GOVERNING SUSTAINABILITY IN BIOMASS SUPPLY CHAINS FOR THE BIOECONOMY: SOME OECD PERSPECTIVES

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OECD
BETTER POLICIES FOR BETTER LIVES

Sustainable biomass: where we were in 2015

- An internationally agreed framework on biomass sustainability is top priority

BUT

- No agreement on how to measure biomass sustainability (indicators, tools)
- No agreement on biomass potential
- Already there are international biomass disputes

Bosch et al. (2015). *Nature* 523, 526-527.

Mountain pine beetles have destroyed hundreds of thousands of hectares of forest in Canada.

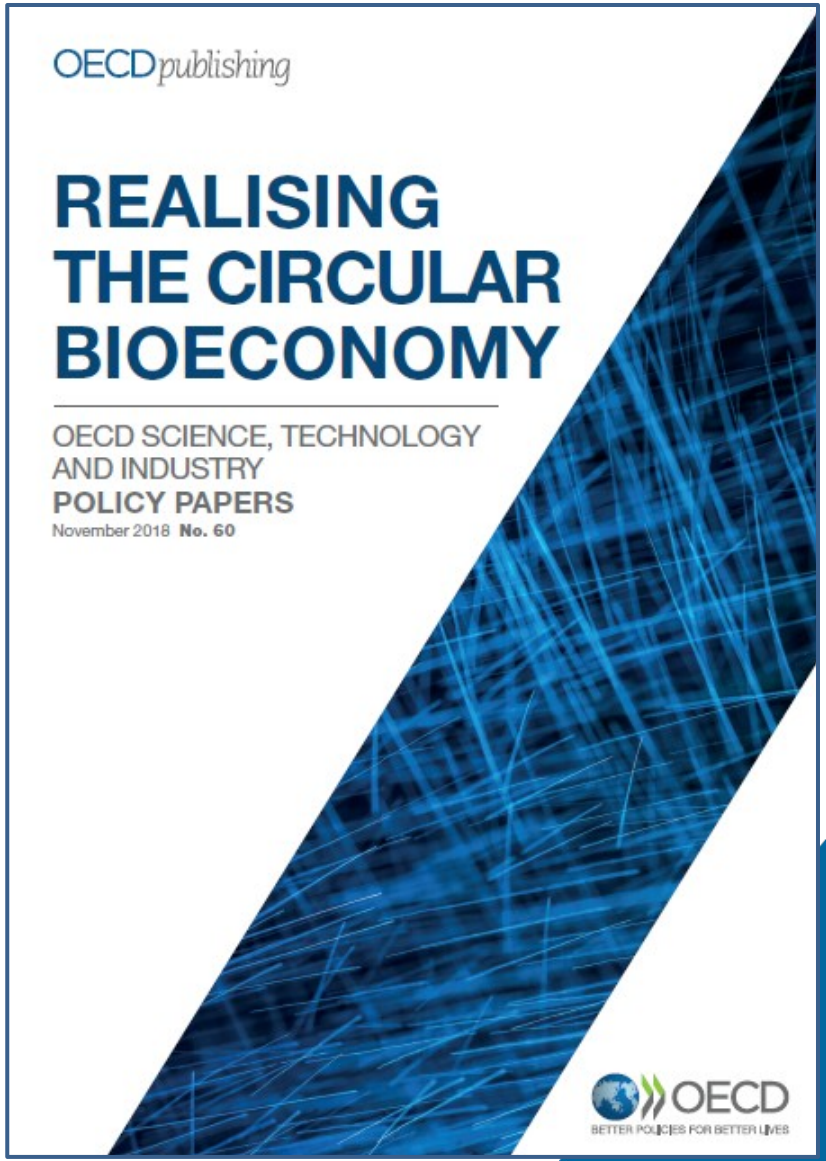
Define biomass sustainability

The future of the bioeconomy requires global agreement on metrics and the creation of a dispute resolution centre, say **Roeland Bosch**, **Mattheüs van de Pol** and **Jim Philp**.

Circular Bioeconomy policy paper, 2018

What it is the key question this project addresses?

- How can the bioeconomy and circular economy work together for a sustainable future?
- The answer is not self-evident
  - Bio- is not necessarily more sustainable
  - Circular is not necessarily easier
  - Both are not necessarily cost-competitive
  - We see **conflicts** and we see **synergies**
- Can policy makers walk this tightrope?



Innovation Ecosystems in the Bioeconomy (in press)

12 national case studies, 6 international workshops: top messages

- **Valorisation of wastes and residues** is at the very heart of a circular bioeconomy e.g. all, very large scale in China (case study- rice straw)
- Caution with **interpretation of cascading use** of biomass e.g. China
- More **targeted instruments** are now necessary e.g. Belgium, China, Norway
- Measures to grow companies to **medium-sized** e.g. Finland, Norway
- **Distributed manufacturing business model** linked to sustainability e.g. Finland, France, Japan, Sweden, United States: BUT evidence that it will work is lacking
- Strengthen the interplay between the traditional bioeconomy and "***advanced bioeconomy***" e.g. Canada, United States
- Need for a **better balance** between technology push and market pull e.g. China, Italy, United States
- Education and training needs suggest **radical adaptations in higher education** e.g. Belgium, Canada, France, Italy
- High importance and value in **engaging the general public** e.g. Italy, Japan, Sweden, especially with high priority issues such as plastics

Japan: a long history of orchestrated biomass governance

Cabinet office
- Fundamental national policies

Ministry of Internal Affairs and Communications
- Regional administrative and fiscal policies
- Firefighting legislation

Ministry of the Environment
- Global warming measures
- Waste policies

Biomass Utilization Promotion Council

Ministry of Education, Culture, Sports, Science and Technology
- Science and technology policies
- Education policies

Ministry of Land, Infrastructure, Transport and Tourism
- Land infrastructure, transport and tourism policies
- Infrastructure e.g. sewers, etc.

Ministry of Agriculture, Forestry and Fisheries
- Agriculture, forestry, fisheries policies
- Agriculture, mountain, fishing village area policies
- Food industry policies

Ministry of Economy, Trade and Industry
- Industry policies
- Energy policies

Biomass Nippon Strategy, 2002

Japan: **318** biomass towns, **79** biomass industrial cities

(Reference) Examples of major activities

L Livestock excrement
F Food waste
W Woody biomass
S Sewage sludge
O Waste edible oil

Toyosato-cho, Shiga (O)
Aburatou Shoji, Co., Ltd

This company produces biodiesel fuel by the separation and purification of waste edible oil salvaged from school lunch programs and the food Service industry and sells it as mixed light oil (B5) at gas stations.

Suzu, Ishikawa (S) (F)
Suzu City Purification Center

This center installs the fermentation facility to process concentration and mixing of sewage sludge and garbage, etc. at purification center.
The heat of generated biogas is utilized for warming a fermenter and for drying fermentation residues.

Shimokawa-cho, Hokkaido (W)
Shimokawa-cho

This town utilizes wood biomass as a heat resource for regional hot springs and greenhouses, etc.
Wood biomass accounts for approximately 60% of heat energy consumption of all public facilities.

Kobe, Hyogo (S)
KOBE Biogas (Higashinada Sewage treatment plant)

This plant makes sewage sludg fermentation and utilizes it for natural gas vehicles as KOBE Biogas. It also supplies biogas that is highly purified as city gas for the first time in Japan.

Shihoro-cho, Hokkaido (L)
Shihoro-cho agricultural cooperative organization

This organization produces methane gas from livestock excreta generated from adjacent farms to conduct power generation. It also utilizes generated heat as warm freezing of fermenters, etc.

Maniwa, Okayama (W)
MEIKEN LAMWOOD CORPORATION

This company makes chips from bark generated from thinning timber, forest residues, and sawmills to utilize it as fuel for power generation within the factory.

Kuzuishi-cho, Iwate (L) (F)
Biomass Power Shizukuishi

This company utilizes biogas generated from livestock excreta and food waste to conduct power generation business. It also sells digestive juice and compost to Koiwai farm, and the farm uses it in pastures.

Hita, Oita (L) (F)
Hita

This city generates biogas by methane fermentation of food waste and pig excreta to utilize power generation.
The digestive juice generated in the process of power generation is also provided to citizens as compost and liquid fertilizer.

Taketoyo-cho, Aichi (F)
EIZEN Co., Ltd.

This company ferments food waste discharged from food production companies and utilizes the good quality part as feed and the other as fertilizer. Fertilizer is used for cultivating feed crops.

Asahi, Chiba (F)
Bright Pig Co.,Ltd

This company utilizes food waste discharged from convenience stores, etc. and rice for feed produced in the region to produce liquid feed to use it at pig farms.

Thank you for your time

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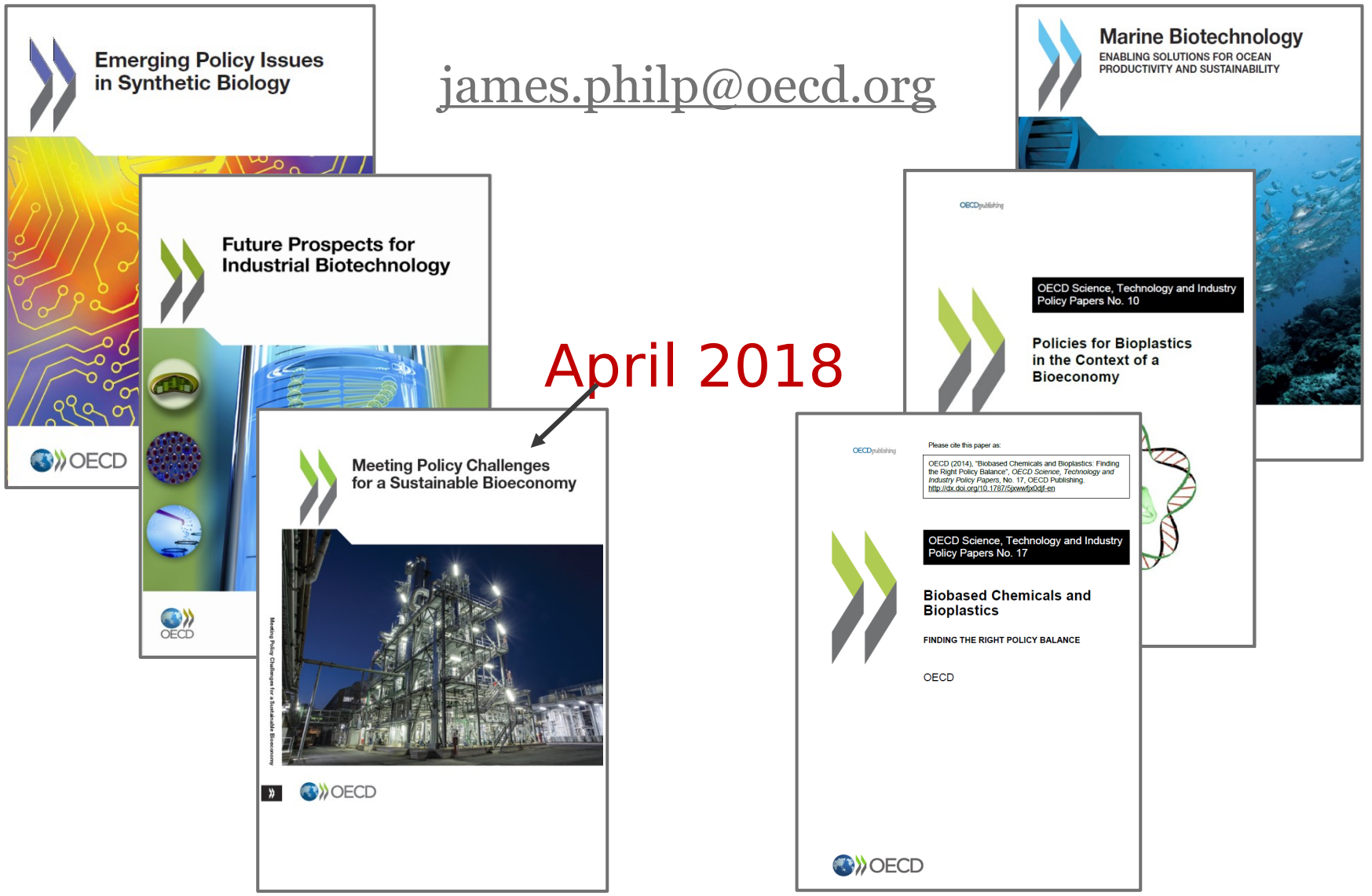

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