hansen, 2012; Sarewitz, 2004)



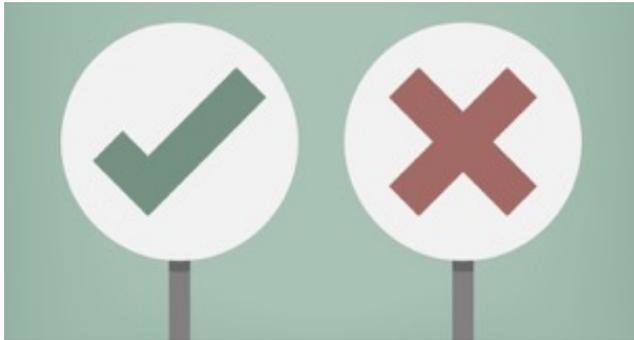
# Current barriers to bio-economy

## societal acceptance

- In order for the bio-based economy to deliver on its promises of sustainability, invigoration of agricultural practices and production, and economic opportunities for all stakeholders, **societal engagement with the bio-economy is of utmost importance** (OECD, 2009)
- **Social legitimacy** is sought since public funds are used to invest in research and development of the bio-economy (Asveld et al., 2011)
- Public policies aligning economic interests of the industry with the values and needs of society at large depend on a **well-informed, engaged, and balanced societal debate and societal engagement at large** (Paula & Birrer, 2006; Pierce, 2012)
- The **public acceptance** of newly emerging technologies is of crucial importance to their success (Felt & Wynne, 2007; Soetaert & Vandamme, 2006)
- **Engaging the public** at the level of technology-in-the-making may prove to be highly beneficial for the technological development itself, and reduce the risks associated with the innovation process (Schuurbiers et al., 2007; Soetaert & Vandamme, 2006)



# A multifaceted debate



## □ Pro perspective

### ■ Local scale

- Rural area development
- New jobs creation
- Tax reductions/revenues
- New public infrastructures
- Bioremediation

### ■ Global scale

- Reduction of GHG emissions
- Renewable feedstock

## □ Cons perspective

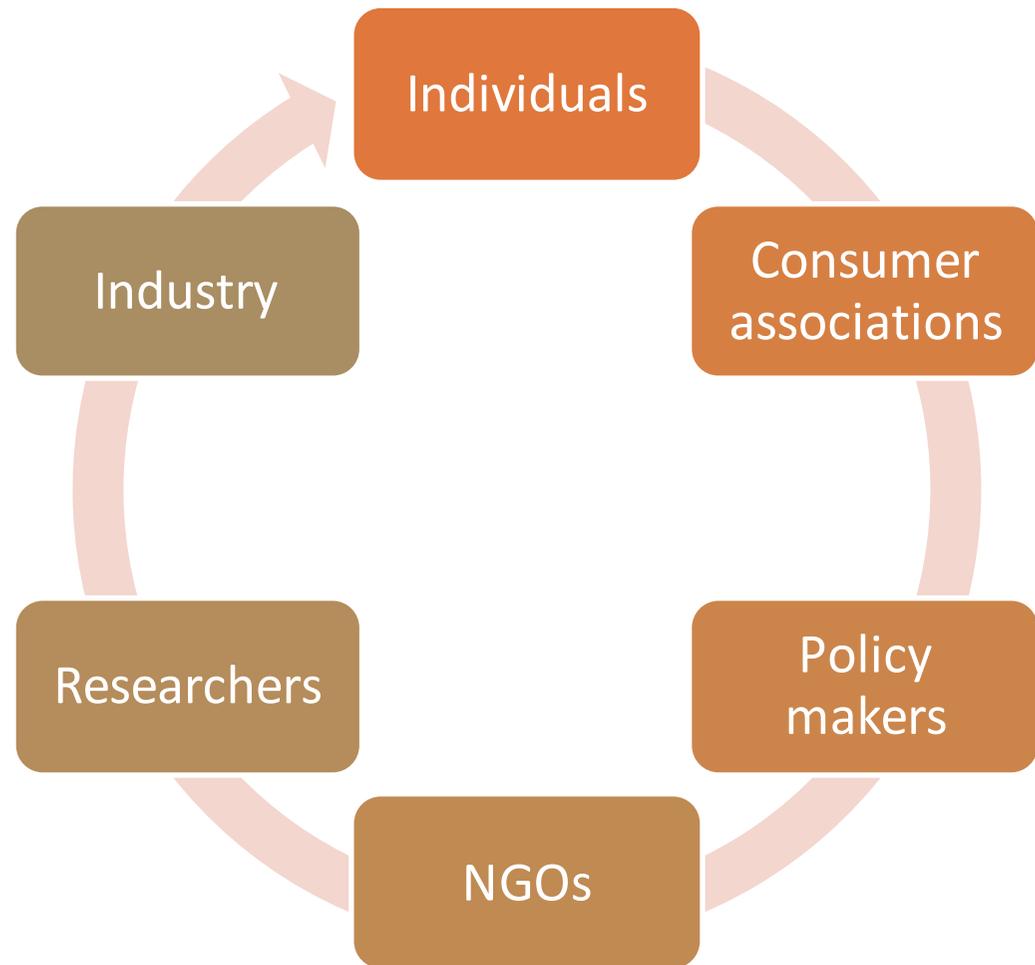
### ■ Local scale

- Water contamination
- Traditional job losses
- Safety/Health risks
- Security
- Area depreciation (smell, pollution)

### ■ Global scale

- Land-grabbing
- Food VS fuel competition
- Biodiversity loss
- Patents owned by multinationals
- Unfair distribution of benefits
- Biofuels support the existence of carbon intensive transport systems
- Misuse

# A framework for stakeholders cooperation



# Roles and goals of cooperating social actors

- Cooperation requires a communication process
  - Emitting sources
  - Message receivers
- Emitting sources on bio-economy side
  - Researchers
  - Industry
- Emitting source on community side
  - Consumers' associations
  - Policy makers
  - NGOs
- Message receivers
  - Individuals
  - Consumers' associations
  - Policy makers
  - NGOs
  - Researchers
  - Industry



# Effective communication among social actors depends on

- Knowledge
  - General education level
  - Scientific education level
- Attitude towards
  - science & technology
  - nature
  - environment
  - selfishness/altruism
  - capital-intensive industry

Values

Concerns

Needs

Beliefs & worldviews

# Barriers to effective communication among bio-economy stakeholders

- Communication basics for science & technology topics
  - Defining the audience
  - Choosing the Right Words
  - Choosing Supporting Information & Visualizations
  - Developing the Message
- Communication interferences
  - Neglecting audience's
    - Values
    - Needs
    - Concerns
  - Lack of common
    - experiences
    - language
  - Unclear
    - scopes
    - willingness

# What communities seek in science and technology side

Responsible Research & Innovation



Engagement



Community centred design



Trustworthiness



Bio-economy acceptance

# Responsible Research & Innovation

- Definition
  - A transparent, interactive process
  - societal actors and innovators become mutually responsive to each other
  - shared view on ethical acceptability, sustainability and societal desirability of the innovation process and its marketable products
  - to allow a proper embedding of scientific and technological advances in our society
- Scopes
  - introduction of technologies that touch upon socially sensitive issues
  - identify and accommodate public concerns when developing a new technology
- Engaging with
  - a wide range of relevant actors
  - interactive & transparent process
- RRI fosters trust among actors in the relevant value-chain
- RRI provides best conditions for trustworthiness

# Engaging the whole society in bio-economy

- Community engagement helps to handle socially sensitive issues involved that need to be addressed to prevent social resistance
- Bio-economy requires changes in the social structures embedding the bio-economy
  - manufacturers, suppliers, policymakers, citizens
  - collaboration between actors that did not previously cooperate
- Participation is a core dimensions of RRI
  - Inclusion
    - lay people in decision making
  - Anticipation
    - systematic thinking aimed at increasing resilience, while revealing new opportunities for innovation and the shaping of agendas for socially robust risk research
  - Reflexivity
    - demands actors to critically assess their own preconceptions
  - Responsiveness
    - responsiveness refers to willingness to adapt an innovation to societal response

# Trustworthiness

- Trust
    - the decision of one party to rely on another party under conditions of risk
  - New technologies associated with the bio-economy bring about risks and uncertainty
    - actors will only accept such risks and uncertainties if they trust the parties that control the relevant technologies
    - actors have no other grounds to assess each other's trustworthiness because they do not know
    - actors have reasons to consider each other untrustworthy and therefore unsuitable as partners in an RRI process
  - Trust itself cannot be brought about in another person but it is possible to create conditions for trust
- Trustworthiness
    - bio-economy advantages
      - are difficult to observe, not directly perceptible by most individuals
      - rely on the testimony of other actors
    - New alliances involve new risks and concerns
    - bio-economic innovations can have a considerable impact on the environment of people's homes
  - Mutual understanding of each other's values and motives and to action perspectives that each actors' concerns and interests are taken into account

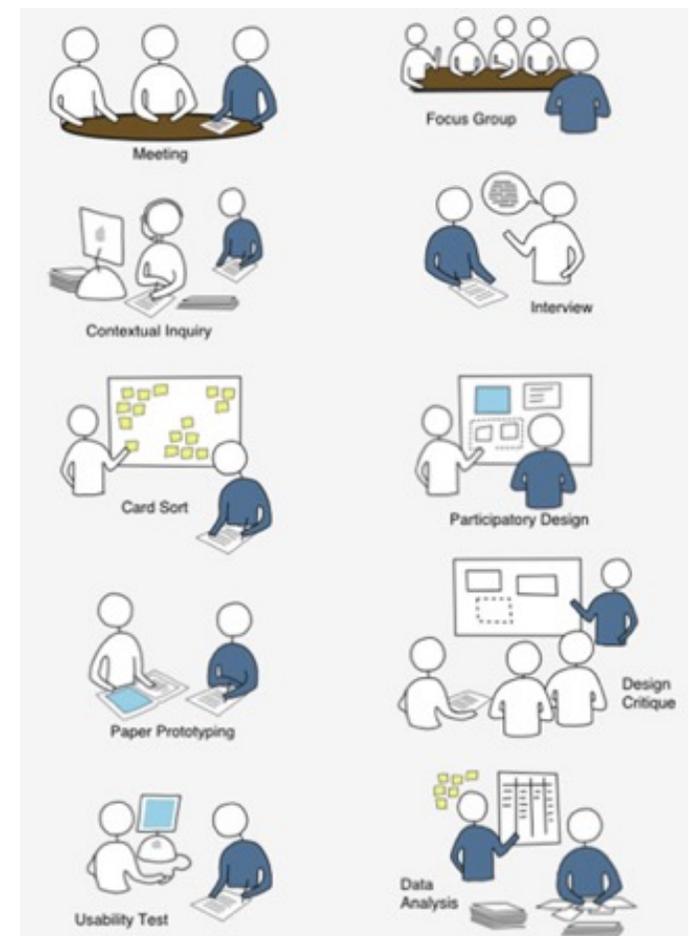
# A possible approach for community centeredness in bioeconomy

- Refer to contexts focused on
  - ▣ people needs
  - ▣ people desires
  - ▣ people engagement
- Apply techniques from
  - ▣ UX
  - ▣ design thinking
  - ▣ service design
  - ▣ ethnographic research



# Benefits from community centred techniques to bioeconomy

- ❑ Discover ambiguous and unexpected aspects
- ❑ Unveil hidden and multiple paths to the goal
- ❑ Mediate between
  - ❑ Social expectations and needs
  - ❑ Feasibility of solutions
- ❑ Identify unmet expectations and needs
- ❑ Highlight constraints from local communities at earliest stages of a project



# Outputs from community centred design techniques for bioeconomy



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UCD / DT  
technique

Technique description

Outputs feeding community  
centred design process

# It works if....

- Make sure that
  - ▣ all parties are sitting at the table
  - ▣ invited representatives are really/still representative of a given group
  - ▣ the scale of the project is clearly understood by the audience
  - ▣ true willingness in research & industry side
  - ▣ human centred design skills are on board since early stages of the project



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