



Biomass energy register
for sustainable site development for
European regions

Grant Agreement No. EIE/07/595/SI2.499697

BEn

**Biomass energy register for sustainable site development
for European regions**

Intelligent Energy – Europe (IEE)

Horizontal Action: Bio Business Initiative

Deliverable 3.3: Methods to collect data

Authors: Michael Jandewerth (Fraunhofer UMSICHT) and the BEn team

Date: September 2009



The sole responsibility of this publication lies with the authors. It does not necessarily reflect the opinion of the European Communities. The European Commission is not responsible for any use that may be made of the information contained therein.

1.	<i>Introduction</i>	2
2.	<i>Methodological approach</i>	2
3.	<i>Needed data</i>	3
3.1.	<i>Basic data</i>	3
3.2.	<i>Project specific data (application related data)</i>	3
3.2.1.	<i>Data on biomass potentials</i>	3
3.2.2.	<i>Data on energy sinks</i>	4
3.2.3.	<i>Other data</i>	4
<i>Annex I:</i>	<i>Added Value for obtaining data from authorities and others</i>	6
<i>Annex II:</i>	<i>Biomass-Potentials (Definition/Description)</i>	7
<i>Annex III:</i>	<i>Questionnaire for the identification of energy sinks in European Regions</i>	13
<i>Annex IV:</i>	<i>Questionnaire for the identification of energy sinks in the North East of England (English)</i>	15
<i>Annex V:</i>	<i>Questionnaire for the identification of energy sinks in the Emscher-Lippe Region (German)</i>	17
<i>Annex VI:</i>	<i>Questionnaire for the identification of energy sinks in the Umbria Region (Italian)</i>	19
<i>Annex VII:</i>	<i>Questionnaire for the identification of energy sinks in the Gostynin Lake District (Polish)</i>	21
<i>Annex VIII:</i>	<i>Biomass Classification</i>	24



1. Introduction

This deliverable describes the methodology for data assessment for the web based GIS register. In this register spatial data (=geodata) will be presented. Therefore this deliverable emphasises on the collection of spatial data, which will be integrated into the register. In order to start the collection an agreement regarding the content has to be found. The data collection starts with the so-called use case analyses. Both within the consortium as well as within the regional network meetings, project specific questions have been compiled which are to be answered with the help of the register. These issues are to be called use cases in this context. On basis of a catalogue of these question catalogues, the necessary geographical data for answering these questions have been derived. Possible use cases are for example:

- § Where are suitable energy consumers?
- § What amount of energy do they need?
- § What kind of energy is needed?
- § Who are the key actors for bio energy production in the area?

2. Methodological approach

The methodological approach for collection data comprises different phases. Each phase was carried out within the project team. Additionally, phase one was complemented during the regional meetings. The phases are:

1. Use case collection by questionnaire
2. Collection of required data on the basis of the use cases
 - § List of data
 - § Collection of data
 - § Basic data
 - § Project specific data
 - § Other data
3. Data integration

The methods for data collection are described in this deliverable. The relevant data to be collected are presented in deliverable 3.1. The technical integration is described in deliverable 3.2.

3. Needed data

The used analysis has led to the conclusion that both geographical basic data and project specific information have to be identified, processed and integrated for the realisation of the energy register. This deliverable provides a methodological overview on the methodological procedure for data collection. The data identified during the use case analysis are:

§ Basic data

§ Project specific data

§ Data on biomass potentials

§ Data on energy sinks

§ Other data

One project aim is the creation of an energy register on the basis of distributed data management. In this context distributed data management means that the storage and maintenance of the data bases may be performed at different places, at different organisations/authorities etc. It is essential for the register that these data bases can be accessed via standardised services (web mapping services) and thus be integrated into the register. This applies in particular to the basic data that will be described below:

3.1. Basic data

Basic data in the energy register serve for the orientation in space and for navigating within the system. They encompass generally topographic maps and aerial photographs.

The objective is to take already existing data of the public sector as basis in order to use synergetic effects in the distributed data use in compliance with the European and national geographical data infrastructures. From the methodological point of view cooperation relationships with authorities in the model regions have been initiated or are about to be set up. For the region Emscher-Lippe, the corresponding cooperation has been established with the Kreis Recklinghausen (county of Recklinghausen); geographical data of the infrastructure of the county can be accessed here. This type of data compilation and integration is to be considered as utilisation of distributed data resources. Through close cooperation between the partners WiN and Fraunhofer UMSICHT, this cooperation has been made possible. In other model regions, this process has been initiated.

Data bases in the other model regions have been researched via contacting the offices for national geographical data infrastructures.

Basically, the methodological procedure may be described as networking and as well as a direct exchange with the public sector, since the fundamental data are available here and the integration of information into the register is possible via internet technologies. To successfully establish contacts with the data provider, reasons to support the direct talks have been listed. For a list of added values, see annex I.

3.2. Project specific data (application related data)

3.2.1. Data on biomass potentials

The integration of relevant data for the description of biomass potentials requires a prior definition of the term biomass potentials, both in respect of usage within the project and in the sister projects "MAKE-IT-BE" and "BioEnerGIS".

For the spatial description of biomass potentials, two approaches and accordingly two different procedures for data compilation have been used. On the one hand area-wide mapping, e. g. on municipal level, has to be pursued. In this context, the data compilation is made via evaluation of publicly researchable/accessible statistical data on the individual biomass sources. The statistical data is linked to geographic units and can be shown in an area-wide presentation.

On the other hand biomass potentials can be presented as punctiform information. A dot/point on the map represents a potential site of a biomass source. Attributive information regarding the description of biomass will be linked to that spatial representation.

For the integration of punctiform information network efforts have to be undertaken. The key actors of biomass production have to be identified within in the network. They have to provide information about the kind and amount of biomass they can offer.

For the definition of biomass potentials and its spatial representation see annex II. For the classification of biomass potentials see annex IV.

3.2.2. Data on energy sinks

Energy sinks represent the energy consumption side. In the context of the BEn-project, these sinks are to be integrated into the energy register as point information. Meaning the location of an energy sink is being represented as dot/point on the map. The access via publicly accessible sources is not possible; hence an interrogation via questionnaires has to be performed to identify energy sinks and their attributive description.

This approach is structured in two phases. A rough estimate is made in a first step in order to identify energy sinks. The focus here is particularly on publicly owned real estate areas. As soon as these sinks have been identified, in a second step, details will be interrogated on the specific estates. The second step will also be based on a questionnaire.

The information yielded in the questionnaire interrogation is evaluated and incorporated into the data model of the energy register. For an exemplary questionnaire see annex III.

3.2.3. Other data

In addition, the observation of the geographical information sector offers further possibilities to compile data of the energy register. Observations will be made during participation in conferences as well as newsletters and special magazines. For example, the project Open Street is being pursued intensively in order to integrate freely accessible geographical data (in this case: data on street networks).

Furthermore, data on existing biomass installations and information about stakeholders regarding bio energy (biomass producer, installer, and consulting and or research organisations) will be accessed with the help of networks.

An overview of data to be integrated is shown in the figure below and presented in deliverable D.3.1 in detail.

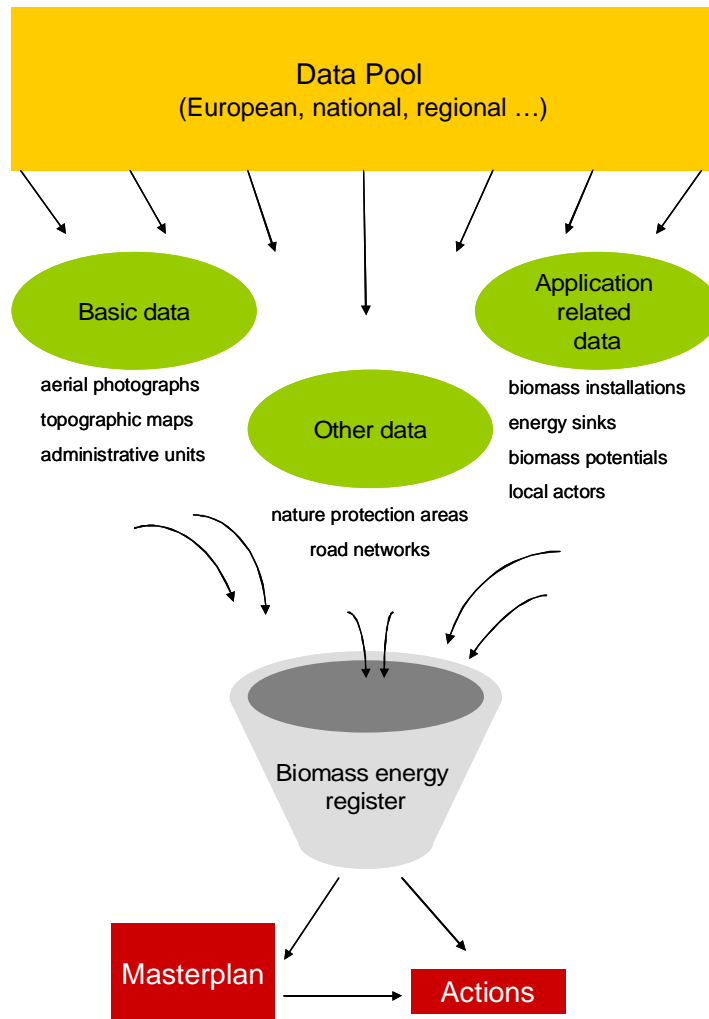


Figure 1: Data integration and information flow

Annex I: Added Value for obtaining data from authorities and others

Target group (Owner of data)	Added value of energy register
Public authorities	Diversification of income from agriculture and forestry
	Securing and creating new jobs for your region
	Localisation of energy and biomass resources as well as energy sinks in the region
	Strengthening the municipal income situation
	Cost savings by previous achievements of the BEn-project for each model region
	Advantages for planning authorities by in-depth analysis of energy-sinks and all kinds of renewable energy sources and therefore an increased planning-security. Utilisation as an instrument for strategic urban land-use planning, particularly by integration of renewable energies with the aim of a regional energy supply
	Strengthening the regional value added chain
	Supporting the creation of regional added value by combination and integrative utilisation of renewable energies
	Strengthening the spatial cooperation in regions European regions through uniform GIS application
	Transparent system for the public
	Breaking-down the national expansion targets for the the use of renewable energies to specific projects in the region
	Ensuring the transferability and expansion of the approach to other regions
	Strengthening of cooperations and investments in the local environment by spatial visualisation
	Supporting the political level in strategic decisions concerning renewable energies, planning options and the power supply in general
	Conservation of rural and cultural landscape structures
	Enhancement of the forestry and agriculture income situation. This is a positive response to the negative structural changes in agriculture.
	Strengthening the spatial cooperation in European regions through uniform GIS application
Mobilising biomass producers for energetic utilisation of biomass	
Industry	Increase of economic cooperation in the region or on regional level
	Support in sustainable site planning
	Support in strategic decision findings
	Medium-term safeguarding of the biomass supply, thus creating planning security for investments
	Direct energy supply (regional energy chain)
	Sustainable and secure energy supply and ultimately reduced dependency on imported energy
	Opening up new markets for novel and innovative technologies for small and medium-sized enterprises in the RE sector
	Increasing the efficiency of power stations by means of cogeneration technology for all kinds of renewable energies
General	Quick realisation through an existing platform and an existing and highly motivated network of stakeholders from different fields
	Immediate availability of a uniform database
	Spatially and temporally independent access to the database and possibility of regulating user access rights
	Selection and editing of data by using extensive and easy handling GIS-tools without detailed GIS-knowledge
	Optimised data maintenance and up-to-dateness through distributed data storage

Annex II: Biomass-Potentials (Definition/Description)



Biomass energy register
for sustainable site development for
European regions

Speaking about biomass-potentials may have totally different meanings depending on the view of the involved persons. This paper at first will show the definitions of biomass-potentials which are (based on the results of a literature research of Fraunhofer UMSICHT) most common in the bioenergy-sector. Subsequent the definitions which are use for the BEn-project are listed, and guidelines for the approach of their appraisal will be given.

1. Biomass potential definitions which will be found in literature

Theoretical potential

The overall maximum amount of terrestrial biomass which can be considered theoretically available for bioenergy production within fundamental bio-physical limits [Rettenmeier-2008].

Technical potential

The fraction of the theoretical potential which is available under the regarded technostructural framework conditions and with the current technological possibilities, also taking into account spatial confinements due to competition with other land uses (food, feed and fibre production) as well as ecological (e.g. nature reserves) and other non-technical constraints [Rettenmeier-2008].

Economic potential

The share of the technical potential which meets criteria of economic profitability within the given framework conditions [Rettenmeier-2008].

Implementation potential

The fraction of the economic potential which can be implemented within a certain time frame and under concrete socio-political framework conditions, including institutional and social constraints and policy incentives [Rettenmeier-2008].

Environmental potential

The environmental potential is the fraction of the theoretical potential which meets ecologic criteria related to biodiversity as well as to soil erosion (Smeets & Faaij 2007). Also referred to as "ecologic potential" [Rettenmeier-2008].

All potential-definitions given in English language by Rettenmeier are based on definition given in German language by Kaltschmitt [Kaltschmitt-2001].

[Rettenmaier-2008]: Rettenmeier, N. et Al.: „Biomass Energy Europe BEE- Status of Biomass Resource Assessments Version 1". IFEU, 2008

[Kaltschmitt-2001]: Kaltschmitt, M., Hartmann, H. [Hrsg.]: „Energie aus Biomasse – Grundlagen, Techniken und Verfahren". Springer Verlag, 2001



2. Potential-definitions used within the BEn-project

For the determination of biomass potentials within the BEn-project, especially for the definition within the energy-register the following definitions and procedures will be used.

Theoretical potential

(What is possible if nothing is influencing the biomass growth?)

Definition:

The overall maximum amount of terrestrial biomass which can be considered theoretically available for bioenergy production within fundamental bio-physical limits.

To obtain the appropriate data the following steps have to be carried out:

Step 1:

- **Determination of the maximum agricultural potential:**

All agricultural material will be taken into account; it will be derived from the available agricultural area of the region. No deductions will be made.

Based on the calculated amount of biomass the theoretical technical potential can be determined by using the technological pathway which gains the maximum energy amount from the available material.

- **Determination of maximum wood potential:**

All ligneous material which can be provided in the region will be considered. It will be derived from the sustainable yield of wood in the region.

Based on the calculated amount of biomass the theoretical technical potential can be determined by using the technological pathway which gains the maximum energy amount from the available material.

- **Determination of maximum residues potential imported in the region:**

All organic residual material which can be provided in the region will be considered.

Based on the calculated amount of biomass the theoretical technical potential can be identified by using the technological pathway which gains the maximum energy amount from the available material.

Note: *As preferential conversion technologies will be depending on the kind of material, the region and the available technologies, the definitions are not connected to the conversion technologies. Due to this it is mandatory to define on which basis or technology the potential was calculated.*

For example this may be:

1. **No processing at all:** *The theoretical potential of energy-crops in region X will be 300 000 t/a maize silage.*
2. **Referring to biogas production:** *The biogas potential of region X will be 300 GWh/a.*

Which form (unit) for the definition of the potential will does not matter as long as all necessary information will be added.

Step 2 (influencing factors can be introduced):

Subsequently, based on the theoretical-potential, deductions can be made e.g.

- Subtraction of material use for livestock breeding
- Addition of Livestock manure
- Subtraction of wood used as building materials or for furniture

Note: In case that influencing factors will be introduced, it is mandatory to describe the kind of the influencing factor.

Technical potential:

What is possible under the prevailing circumstances (including best available technology, best cultivation methods)?

Definition:

The fraction of the theoretical potential which is available under the regarded technostructural framework conditions and with the current technological possibilities, also taking into account spatial confinements due to competition with other land uses (food, feed and fibre production) as well as ecological (e.g. nature reserves) and other non-technical constraints.

The technical potential can be assessed for different biomass sources:

- A.1. Agricultural residues/crops**
- A.2. Livestock waste**
- A.3. Forestry biomass/residues**
- A.4. Co-products from Industries**
- A.5. Organic material from civil sector**
- A.6. Other types of organic material**

If possible the data should be evaluated on a municipal level.

Further explications of the types of biomass and subclasses are given in biomass classification file.

Some Examples (analog biomass classification file):

A.1. Agricultural residues/crops

A.1.1 – A.1.3) Energy crops

The technical potential of energy crops can be calculated with the help of expert estimations: Relation of arable land supposed to be rededicated to cultivation of energy crops can be estimated by regional experts. Assumptions regarding the kind energy crops (maize, short rotation coppice, rape seed...) and hence technology (biogas, combustion, biodiesel) can lead to conclusions regarding technical potentials of energy crops.

A.1.1 – A.1.3) Grass /-silage

Assumptions regarding the proportion of grass used for energy purposes will lead to the technical potential. Statistical data about existing hectare of grassland will be taken into account.

A.1.4) Straw for combustion

The technical potential can be calculated by assessing the area of cultivated crop, maize and oilseeds and the average yield. Via the proportion grain to straw an amount of straw can be calculated. Deduction can be made for litter and for the humus balance. Via the energy content of straw energy amounts can be calculated.

A.1.4) Beet and potato leaves for biogas

The hectares of beet and potatoes cultivated, the average yield and the relation of the leave to the fruit are basis for calculation of the theoretical potentials of this subgroup. The energy content (refer to literature) of the leaves lead to the technical potential of the subgroup.

A.2. Livestock waste

A.2.1) Manure from livestock farming

Statistical data on husbandry and energy content of manure are basically data for calculation of technical energy potential of this group. Deductions can be made regarding stable size and type of animal housing.

A.3. Forestry biomass/residues

A.3.1 – A.3.3)) Wood for combustion from the forest (fuel wood logs)

The timber share of energy wood is the basis for calculating energy potentials from the forest.

Relevant data has to be collected via statistics or questionnaires.

3. Definition of the present situation (equivalent to the baseline of the master plan)

**The present situation describes the current use of biomass for energetic purposes.
What is currently used for energy production?**

Practical approach:

- Regarding forests, please inquire at the forest agencies or relevant wood industries how much wood is currently available for material use and for energy purposes (best: use of wood e.g. in m³ per hectare). This should be the easiest way to get a rough value. It is clear that the result covers a range of values but it should be a rough estimate which has to be discussed with the local stakeholder network.
- Regarding agriculture, please inquire at the chamber of agriculture or other local boards to identify the land which is already used for energy crops. The same sources of information should be used to calculate the amount of straw used for combustion, the amount of beet and potato leaves for biogas and the grassland used for biogas. The data on manure of animals should be also collected in the region in cooperation with the local

stakeholder network. Not all manure will be collected due to animals on fields or to small amount of manure. Please ask the relevant stakeholders to deliver realistic amounts.

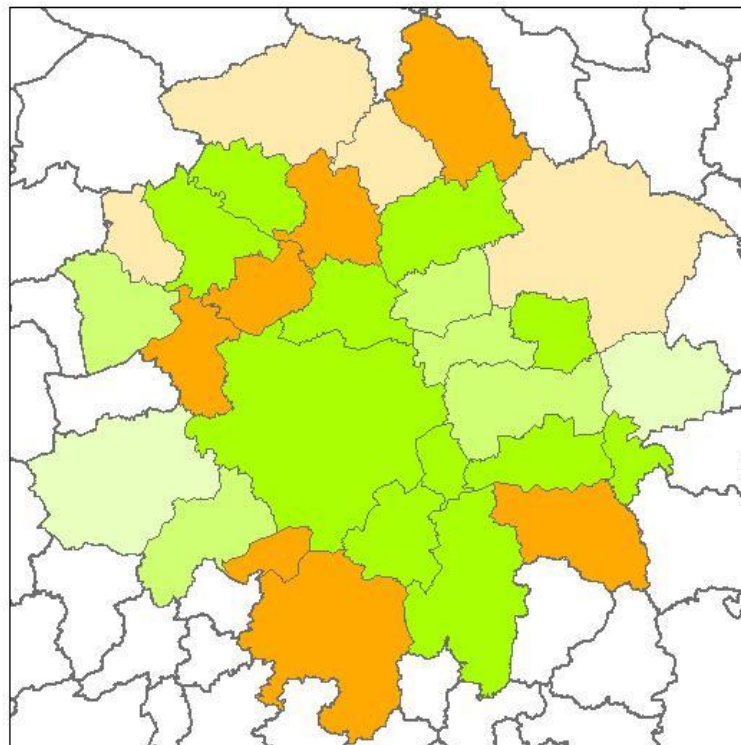
- Regarding the waste sector, you should access municipal waste collectors for municipal waste, bio waste, residues from arboriculture. Please collect also data on the current use of sewage sludge, landfill gas and food waste for biogas for the corresponding stakeholders.

Note: Some data might correspond to the use of installations in the region where biomass is transformed into energy. This will be the case for landfill gas, sewage sludge if the biomass stays in the region. Please collect also data on existing bioenergy facilities (e. g. biogas plants, wood fired plants etc.) with regard to input material-and installed power.

Spatial description of potentials:

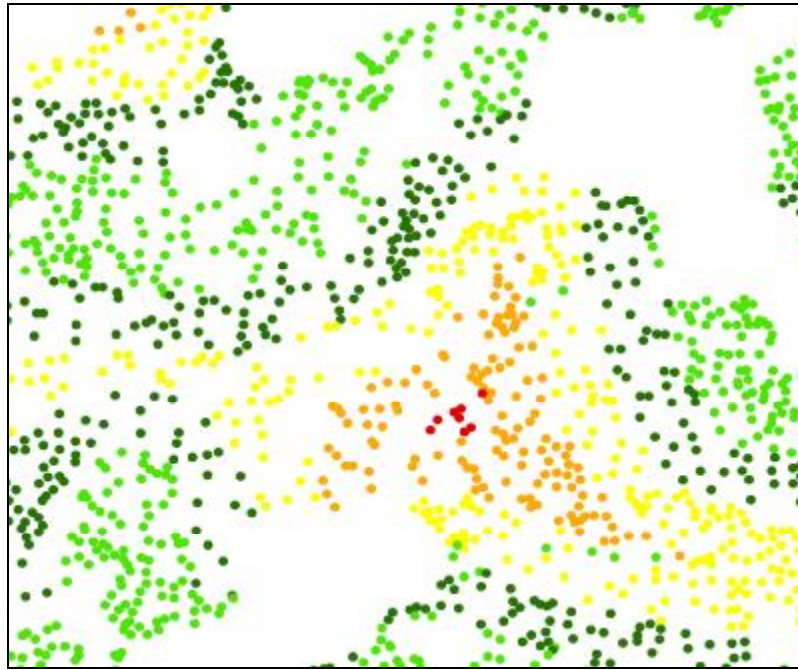
The idea is to present the collected data in the register as a spatial pattern. The first idea is to present the data on a communal level (cf. figure below).

Image 1-1:
**Spatial
description of
potentials**



Alternatively the data can be related to local stakeholders if such data is available and free for publication (facilities of food processing industries, big local farms, sawmills...)

Image 1-2:
Description
based on
distinctive
spatial
location, e.g.
point of
occurrence



Annex III: Questionnaire for the identification of energy sinks in European Regions



Biomass energy register
for sustainable site development for
European regions



Dear Sir/Madam,

As a **first step** in the process of building up a register of sites potentially suitable for biomass in the North East we would like to identify public buildings/plants which are being renovated at the moment or are planned to be built in future and have a significant energy demand. We would suggest that any site (or group of sites which could be considered for district heating – generally within a 1km radius) which has a potential energy use of greater than 50kW installed capacity is included in the list.

Following building types are of interest for the BEn register in the first instance:

- *children nurseries*
- *primary schools*
- *secondary schools*
- *colleges*
- *universities*
- *hospitals*
- *county halls*
- *other municipal buildings*

The objective of our questionnaire is the depiction of all energy sinks (heat loads) in publicly-run buildings in the North East region on an online map. This map will be used to help county and regional-level decision-makers - as well as businesses - see which areas would be most suitable for focusing on support for individual or district biomass heating systems.

Any data we receive will be kept confidential. The publicly-available information will include only the energy demand and type of energy required (heat, electricity, cold), and no site will be able to be identified from the mapping facility as data will be aggregated at a multi-site level.

If desired we will offer an link on the map redirecting an interested viewer to the authority or managing establishment responsible for the building or group of buildings for direct contact.

Thank you very much for your cooperation!

In case of any questions or problems concerning the responses to this questionnaire, please feel free to contact:

Kasia Zielewska

Northwoods / Rural Development Initiatives Ltd

Phone: 01670 513292

E-Mail: Katarzyna.zielewska@ruraldevelopment.org.uk



Annex IV: Questionnaire for the identification of energy sinks in the North East of England (English)



Biomass energy register
for sustainable site development for
European regions



Questionnaire

Biomass Energy register for sustainable site planning for European regions

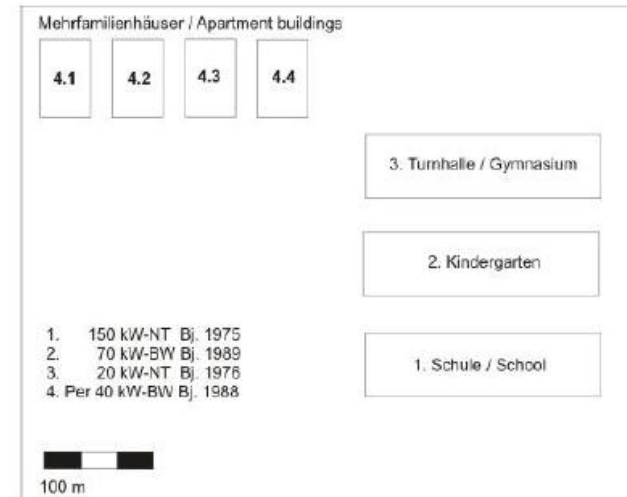
In a **first step** we would like to identify public buildings/plants which are being renovated (or being planned to) or are planned to be built in future, and have demands on energy.

In a possible **second step** we are going to define suitable sites/buildings and require more detailed information.

The objective of our interrogation is also the cartographic depiction of all energy sinks in public-run buildings of the Northwood region/district in order to define buildings which are suitable for the supply of biomass-powered energy.

The questions are therefore not only for single objects, but also for groups of objects to comprise the energy supply demands in a district heating network. Therefore the lower capacity limit of 50 kW for single objects is only for **first orientation**.

Example:



We assure that your data will be handled confidentially. The energy register to be made available to the public will include only the energy demand and type of energy produced. The assignment of plants to locations will be afflicted with certain impreciseness in order to prevent the direct identification of an object.

1. General data on the building, describing the type of building (e.g. school):

1.
2.
3.
4.



2. Could several buildings be supplied comprehensively via a district heating system?

1.
2.
3.
4.

3. Entry points/ Boiler capacity:

1.
2.
3.
4.

4. Energy source:

1.
2.
3.
4.

5. Is an energetic database (e.g. regarding energy passport) already available?

6. Do you know the coordinates of the Geometry of the objects?

X, Y-Coordinates (GPS, Google Earth)	X-Coordinate	Y-Coordinate
For the visualization, information about the X,Y-Coordinates is helpful (such as from GPS or Google Earth)		

Thank you very much for your cooperation!

In case of any questions or problems concerning the responses to this questionnaire, please feel free to contact:

Kasia Zielewska
 Northwoods / Rural Development Initiatives Ltd
 Phone: 01670 513292
 E-Mail: Katarzyna.zielewska@ruraldevelopment.org.uk



Annex V: Questionnaire for the identification of energy sinks in the Emscher-Lippe Region (German)



Biomass energy register for sustainable site development for European regions



Fragebogen

Biomasse-Energiekataster zur nachhaltigen Standortentwicklung in europäischen Regionen

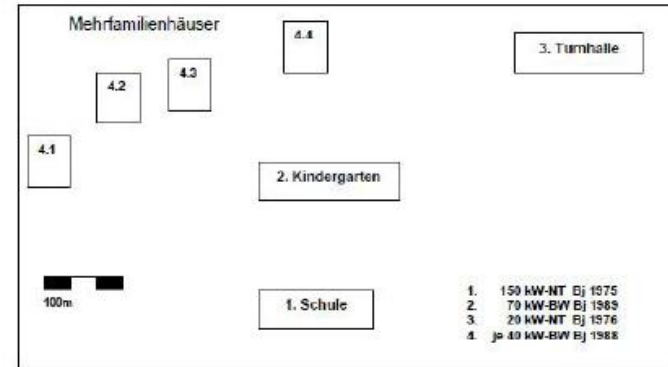
In einem ersten Schritt möchten wir zunächst die öffentlichen Objekte ermitteln, die saniert werden (oder zukünftig saniert werden sollen) oder zukünftig errichtet werden und Energie benötigen.

In einem möglichen zweiten Schritt werden wir nach einer Auswertung, die geeigneten Objekte identifizieren und genauere Daten abfragen.

Ziel dieser Erhebung ist unter anderem eine kartographische Darstellung aller Energiesenken in öffentlichen Gebäuden der Emscher-Lippe Region, um Gebäude zu identifizieren, für die sich evtl. eine Energieversorgung mit Biomasse anbietet.

Die Anfrage richtet sich nicht nur an Einzelobjekte – die Möglichkeit einer Zusammenfassung der Energieversorgung durch ein Nahwärmenetz soll auch mit in Betracht gezogen werden. Deshalb ist eine Leistungsbegrenzung nach unten mit 50 kW nur ein Richtwert.

Beispiel:



Ihre Angaben werden selbstverständlich vertraulich behandelt. Im öffentlich zugänglichen Energieregister, werden ausschließlich der Energiebedarf und die Energieart aufgenommen. Die Verortung erfolgt mit einer gewissen Unschärfe, so dass die eindeutige Zuordnung zu einem Gebäude erschwert wird.

1. Objektangaben

In welchen Objekten ist die Energieversorgung sanierungsbedürftig? Welche Objekte sind in Planung?

1.
2.
3.
4.



2. Könnten mehrere Objekte über ein Nahwärmenetz zusammen versorgt werden?

1.
2.
3.
4.

4. Energieträger

1.
2.
3.
4.

3. Anschluß/Kesselleistungen

1.
2.
3.
4.

5. Gibt es schon eine „energetische“ Datenbank (z. B. im Hinblick auf den Energieausweis)?

1.
2.
3.
4.



5. Kennen Sie die Koordinaten bzw. die Geometrie der Objekte?

X,Y-Koordinaten (GPS, Google Earth) X Y	X	Y
Die Darstellung wird durch Angabe der X, Y-Koordinaten ermöglicht z. B. durch ein GPS oder Google Earth		
Geometrie aus der ALK (falls verfügbar)		
Ideal ist für uns eine Weitergabe der Gebäudegeometrie aus der automatisierten Liegenschaftskarte (ALK).		

Vielen Dank für Ihre Mitarbeit!

Sollten bei der Bearbeitung des Bogens Fragen aufgetreten sein, wenden Sie sich bitte an:

Herrn Günter Fritsch
 WiN Emscher-Lippe GmbH
 Tel.: 02366 109826
 E-Mail: guenter.fritsch@emscher-lippe.de

Annex VI: Questionnaire for the identification of energy sinks in the Umbria Region (Italian)



Biomass energy register
for sustainable site development for
European regions



Questionario

Biomass Energy register for sustainable site planning for European regions

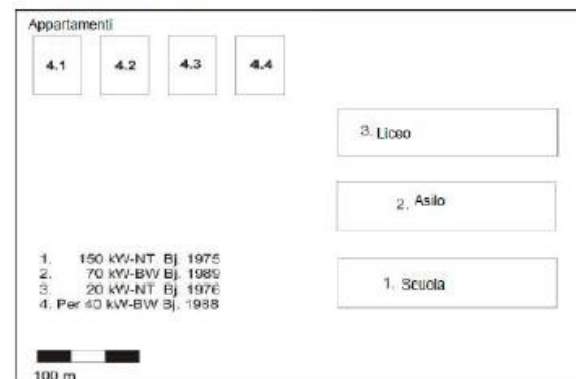
In un primo passo gradiremmo identificare gli edifici pubblici o gli impianti che sono in via di rinnovamento, o che sono pianificati in futuro ed hanno interessanti fabbisogni energetici.

In un secondo passo si definiranno i siti/edifici interessanti e si richiederanno più informazioni.

L'obiettivo del questionario è anche la visualizzazione grafica su mappe di tutti i sink di energia negli edifici pubblici del distretto energetico al fine di definire gli edifici che sono adatti alla produzione di bioenergia.

Le domande non si riferiscono perciò solo ad oggetti singoli, ma anche a gruppi di oggetti che comprendono la domanda e offerta di energia di una rete di teleriscaldamento, per esempio. A questo scopo si stabilisce un limite inferiore di 50 kw per gli oggetti singoli, in modo da avere un primo valore soglia.

Esempio:



Assicuriamo il fatto che i vostri dati saranno trattati in modo confidenziale. Il registro dei sink sarà reso disponibile pubblicamente ed includerà solo la domanda energetica e le tipologie di energia prodotte. L'associazione dell'impianto alla località sarà affetta da una certa imprecisione al fine di prevenire la diretta identificazione di un oggetto.

1. Dati generali sugli edifici, che descrivono la tipologia di edifici (e.s. scuole)

1. 2. 3. 4.

2. Si possono connettere diversi edifici attraverso reti di teleriscaldamento?

1. 2. 3. 4.

3. Digitare i punti/ la capacità della caldaia

1. 2. 3. 4.

4. Fonte di energia

1. 2. 3. 4.



5. E'già disponibile un daabase energetico della zona?

--

6. Si è a conoscenza della geometria e delle coordinate degli oggetti?

X, Y-Coordinate (GPS, Google Earth)	X-Coordinata	Y- Coordinata

Grazie per il vostro aiuto

In caso di domande o problemi riguardo alle risposte a questo questionario, si prega di contattare:

Gianluca Cavalaglio
CRB Biomass Research Centre
Tel.: +39 075.500.4209
Fax: +39 075.515.3321
E-mail: cavalaglio@crbnet.it

Annex VII: Questionnaire for the identification of energy sinks in the Gostynin Lake District (Polish)



**Biomass energy register
for sustainable site development for
European regions**



Ankieta

Rejestr potencjału energetycznego biomasy dla zrównoważonego planowania w Regionach Europejskich

Szanowni Państwo,

W **kroku pierwszym** chcielibyśmy zidentyfikować budynki publiczne/zakłady, które są poddawane renowacji (planowana jest ich renowacja) lub planowana jest budowa nowych obiektów w przyszłości, które będą wymagały zaopatrzenia w energię.

W **kroku drugim**, o ile będzie to możliwe, chcielibyśmy wskazać lokalizację budynków w oparciu o bardziej szczegółowe informacje.

Celem naszego badania jest także stworzenie podstaw do kartograficznego opisu budynków użyteczności publicznej w regionie Pojezierza Gostynińskiego wymagających zaopatrzenia w energię w celu zidentyfikowania tych budynków, dla których są podstawy do wykorzystania energii wytwarzanej z biomasy.

Pytania dotyczą nie tylko pojedynczych obiektów, ale również grup obiektów, które mogą być zaopatrywane w energię przez sieć grzewczą. Niemniej jednak przyjęto orientacyjnie, że najmniejsza moc dla pojedynczych obiektów wynosi 50 kW.



Przykład:



Gwarantujemy, że dane, które Państwo przekażą nie będą upowszechniane. Rejestr energetyczny, aby mógł być powszechnie dostępny będzie zawierał tylko informacje o zapotrzebowaniu na energię i typie energii wytworzonej. Określenie lokalizacji geograficznej zakładów zostanie przeprowadzone z pewnym przybliżeniem, w celu uniknięcia bezpośredniej identyfikacji obiektu.

1. Ogólne dane dotyczące budynku, opis typu budynku (np. szkoły):

- 1.
- 2.
- 3.
- 4.

2. Czy jest możliwość zaopatrywania grupy budynków w energię w ramach sieci grzewczej?

- 1.
- 2.
- 3.
- 4.

3. Punkty wejścia / Pojemność kotła

- 1.
- 2.
- 3.
- 4.

4. Źródło energii

1. 2. 3. 4.

5. Czy dostępna jest baza danych o stanie energetycznym budynków (np. świadectwa energetyczne budynków)?

--

Czy znają Państwo współrzędne lub geometrię obiektów?

Współrzędne X, Y (GPS, Google Earth)	Współrzędna X	Współrzędna Y
Dla celów wizualizacji pomocne są informacje o współrzędnych X, Y (na przykład pochodzące z systemu GPS lub Google Earth)		

Bardzo dziękujemy za współpracę!

W razie pytań lub wątpliwości dotyczących odpowiedzi na pytania zawarte w ankiecie, prosimy o kontakt z

Panią Agnieszką Żukowską

Stowarzyszenie Gmin Turystycznych Pojezierza Gostyńskiego

09-529 Łąck,

ul. Lipowa 6

Tel/Fax (+48 24) 261 40 54

E-mail: stowamin@wp.pl

BEn – D3.3 Methods to collect data



Annex VIII: Biomass Classification

Number	Sub-class	Origin	Types of biomass	Categories (Examples)	Possible utilisation (B) Use of biomass (orange font marked for energy purposes)
Agricultural residues/crops (A.1)					
A.1.1	Grown on arable land	Arable and permanent cropland incl. SRC	Harvest from arable and permanent crop land incl. annual energy crops and SRC excluding residues	A.1.1.1 Short rotation crops (SRC) (e. g. willow, poplar) A.1.1.2 Grass /-silage A.1.1.3 Energy crops (e.g. corn) A.1.1.4 Energy grasses (e.g. Miscanthus, reed canary grass, switch grass)	<i>Different uses are possible: Incineration: (Pellets e. g. from straw [B1] wood chips from short rotation crops Bio-chemical conversion (Crops) [B4] Building blocks for the chemical sector: (e. g. starch, sugar, oils...) Animal feed Food</i>
A.1.2	Grown on grassland	Permanent grassland (meadows and pastures)	Permanent or annual energy crops/grass excluding residues	A.1.2.1 Short rotation crops (SRC) (e. g. willow, poplar) A.1.2.2 Grass/ -silage A.1.2.3 Energy crops (e.g. corn) A.1.2.4 Energy grasses (e.g. Miscanthus, reed canary grass, switch grass)	<i>Different uses are possible: Incineration: (Pellets e. g. from straw [B1] wood chips from short rotation crops Bio-chemical conversion (Crops) [B4] Building blocks for the chemical sector: (e. g. starch, sugar, oils...) Animal feed Food</i>
A.1.3	Grown on marginal land	Other land (degraded land, mine dumps,...)	Permanent or annual energy crops/grass excluding residues	A.1.3.1 Short rotation crops (e.g. willow, poplar) A.1.3.2 Grass /-silage A.1.3.3 Energy crops (corn) A.1.3.4 Energy grasses (e.g. Miscanthus, reed canary grass, switch grass)	<i>Different uses are possible: Incineration: (Pellets e. g. from straw [B1] wood chips from short rotation crops Bio-chemical conversion (Crops) [B4] Building blocks for the chemical sector: (e. g. starch, sugar, oils...) Animal feed Food</i>
A.1.4	Residues	Agr. cultivation and harvesting activities	Dry residues (Harvesting residues e. g. straw)	A.1.4.1 prunings from woody crops A.1.4.2 Corn stover A.1.4.3 Straw A.1.4.4 Other husks	<i>Fermentation -> Biogas [B1] Incineration Material/Fertilizer for soil Litter/mulch/bedding for animals</i>
Livestock waste (A.2)					
A.2.1	From livestock farming	Animal excrements and litter	Wet and semi-wet residues/manures	A.2.1.1 Solid/shovelable manure (including used straw from stables) A.2.1.2 liquid manure A.2.1.3 grass/ -silage	<i>Fermentation for biogas Fertilizer</i>
Forestry biomass/residues (A.3)					
A.3.1	From forestry	Forests and other woodland incl. tree plantations	Harvest from forests and other wooded land incl. tree plantations	A.3.1.1 wood blocks (big dimensioned wood (bigger than 16 cm diameter) A.3.1.X Christmas tree plantations A.3.1.Y Special plantations	<i>Incineration (logs, pellets, wood chips) Material use (e.g. Furniture, boards, fences)</i>
A.3.2	From trees outside forests (landscape)	Trees outside forests incl. orchards and vineyards, public green spaces and private residential gardens	Harvests from trees outside forests incl. orchards and vineyards, excl. residues	A.3.2.1 wood blocks (big dimensioned wood (bigger than 16 cm diameter) A.3.2.X wood chips from logs, branches...	<i>Incineration (logs, pellets, wood chips) Material use (e.g. Furniture, boards, fences)</i>
A.3.3	Residues	Cultivation and harvesting/logging activities in all of the above incl. landscape management	Cultivation and harvesting/logging residues (twigs, branches, thinning material), prunings from fruit trees and grapevines etc.	A.3.3.0 wood blocks A.3.3.1 wood chips from thinnings A.3.3.2 tree bark	<i>Incineration (logs, pellets, wood chips) Material use (e.g. Furniture, boards, fences), Cork</i>

Number	Sub-class	Origin	Types of biomass	Categories (Examples)	Possible utilisation (B) Use of biomass (orange font marked for energy purposes)
Co-products from industries (A.4)					
A.4.1	Co-products from agro-industrial activities	Processing of agricultural products, livestock products, e.g. for food	Processing residues (e.g. pits from olive pitting, shells/husks from seed/nut shelling and slaughter waste)	A.4.1.1 Rice husks A.4.1.2 Nut shells A.4.1.3 Olive pomace A.4.1.4 Grape pomace A.4.1.5 Slaughter waste	<i>Incineration, e.g. in CPH-plants</i> <i>Bio-chemical treatment</i> <i>Fermentation -> Biogas</i> <i>Fertiliser, Compost</i>
A.4.2	Co-products from wood processing activities	Wood processing, e.g. industrial production	Wood processing by-products and residues (sawdust, bark, black liquor etc.)	A.4.2.1 Sawdust A.4.2.2 Bark A.4.2.3 Off-cuts A.4.2.4 Waste from production of paper including black liquor	<i>Incineration, e.g. Waste or pellets (from saw dust) in CPH-plants</i> <i>Material use in chipboard production, soil conditioner</i> <i>Fertiliser</i>
A.4.3	Co-products from other industries and trade (tertiary residues)	Industry and trade (excl. forest industry, agro-industry, wood industry)	Waste incl. woody fractions, e.g. bulk transport packaging, recovered demolition wood (excl. wood which goes to non-energy uses), incl. sewage sludge	A.4.3.1 Wood chips A.4.3.2 Industrial sewage sludge A.4.3.3 Demolition wood (also from households) A.4.3.4 Landfill gas from stored biomass	<i>Incineration, e.g. in CPH-plants</i> <i>Material use in chipboards</i>
Organic material from civil sector (e.g. MSW, parks/gardens) (A.5)					
A.5.1	Organic material from households (tertiary residues)	Private Households	Organic household waste incl. wood fractions, e.g. food leftovers, waste paper, discarded furniture, incl. sewage sludge	A.5.1.1 Demolition wood (see also A.4.3.3) A.5.1.2 Biodegradable municipal waste (also kitchen waste) A.5.1.3 Sewage sludge (see also A.4.3.1, is often collected in one system) A.5.1.4 Landfill gas from stored biomass	<i>Fermentation -> Biogas</i> <i>Incineration ,</i> <i>Fertiliser,</i> <i>Compost</i>
A.5.2	Organic material from landscaping	Trees outside forests incl. orchards and vineyards, public green spaces and private residential gardens	Harvests from landscaping incl. orchards and vineyards, excl. residues	A.5.2.1 Prunings A.5.2.2 Grass	<i>Fermentation -> Biogas</i> <i>Incineration ,</i> <i>Fertiliser,</i> <i>Compost</i>
Other types of organic material (A.6)					
A.6			Algae,...		<i>Incineration, fermentation (bio-chemical treatment)</i> <i>Material use (fertiliser)</i>