Title (orig.): Analýza potenciálu biomasy v České republice

Language: CS

Summary:
This publication presents the outcomes of the MŽP SP/3G/24/07 project implemented by the The Silva Tarouca Research Institute for Landscape and Ornamental Gardening (RILOG), (in original Výzkumný ústav Silva Taroucy pro krajinu a okrasné zahradnictví, v.v.i. (VÚKOZ)). The book consists of eight chapters dealing mainly with determining the biomass potential of arable land and economy of energy from biomass. There are 26 colored graphic attachments at the end of the publication, which display various map outputs describing the resource maps and the attachment. Potential of forest harvest residues by age levels is also indicated in this attachment.

Link:
[Website of the project](Ministry of Agriculture of the Czech Republic)
[Homepage of the institute](Ministry of Agriculture of the Czech Republic)

---

Title (orig.): Možnosti energetického využití biomassy

Language: CS

Summary:
This publication tries to indicate the possibility of biomass energy utilization, set up appropriate support mechanisms and the direction of development of technology for biomass utilization.

The booklet helps to zoom on the Biomass Action Plan 2012 – 2020 for citizens, to describe the potential of biomass, and discovers in detail the possibility of using biomass for wider public.

The publication is thus divided into three thematic sections, according to whom it is addressed, practical application of knowledge of Biomass Action Plan 2012-2020:

- possibilities of cultivation and utilization of biomass energy in agriculture
- possibilities of energy use of biomass in the municipalities
- possibilities of energy use of biomass in households.

Link:
[Možnosti energetického využití biomassy (PDF)](Ministry of Agriculture of the Czech Republic)

---
**Title (orig.):** Ak?ní plan pro biomasu v ?R na období 2012–2020  
**Language:** CS  
**Summary:**  
Biomass Action Plan in the Czech Republic for the period 2012-2020 presents an analysis of the biomass use in the Czech Republic for energy purposes, and proposes appropriate measures for sustainable agro-energy interconnections till the year 2020.  
The material includes information on key areas of energy use of biomass, including the use of solid biomass for direct combustion to produce heat and electricity, biogas production and liquid biofuels and proposes appropriate measures for the sustainability of the biomass field by 2020.  
Biomass Action Plan presents real potential of various types of biomass for efficient energy utilization.  
The Biomass Action Plan is built on a previous similar document prepared by the Ministry of Agriculture for years 2009-2011, which indicated the possibility of biomass energy utilization.  
**Link:** [Ak?ní plan pro biomasu v ?R na období 2012–2020 (PDF)](#)  

|-----------------------------------------------------|--------------------------------------------------------|--------------------------------|-------|----|

**Title (orig.):** Národní ak?ní plán pro energii z obnovitelných zdroj?  
**Language:** CS  
**Summary:**  
The National Action Plan for energy from renewable sources sets a national target for the share of energy from renewable sources by 2020 in electricity, heating, cooling and transport. The publication describes the set and projected trajectory of achieving the sets objectives.  
**Link:** [Národní ak?ní plán ?eské republiky pro energii z obnovitelných zdroj?](#)  

The document sets a strategic task for the development of Czech energy for another 25 years. The mission of National Energy Policy of the Czech Republic is to provide reliable, safe and environmentally friendly energy supply for the needs of the population and national economy, and also to ensure that the Czech Republic will have a steady supply of energy in case of crisis situations.

The main reason for the approval of the State Energy Policy is needed to clearly articulate priorities and strategic objectives of the state within the energy sector and provide stability to investors, citizens and government in today’s turbulent and dynamic period.

National Energy Concept identifies strategic priorities, which should contribute to the fulfillment of top targets.

Link:
- State Energy Policy of the Czech Republic (PDF)
- Aktualizace státní energetické koncepce ?eské republiky (ZIP)

Title (orig.): Urban Tree Utilization and Why It Matters

Language: EN

Summary:
Comprehensive article about the problematic of treatment of urban wood in the USA.

Link:
- Urban Tree Utilization and Why It Matters
<table>
<thead>
<tr>
<th>Author</th>
<th>Title (in English)</th>
<th>Publisher</th>
<th>Year</th>
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<tbody>
<tr>
<td></td>
<td><strong>Title (orig.):</strong> La mayor parte de los incendios serían evitables mediante un plan para la limpieza de las masas forestales**</td>
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<td><strong>Language:</strong> ES</td>
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<td></td>
<td><strong>Summary:</strong> The withdrawal of forest biomass surplus allows to decrease the forest fires occurrence 70 %, and in case of fire, and in case of occurrence, allows a faster and most efficient extinction and also a better forest recovery.</td>
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<td></td>
<td><strong>(LCMW) Relevance:</strong> The forests cleaning are an important source of employment and renewable energy.</td>
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<td><strong>Link:</strong> <a href="#">La mayor parte de los incendios serían evitables mediante un plan para la limpieza de las masas forestales</a></td>
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<tr>
<td>La Voz de Galicia</td>
<td>Recycling and biomass plant to use biomass from roadside cleaning</td>
<td>La Voz de Galicia.es</td>
<td>2007</td>
<td>ES</td>
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<td></td>
<td><strong>Title (orig.):</strong> Sugieren una planta de reciclaje y aprovechamiento de biomasa para residuos de cunetas</td>
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<td><strong>Language:</strong> ES</td>
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<td></td>
<td><strong>Summary:</strong> Pontevedra could carry out a project to use biomass from roadsides for energy purposes if the initiative proposed by the Workers’ Commissions succeed. The trade Union asked the Council, to which are attributable 2,200 km of roads, to launch the initiative. The plant would produce energy and fertilizers or both at the same time. It would also treat the biomass residues from different centres and farms of the provincial agency. Additionally it would process the residues from the forest cleaning, agriculture and vineyards. The residues from the roadside cleaning are many times abandoned in site and therefore become a dangerous fuel in case a fire starts.</td>
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<td><strong>Link:</strong> <a href="#">Sugieren una planta de reciclaje y aprovechamiento de biomasa para residuos de cunetas</a></td>
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<tr>
<td>Kirsten Graulich</td>
<td>Energy Transition - Do it yourself</td>
<td>Tagesspiegel Potsdamer Neueste Nachrichten</td>
<td>2015</td>
<td>DE</td>
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<td><strong>Title (orig.):</strong> Energiewende selber Machen</td>
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<td><strong>Language:</strong> DE</td>
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<td></td>
<td><strong>Summary:</strong> The German regions Teltow, Kleinmachnow and Stahnsdorf lack sufficient biomass for a biomass facility. But now there is the idea of using leaf-fall for energy production. The local citizens should take part on this project.</td>
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<td><strong>Link:</strong> <a href="#">Energiewende selber Machen</a></td>
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<tr>
<td>Enel Energia</td>
<td>Enel Energia begins work on first mini-biomass plant</td>
<td>Biomass magazine</td>
<td>2015</td>
<td>IT</td>
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</table>

**Title (orig.):** Enel Energia begins work on first mini-biomass plant  

**Language:** EN  

**Summary:**  
Enel Energia has begun construction of an innovative combined-cooling,-heat-and-power (CCHP) mini-biomass plant (capacity of 199 kWe) at the historic Luxottica factory in Agordo, in the Veneto region’s Belluno province of Italy. The plant will be fuelled with solid biomass from the local area, such as woodchips, clippings and pruning by-products.

**Link:**  
[Enel Energia begins work on first mini-biomass plant](#)

| Biomass logistic centers in Ourense, Galicia | Biomass logistic centers in Ourense, Galicia | Bioenergy International | 2011 | ES      |

**Title (orig.):** Centros de Tratamiento de la Biomasa, Ourense, Galicia  

**Language:** ES  

**Summary:**  
The network of biomass treatment centres (CTB) distributed along Ourense (Spain) allows the use of biomass from roadside cleaning and forest for energy purposes. The Provincial Council of Ourense has converted the existing problem regarding the residues accumulation and fire risk related to roadside biomass and forest areas in an opportunity to increase the life quality of the local habitants through the biomass potential use for energy which is strategically distributed among the 3 biomass logistic centres.

**Link:**  
[Centros de Tratamiento de la Biomasa, Ourense, Galicia](#)

| Barcelona         | Management of biodiversity and green areas                                     | Barcelona            | 2011 | ES      |

**Title (orig.):** Barcelona website  

**Language:** EN  

**Summary:**  
Green spaces in the city of Barcelona are of a big importance. On its website, a lot of information about it can be found regarding the use of natural resources, maintenance of the parks and gardens which generate biomass that is recycled by turning it into compost, an organic fertilizer for the green spaces in Barcelona.

**Link:**  
[Ecology, Urban Planning and Mobility Area (website)](#)  
[Street Tree Management in Barcelona (brochure)](#)
<table>
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<tbody>
<tr>
<td>García-Martín A., de la Riva J., Pérez-Cabello F. and R. Montorio</td>
<td>Using remote sensing to estimate a renewable resource: forest residual biomass</td>
<td>InTech</td>
<td>2012</td>
<td>EU</td>
</tr>
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</table>
The reduction of greenhouse gas (GHG) emissions is a relevant part in many of the current energy and environment policies in most of the European countries. Diverse alternatives are being used by the governments and the private companies to palliate the emissions and the costs derived from the emissions trade system; one of these possibilities for the CO2 emission remediation is the replacement of solid fossil fuels by biomass (co-firing) in different sectors. In Spain the consumption of fossil fuels account for more than 124 Mtep, from which solid fossil fuels represent 20 % of the share in the primary energy.

The main solid fuel consuming sectors are the power generation sector (more than 82 %) and cement industry (more than 7 %). The equivalent CO2 emissions of those solid fuel intensive consuming sectors account for more than 20 % of the gross CO2 equivalent emissions, similar to other important sectors like the transport. Therefore the co-firing technology arises as a promising mean to reduce the emissions from solid fossil fuels.

The current paper presents the project ENE2005-00304/ALT (founded by the Spanish Ministry of Science and Education). The main objective is the assessment of the potential of co-firing in Spain and the development of a methodology based on the Life Cycle Analysis (LCA), allowing a precise knowledge about the multiplier effect, in terms of GHG emissions reduction, associated with this technology and the related economic benefits.

(LCMW) Relevance: The Authors are one of the greenGain project partners (Daniel García, Maider Gómez; CIRCE).
The effect of the surrounding conditions in the assessment of biomass: case study of agricultural residual biomass in Teruel province (Spain)

Language: EN

Summary:

Paper presented to the 15th European Biomass Conference & Exhibition 7-11 May 2007 (Berlin, Germany)

The best location for the sitting of a biomass plant inside a territory requires as input data the energy potentials of the territory. Up to date the area outside the territory under assessment has not been considered, and the territory was studied as an island. The paper summarizes the results of using different spatial resolution degrees for the area surrounding the Spanish Teruel province (NUTS 3). Residual biomass from woody crops pruning has been estimated inside the province of Teruel using the geographical resolution of the Corine Land Cover. The resources evaluation for the area surrounding Teruel province (50 km in straight line) has been carried out at four levels of spatial resolution: no biomass in the surroundings, biomass per province (NUTS3), biomass per municipalities (NUTS5), and biomass assigned to the Corine Land Cover land use characterisation. The sum of the potential biomass in a 50 km-radius circle has been calculated for every point inside the province of Teruel per resolution scale. A comparison among the cases has been carried out by qualitative and quantitative observations. The results have shown the essentiality of the surrounding areas when searching for the maximum potentials in a territory. The use of spatially vast information (NUTS 3) generates a distortion in the geographical potentials and may lead to excessively large errors. For the analysed zone, it has been proved that municipality resolution (NUTS 5) is already sufficient to get a nearly real picture of the biomass potentials.

Link:

The effect of the surrounding conditions in the assessment of biomass: case study of agricultural residual biomass in Teruel province (Spain)

Bundesamt für Umwelt (BAFU) & Bundesamt für Energie (BFE)

Energy wood potentials outside of the forest in Switzerland

2009 CH

The aim of this study is to assess the potential amount of meadow wood (= wood growing on areas outside of forests) in Switzerland, how it is currently used and what gains and costs occur. The authors defined five sources for meadow wood (along roads, along rivers and lakes, urban green, hedgerows and agricultural areas). They used a GIS-model and conducted expert interviews for the data collection. The study showed that on 10 % of Switzerland’s area meadow wood is growing (400 000 ha) and that 420 000 t TS per year can be sustainably used. Over 80 % of the meadow wood is on urban or agricultural are and mostly in the region of the Swiss midland. Of today’s use only 54 % are used for energetic purposes, 39 % are left on the site and 7 % is used for material production. The profits and costs differ strongly between the regions. In some regions, the same material is sold and in others, disposal charges have to be paid.

(LCMW) Relevance: Broad overview of the situation of LCMW biomass in Switzerland.

Link:

Energieholzpotenziale außerhalb des Waldes (PDF)
Holzenergie (website)
Wood characterization for energy application proceeding from pruning Morus alba L., Platanus hispanica Münchh. and Sophora japonica L. in urban areas

Pruning urban forests generates significant amounts of lignocellulosic biomass every year. The energy potential of this biomass is unclear. The aim of this research was direct analysis of the gross calorific value (GCV), elemental composition and moisture content of Morus alba L., Platanus hispanica Münchh. and Sophora japonica L. by means of laboratory equipment.

(LCMW) Relevance: The gross calorific value and other analysis proved these residues to be an interesting source of bioenergy.

Link:
Wood characterization for energy application proceeding from pruning Morus alba L., Platanus hispanica Münchh. and Sophora japonica L. in urban areas

Establishing an example of a regional energy cycle with biomass from LCMW in the natural park Unteres Saaletal with special consideration of a GIS-assessment on the long-term availability of the biomass potential

DBU (Deutsche Bundesstiftung Umwelt)
Title (orig.): Etablierung eines beispielhaften regionalen Energiekreislaufs mit Biomasse aus der Landschaftspflege im Naturpark Unteres Saaletal unter besonderer Berücksichtigung einer GIS-gestützten Abschätzung des langfristig zur Verfügung stehenden Biomassepotenzials

Language: DE

Summary:
1) Analyse status quo – classification of the research area with areal photos and existing data to select LCMW areas
2) Determination and definition of use- and maintenance- categories based on aims of nature protection
3) Establish 18 test areas to verify height classes, perform a biomass collection (harvest) and record data on vegetation and habitat.
4) Develop a procedure based on GIS to assess the biomass potential
5) Selection of several representative forest stands and record of random samples to derive forest stand types
6) Calculation of the biomass stock of the selected stands and calculation of the wood stock of the single stand types
7) Derive the actual useable biomass potential of all LCMW areas
8) Develop a regional concept for the use of wood from LCMW for a heating site in the primary school Wettin and make a cost calculation for the heating system

(LCMW) Relevance: Method for a comprehensive determination of the available standing woody biomass potential from LCMW

Link:
Etablierung eines beispielhaften regionalen Energiekreislaufs mit Biomasse aus der Landschaftspflege im Naturpark Unteres Saaletal unter besonderer Berücksichtigung einer GIS-gestützten Abschätzung des langfristig zur Verfügung stehenden Biomassepotenzials

Müller S., Steensen T., Büscher O., Jandewerth M.
Preparation of a biomass potential map
BIS-Verlag, Oldenburg (EnviroInfo Conference 2014)
2014 DE

Title (orig.): Preparation of a biomass potential map

Language: EN

Summary:
Proceedings of the 28th EnviroInfo 2014 Conference, Oldenburg, Germany (September 10-12, 2014)

Normally, there are no reliable data sources that give information about the objects of interest like hedges and vegetation along streets, railways, rivers and field margins. There is a great demand for an inventory of these biomass sources which could be answered by applying remote sensing technology. To generate that kind of spatial information, satellite imagery is used in combination with area-wide available GIS and elevation data.

(LCMW) Relevance: Biomass potential map of hedges and vegetation along streets, railways, rivers and field margins.

Link:
Preparation of a biomass potential map (PDF)

Stegner, Jan
Framework for energetic utilization of biomass from landscape management in Saxony - Final Report
Sächsischen Staatsministeriums für Umwelt und Landwirtschaft
2010 DE
Summary:

Following topics are assessed:

- Political and legal framework for energy recovery from biomass from landscape management
- Volume of landscaping material in Saxony
- Determination of energetic utilization demand for biomass from landscape management
- Technical solutions for utilizing biomass from landscape management
- Analysis and presentation of technological deficiencies and uncertainties exploitation potential
- Regionalized analysis of acceptance for plant operators and farms with regard to their willingness to energetic utilization of biomass from landscape management
- Suitable recycling methods and technologies for the energy use of landscaping material

Under the current technical and technological and politico-economic conditions, the energetic use of landscape material via biogas and combustion in small and medium combustion plants or large combustion plants are appropriate ways. Both pathways require further procedural and logistical improvement.

The energetic use of landscape material is currently in Saxony barely realized. Especially in biogas plants, energy use with small technical changes would be possible. However, the political and economic conditions contradict such use.

(LCMW) Relevance: The political and economic conditions contradict the utilization of this biomass type.

Link:

Rahmenkonzept zur energetischen Verwertung von Biomasse aus der Landschaftspflege im Freistaat Sachsen

Britton, Renée Bradford
The potential for CO2 reduction of energetically used landscape conservation materials and green waste in the county Marburg - Biedenkopf, Germany
Kassel University, Kassel, Germany and Faculty of Engineering, Cairo University, Giza, Egypt (Master thesis)
2013
DE
**Title (orig.):** The potential for CO2 reduction of energetically used landscape conservation materials and green waste in the county Marburg - Biedenkopf, Germany

**Language:** EN

**Summary:**
The goal of this thesis is to ascertain the annual average amount of green waste available from LCMW and to determine the potential of its energetic use and its positive contribution to the climate targets.

**LCMW Relevance:** Key messages and data for greenGain Approaches: Bio-waste management analysis in Marburg-Biedenkopf

Literature review on relevant energy-conversion technology

Overview on green waste in Germany, key stakeholders of the energetic use

Importance of logistic for the use of green residues

Determining the potential of the green residues for the energy utilisation (yield of methane)

Tool for modelling CO2 emissions

Case scenario for Marburg-Biedenkopf: coal vs. grass plant

Transferability of the concept to Jamaican context.

**Link:**
- Thesis
- Presentation

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<tbody>
<tr>
<td>Baumgartner, Hansjakob</td>
<td>Also in meadows grows energy wood</td>
<td>Federal Office for Environment (CH), Magazine &quot;Umwelt&quot;</td>
<td>2010</td>
<td>CH</td>
</tr>
</tbody>
</table>

**Title (orig.):** Auch in der Flur wächst Energieholz

**Language:** DE - CH

**Summary:**
Meadows enrich the landscape among other also by providing important habitats for animals and plants. To fulfil this function on a long term regular maintenance work is necessary. The resulting woody biomass has a high potential to contribute to a climate neutral energy potential.

**LCMW Relevance:** In the city of Bern, biomass coming from LCMW is nearly completely used for energetic purposes. Description of the use of LCMW biomass in Switzerland.

**Link:**
- Aktionsplan Holz: Auch in der Flur wächst Energieholz

<p>| Chamber of Commerce of Padova | Recovery of prunings in vineyards and orchards for the production of energy | Chamber of Commerce of Padova, in cooperation with CNR-Ivalsa, Confagricoltura, Coldiretti, CIA | 2012 | IT      |</p>
<table>
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<th>Publisher</th>
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<tbody>
<tr>
<td>Cremer, Tobias</td>
<td>Mobilisation and economical utilization of raw wood from forests and landscape for energy production</td>
<td>DBU (Deutsche Bundesstiftung Umwelt)</td>
<td>2007</td>
<td>DE</td>
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</table>

**Title (orig.):** Recupero delle potature di vigneti e frutteti finalizzato alla valorizzazione energetica

**Language:** IT

**Summary:**
The publication presents the results of a project, which aimed to test new rational solutions that would allow market actors to have economic benefit from the use of LCMW biomass from pruning in vineyards and orchards in the Padua area. The test was conducted through the creation of collection / treatment sites in the hills and plains, aimed at studying and testing functional technologies able to overrun the challenges related to collection and logistics.

**Objectives:**
- Define the productivity of the machines and the cost of recovery of the residual biomass, according to various length of the rows, extraction distance, yield of the pitch and type of collection
- Identify the elements of optimization to reduce the cost of pruning collection
- Identify the quality of wood chips obtained (size, water content and energy content)

**LCMW Relevance:** Given that the biomass boilers are three time as expensive as a natural gas boiler, the cost of primary energy provided by chipped trenches in an optimized system is the cheapest possible: 27 €/MWh against 70 €/MWh for natural gas and 108 €/MWh for heating oil/diesel.

**Link:**
[Recupero di potature di vigneti e frutteti finalizzato alla valorizzazione energetica](#)

**Title (orig.):** Mobilisierung und wirtschaftliche Nutzung von Rohholz aus Wald und Landschaft zur Energieerzeugung

**Language:** DE

**Summary:**
The aim of this project was to develop and implement optimised mobilisation, supply and logistic concepts for energy wood from forests and LCMW biomass for a concrete region. Existing and innovative technologies and organisational approaches for the supply of energy wood were further developed and combined. During this process, all affected regional actors were involved.

**LCMW Relevance:** A new approach for the assessment of the potential of LCMW biomass for energetic use was described.

**Link:**
[Mobilisierung und wirtschaftliche Nutzung von Rohholz aus Wald und Landschaft zur Energieerzeugung](#)
The municipal utilities of Basel (IWB) are in the process of building a 30 MW wood-fired CHP plant in the city of Basel, a project idea that was initially propelled by visionaries from the forest sector. The plant is attractive both politically and from a business perspective, as several goals related to the increased use of renewable energy can be achieved simultaneously. Moreover, significant woody biomass resources are awaiting further exploitation in the Basel region, which could help to improve markedly the cost effectiveness of forest maintenance. In this paper we study the history and some of the characteristics of the planned project from a socio-economic perspective.

**LCMW Relevance**: Socio-economic analysis of diffusion of bioenergy in urban areas.

**Link**: Diffusion of bioenergy in urban areas: socio-economic analysis of the planned Swiss wood-fired cogeneration plant in Basel

Morgenroth, Andreas
The energy transition at the cemetery - production and use of renewable energies in cemetery open spaces
Aeternitas e.V. - Verbraucherinitiative Bestattungskultur
2006 DE

Landscape architect Andreas Morgenroth describes the benefits and shows how to use renewable energy in cemeteries. He constitutes the framework of the energy transition and explains sustainability aspects of cemetery management, taking into account the special cemetery cultural concerns. On German cemeteries approximately 15,000 hectares are no longer needed for burials. The trend is towards small urn graves. Morgenroth explains several options of production and use of renewable energies and describes cemetery open spaces as predestined.

**LCMW Relevance**: Potential of landscape material from cemeteries for incineration and digestion.

**Link**: Pressemitteilung: Friedhöfe könnten Energie erzeugen
Die Energiewende auf dem Friedhof (PDF)