



# Tools for Sustainable Biobased Projects

## International biobased and bioenergy project development tools

This factsheet presents the insights, tools and guidance materials that have been developed in the last years in the Netherlands Programme Sustainable Biomass.

- **Project developers** can use the information for further developing their own sustainable projects, based on their own local circumstances.
- **Policy makers** are provided with useful insights in how to best create the conditions and enabling environment for doing so.
- **Knowledge institutions, NGOs and consultancies** are provided with specific insights, research reports and guidances to continue their work on.

### **The Netherlands Programme Sustainable Biomass (NPSB)**

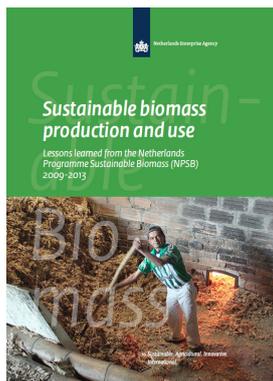
NPSB was developed to gain experience in the production and certification of sustainable, based on practical experiences. The NPSB programme has run from 2008 to the end of 2013. During its run, the programme has clustered knowledge from the biomass project portfolio and filled the knowledge gaps with supplementary research.

## Results and lessons learned

Business opportunities exist for sustainable biomass production and their effective use. These opportunities then should be structured in a convincing business case. Governments help by providing stable enabling environments for these opportunities.



The experiences developed by NPSB have resulted in a report with lessons learned and key recommendations along the biomass value chain (<http://bit.ly/1rt6gLk>).



The Green Matter Magazine provides an overview of the NPSB programme with news and insights from bright minds (<http://bit.ly/1xxoctl>).

### Crucial lessons and key recommendations along the biomass value chain

#### Creating availability of biomass

- Supply and demand change over time and influence trade and availability;
- Use realistic sustainability criteria for measuring biomass availability on the ground;
- Apply climate smart agriculture approaches for efficient biomass production.

#### Feedstock and innovations in conversion

- Adjust facilities to allow for conversion of large potentials of yet untapped feedstocks;
- Exploit the positive impacts by transforming traditional biomass uses into modern uses;
- Adapt new technologies to local needs and capacities.

#### Enhancing sustainable production

- Measure and monitor your sustainability impacts to enhance benefits and adjust in time;
- See biomass projects as possible contributors to rural development and food security;
- Develop business models (as integrated systems) driving towards better sustainability.

#### Guaranteeing sustainability

- Integrate sustainability requirements in law and align the supporting framework to create an enabling environment for innovative projects;
- Select your certification scheme in the design phase to anticipate on requirements;
- Use self-assessments as tool for continuous improvement of better practices.

#### Creating feasible business cases

- A structured approach of the business case is crucial to enhance funding opportunities, foresee risks and to introduce better practices;
- Align sustainability in day-to-day business: this contributes to a structured business case;
- Provide support (opportunities) to innovative projects to bridge their gap in competition with “business as usual”.

## Electronic access to the tools and guidance materials

The tools and guidance materials and the individual project reports are electronically available in the topics section Sustainable biomass of Netherlands Enterprise Agency website (<http://bit.ly/1xRXbo1>). Public material is grouped in the section Publications & results (<http://bit.ly/1whPQMP>). The table below assists you in finding the right tools and guidance.

### Start in Publications & results (<http://bit.ly/1whPQMP>) and continue to relevant sections for:

#### Creating availability of biomass

- Monitoring
- Crops
- Countries

#### Feedstock and innovations in conversion

- Crops
- Overview results and lessons learned

#### Enhancing sustainable production

- Assessing sustainability aspects
- Food security

#### Guaranteeing sustainability

- Guidance for certification
- Certification of indirect effects
- Handbook Biomass (solid)
- Policies and governance
- General reports

#### Creating feasible business cases

- Business opportunities
- Countries
- Finance
- General reports (Information Bulletins)

## Tools and guidance for creating availability of sustainable biomass

### Country potential studies and resource assessments

The section Monitoring (<http://bit.ly/1tZ6sop>) contains studies on biomass and bioenergy trade with the Netherlands. More information on production potentials for specific countries (Colombia, Vietnam, Indonesia, Brazil) is found in the section Countries (<http://bit.ly/V5bqrl>).

### Sustainability criteria and biomass availability

The report on alternative feedstock for charcoal (<http://bit.ly/WxZNGh>) and on the sustainability of the Brazilian sugar cane industry (<http://bit.ly/1tIsLUG>) provide you insights on how selection criteria may impact the potential availability of biomass.

With support from Netherlands Enterprise Agency, effort has been put at international level to develop tools that help national governments in their assessment of sustainability impacts of

bioenergy. Examples are the GBEP ([www.globalbioenergy.org](http://www.globalbioenergy.org)) and BEFS (<http://www.fao.org/energy/befs>) framework tools.

### Crops (<http://bit.ly/ZenQvS>)

Lessons are learned in the potential, efficient production and properties of various biomass resources. Section Crops (<http://bit.ly/ZenQvS>) contains information on:

- Switchgrass, bamboo and straw
- Wood waste
- Jatropha

Report Charcoal production from alternative feedstock (<http://bit.ly/WxZNGh>).

Report Setting up international biobased commodities trading chains (<http://bit.ly/1lXtDAX>).

## Tools and guidance for applicability of feedstock and innovations in conversion

Innovation is crucial, both on the conversion side as on the biomass production side. Several of the NPSB projects demonstrate innovative processes, the lessons learned and the points of attention – especially when introducing new technologies in developing countries.

Section Sustainable biomass projects (<http://bit.ly/1lxX2Bo>) shows that the majority of projects focused on improving efficiency of existing conversion technologies (e.g. by better using waste

streams). Project examples that demonstrated the use of innovative processes and/or feedstock are:

- The use of bamboo from Mozambique and Colombia for torrefaction, for further export to the Netherlands (projects (DBM02045 and DBI02006);
- The use of algae for bioethanol in Vietnam, demonstrated at pilot scale (DBM02020).

## Tools and guidance for enhancing sustainable production

When projects are carefully designed, positive impacts can be created and negative ones can be avoided. Doing so requires measuring, verifying and monitoring sustainability impacts. Tools and guidance documents have been developed for project developers and policy makers.

### Assessing direct and indirect sustainability effects (<http://bit.ly/1wLVjg6>)

NPSB has carried out an inventory of the direct and indirect sustainability effects in an early phase of implementation for various individual projects. The findings are written down in two separate reports: One on direct effects (<http://bit.ly/1nFHZk3>) and another on indirect effects (<http://bit.ly/1rtYeSe>).

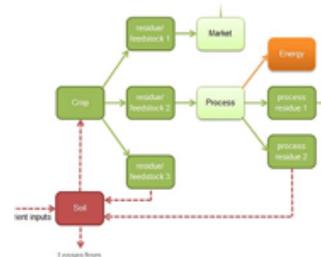
### Food security (<http://bit.ly/1sNcpUu>)

Food security is one of the most important sustainability topics. When projects are well designed, bioenergy production can make a contribution to food security through improved efficiency and transferring knowledge. Other options include e.g. intercropping.

Section Food security (<http://bit.ly/1sNcpUu>) contains the report Combining bioenergy and food security (<http://bit.ly/1qH6kcN>)

### The tool BioESoil

This tool has been developed to assess the impacts of bio-energy on soil quality. It takes into account nutrient losses during the bioenergy production process, potential nutrient return with residues and effects on soil organic matter. The tool suits both large and small-scale bioenergy users and producers. <http://bit.ly/1vTUL3E>



## Tools and guidance for guaranteeing sustainability

### Sustainability policy frameworks

- Support has been provided to governments (e.g. in Mozambique, Mali and the Ukraine) for developing their own sustainability policy frameworks. The report Mozambique Biofuel Sustainability Framework (<http://bit.ly/1uJBmbd>) is available in section Countries (<http://bit.ly/Vsbqr1>)
- Section Policies & governance (<http://bit.ly/Vs3Jla>) presents a comparison of the legislation frameworks for sustainability of biomass in the European Union and the USA (<http://bit.ly/Vs3Jla>)
- Information bulletins (from 2010 until 2013) are available in the section General reports (<http://bit.ly/1tgCWxv>). They provide insights in the main regulation initiatives and sustainability developments during the last years and across the world.

### Sustainability certification (<http://bit.ly/1wal4Wj>)

Certification is one of the best strategies to guarantee sustainability of a project. It also gives confidence to consumers and public. Section Guidance for Certification (<http://bit.ly/1wal4Wj>), contains several guidance documents and tools developed by NPSB to help companies select and implement certification in their operations. Examples include:

### Report: Handbook for solid biomass sustainability certification (<http://bit.ly/1qbf1Yn>)

- Assists market players with information for informed decision-making on sustainability certification
- Key features of 9 selected certification schemes

### Report: Selecting a biomass certification system (<http://bit.ly/1SFPSR>)

- A benchmark on level of assurance, costs and benefits
- Chain of custody of 8 systems (2BSvs, Bonsucro, ISCC, NTA8080, REDcert, RSB, RSPO, RTRS)
- Levels of assurance including audit rules and accreditation

Other examples are:

- Report: Smallholder certification in biomass supply chains. Guidance manual (<http://bit.ly/WCqTvP>)
- Module for the certification of indirect effects (LIIB module), which was used for testing several of the NPSB pilot projects. Information is available on: [www.liib.org](http://www.liib.org)

### Good corporate governance (<http://bit.ly/Vs3Jla>)

Section Policies & governance (<http://bit.ly/Vs3Jla>) presents examples of tools and activities that can help project developers and investors to implement good corporate governance practices in the planning, implementation and finalisation phases of biomass projects. A Factsheet on Good Corporate Governance (<http://bit.ly/Vs69A9>) is available.

# Tools and guidance for creating a feasible business case

## Business opportunities

The bioeconomy is developing rapidly. How to take advantage of these opportunities? The NPSB presents recommendations and information products in the section Biomass business opportunities (<http://bit.ly/1nYPgix>). Guidance to facilitate Dutch business in many countries is given in the section Countries (<http://bit.ly/VsbqrI>). These recommendations are also useful for policy makers and knowledge institutions.

### Report: International biomass market opportunities (<http://bit.ly/1sKUyRD>)

- Where do we stand?
- Global trends
- Obstacles and opportunities for a good business case
- Project examples

### Country information (<http://bit.ly/1pPpGgQ>)

- EU: Finland, France, Germany, Latvia, Spain, UK
- Non-EU: Australia, Brazil, Canada, China, Ghana, India, Russian Federation, South Africa, Thailand, USA

### Business opportunities in additional countries (<http://bit.ly/VsbqrI>)

- Colombia
- Indonesia
- Mozambique
- Ukraine
- Vietnam

## Financing opportunities (<http://bit.ly/XXM5yf>)

Finding funding for projects is not an easy task. NPSB has developed guidance documents and publications to help project developers find existing and emerging sources of climate finance. Guidance documents can be found in section Finance (<http://bit.ly/XXM5yf>). Examples given:

### Report: Climate finance for biomass (<http://bit.ly/vsZsZr>)

- Existing funds: CDM, Verified Carbon Standard, Gold Standard, Biodiversity Standards, etc.
- Emerging funds: NAMAs, NMMs, REDD+
- Non-market based funds

### Report: Tools for commercial project developers pilot projects (<http://bit.ly/1sNTWqX>)

- Compilation of tools to help project developers reach a bankable presentation of their projects
- Risk assessment, partner choices, future values, etc.

## Tools for developing a good business case

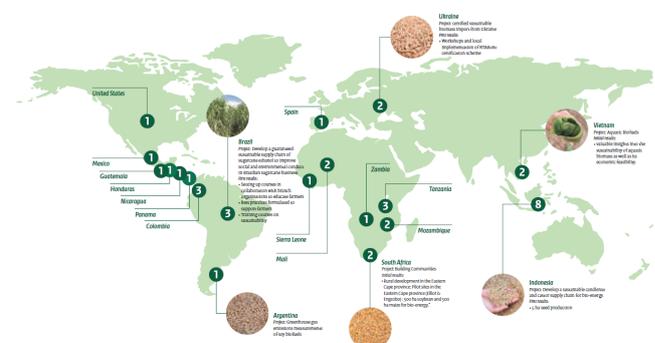
Within NPSB, commercial support has been provided to individual projects.

- Section Finance includes the report Tools for Commercial project development (<http://bit.ly/1sNTWqX>) providing tools and guidance to support project developers in developing a good, structured business case.
- The report Charcoal Production from Alternative Feedstock (<http://bit.ly/WxZNGh>) presents the Alternative Charcoal Tool (ACT) and gives information and insight in the potential for charcoal production from alternative feedstock.

# Lessons learned from individual projects help the market developing own projects

The NPSB launched and supported individual projects as shown in the section Sustainable Biomass Projects (<http://bit.ly/1lxX2Bo>) in 20 countries around the world. Lessons learned and recommendations help project developers to develop their own projects under their own circumstances and provide useful information for policy makers on how to best support bioenergy projects and the private sector.

Geographical presentation of the different NPSB biomass projects in the world, (RVO, 2014)



The findings and deliverables of the individual projects results are shared – sorted by continent and country in the section Sustainable biomass projects (<http://bit.ly/1lxX2Bo>):

	<i>Country</i>	<i>Resource</i>	<i>Project nr.</i>
<b>Africa</b>	Mali	Jatropha	DBM01002
	Mali	Various	DBM01005
	Mozambique	Jatropha	DBM01013
	Mozambique	Agricultural residues, SRC	DBM02045
	Sierra Leone	Palm oil	DBM02026
	South-Africa	Oilseeds	DBM02037
	South-Africa	Residual flows	DBM01012
	Tanzania	Jatropha	DBM01018
	Tanzania	Jatropha	DBM02025
	Tanzania	Jatropha	DBI 02007
<b>Asia</b>	Zambia	Jatropha	DBM01017
	Indonesia	Sugar sorghum	DBM01004
	Indonesia	Algae and palm oil	DBM02021
	Indonesia	Palm oil and soy	DBM02038
	Indonesia	Palm oil	DBM02039
	Indonesia	Palm oil	DBM01014
	Indonesia	Candlenut & castor bean	DBM02031
<b>Asia</b>	Vietnam	Residual wood	DBO 01002
	Vietnam	Algae (seaweed)	DBM02020
<b>Europe</b>	Spain	Various	DBI 02002
	Ukraine	Wood pellets	DBI 01010
	Ukraine	Wood pellets	DBI 01013
<b>North America</b>	USA	Urban wood and other low-grade residual flows	DBI 01006
<b>South America</b>	Argentina	Soy	DBI 02009
	Brazil	Biomass	DBI 02011
	Brazil	Sugar cane	DBM01011
	Colombia	Bamboo	DBI 02006
	Colombia	Palm oil	DBM01015
	Colombia	Sugar cane	DBM02011
	Nicaragua (Honduras, Guatemala)	Coffee waste & wastewater	DBM02032
	Mexico	Jatropha	DBM02050
	Panama	Cassava	DBM02024
<b>Transnational</b>	Brazil, Indonesia, South Africa, Mozambique	Various	DBM02047

# Netherlands Enterprise Agency continued support to biomass sustainability

The agency continues to support biomass sustainability through its:

## New programmes

The Public Private Partnership Facility (PPP) is aimed at improving water and food security, water safety and private sector development in emerging markets. The programme consists of:

- The Sustainable Water Fund (FDW) (<http://bit.ly/1vHxuEP>)
- Food Security and private sector development (FDOV) (<http://bit.ly/1lPlqPo>)

A complete overview of the programmes and subsidies run by Netherlands Enterprise Agency can be found at the webpage Subsidies & Programs (<http://bit.ly/1umPOku>)

## Knowledge centre

Extensive knowledge and information is available to answer your questions on bioenergy, certification and related topics. Project reports and presentations are available on request.

## Network

Continuing activities to exchange knowledge and information, and to establish links between new initiatives and private businesses with Dutch companies.

## Justification and contact details

### Justification

The NPSB portfolio was supported by the Dutch Ministries of Economic and Foreign Affairs via the Global Sustainable Biomass Fund and the Sustainable Biomass Import Fund. More than 100 publications including topic reports, tools and factsheets bundle all the knowledge and experiences acquired in these past 5 years.

#### Sustainable biomass programmes:

- The Sustainable Biomass Import programme (<http://bit.ly/1tFY9z5>) supported projects that had as objectives to promote sustainability of biomass production, develop and apply certification systems for imported biomass and counteract undesired indirect effects of biomass production.
- The Global Sustainable Biomass programme (<http://bit.ly/1oqEs8D>) supported projects to make sustainable the biomass production for energy purposes in developing countries.

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