BioGov.net
Governance & Upskilling for a **Stronger Bioeconomy**

The Netherlands

Factsheet

This document provides an overview of The Netherlands' initiatives and current state in the bioeconomy sector, highlighting regional policies, educational programmes, key trends, existing and expected sub-sectors, and opportunities for personal advancement in bioeconomy related fields.

About the region

The Netherlands has a comprehensive National Bioeconomy Strategy and an implementation plan with structures such as the Circular Biobased Delta (CBBD), the Centre of Expertise of Biobased Economy (CoE BBE), and the Smart Delta Resources (SDR).

These structures focus on green chemistry, chemical recycling, bio-based construction, and marine bio-based specialities. The strategy emphasises decarbonisation, electrification of the industry, and collaboration among educational institutions.

Thematic Orientation

Existing Sub-Sectors

- The Circular Biobased Delta (CBBD) active from 2013-2023 as an interregional cluster stopped to exist in 2024. Valuable programmes and projects on Green Chemistry have been transferred or continue on their own. Examples are Circuroad focussing on replacing bitumen with biobased raw materials now led by Rijkswaterstaat; Biorizon, focusing on bio-aromates continues on its own merits; Sugar Delta, focusing on new applications of sugar and other carbohydrates has been integrated with the Dutch Growth Fund programme Biobased Based Circulair (BBC; The Chemical Recycling (network with relevant industrial partners) activities are coordinated by Holland Circular Hotspot. This organisation also takes over the international activities and has become a member of the Biobased Industries Consortium (BIC) in Brussels.
- Centre of Expertise Biobased Economy (CoE BBE): biobased construction, biobased building blocks & products, marine biobased specialities (algae etc.), biobased resources & energy, biobased transitions, smart energy.
- Smart Delta Resources (SDR, a network of many large energy and resource-intensive companies in the Flemish-Dutch Schelde-Delta region): green hydrogen, carbon capture and storage (CCS).
- Green Chemistry Campus: hotspot where innovative biobased companies, governments and knowledge institutes cooperate. There are facilities like laboratories and offices and a pilot hall

Key Trends Influencing Innovation

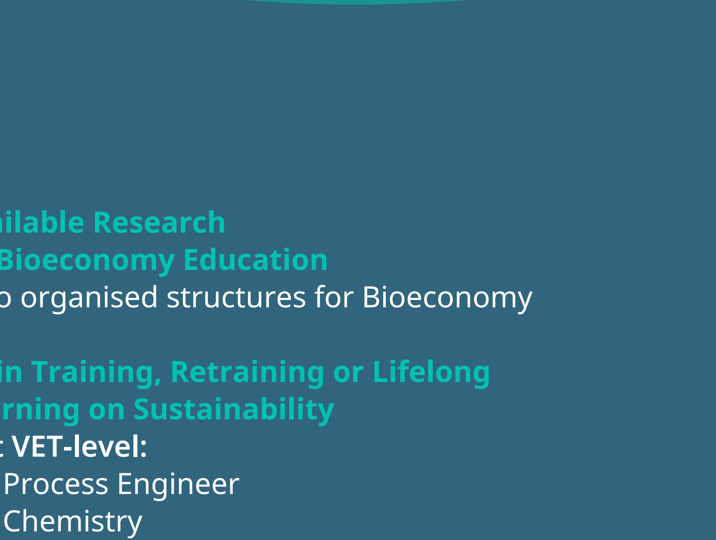
- The scope is widening from "biobased chemistry" to "green" chemistry (i.e. circular, biobased, and sustainable chemistry) and in 2023 to plant-based. Less explicit focus on bio-based, and more on circular.
- More bio-based economy, less bioeconomy.
- Decarbonisation, electrification of the industry.
- Collaboration & connection of educational actors of different education types and levels (especially vocational and higher education, etc.).

Expected Sub-Sectors / Value Chains

- Circular by design.
- Valorisation of residues and waste.
- Cascading (See SER document Bioeconomy in the Netherlands 2030 Vision on biomass).
- Biomass stocks must be optimised (cascading).
- Short-term: biomass is vital to realise the objectives of the (Dutch) Energy Agreement and the climate policy.
- Long-term: only use biomass for non-food and feed sectors when other renewable alternatives are scarcely available (Chemicals and materials; Aviation and shipping; Heavy long-distance road transport; High-temperature industrial heating).

Opportunities for advancement *(Growth, Career, Social etc.)*

- Provinces North Brabant and Zeeland support the transition towards a biobased economy. Both provinces are pushing entrepreneurs towards sustainability (valorisation of residues and waste).
- Support to start-up companies, and lifelong learning: Educational institutes and the provinces of North Brabant and Zeeland stimulate to deploy knowledge to address regional issues. Knowledge Pact for Higher Education in Brabant (Kennispact HO Brabant) to boost entrepreneurship, lifelong learning, and knowledge development. The same issues are key for vocational education, as agreed in the MBO-Kennispact.
- Increasing focus and catching up on practice oriented research (in Dutch: praktijkgericht onderzoek).



Governance, Education Levels & Skills

Governance structure in adult education on Bioeconomy, or on the wider topic of sustainability *(Higher Education, Vocational Training etc.)*

- Practice-oriented education is offered by universities of applied sciences
- Research-oriented education is traditionally offered by research universities
- Centres of Expertise play an important role in the practice-oriented research of universities of applied sciences
- Online Education
- Massive Open Online Courses (MOOC)
- Small Private Online Course (SPOC)

Organisation of Adult and Lifelong Learning

- Learning and development incentive scheme
- Lifelong learning credits: many courses are registered as Edubadges on a national website.
- The Netherlands Keeps Learning (Nederland Leert Door), free (online) training courses.
- SLIM budget for training and development
- Expedition Scheme for Sustainable Employability

Available Research on Bioeconomy Education

- No organised structures for Bioeconomy

Main Training, Retraining or Lifelong Learning on Sustainability

- **At VET-level:**
  - Process Engineer
  - Chemistry
- **At HBO-level:**
  - Chemistry, with a special focus on Biobased Economy
  - Chemical Technology with a special focus on Biobased Economy
- **For the green sector in the region, the most relevant education suppliers are:** Agricultural studies at HAS University of Applied Sciences

Available Research on Bioeconomy skills needed

- Flemish-Dutch INTERREG project **Grenzeloos Biobased Onderwijs (GBO)**
  - In the book of results, GBO project activities and results are briefly introduced
  - Market survey on needed competencies
  - Developed the European Biobased Knowledge Network (EBKN)

Linking Art & Bioeconomy Education

Bioeconomy education in which Art concepts are applied

8 case studies of bioeconomy education in which art concepts are applied were identified:

- Art as a stimulus of the needed skills
  - MU Hybrid Art House
  - BlueCity
- Art addressing learning styles
  - Design Thinking is a way of working within education and other initiatives. Some courses at Avans are fully set up around this innovative way of realising innovative products.
- Inspirational case studies from art to bioeconomy education
  - Bio-based Bridge, TUe
  - LandArtBrabant (LAB), the successor of Land Art Diessen
  - BioArt Laboratories
- Injecting the bioeconomy in design, art, architecture, etc. professions
  - Bio-based Pop-up and Grow Store, Bergen op Zoom
  - The Growing Pavilion
  - Exploded View Beyond Building

Marginalised Groups

Working with marginalised, disadvantaged, and minority groups is prioritised by focusing on residents included in the National Target Group Register regarding the "Banenafspraak." Additionally, newcomers, status holders, and people who do not speak Dutch are also prioritised. Relevant jobs and opportunities are identified to ensure the inclusion of these marginalised groups, with efforts directed at matching different types of work to the competencies, experiences, and skills of the target individuals. It is essential that guidance is offered either structurally or temporarily, and that any performance is appropriately compensated.

The primary needs of individuals from marginalised groups, particularly in integrating them into the bioeconomy, revolve around achieving a worthy existence. Social participation is closely linked with labour participation, and developing an individual's own income, autonomy, and self-esteem plays a key role in this process. Various existing educational and development activities support these efforts, helping to integrate marginalised groups into bioeconomy-related work.

Several organisations and services contribute to this integration, including the Employer Service Point, the Regional Mobility Team, the Employee Insurance Agency (UWV), municipalities, social development companies, and people development companies. Employers, social organisations, and foundations also play significant roles in providing opportunities for marginalised individuals to participate in the workforce.

SWOT Analysis

STRENGTHS

- Wide spectrum of sectors involved
- Competitiveness based on innovation
- Increase of employment / available job positions
- Existing National plan for achieving the goals
- Existing Educational Strategies – Defined policies and a well-structured Governance Existence of a broad spectrum of high-quality initiatives and organisations in the fields of Life-Long learning initiatives, Vocational training, mass information, etc
- Substantial overlapping and cooperation between the Bioeconomy Education Institutions and Art related institutions

WEAKNESSES

- Not fully valorised resources and products
- Bioeconomy is not fully aligned with the socioeconomic priorities of the country
- There is a National Strategy on Bioeconomy but there is no data on implementation levels of this strategy
- Fragmentation of activities and priorities
- Lack of an organisational umbrella
- No dedicated research on Bioeconomy Education available

OPPORTUNITIES

- Building strategic alliances
- Further exploitation of the developed digital background
- Making the Netherlands a recognised centre of bioeconomy/biobased development in Europe
- Benefitting from the existing educational background
- Organised structures for advancing opportunities on social educational and career levels

THREATS

- Potential decrease of biobased resources by 2050 due to climate impacts
- National policies and subsidy programmes favour established industries hampering the required transition
- Fragmentation and the lack of putting strategy into action remains
- Lack of a concrete National plan aiming to identify and then to integrate the marginalised groups

Consortium

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For more detailed information, visit The Netherlands regions page in our website.

BioGov.net

info@biogov.net
@biogovnet