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GLOSSARY ON RENEWABLE ENERGY AND LANDSCAPE QUALITY – THE GLOSSARY

KRUSE Alexandra[1], MAROT Naja[2] (Eds), ALDUK Zlata Dolacek, BENEDIKTSSON Karl[3], BOTTARELLI Michele[4], BRITO Paolo, CENTERI Csaba, EITER Sebastian, FRANTAL Bohumil, FROLOVA Marina, GAILLARD Bénédicte, GRÓNÁS Viktor, HÁYRYNEN Maunu, HERNANDEZ JIMENEZ Veronica, HEWITT Richard, HUNZIKER Marcel, KABAI Róbert, KARAN Isidora, LACHOWSKA Malgorzata, MARTINAT Stanislav, MARTINOPOULOS Georgios, MESTRE Nieves, MICKOVSKI Slobodan B., MILLER David, OTTE Pia, MORENES MUNOZ-ROJAS José Rafael, ROEHNER Sina, ROTH Michael, SCHROTH Olaf, SCOGNAMIGLIO Alessandra, SLUPINSKI Mateusz, STREMKE Sven, TESCHNER Na'ama

Alexandra Kruse, Institute for Research on European Agricultural Landscapes e.V. (EUCALAND), Hauptstr. 48, 51491 Overath, Germany, e-mail: kruse@eucalandnetwork.eu
Naja Marot, University of Ljubljana, Biotechnical Faculty, Department of Landscape Architecture, Jamnikarjeva 101, 1000 Ljubljana, Slovenia, e-mail: naja.marot@bf.uni-lj.si
Zlata Dolacek Alduk, Josip Juraj Strossmayer University of Osijek, Faculty of Civil Engineering Osijek, Department for Organisation, Technology and Management, Croatia
Karl Benediktsson, University of Iceland, Faculty of Life and Environmental Sciences, Iceland
Michele Bottarelli, University of Ferrara, Department of Architecture, Italy
Paolo Brito, Instituto Politécnico de Portalegre – Escola de Tecnologia e Gestão, Portugal
Csaba Centeri, Szent István University, Institute of Nature Conservation and Landscape Ecology, Hungary
Sebastian Eiter, Norwegian Institute of Bioeconomy Research, Norway
Bohumil Frantal, Institute of Geonics, The Czech Academy of Sciences, Czech Republic
Marina Frolova, University of Granada, Institute of Regional Development, Spain
Bénédicte Gaillard*, BG Consulting, France
Viktor Grónás, Szent István University, Institute of Nature Conservation and Landscape Ecology, Hungary
Maunu Háyrynen, University of Turku, School of Cultural Production and Landscape, Finland
Veronica Hernandez Jimenez, Universidad Politechnica de Madrid, Research Group: Landscape Ecology, Spain
Richard Hewitt, Observatory for a Culture of the Territory, Spain
Marcel Hunziker, Swiss Federal Institute for Forest, Snow and Landscape Research WSL, Switzerland
Róbert Kabai, Corvinus University of Budapest, Department of Landscape Protection and Reclamation, Hungary
Isidora Karan*, Center for Spatial Research (Istraživački centar za prostor), Bosnia and Herzegovina
Malgorzata Lachowska*, Institute of Spatial Management and Housing, Poland
Stanislav Martinat, Institute of Geonics, Czech Academy of Sciences and Silesian University in Opava, School of Business Administration in Karvina, Czech Republic
Georgios Martinopoulos, International Hellenic University, School of Science and Technology, Greece
Nieves Mestre, Universidad Europea Madrid, Department of Architecture, Spain
Slobodan B. Mickovski, Glasgow Caledonian University, United Kingdom
David Miller*, The James Hutton Institute, United Kingdom
Pia Otte, Centre for Rural Research, Norway
Sina Roehner*, Nuertingen-Geislingen University, Germany
Michael Roth, Nürtingen-Geislingen University, Germany
José Rafael Morenes Munoz-Rojas, ICAAM-Universidade de Evora, Portugal
Olaf Schroth, Weihenstephan-Triesdorf University of Applied Sciences, Germany
Alessandra Scognamiglio, ENEA, Italian National Agency for New Technologies, Energy and Sustainable Economic Development, Photovoltaic Systems and Smart Grid Unit (DTE-FSN-FOSG), Italy
Martina Slámová, Technical University in Zvolen, Slovakia
Mateusz Slupinski, Centre for System Solutions, Poland
Sven Stremke, Wageningen University, The Netherlands
Na'ama Teschner, Technion – Israel Institute of Technology, Israel

*people who participated as core group members in the work of the responsible Working Group

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ENERGY LANDSCAPE

Definition

An energy landscape is characterized by one or more elements of the energy chain (e.g. energy extraction, assimilation, conversion, storage, transport or transmission of energy). The outcome can be a multi-layer energy landscape comprising combinations of technical and natural sources of energy within a landscape. In COST RELY, energy landscape is focused on renewable energy and the impact on landscape quality.

Related terms

Landscape resilience, Landscape sensitivity, Landscape vulnerability

Keywords

Energyscapes, Landscapes of carbon neutrality, Multi-layer, Multi-functional, Renewable energy sources, Sustainable energy landscape

Figure 3a. Three layers of energy production in the area of Garzweiler II, Germany. Foreground: agriculture with oil pumping. Middle: open brown coal mining with a coal-fired power plant. Background: wind turbines. (Photo: Alexandra Kruse 2016)

Figure 3b. Wind energy landscape, Ore Mountains, Czech Republic (Photo: Bohumil Frantal 2012)

Figure 3c. This energy landscape in Carinthian Mölltal in Austria shows different layers of energy production and impact on the landscape. Foreground: electric train line and electricity high voltage cables. Middle: agriculture including modern hay balls; background, forestry. These very intensive and close layers are dominating the Alpine valleys in Austria. (Photo: Alexandra Kruse 2016)

Source

Definition developed by COST RELY Action.

Translations	
Bosnia and Herzegovina: Energetski pejzaž/ Energetski krajolik Bulgarian: Ландшафт за производство на енергия Croatian: Energetski krajolik Czech: Energetická krajina Danish: Energilandskab Dutch: Energie landschap Esperanto: Energia pejzaĝo Estonian: Energiamaastik Finnish: Energiamaisemat (not commonloy used) French: Paysage énergétique German: Energielandschaft Greek: Ενεργειακό Τοπίο Hebrew: נופי אנרגיה Hungarian: Energiatáj (the term is not in use)	Italian: Paesaggio dell'energia Icelandic: Orkulandslag Latvian: Enerģijas ainava Lithuanian: Energijos gavybos kraštovaizdžiai Montenegrin: Energetski pejzaž Polish: Krajobrazy energetyczne Portuguese: Paisagem de energia Romanian: Peisaj energetic Russian: Энергетический пейзаж Slovakian: Energetická krajina Slovenian: Energetska krajina Serbian: Енергетски пејзажи (земљишта) Spanish: Paisajes de las energías/ Paisajes energéticos Swedish: Energi landskap

LANDSCAPE

Definition

(1) An area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.

(2) An area (spatial component) as perceived by people (subjective component), whose sensually perceivable features (link to aesthetics in the original meaning of the Greek 'aisthesis') and character (Alexander von Humboldt's definition of landscape) are the result (evolutionary/temporal aspect of landscape) of the action of natural and/or cultural factors (holistic view of landscape).

(3) The Swedish primary definition of the word landscape (*swe. landskap*) denotes the conditions in a country, a country's character, and/or a country's traditions. Originally, landskap was strongly related to customs, ideas of homeland, justice, nature, and nation (Olwig 1996). Landskap was a social space that denoted a territory and its people, and connoted aspects of custom, value, and everyday life.

(4) For many people, landscape simply means scenery – everything that is around us and can be viewed at one time from one place on the horison – or all the visible features of an area, considered for their aesthetic appeal.

Related terms

Landscape identity, Landscape quality, Landscape sensitivity, Landscape service, Landscape vulnerability

Keywords

/

Figure 4. Landscape – composed by houses, forest, bushes, windmills, single trees and meadows, Sao Miguel, Azores (Photo: Naja Marot, 2006)

Source

A discussion on the origin and meaning of the term landscape, including the three definitions cited above, can be found in the EUCALAND glossary:

Kruse, A. (ed.), Centeri, Cs., Renes, H., Roth, M., Printsmann, A., Palang, H., Benito Jorda, L., Velarde, M. D., Kruckenberg, H. 2010: Glossary on agricultural landscapes. Hungarian: Journal of Landscape Ecology (Special Issue): 99–127.

Olwig, K. R. 1996: Recovering the substantive nature of landscape. Annals of the Association of American geographers 86(4): 630–653.

Translations

Bosnia and Herzegovina: Pejzaž/okoliš Bulgarian: Пандшафта Croatian: Krajolik Czech: Krajina Danish: Landskab Dutch: Landschap Esperanto: Pejzaĝo Estonian: Maastik Finnish: Maisema French: Paysage German: Landschaft Greek: Ανάλυση Τοπίου Hebrew: נוף Hungarian: Táj	Italian: Paesaggio Icelandic: Landslag Latvian: Ainava Lithuanian: Kraštovaizdis Montenegrin: Pejzaž Polish: Krajobraz Portuguese: Paisagem Romanian: Peisaj Russian: Пейзаж Slovakian: Krajina Slovenian: Krajina Serbian: Пејзаж Spanish: Paisaje Swedish: Landskap

LANDSCAPE AWARENESS

Definition

Landscape awareness refers to deeper understanding of the value of landscapes, their role and changes to them, among the civil society, private organisations and public authorities. European Landscape Convention marks the importance of awareness-raising which is defined as a way of making clear the relations that exist between people's cadre de vie, the activities pursued by all parties in the course of their daily lives and the characteristics of the natural environment, housing and infrastructure (Council of Europe).

Related terms

Landscape character, Landscape identity, Landscape sensitivity

Keywords

Ecological awareness, Knowledge-spreading process, Perception

Figure 5. "Re-Storying the Landscape" landscape awareness-raising among children (Source: http5)

Source

Elaborated for COST RELY on the basis of the European Landscape Convention CEP-CDCPP:
Council of Europe. 2000: European Landscape Convention. Council of Europe, Florence.

Translations

Bosnia and Herzegovina: Svijest o pejzažu/ okolišu
Bulgarian: Информираност относно ландшафта
Croatian: Svjesnost o krajoliku
Czech: Povědomí krajiny
Danish: Povědomí krajiny
Dutch: Landschapsbewustzijn
Esperanto: Konscienco pri pejzaĝo
Estonian: Teadlikkus
Finnish: Tietoisuus maisemasta
French: Participation publique considérant le paysage
German: Landschaftsbewusstsein
Greek: Κατανόηση Τοπίου
Hebrew: מודעות נופית
Hungarian: Tájtudatosság *(we do not really use it)*
Italian: Consapevolezza pesaggistica
Icelandic: Landslagsvitund
Latvian: Ainavas novērtējums
Lithuanian: Susirūpinimas kraštovaizdžiu (visuomenės, politinis...*)*
Montenegrin: Svijest o pejzažu
Polish: Świadomość krajobrazowa
Portuguese: Sensibilização paisagística, consciencialização paisagística
Romanian: Conștientizarea peisajului
Russian: Пейзажное осознание / Информированность о ландшафте
Slovakian: Povedomie o krajine (znalosť krajiny)
Slovenian: Zavedanje o krajini
Serbian: Свест и вредновањепејзажа
Spanish: Participación pública en relación con el paisaje
Swedish: Landskapsmedvetenhet

LANDSCAPE CAPACITY

Definition

Landscape capacity refers to the degree to which a particular landscape character type or area is able to accommodate change without significant effects on its character, or overall change of landscape character type. Capacity is likely to vary according to the type and nature of change being proposed.

Related terms

Environmental Impact Assessment, Landscape sensitivity, Landscape service, Suitability of landscape for renewable energy production

Keywords

Magnitude of landscape change, Capacity thresholds, Landscape capacity thresholds

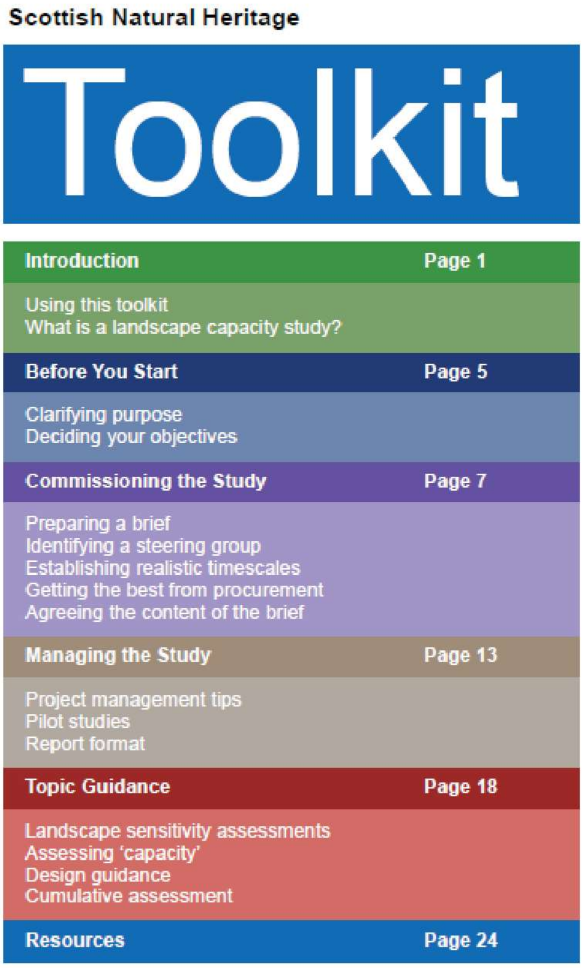


Figure 6. Example of Landscape Capacity toolkit used by Scottish National Heritage (Source: http6)

Source

Scottish Natural Heritage 2016: A Guide to Commissioning a Landscape Capacity Study. (http6: www.snh.gov.uk/docs/B858929.pdf)

Translations	
Bosnia and Herzegovina: Kapacitet pejzaža/ okoliša Bulgarian: Капацитет наландшафта Croatian: Nosivost krajolika Czech: Únosnost krajiny Danish: Landskabskapacitet Dutch: Landschapscapaciteit Esperanto: Kapacito de pejzaĝo Estonian: Capacitatea peisajului Finnish: Maiseman kantokyky French: Capacité du paysage German: Tragfähigkeit der Landschaft Greek: Δυνατότητα αναμόρφωσης τοπίου Hebrew: קיבולת נופית Hungarian: Tájterhelhetőség	Italian: Capacità del paesaggio Icelandic: not used Latvian: Ainavas kapacitāte Lithuanian: Kraštovaizdžio pajėgumas Montenegrin: Kapacitet pejzaža Polish: Pojemność krajobrazu Portuguese: Capacidade paisagística Romanian: Capacitatea peisajului Russian: Ландшафтная вместимость Slovakian: Únosnosť krajiny Slovenian: Nosilna zmogljivost krajine Serbian: Кашпацитет пејзажа Spanish: Aptitud/Capacidad del paisaje Swedish: Landskapskapacitet

LANDSCAPE CHARACTER

Definition

The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape. It is a standard methodology for identifying, describing, classifying and mapping what is distinctive about landscapes. It is used in the assessment of landscape impacts for land use changes. For COST RELY, it is a basis of considering some of the landscape impacts of renewable energy developments (e.g. the UK).

Related term

Landscape identity

Keywords

Landscape Character Assessment, Landscape quality, Landscape value

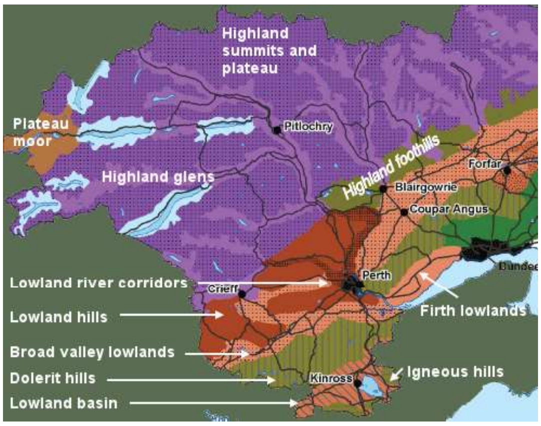


Figure 7a. Map of Landscape Character from Tayside Landscape Character Assessment, produced for Scottish Natural Heritage (Source: Perth and Kinross Council, UK)

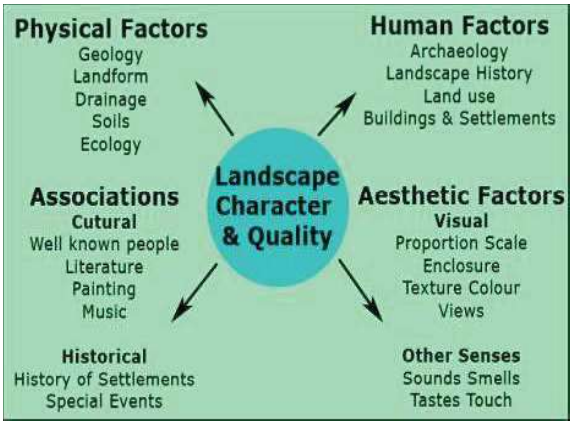


Figure 7b. Physical and perceptual characteristics to be considered in a Landscape Character Assessment (Source: http7)

Source

Countryside Agency and Scottish Natural Heritage 2002: Landscape character assessment guidance for England and Scotland, Cheltenham, Countryside Agency; Edinburgh, Scottish Natural Heritage, Paragraph 7.8

Translations

Bosnia and Herzegovina: Karakter pejzaža/ okoliša
Bulgarian: Характер на ландшафта
Croatian: Karakter krajolika
Czech: Krajinný ráz
Danish: Landskabskarakter
Dutch: Landschapskarakter
Esperanto: Karaktero de pejzaĝo
Estonian: Maastikukarakter
Finnish: Maiseman Luonne
French: Caractère du paysage
German: Eigenart der Landschaft
Greek: Χαρακτήρας τοπίου
Hebrew: מאפיין נופיים
Hungarian: Tájkarakter
Italian: Carattere del paesaggio
Icelandic: Landslagseinkenni / einkenni landslags
Latvian: Ainavas raksturs
Lithuanian: Kraštovaizdžio pobūdis
Montenegrin: Karakter pejzaža
Polish: Charakter krajobrazu
Portuguese: Caracter da paisagem
Romanian: Caracterul peisajului
Russian: Ландшафтный характер
Slovakian: Krajinný ráz
Slovenian: Značaj krajine
Serbian: Карактер пејзажа
Spanish: Cualidad/Caracter del paisaje
Swedish: Landskapskaraktär

LANDSCAPE CLASSIFICATION

Definition

Landscape classification is a means of grouping different types of landscapes into categories to address similar types at once. Classification is important for communication because it provides a consistent frame of reference. As the classification of landscapes is complicated by the fact that it involves both human perception and physical reality, there are many different attempts, according to nationality but also to scientific background. EUCALAND set-up a European Agricultural Landscape classification based on identity, pattern, process, change, spatial relationship, social organisation and topography with 10 different classes. Landscape classification is a basis of the research on landscape structure, process, and function, and also, the prerequisite for landscape evaluation, planning, protection, and management, directly affecting the precision and practicability of landscape research.

Related terms

Landscape character

Keywords

Landscape units

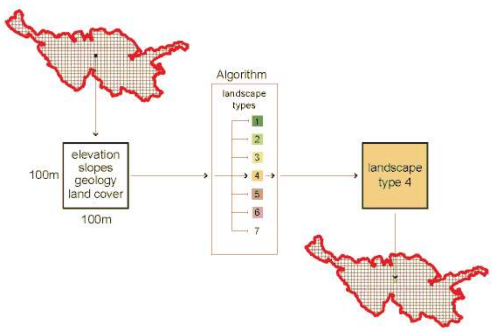


Figure 8a. Illustration of a method of calssification using an algorithm (Source: Bevk 2015)

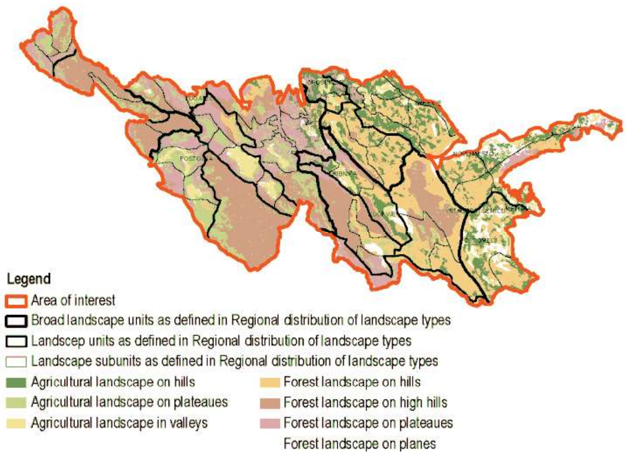


Figure 8b. Typology and regionalization of the Karst landscapes of in the selected area of inner Slovenia (Source: Bevk 2015)

Source

Bevk, T. 2015: The use of automated classification for landscape typology in the case of regional distribution of landscape types in Slovenia : Master thesis. Biotechnical Faculty, University of Ljubljana, Ljubljana.

Fairclough, G. 2010: Complexity and contingency: classifying the influence of agriculture on European landscapes. In: Pungetti, G., Kruse, A. (eds.) (2010): European Culture expressed in Agricultural Landscapes. Palombi Editori, Roma, pp. 115–148.

Translations	
Bosnia and Herzegovina: Klasifikacija pejzaža/ okoliša Bulgarian: Класификация на ландшафта Croatian: Klasifikacija krajolika Czech: Klasifikace krajiny Danish: Landskabs klassifikation Dutch: Landschapsclassificatie Esperanto: Klasifiko de pejzaĝo Estonian: Maastiku klassifikatsioon Finnish: Maisemien luokittelu French: Classification du paysage German: Landschaftsklassifikation Greek: Κάταταξη τοπίου Hebrew: סיווג נופים Hungarian: Tájosztályozás	Italian: Classificazione del paesaggio Icelandic: Flokkun landslags / landslagsflokkun Latvian: Ainavas klasifikācija Lithuanian: Kraštovaizdžio klasifikacija Montenegrin: Klasifikacija pejzaža Polish: Klasyfikacja krajobrazu Portuguese: Classificação paisagística Romanian: Clasificarea peisajului Russian: Ландшафтная Класификация Slovakian: Klasifikácia krajiny Slovenian: Klasifikacija krajine Serbian: Класификација пејзажа Spanish: Clasificación del paisaje Swedish: Landskapsklassificering

LANDSCAPE FUNCTION

Definition

The flows of social, economic and ecological benefits that land may generate. In the context of Ecosystem Services, this can be described as the capacity of land for ecosystem service production.

Related terms

Landscape capacity, Landscape services

Keywords

Assessment, Landscape goods and services, Land-use functions, Multi-functional landscapes, Sustainability

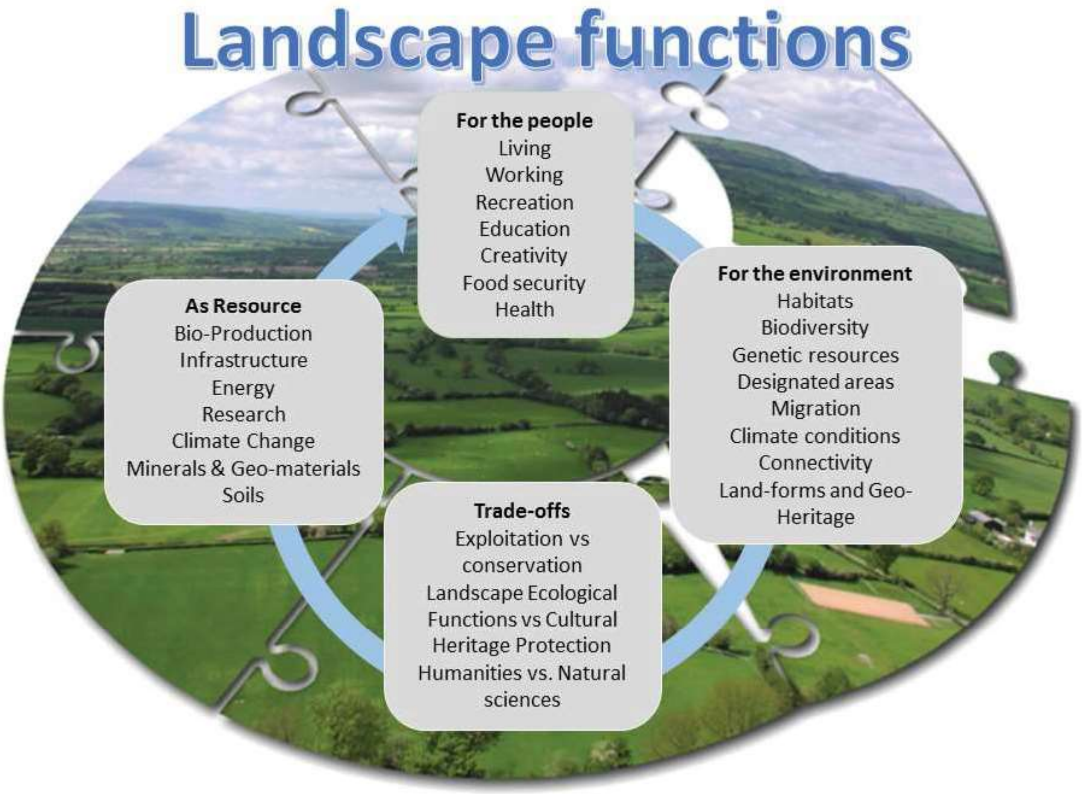


Figure 9. Landscapes have different functions for different stakeholders
(Graphic made by COST RELY: A. Kruse & J. M. Rojas)

Source

Bolliger, J., Kienast, F. 2010: Landscape Functions in a Changing Environment. Landscape Online 21: 1–5.
Krovakova, K., Semeradova, S., Mudrochova, M., Skalos, J. 2015: Landscape functions and their change: a review on methodological approaches. Ecological Engineering 75: 378–383.
Pérez-Soba, M., Petit S., Jones, L., Bertrand, N., Briquel, V., Omodei-Zorini, L., Contini, C., Helming, K., Farrington, J.H.M., Mossello, M.T., Wascher, D., Kienast, F., de Groot, R.S. 2008: Land use functions: a multifunctionality approach to assess the impact of land use changes on land use sustainability. In: Helming, K., Pérez-Soba, M., Tabbush, P. (eds.): Sustainability impact assessment of land use changes. Springer, Berlin Heidelberg, pp. 376–404.

Translations	
Bosnia and Herzegovina: Namjena zemljišta/funkcja krajolika Bulgarian: Ландшафтни функции *(Жозе М. Рояс)* Croatian: Funkcija krajolika Czech: Funkce krajiny Danish: Landskabsfunktion Dutch: Landschapsfuncties Esperanto: Funkcio de pejzaĝo Estonian: Maastiku funktsioonid Finnish: Maiseman toiminnot French: Fonction du paysage German: Landschaftsfunktionen Greek: Χρήση τοπίου Hebrew: תפקוד נופי	Hungarian: Tájfunkció Italian: Funzione del paesaggio Icelandic: / not used Latvian: Ainavas funkcija Lithuanian: Kraštovaizdžio funkcijos Montenegrin: Funkcija pejzaža Polish: Funkcja krajobrazu Portuguese: Regulação da paisagem Romanian: Funcțiunea peisajului Russian: Ландшафтная функция Slovakian: Funkcie krajiny Slovenian: Funkcija krajine Serbian: Намена земљишта Spanish: Funciones del paisaje Swedish: Landskapsfunktion

LANDSCAPE IDENTITY

Definition

Landscape identity is related to the character and the tangible and intangible characteristics that shape the feeling of a person belonging to a landscape. Identity of a landscape is the sum of the different information layers drawing on for example the territory, cultural elements, natural resources, and current use.

The Spanish: key naturalists Martinez de Pison (2000) and Gonzalez Bernaldez (1981) have referred to this concept saying landscape identity comes with the person; it is a bag full of information of what we are carrying.

Related terms

Landscape awareness, Landscape resilience, Landscape sensitivity

Keywords

Attachment, Feeling of belonging, Motivation, People and place, Recognition, Roots, Sense of place

Figure 10. Orchards (or, allotment gardens, CSA (community supported agriculture) etc.) establish emotional relationships between people and territory, as well as among different groups of people. New feelings of belonging to a certain place emerge throughout the practice of farming itself or the fact of producing own food. This is a very ancient practice but certainly is being used in our current days to create connections between people and their place, to create new places and to live a place and it is widely adopted by young communities in urban backgrounds. Orchards in the South of Madrid, Olmeda de las Fuentes. (Photo: Observatory for a Culture of the Territory 2009)

Source

Council of Europe. 2000: European Landscape Convention. Council of Europe, Florence.
http8: http://www.snh.gov.uk/docs/B1118160.pdf
Martinez de Pison, E. 2000: Estudios sobre el paisaje. Fundacion Duques de Soria - Ediciones Universidad Autonoma de Madrid, Madrid.
Gonzalez Bernaldez, E. 1981: Ecologia y Paisaje. Blume, Madrid.

Translations	
Bosnia and Herzegovina: Identitet pejzaža/ okoliša Bulgarian: Ландшафтна идентичност Croatian: Identitet krajolika Czech: Identita krajin Danish: Landskabsindentitet Dutch: Landschappelijke identiteit Esperanto: Identeco de pejzaĝo Estonian: Maastiku identiteet Finnish: Maisemaidentiteetti French: Identité du paysage German: Landschaftsidentität Greek: Ταυτότητα Τοπίου Hebrew: זהות נופית Hungarian: Táji identitás	Italian: Identità del paesaggio Icelandic: Ímynd landslags / landslagstengd sjálfsmynd Latvian: Ainavas identitāte Lithuanian: Kraštovaizdžio identitetas Montenegrin: Identitet pejzaža Polish: Tożsamość krajobrazowa Portuguese: Identidade de paisagem Romanian: Identitatea peisajului Russian: Ландшафтная идентичность Slovakian: Identita krajiny Slovenian: Identiteta krajine Serbian: Идентитет пејзажа Spanish: Identidad de paisaje/Identidad paisajística Swedish: Landskapsidentitet

LANDSCAPE QUALITY

Definition

The perception of the holistic environmental, cultural, sensory and psychological characteristics of a landscape with respect to their benefits or significance to people. It is relative, not absolute, requiring interpretation in the context of geographic scale (i.e. local, regional, national) and, or human experience.

Related terms

Landscape service

Keywords

Benefits, Landscape character, Landscape resource, Landscape value, Perception

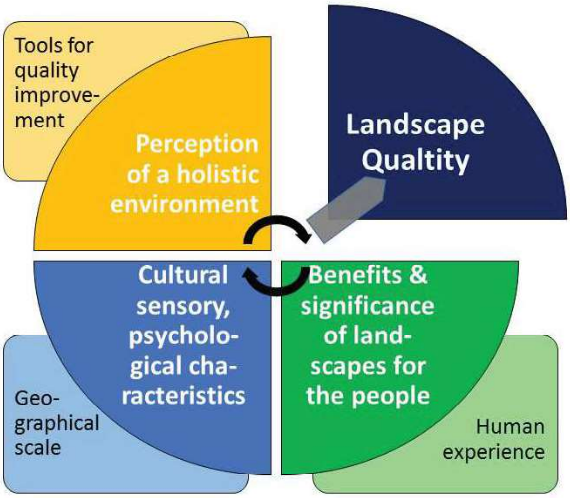


Figure 11. Landscape quality comprises different components and perception (Graphic made by COST RELY, A. Kruse)

Source

Definition developed by COST RELY Action, 2017.

Daniel, T.C. 2001: Whither scenic beauty? Visual landscape quality assessment in the 21st century. Landscape and Urban Planning 54: 267–281.

http9: www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-resource-library/glossary-of-terms/

Jacques, D.L. 1980: Landscape Appraisal: The Case for a Subjective Theory. Journal of Environmental Management 10: 107–113.

Translations

Bosnia and Herzegovina: Kvalitet pejzaža/ okoliša
Bulgarian: Качество на ландшафта
Croatian: Kvaliteta krajolika
Czech: Kvalita krajiny
Danish: Landskabskvalitet
Dutch: Landschapskwaliteit
Esperanto: Kvalito de pejzaĝo
Estonian: Maastiku kvaliteet
Finnish: Maiseman laatu
French: Qualité du paysage
German: Landschaftsqualität
Greek: Ποιότητα τοπίου
Hebrew: הנוף איכות
Hungarian: Tájminőség és
Italian: Qualità del paesaggio
Icelandic: Gæði landslags
Latvian: Ainavas kvalitāte
Lithuanian: Kraštovaizdžio kokybė
Montenegrin: Kvalitet pejzaža
Polish: Jakość krajobrazu
Portuguese: Qualidade paisagística e avaliação de caracteristicas
Romanian: Calitatea peisajului
Russian: Качество ландшафта
Slovakian: Kvalita krajiny
Slovenian: Kakovost krajine
Serbian: Квалитет пејзажа
Spanish: Calidad del Paisaje
Swedish: Landskapskvalitet

LANDSCAPE RESILIENCE

Definition

Landscape resilience is its capacity for renewal in a dynamic environment. Its characteristics are flexibility, adaptability, and ability to withstand change. In the context of COST RELY, such change focuses on renewable energy systems.

Related terms

Landscape assessment, Landscape capacity, Landscape governance, Landscape vulnerability

Keywords

Adaptation, Renewable energy landscape impact, Regeneration, Resistance, Risk*

*No definition of landscape risk is included in COST RELY as the pressures for change are those of renewable energy, while the term landscape risk is more commonly associated with natural hazards (e.g. earthquakes).

Figure 12. Yanweizhou Park gives new life to the riparian wetland of Jinhua City, China (Source: Turenscape, http10)

Source

Gunderson, L.H. 2000: Ecological resilience — in theory and application. Annual Review of Ecology and Systematics 31: 425–439.

Translations

Bosnia and Herzegovina: Otpornost pejzaža/okoliša
Bulgarian: Устойчивост на ландшафта
Croatian: Otpornost krajolika
Czech: Přizpůsobivost krajiny
Danish: Landskabets robusthed
Dutch: Herstelvermogen van het landschap
Esperanto: Rezisteco (elasteco) de pejzaĝo
Estonian: Maastike säilenõtkus
Finnish: Maiseman resilienssi
French: Résilience du paysage
German: Resilienz der Landschaft
Greek: Αντοχή τοπίου
Hebrew: השפעה נופית
Hungarian: A táj ellenállóképessége/tájstabilitás
Italian: Resilienza del paesaggio
Icelandic: Seigla landslags / viðnámsþróttur landslags
Latvian: Ainavas elastīgums
Lithuanian: Kraštovaizdžio atsparumas
Montenegrin: Otpornost pejzaža
Polish: Odporność krajobrazu
Portuguese: Resiliência paisagística
Romanian: Rezilienţa peisajului
Russian: Устойчивость ландшафта
Slovakian: Prispôsobivosť krajiny
Slovenian: Odpornost krajine
Serbian: Резистентност околине
Spanish: Resiliencia del paisaje/Paisajes resilientes
Swedish: Landskaps resiliens

LANDSCAPE SENSITIVITY

Definition

The degree to which the character and qualities of the landscape are affected by specific types of development and land-use change. In the context of COST RELY, such change is the development of renewable energy systems.

Related terms

Landscape character, Landscape quality, Landscape vulnerability

Keywords

Capacity, Development, Planning

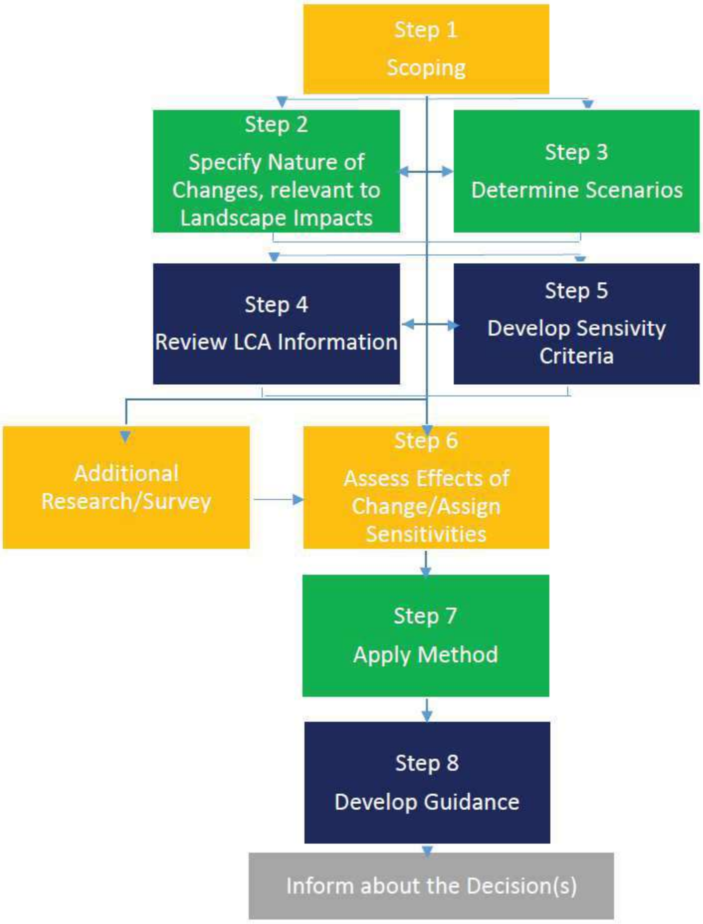


Figure 13. Steps in a landscape sensitivity study
(Source: Adapted by COST RELY, based on: Land Use Consultants (LUC), http11)

Source

Countryside Agency and Scottish Natural Heritage 2002: Landscape character assessment guidance for England and Scotland. Cheltenham, Countryside Agency; Edinburgh, Scottish Natural Heritage, Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity.
http9: http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-resource-library/glossary-of-terms/

Translations	
Bosnia and Herzegovina: Osjetljivost pejzaža/ okoliša Bulgarian: Чувствителност на ландшафта Croatian: Osjetljivost krajobraza Czech: Citlivost krajiny Danish: Landskabets sensitivitet Dutch: Gevoeligheid van het landschap Esperanto: Sentemeco de pejzaĝo Estonian: Maastiku tundlikkus Finnish: Maiseman herkkyys French: Sensitivité du paysage German: Empfindlichkeit der Landschaft Greek: Ευαισθησία Τοπίου Hebrew: רגישות נופית Hungarian: Táji érzékenység	Italian: Sensibilità paesaggistica Icelandic: Næmi landslags Latvian: Ainavas jutīgums Lithuanian: Kraštovaizdžio jautrumas Montenegrin: Osjetljivost pejzaža Polish: Wrażliwość krajobrazu Portuguese: Sensibilidade da paisagem Romanian: Senzitivitatea peisajului Russian: Чувствительность ландшафта Slovakian: Citlivosť krajiny Slovenian: Občutljivost krajine Serbian: Сензитивност пејзажа Spanish: Susceptibilidad del paisaje Swedish: Landskaps känslighet

LANDSCAPE SERVICES

Definition

The contributions of landscapes and their components to human well-being. Landscape Services is a concept complementary to that of Ecosystem Services.

Related terms

Landscape function, Landscape services

Keywords

Landscape processes, Ecosystem services, Landscape scale

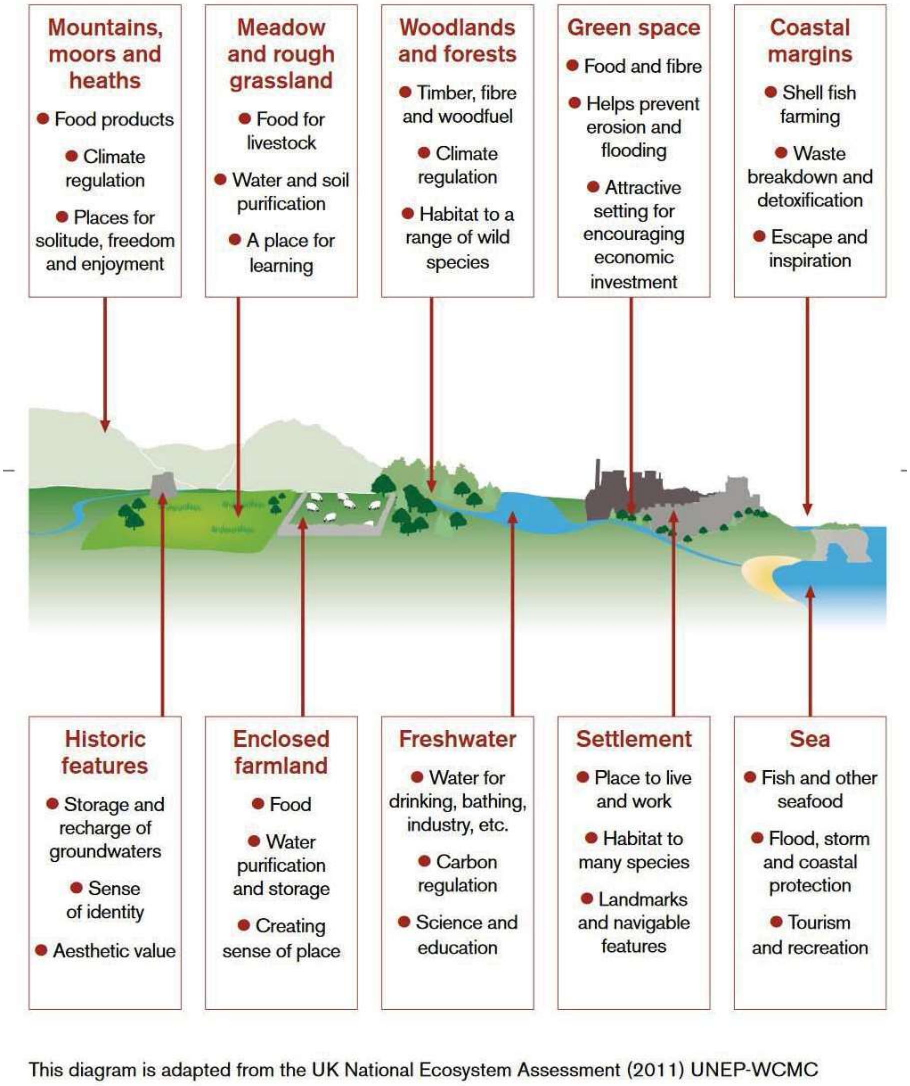


Figure 14. Landscape and their benefits (Source: SNH: http12)

Source

Bastian, O., Grunewald, K., Syrbe, R-U., Walz, U., Wende, W. 2015: Landscape services: the concept and its practical relevance. Landscape Ecology 29: 1463–1479.

Valles-Planells. M., Galiana. F., Van Eetvelde. V. 2014: A Classification of Landscape Services to Support Local Landscape Planning. Ecology and Society 19(1): 44.

http12: http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/communities/talking-about-our-place/

Translations	
Bosnia and Herzegovina: Uređenje pejzaža/ okoliša Bulgarian: Ландшафтни услуги Croatian: Uslužne funkcije krajobraza Czech: Služba krajiny Danish: Landskabsservice Dutch: Landschapsdiensten Esperanto: Servoj pri pejzaĝo Estonian: Aastikuteenused Finnish: Maiseman ekosysteemipalvelut French: Service du paysage German: Landschaftsdienstleistung Greek: Υπηρεσίες τοπίου Hebrew: הנוף שימושי Hungarian: Táj szolgáltatások	Italian: Servizio del paesaggio Icelandic: þjónusta landslags Latvian: Ainavas pakalpojumi Lithuanian: Kraštovaizdžio paslaugos Montenegrin: Uređenje pejzaža Polish: Usługi krajobrazowe Portuguese: Serviços da paisagem Romanian: Servicii în peisaj Russian: Ландшафтные услуги Slovakian: Služba krajiny Slovenian: Krajinske storitve Serbian: Уређење пејзажа Spanish: Servicios del paisaje Swedish: Landskapstjänst

LANDSCAPE VULNERABILITY

Definition

In landscape planning, vulnerability is defined as 'vulnerability to impact', and the likelihood of change to, or loss of, landscape features. Its level is a reflection of the significance of the functions of such features. In COST RELY it relates to the potential negative impact of renewable energy developments on landscapes.

Related terms

Landscape sensitivity

Keywords

Development constraints, Hazard, Impact models, Risk

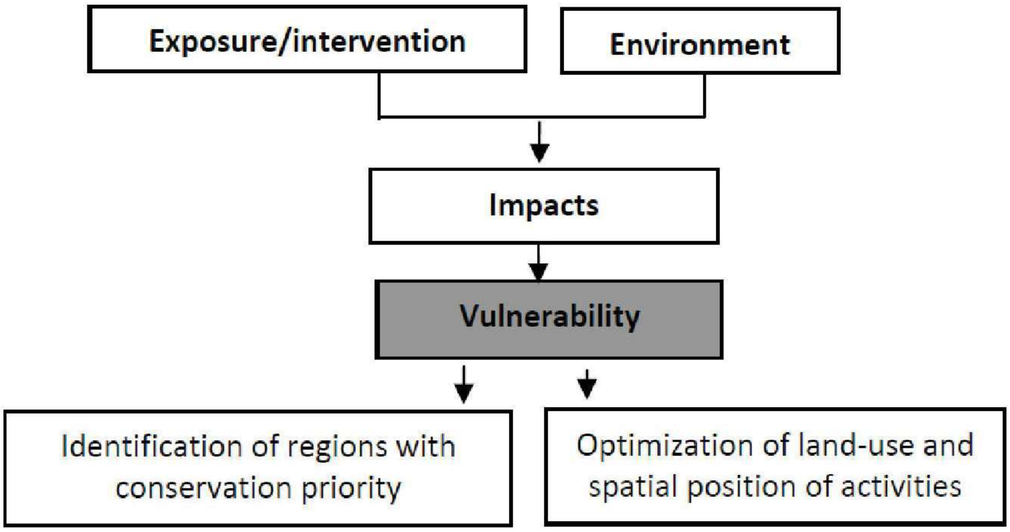


Figure 15. Vulnerability concept within the spatial planning context (Source: Golobic, Breskvar Zaucer 2010)

Source

Golobic. M., Breskvar Zaucer. L. 2010: Landscape Planning and Vulnerability assessment in the Mediterranean; http://www.pap-thecoastcentre.org/pdfs/Landscape%20Vulnerability.pdf
Steinitz, C. 1967: Computers and regional planning: the DELMARVA study. MA: Graduate School of Design, Harvard University, Cambridge.

Translations

Bosnia and Herzegovina: Ranjivost pejzaža/ okoliša
Bulgarian: Уязвимост на ландшафта *(*Слободан миковски*)*
Croatian: Ranjivost krajobraza
Czech: Zranitelnost krajiny
Danish: Landskabets sårbarhed
Dutch: Kwetsbaarheid van het landschap
Esperanto: Vundebleco de pejzaĝo
Estonian: Maastiku haavatavus
Finnish: Maiseman haavoittuvuus
French: Vulnérabilité du paysage
German: Verletzlichkeit der Landschaft
Greek: Κίνδυνοι τοπίου
Hebrew: נופית פגיעות
Hungarian: Táji sérülékenység
Italian: Vulnerabilità del paesaggio
Icelandic: Viðkvæmni landslags
Latvian: Ainavas trauslums
Lithuanian: Kraštovaizdžio pažeidžiamumas
Montenegrin: Ranjivost pejzaža
Polish: Wrażliwość krajobrazu
Portuguese: Vulnerabilidade paisagística
Romanian: Vulnerabilitatea peisajului
Russian: Уязвимость ландшафта
Slovakian: Zraniteľnosť krajiny
Slovenian: Ranljivost krajine
Serbian: Рањивост пејзажа
Spanish: Vulnerabilidad del paisaje
Swedish: Landskaps sårbarhet

LAND USE CONFLICTS

Definition

A land use conflict is a situation where there is a disagreement on the use of a certain piece of land and/or a belief that people's rights or well-being are being threatened by an action or undertakings of another, or the inaction of another party.
The origins of most land use conflicts is when a land use, a project or an action is incompatible with the views, expectations and values of the people living, working and/or vacationing in a potentially affected area.

Related terms

Landscape governance, Planning process, Public participation, Stakeholder

Keywords

Disagreement, Dispute, Incompatibility, Dysfunctionality, Landscape conflict

Figure 16. Public protest against a proposed project of large wind park (130 wind turbines) at Nantucket Sound, Massachusetts (USA) taken on February 2, 2010 at Woods hole, MA
(Source: The Associated Press, http13)

Source

Definition adapted from Learmonth, R., Whitehead, R., Boyd, W., Fletcher, S. 2007: Living and working in rural areas: a handbook for managing land use conflict issues on the NSW North Coast. Department of Primary Industries, Wollongbar.

Translations

Bosnia and Herzegovina: Konflikt namjene zemljista
Bulgarian: Конфликт при използването на земите
Croatian: Konflikt namjene zemljista
Czech: Konflikt o využití krajiny
Danish: Arealanvendelses konflikt
Dutch: Landgebruiksconflict
Esperanto: Konflikto pri uzo de tero
Estonian: Maakasutuskonflikt
Finnish: Maankäyttökonfliktit
French: Conflit dans l'exploitation du paysage
German: Landnutzungskonflikt
Greek: Διενέξεις χρήσης γής
Hebrew: קרקע שימושי של קונפליקטים
Hungarian: tájhasználati konfliktus
Italian: Conflitto di usi del suolo
Icelandic: Átök um landnýtingu/ ágreiningur um landnýtingu
Latvian: Zemes lietojuma konflikts
Lithuanian: Žemėnaudos konfliktai
Montenegrin: Konflikt korišćenja zemljišta
Polish: Konflikty przestrzenne
Portuguese: Conflito sobre uso de terra
Romanian: Conflict în utilizarea terenului
Russian: Конфликт землепользования
Slovakian: Konflikt o využití zeme
Slovenian: Konflikt med rabami zemljišč
Serbian: Конфликти при коришћењу земљишта
Spanish: Markanvändningskonflikt
Swedish: markanvändningskonflikt

VISUAL IMPACT

Definition
Change to the appearance of the landscape as a result of a development which can be positive (improvement) or negative (detraction) and the associated changes in the human visual experience of the landscape.

Related terms
Landscape assessment, Landscape capacity, Visual assessment, Visual impact assessment,
Keywords
Scenery, Visual amenity, Viewsheds

Figure 17. This former natural landscape on Iceland is now dominated through energy production by hydro power (Photo: Alexandra Kruse 2016)

Source
IEA and the Landscape Institute 1995: Guidelines for landscape and visual impact assessment. E and FN Spon, London.

Translations
Bosnia and Herzegovina: Vizuelni uticaju/utjecaji
Bulgarian: Визуална оценка на въздействието
Croatian: Vizualni utjecaj
Czech: Vizální dopad
Danish: Virsuelle konsekvenser
Dutch: Visueel effect of visuele invloed *(of hinder)*
Esperanto: Vida influo
Estonian: Visuaalne mõju
Finnish: Visuaalinen vaikutus
French: Impact visuel
German: Visuelle Beeinträchtigung
Greek: Οπτική επιβάρυνση
Hebrew: חזותית השפעה
Hungarian: Vizuális hatás
Italian: Impatto visivo
Icelandic: Sjónræn áhrif
Latvian: Vizuālā ietekme
Lithuanian: Vizualinis poveikis
Montenegrin: Vizualni uticaj
Polish: Oddziaływania wizualne
Portuguese: Impacto visual
Romanian: Impact vizual
Russian: Визуальное воздействие
Slovakian: Vizuálny impakt
Slovenian: Vpliv na vidne kakovosti
Serbian: Визуелни утицај
Spanish: Impacto visual
Swedish: Visuell påverkan

BIOFUEL

Definition

A biofuel is any fuel whose energy is obtained through a process of biological carbon fixation. To be considered a biofuel it must contain over 80 % renewable materials. It can be derived directly from plants, or indirectly from agricultural, commercial, domestic, and/or industrial wastes.

Biofuels generally involve carbon fixation through the process of photosynthesis. It is produced by conversion from biomass in three different ways:

a) thermal,
b) chemical and
c) biochemical.

Biofuel can be solid, liquid or gaseous. The most common types of biofuels are bioethanol and biodiesel, which are predominantly used in the transport and heating sectors.

Related terms

Biomass, Biogas

Keywords

Carbon fixation, Bioethanol, Biodiesel, Transportation fuel, Heating fuel

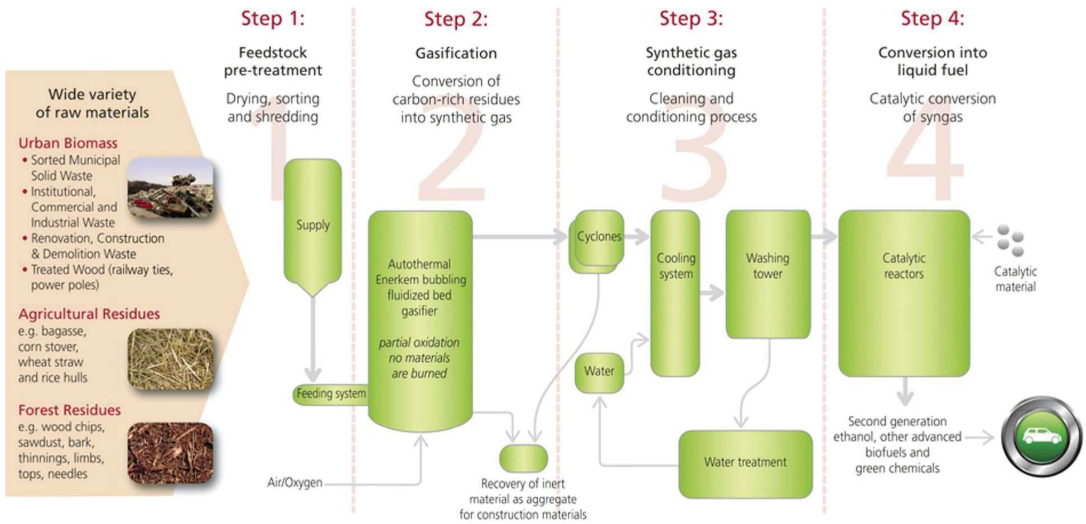


Figure 18. Scheme of production of biofuels from the waste (Source: http14)

Source

http15: http://biofuel.org.uk/glossary.html
http16: https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels
http17: http://www.alternative-energy-news.info/technology/biofuels/
http18: www.gov.uk/guidance/industrial-energy-and-non-food-crops-business-opportunities-for-farmers

Translations	
Bosnia and Herzegovina: Biogorivo Bulgarian: Биогориво Croatian: Biogorivo Czech: Biopalivo Danish: Biobrændsel Dutch: Biobrandstof Esperanto: Biofuelo Estonian: Biokütus Finnish: Biopolttoaine French: Bio combustible German: Biokraftstoff Greek: Βιοκαύσιμο Hebrew: ביולוגיים דלקים Hungarian: Bioüzemanyag, agroüzemanyag	Italian: Biocombustibile Icelandic: Lífeldsneyti Latvian: Biodegviela Lithuanian: Biokuras Montenegrin: Biogorivo Polish: Biopaliwa Portuguese: Biocombustível Romanian: Biocombustibil Russian: Биотопливо Slovakian: Biopalivo Slovenian: Biogorivo Serbian: Биогориво Spanish: Informes técnicos Swedish: Biobränsle

BIOGAS

Definition

Biogas is produced by anaerobic digestion (AD) which is the breakdown of organic material by micro-organisms in the absence of oxygen. Suitable organic materials include animal manure, sewage sludge, the organic fractions of household and industrial waste, or energy crops.

The calorific value of biogas is linked to characteristics of the inputs. For example, a high content of sugar and fat will result in biogas with a high calorific value.

Related terms

Biomass, Biofuel

Keywords

Methane, Landfill gas, Agricultural wastes, GHG emissions

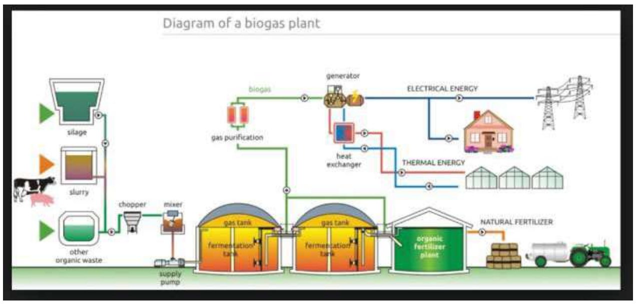


Figure 19a. Diagram of a biogas plant (Source: http19)

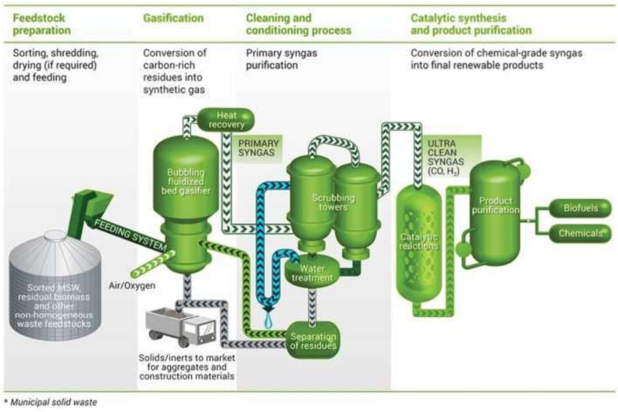


Figure 19b. Scheme of biogas production in industrial style (Source: http20, permission by Enerkem)

Figure 19c. Bigger biogas plant on a farm in Oberscheid, Germany (Photo: Alexandra Kruse 2016)

Figure 19d. Full-scale biofuel facility in Edmonton, Canada Publication permission by Enerkem (Source: http20)

Source

http21: www.biogas-info.co.uk/ (UK Government portal on aerobic digestion)
http22: http://european-biogas.eu/biogas/ (European Biogas Association)

Translations	
Bosnia and Herzegovina: Biogas Bulgarian: Биогаз Croatian: Bioplin Czech: Bioplyn Danish: Biogas Dutch: Biogas Esperanto: Biogaso Estonian: Biogaas Finnish: Biokaasu French: Biogaz German: Biogas Greek: Βιοαέριο Hebrew: ביוגז Hungarian: Biogáz	Italian: Biogas Icelandic: Lífgas Latvian: Biogāze Lithuanian: Biodujos Montenegrin: Biogas Polish: Biogaz Portuguese: Biogás Romanian: Biogaz Russian: Биогаз Slovakian: Bioplyn Slovenian: Bioplin Serbian: Биогас Spanish: Biogás Swedish: Biogas

BIOMASS

Definition
From an ecological point of view, biomass is the total amount of living matter that exists in an ecosystem or in an animal or plant population. It is derived from organic material such as trees, plants, and agricultural and urban waste.

(a) Agricultural crops, i.e. those grown for energy production, in Europe are predominantly herbaceous crops (e.g. miscanthus, reed canary grass, giant reed), oil seeds (e.g. rape seed, sunflower), sugar crops (e.g. sugar cane, sweet sorghum), and starch crops (e.g. maize, wheat), straw;
(b) Forestry crops, which are predominantly short rotation plantation (e.g. willow, poplar and eucalyptus), and forest by-products (e.g. wood chips and blocks); agricultural wood production (e.g. vineyard, olive groves, orchards);
(c) Industrial residues, such as industrial wood waste, sawdust from sawmills, fibrous vegetable waste from paper industries;
(d) Waste, from parks and domestic gardens, demolition wood, biodegradable landfill waste, sewage sludge, municipal solid waste.

These various sources of biomass can be treated by chemical, biochemical or thermochemical processes to produce energy to generate renewable electricity or heat. They are chopped, chipped, pelleted or baled before being:

- burnt in a stove or boiler,
- mixed with coal for use in a conventional power station and
- used in a dedicated biomass power station.

Energy crops can also be grown for use in an anaerobic digester, where the organic material is broken down to produce biogas for heat and power.

Related terms
Biofuels, Biogas
Keywords
Bioenergy, Land use for energy

Figure 20a. Non-food, perennial biomass, crops such as willows and miscanthus can contribute to the reduction of CO_2 and play a role in mitigation against climate change
(Source: Test fields at Szent István University/HU Alexandra Kruse 2017)

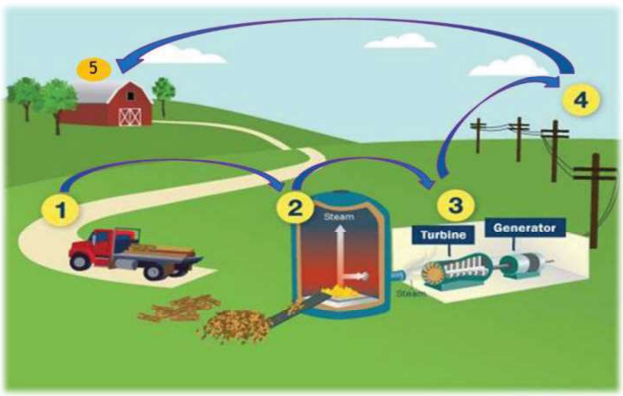


Figure 20b. Biomass power plant – Scheme
(Source: http23)

Source Definition developed by COST RELY Action.	
Translations Bosnia and Herzegovina: Biomasa Bulgarian: Биомаса Croatian: Biomasa Czech: Biomasa Danish: Biomasse Dutch: Biomassa Esperanto: Biomaso Estonian: Biomass Finnish: Biomassa French: Biomasse *(énergie)* German: Biomasse Greek: Βιομάζα Hebrew: ביומס Hungarian: Biomassza	Italian: Biomassa Icelandic: Lífmassi Latvian: Biomasa Lithuanian: Biomasė Montenegrin: Biomasa Polish: Biomasa Portuguese: Biomassa Romanian: Biomasă Russian: Биомасса Slovakian: Biomasa Slovenian: Biomasa Serbian: Биомаса Spanish: Biomasa Swedish: Biomassa

ENVIRONMENTAL THERMAL ENERGY SOURCE

Definition

Environmental thermal energy source refers to the availability of very low enthalpy of air (aerothermal), water (hydrothermal) and ground (geothermal) that can be commonly exploited as a heat source by convertible heat pump systems. This energy can be used either for air conditioning or producing the hot water. Its benefits include zero CO_2 emissions, inexhaustible source of energy, independence from external suppliers and low heating costs. Preconditions are large radiators for a low temperature system and good insulation of the building.

Ground-sourced energy can be utilised via heat pumps in two different ways. 1. Heat close to the surface is used (an uniformed year-round temperature) via a surface collector installed as a heating coil at a depth of 1.5 m extracts heat from the ground. 2. Heat recovery is possible with a space-saving geothermal probe. The geothermal heat is removed with special ground probes that go as far as 100metres deep into the earth (the area with the all-year-constant temperature of 10 °C).

Groundwater-source energy relies on the constant temperature of the groundwater. Exploitation is possible with a well.

Ambient-air-sourced energy can be utilized with heat pumps for heating purposes.

Related terms

Geothermal energy

Keywords

Air-source heat pumps, Ground coupled heat pumps, Ground- source heat exchangers, Surface water heat pumps

Figure 21a. Air source heat pump, Ferrara (Photo: M. Bottarelli 2017)

Figure 21b. Water heat exchanger using a pond (Photo: http24)

Source

http25: www.ehpa.org (European Heat Pump Association)
http26: http://egec.info/ (European Geothermal Energy Council)
Somogyi, V., Sebestyén, V., Nagy, G. 2017: Scientific achievements and regulation of shallow geothermal systems in six European countries – A review. Renewable and Sustainable Energy Reviews 68: 934–952.
Yang, H., Cui, P., Fang, Z. 2010: Vertical-borehole ground-coupled heat pumps: A review of models and systems. Applied Energy 87(1): 16–27.

Translations

Bosnia and Herzegovina: Izvori toplotne energije u prirodnom okruženju/okolišu
Bulgarian: Източник на термална енергия от ОС
Croatian: Toplinski izvor energije iz okoliša
Czech: Zdroj tepelné energie z životního prostředí
Danish: Miljøtermisk energiressource
Dutch: Omgevingswarmte
Esperanto: Fonto de varma energio el medio (grunto, akvo, aero)
Estonian: Maasoojuspump
Finnish: Maalämpö
French: Source d'énergie thermale environnementale
German: Lantentwärmenutzung
Greek: Περιβαλλοντική θερμική Ενέργεια
Hebrew: מקור אנרגיה תרמי-סביבתי
Hungarian: Környezethő energiaforrás
Italian: Fonte energetica da risorsa termale/ Sorgente di energia termica naturale

Icelandic: not used
Latvian: Termālie vides enerģijas avoti
Lithuanian: Aplinkos šiluminės energijos šaltinis
Montenegrin: Toplotni izvori iz životne sredine
Polish: Źródło energii cieplnej otoczenia np. grunt, woda, powietrze
Portuguese: Fonte de energia térmica ambiental
RomanianSursă de energie termală a mediului
Russian: Источник экологической тепловой энергии
Slovakian: Zdroj tepelnej energie zo životného prostredia
Slovenian: Toplotni vir iz okolja
Serbian: Амбијент у својству топлотног извора
Spanish: Energia termica ambiental (hidro-termica, aerotermica o geotermica)
Swedish: Miljömässig termisk energikälla

GEOTHERMAL ENERGY

Definition
Geothermal energy is energy stored in the form of heat below the earth's surface. It is used as a source for renewable electricity and heat with liquid water or steam as a carrier.

Related terms
Environmental thermal energy source
Keywords
Renewable heat

Figure 22a. Geothermal energy plant in Krafla, Northeast Iceland (Photo: David Ostman 2017)

Figure 22b. Geothermal energy plant in Hengill, Southwest Iceland (Photo: David Ostman 2017)

Source
http27: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_geothermal
(EU Research and Innovation, Geothermal Energy)

Translations
Bosnia and Herzegovina: Geotermalna energija
Bulgarian: Геотермална централа /геотермал-на енергия
Croatian: Geotermalna energija
Czech: Geotermální energie
Danish: Geotermisk energi
Dutch: Geothermie
Esperanto: Subtera varma energio
Estonian: Geotermaalenergia / geotermiline energia; maapõueenenergia
Finnish: 'Maalämpövoima
French: Energie géothermale
German: Geothermie
Greek: Παραγωγή ηλεκτρισμού από γεωθερμία
Hebrew: גאותרמית אנרגיה
Hungarian: Geotermális energia
Italian: Energia geotermica
Icelandic: Jarðvarmaorka; jarðhitaorka
Latvian: Ģeotermālā enerģija
Lithuanian: Geoterminė energija
Montenegrin: Geotermalna energija
Polish: Energia geotermalna
Portuguese: Energia Geotermal/ Geotérmica
Romanian: Energie geotermală
Russian: Геотермальная энергия
Slovakian: Geotermálna energia
Slovenian: Geotermalna energija
Serbian: Геотермална енергија
Spanish: Energía geotérmica
Swedish: Geotermisk energi

HYDROPOWER

Definition

Moving water (kinetic energy) is used to produce electricity, referred to as hydropower.

Hydropower generation is categorized in relation to the: (i) means of storage, (ii) movement of the water. There are two broad types of hydro-power, run-of the river and reservoir. Reservoir is subdivided into storage reservoir and pumped storage.

The energy produced is classified according to their energy production capacity, expressed in megawatts. The two types of hydropower are associated with differ capacities of energy production, described below.

Large scale hydropower generation requires water storage provided by natural or man-made lakes or reservoirs, which are dammed to retain and regulate water for later release for power generation for domestic and industrial use. Globally, the hydropower scheme with the largest installed capacity is the Three Gorges Dam, China (22,500 MW), and the largest in Europe is the Iron Gates I, Romania (2,250MW).

Small scale hydropower is characterised by the capture of energy in flowing water (run of the river), with an upper limit of 10MW to 30MW depending upon country. The power of the scheme is proportional to the flow and the head: 1. Flow - the minimum amount of water that is constantly available throughout the year, and 2. Head - the vertical distance between the flow intake and the turbine. This definition includes micro hydropower that is considered to be an installation of 300kW or less, depending upon country.

Related terms

Marine Energy

Keywords

Hydroelectric, Water energy

Figure 23a. Micro hydro power in Eftimie Murgu village, Caraș Severin county, Romania (Photo: Maria Bostenaru Dan 2008)

Figure 23b. Large hydro power plant Alqueva II in Portugal (Photo: Naja Marot 2015)

Source

Eurelectric 2011: Hydro in Europe: Powering Renewables. Union of the Electricity Industry, Brussels. p. 66.

http28: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_hydro

http29: www.small-hydro.com/about/small-scale-hydrpower.aspx

Translations for small and micro hydropower Bosnia and Herzegovina: Male i mikro hidroelektrane Bulgarian: Малка и средна хидроцентрала Croatian: Male i mikro hidroelektrane Czech: Malá a extrémně malá vodní energie Danish: Lille og micro vandkraft Dutch: Kleine en mico waterkracht Esperanto: Malgranda kaj mikro akvoelektrejo Estonian: Väikehüdroelektrijaamad Finnish: Pienvesivoima French: Energie hydraulique de petite et moyenne taille German: Mini- und Kleinstwasserkraftwerke Greek: Μικρά Υδροηλεκτρικά Hebrew: וקטן בינוני הידראולאקטרית אנרגיה לייצור מתקן	Hungarian: Kis és mikro vízerőmű Italian: Mini e micro idroelettrico Icelandic: Smá- og örvirkjanir Latvian: Mazā un mikro hidroelektrostacija Lithuanian: Mažosios ir mikro hidroelektrinės Montenegrin: Mala i mikro hidroelektrana Polish: Mała i mikro- elektrownia wodna Portuguese: Pequenas e micro hidroelétricas Romanian: Micro- şi minihidrocentrale Russian: Малая и средняя гидроэлектроэнергия Slovakian: Malé a mikro-vodné elektrárne Slovenian: Mala in mikro hidroelektrarna Serbian: Мале хидроелектране Spanish: Energía hidroeléctrica a pequeña escala Swedish: Liten och mikro vattenkraft
Translations for Large hydropower Bosnia and Herzegovina: Velike hidroelektrane Bulgarian: Голяма хидроцентрала Croatian: Velike hidroelektrane Czech: Velká vodní energie Danish: Større vandkraft Dutch: Grote waterkracht (-plant = -centrale) Esperanto: Granda akvoelektrejo Estonian: Hüdroelektrijaam Finnish: Suurvesivoima French: Energie hydraulique de grande taille / Grande hydraulique German: Großwasserkraft Greek: Μεγάλα υδροηλεκτρικά Hebrew: גדול בהיקף הידראולאקטרית אנרגיה לייצור מתקן Hungarian: Nagy vízerőmű	Italian: Grandi impianti idroelettrici / Idroelettrico a grande scala Icelandic: Stórar vatnsaflsvirkjanir Latvian: Lielā hidroelektrostacija Lithuanian: Didžiosios hidroelektrinės Montenegrin: Velika hidroelektrana Polish: Elektrownia wodna Portuguese: Grandes hidroelétricas Romanian: Hidrocentrale Russian: Крупномасштабная гидроэлектроэнергия Slovakian: Veľké vodné elektrárne Slovenian: Velika hidroelektrarna Serbian: Велике хидроелектране Spanish: Grandes centrales hidroeléctricas Swedish: Stor vattenkraft

MARINE ENERGY

Definition

Marine energy is a common term for the energy of oceans, which can be either carried by ocean waves, ocean current, tidal stream and range, run-of-river, salinity and ocean temperature differences. It is also called marine power, ocean energy, ocean power, hydroelectricity, marine and hydrokinetic energy. Due to the proximity of oceans to the most populated locations in the world, oceans have a potential of providing a substantial amount of yet unutilized renewable energy. According to the Ocean Energy Europe (the largest network of ocean energy professionals – utilities, industrialists and research institutes), ocean energy can provide 10% of Europe's electricity by 2050. For this, the industry foresees to build 100 GW of production capacity.

Wave energy encompasses power from surface waves. The size of the waves generated will depend upon the wind speed, its duration, and the distance of water over which it blows (the fetch), bathymetry of the seafloor (which can focus or disperse the energy of the waves) and currents. The movement of water carries kinetic energy, which can be harnessed by wave energy devices. The optimal resources for the wave energy are in the offshore waters where waves are formed by the strong winds that have travelled long distances.

Tidal energy is energy harnessed from the kinetic energy of large bodies of moving water. Tidal streams causing this energy are formed due to the constantly changing gravitation pull of the moon and sun on the oceans. It is a constant movement, which can be due to the relative positions of the sun and moon predicted with perfect accuracy. The best areas for tidal stream exhaustion are areas with a good tidal range or in the in narrow straits and inlets, around headlands, and in channels between islands where the speed of the currents are empowered due to the geomorphological funnelling effect.

Related terms

Hydropower, Wind energy

Keywords

Renewable energy

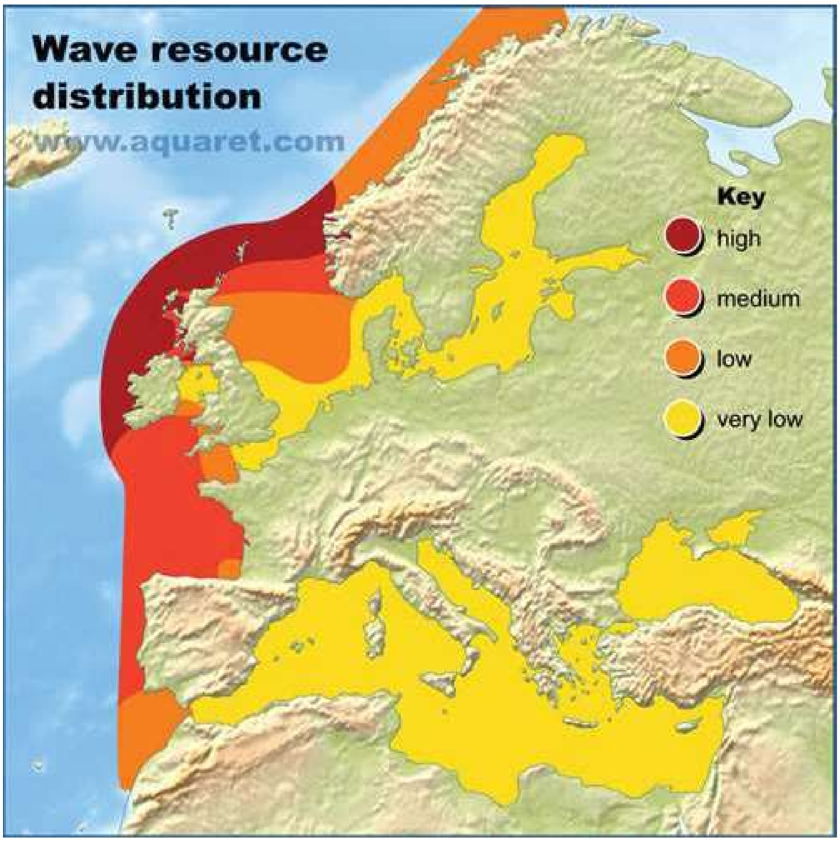


Figure 24. Wave resource distribution in Europe
(Source: http30 via The European Marine Energy Centre 2017)

Source
http31: http://www.emec.org.uk/marine-energy/ (The European Marine Energy Centre)
http32: http://www.oceanenergy-europe.eu/ (Ocean Energy Europe)

Translations

Bosnia and Herzegovina: Energija talasa i morskih struja
Bulgarian: Енергия от морето
Croatian: Energija valova
Czech: Mořská energie
Danish: Havenergi *(energy på havet)*
Dutch: Maritieme energie
Esperanto: Energio de maro
Estonian: Mereenergia
Finnish: Aaltovoima
French: Energie marine
German: Marine Energie
Greek: Ενέργεια των Θαλασσών
Hebrew: גלים אנרגיית
Hungarian: Tengeri energia
Italian: Energia marina
Icelandic: Haforka
Latvian: Jūras enerģija
Lithuanian: Jūros energetika
Montenegrin: Energija talasa
Polish: Energia pływów morskich
Portuguese: Energia marinha
Romanian: Energie marină
Russian: Энергия океана, морская энергия
Slovakian: Morská energia
Slovenian: Energija morja
Serbian: Енергија таласа и морских струја
Spanish: Energía maremotríz
Swedish: Marin energi

PHOTOVOLTAIC

Definition

Photovoltaic technology is the means to convert the sun's radiation directly into electricity by solar cells. These cells are made of semiconducting materials similar to those used in computer chips. When sunlight is absorbed by these materials, the solar energy knocks electrons loose from their atoms, allowing the electrons to flow through the material to produce electricity. This process of converting light (photons) to electricity (voltage) is called the photovoltaic effect. Photovoltaic modules are connected in series and in parallels. The modules mostly have a frame, and the supporting structures are usually built out of galvanized steel or aluminium. The structures are attached to the ground via a foundation. Most of the time this type of systems are grid connected. We distinguish between two types of photovoltaics:

a) On/in building-mounted photovoltaic
b) On ground-mounted photovoltaic

To a): Photovoltaic modules connected in series and in parallel that are mounted onto or into the building's envelope, also called building added on photovoltaics (BAPV), or building attached photovoltaics-BAPV. Such photovoltaics do not use additional land area not included within the building's footprint neither do they have any building's function.

In the case of in buildings systems (so-called building integrated photovoltaics-BIPV) the photovoltaic modules replace conventional buildings' technological units; therefore photovoltaic components, suited for building integration have to be used to fulfil a number of functions, e.g. mechanical and thermal, standard photovoltaic modules cannot meet.

To b): The majority of the solar power installed today, is ground-mounted. Based on some solar capture optimization rules, the modules have generally a fixed orientation (normally South facing in the Northern hemisphere), and they are tilted to an optimal angle in order to maximize solar utilization. The distance between the rows of modules is designed so as to avoid shading effects while maximising the use of the available land.

There is no consensus on the size of an on ground PV system to be defined "utility scale" or "large". The nominal power of on ground PV systems varies greatly, from a few kWp up to hundreds of MWp.

In some countries, the authorization procedure for on ground PV systems is related to the size. In Italy, for example, a simplified procedure exists for systems smaller than 1MWp, whereas for systems larger than 1MWp, the environmental impact assessment procedure is required.

Related terms

Solar thermal, Solar thermoelectric

Keywords

Building Integrated Photovoltaics, Building Added Photovoltaics, Building Attached Photovoltaics

Photovoltaic's definition continues.

Figure 25a. Type a) Roof integrated photovoltaics, Tabià in Selva di Cadore (IT), designed by Exit. Special BIPV opaque components (modules + framing system) replace the traditional wooden tiles of the roof. (Photo: courtesy of Exit)

Figure 25b. Type a) Roof integrated photovoltaics. Glass-glass PV modules can be used in replacement of standard glazed surfaces (facades, roofs, skylights) in building's envelopes, coupled with standard framing systems. (Photo: courtesy of Ertex Solar)

Figure 25c. Type b) Waldpolenz solarpark (40MW), Leipzig (DE). This PV system is a typical example of a large scale PV; it is built on a former military area. The modules are arranged in a parallel stripes pattern, are E-W oriented, and face the South with an optimal tilt inclination of about 30°. (Photo: Juwi Solar GmbH)

Figure 25d. Type b) Agrinergie® (2.1 MWp), La Reunion (FR). It combines energy generation from PV and lemon grass production. This dual land use design pattern enabled the developers to get the approval for the realization of a system, since in French overseas islands it is not allowed to build on ground PV, because of land and landscape protection rules. (Photo: Akuo Energy)

Source

http33: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_solar

http34: http://standards.globalspec.com/std/9996054/ds-en-50583-1

Scognamiglio, A. 2012: Chapter 6 – Building-Integrated Photovoltaics (BIPV) for Cost-Effective Energy-Efficient Retrofitting, In: Pacheco-Torgal, F., Granqvist, C., Jelle, B., Vanoli, G., Bianco, N., Kurnitski, J. (eds.) Cost-Effective Energy Efficient Building Retrofitting. Woodhead Publishing, Sawston, Cambridge: pp. 169–197.

Scognamiglio, A., Bosisio, P., Di Dio, V. 2013: Fotovoltaico negli edifici, Edizione 2013 (Photovoltaics in buildings. Edition 2013). Edizioni Ambiente, Milano.

Translations: Solar PV ground-mounted power

Bosnia and Herzegovina: Samostojeći fotonaponski solarni paneli
Bulgarian: Соларна централа монтирана на земята
Croatian: Ugrađene solarne fotonaponske ćelije
Czech: Sluneční fotovoltaická (FV) pozemní energie
Danish: Solceller jordmonteret
Dutch: Grondgebonden zonnepanelen (solar parks = zonneparken)
Esperanto: Suna surtere muntita elektrejo
Estonian: Päikesepaneelid (PV-paneelid) maapinnal
Finnish: Aurinkopaneelit maassa (closest match)
French: Energie solaire photovoltaïque terrestre
German: Solarpark oder Freiflächen-Photovoltaikanlage
Greek: Φωτοβολταϊκά συστήματα στο έδαφος
Hebrew: אנרגיה סולארית (PV) על הקרקע
Hungarian: földre telepített napelem
Italian: Impianto fotovoltaico a terra
Icelandic: Sólarrafhlöður á jörðu
Latvian: Saules kolektors uz zemes
Lithuanian: Antžeminės saulės jėgainės
Montenegrin: Solarna FN elektrana montirana na zeljištu
Polish: Naziemne panele fotovotaiczne
Portuguese: Energia solar fotovoltáica montada no solo
Romanian: Energie solară fotovoltaică terestră
Russian: Солнечные фотоэлектрические системы смонтированные наземно
Slovakian: Slnečná fotovoltaická pozemná energia
Slovenian: Sončna elektrarna na tleh / fotonapetostna elektrarna na tleh
Serbian: Самостојећи фотонапонски соларни панели
Spanish: Energía solar fotovoltáica sobre suelo
Swedish: Sol PV markmonterad kraft

Translations: Solar PV on-roof power

Bosnia and Herzegovina: Krovni fotonaponski solarni paneli
Bulgarian: Соларна централа монтирана на покривите
Croatian: Krovne solarne fotonaponske ćelije
Czech: Sluneční fotovoltaická (FV) střešní energie
Danish: Solceller tagmonteret
Dutch: Zonne panelen op het dak
Esperanto: Suna surtegmente muntita elektrejo
Estonian: Päikesepaneelid (PV-paneelid) katusel
Finnish: Aurinkopaneelit katolla (closest match)
French: Energie solaire photovoltaïque sur des toits
German: Photovoltaikanlage auf dem Dach
Greek: Φωτοβολταϊκά συστήματα στις σκεπές
Hebrew: אנרגיה סולארית (PV) על גגות
Hungarian: Tetőre telepített napelem
Italian: Impianto fotovoltaico su edificio
Impianto fotovoltaico in copertura
Icelandic: Sólarrafhlöður á þaki
Latvian: Saules kolektors uz jumta
Lithuanian: Stogų saulės jėgainės
Montenegrin: Solarna FN elektrana montirana na krovu
Polish: Dachowe panele fotovotaiczne
Portuguese: Energia solar fotovoltáica instalada em telhados
Romanian: Energie solară fotovoltaică pe acoperiș
Russian: Солнечные фотоэлектрические системы смонтированные на здании
Slovakian: Slnečná fotovoltaická strešná energia
Slovenian: sončna elektrarna na strehi / fotonapetostna elektrarna na strehi
Serbian: Кровни фотонапонски соларни панели
Spanish: Energía solar fotovoltáica sobre cubierta/techo
Swedish: Sol PV markmonterad kraft

SOLAR THERMAL

Definition

Solar energy utilization is used in applications associated with covering the heating and/or cooling requirements of buildings. These applications require low or medium temperature heat and include water heating, for either domestic hot water systems or swimming pools, space heating, and possibly also for space cooling. The main component is the solar thermal collector. The collector typically consists of a black absorber in which the absorbed solar radiation is converted to heat, which in turn is conducted to a fluid. The back and sides of the absorber are insulated and the front side is covered by a transparent cover that allows solar radiation to reach the absorber but reduces heat losses to the atmosphere. All the above, are encased in a metal housing that provides weather protection and offers structural support. Storage tanks are used to store heat in order to cover the loads when solar potential is low. The systems can be of two types:

a) In/on building-mounted solar thermal
b) On ground-mounted solar thermal

To a) In/on building-mounted solar heating systems for hot water production for sanitary use are the most common ones. Typical systems consist mainly of flat plate solar collectors, a storage tank, a mounding base and the necessary piping. Average annual system efficiency for the conversion of solar radiation to energy in form of hot water varies between 30–40%, depending mainly on the type of solar collector used and the location. Larger systems can be used in order to cover space heating needs or/and air conditioning of buildings.

To b) The technical principles of the on ground-mounted solar thermal are the same as under a), but the number of units requires a larger solar field that cannot be accommodated on the roof of buildings.

Related terms

Photovoltaic, Thermoelectric

Keywords

Domestic solar thermal systems, Hot water, Roof-top solar, Solar combi systems, Solar energy, Sun energy

Figure 26a. Type a) Domestic Solar Hot Water System on the roof of a building (Photo: Solahart/ESTIF 2016)

Figure 26b. Type b) Solar Thermal Collector field on the ground (Photo: ARCON/ESTIF 2016)

Source

Martinopoulos, G. 2016: Solar Energy in Buildings. In: Elias, S.A. (ed.) Reference Module in Earth Systems and Environmental Sciences, Elsevier, Amsterdam.

Translations: Solar thermal ground-mounted power Bosnia and Herzegovina: Solarne termoelektrane-samostojeće Bulgarian: Соларно-топлинна централа монтирана земно Croatian: Ugrađeni solarni paneli Czech: Sluneční tepelná pozemní energie Danish: Solvarme jordmonteret Dutch: Thermische zonne-energie op de grond Esperanto: Suna surgrunde muntita varmizilo Estonian: Päikeseküte (maapinnal) Finnish: Aurinkokeräin maassa (closest match) French: Energie thermique solaire terrestre German: Solarthermie Greek: Ηλιακά θερμικά συστήματα παραγωγής ηλεκτρισμού Hebrew: אנרגיה תרמית על הקרקע	Hungarian: Földre telepített napkollektor Italian: Impianto solare termico a terra Icelandic: Sólarhitasöfnunarkerfi á jörðu Latvian: Saules termālie paneļi uz zemes Lithuanian: Antžeminės saulės šiluminės jėgainės Montenegrin: Solarne termalne elektrane na zemljištu Polish: Naziemne panele słoneczne Portuguese: Termoeléctrica solar no solo Romanian: Energie termică solară terestră Russian: Солнечные термальные системы смонтированные наземно Slovakian: Pozemná solárna termálna energia Slovenian: Sončne termalne naprave na tleh Serbian: Соларне термоелектране Spanish: Energía termo-solar sobre suelo Swedish: Sol termisk markmonterad kraft
Translations: Solar thermal on-roof power Bosnia and Herzegovina: Solarne termalne elektrane na krovovima Bulgarian: Соларно-топлинна централа монтирана върху покривите Croatian: Krovni solarni paneli Czech: Sluneční tepelná střešní energie Danish: solvarme tagmonteret Dutch: thermische zonne-energie op het dak Esperanto: Suna surtegmenta varmizilo Estonian: päikeseküte (katusel) Finnish: 'Aurinkokeräin katolla (closest match) French: Energie thermique solaire sur des toits German: Thermische Solarkollektoren (Sonnenkollektoren) auf dem Dach Greek: Ηλιακά θερμικά συστήματα σε κτίρια Hebrew: אנרגיה תרמית על גגות	Hungarian: Tetőre telepített napkollektor Italian: Impianto solare termico su edificio Icelandic: Sólarhitasöfnunarkerfi á þaki Latvian: Saules termālie paneļi uz jumta Lithuanian: Stogų saulės šiluminės jėgainės Montenegrin: Solarne termalne elektrane na krovu Polish: Dachowe panele słoneczne Portuguese: Termoeléctrica solar montada em telhados Romanian: Energie termică solară pe acoperiș Russian: Солнечные термальные системы смонтированные на здании Slovakian: Strešná solárna termálna energia Slovenian: Sončne termalne strešne naprave Serbian: Соларне термоелектране - кровне Spanish: Energía termo-solar sobre cubierta/techo Swedish: Sol termisk takmonterad kraft

SOLAR THERMOELECTRIC

Definition

Solar thermoelectric (concentrated) power systems use a large array of mirrors and/or lenses to concentrate the sun's energy onto a focal point. In this way they transform the direct components of solar radiation into heat energy at high temperature. This heat energy is then converted into electricity for immediate use, and in some cases into energy that can be stored in the form of heat or in chemical form. There are currently four types of thermosolar technology of particular note because of their high degree of technological development: parabolic troughs, solar power towers, linear Fresnel concentrators and Stirling parabolic dishes. Each of these technologies has certain specific characteristics that help create different kinds of thermoelectric solar landscapes, although all these landscapes have a set of common features.

Related terms

Solar thermal, Photovoltaic

Keywords:

Sun energy, Lenses, Heat energy, Concentrated solar power (CSP), Concentrated solar thermal power, Industrial landscape, Agroindustrial landscapes

Figure 27. Solucar PS10 is the first solar thermal power plant in the world that generates electricity with this technique in a commercial way, near Seville, Spain (Photo: Naja Marot 2017)

Source

de Andrés-Ruiz, C., Iranzo-García, E., Espejo-Marín, C. 2015: Solar thermoelectric power landscapes in Spain: A new kind of renewable energy landscape? In: Frolova, M., Prados, M.-J., Nadaï, A. (eds.) Renewable Energies and European Landscapes: Lessons from Southern European cases. Springer, New York, London: pp. 237–254.

Translations

Bosnia and Herzegovina: Termoelektrični solarni sistemi
Bulgarian: Соларна термоелектрическа централа
Croatian: Solarna termoelektrična energija
Czech: Sluneční termoelektrická energie
Danish: Termoelektrisk sol
Dutch: Thermo-elektrische zonne-enerie
Esperanto: Suna varmelektrounuo
Estonian: Päikeseküte
Finnish: Aurinkokeräin
French: Thermoélectrique solaire
German: Solare Thermoelektrik
Greek: Ηλιακά θερνιονικά συστήματα
Hebrew: סולארי-תרמו חשמל
Hungarian: Termoelektromos napelem

Italian: Solare termoelettrico
Icelandic: /not used
Latvian: Saules termoelektrība
Lithuanian: Saulės termoelektrinės
Montenegrin: Solarna termoelektrana
Polish: Ogniwo termoelektryczne
Portuguese: Termoeléctrica solar, Energia solar termoeléctrica
Romanian: Termoelectricitate solară
Russian: Концентрированная солнечная энергия
Slovakian: Slnečná termoelektrická energia
Slovenian: Sončna termoelektrika
Serbian: Термоелектрични соларни системи
Spanish: Energía solar termoeléctrica
Swedish: Solar termoelektrisk

SUSTAINABLE RENEWABLE ENERGY PRODUCTION

Definition

The production of renewable energy in line with the principles of sustainability.

Economic sustainability encompasses the price of renewable energy production at sustainable levels, and efficient processes characterized by lower process requirements, capital and operating costs.

Social sustainability concerns social acceptance, energy democratization, and equality access to energy.

Environmental sustainability includes an assessment of the full environmental footprint of the renewable energy production (e.g. Life Cycle Assessment; Environment Impact Assessment). It also addresses land use requirements and whether renewable energy production is in competition with food production, habitats and biodiversity, or water supply and quality.

Cultural sustainability should conform to local cultural values and not adversely impact on cultural landscapes and heritage.

Related terms

Life Cycle Analysis, Environmental Impact Assessment, Social Impact Assessment

Keywords

Sustainable development

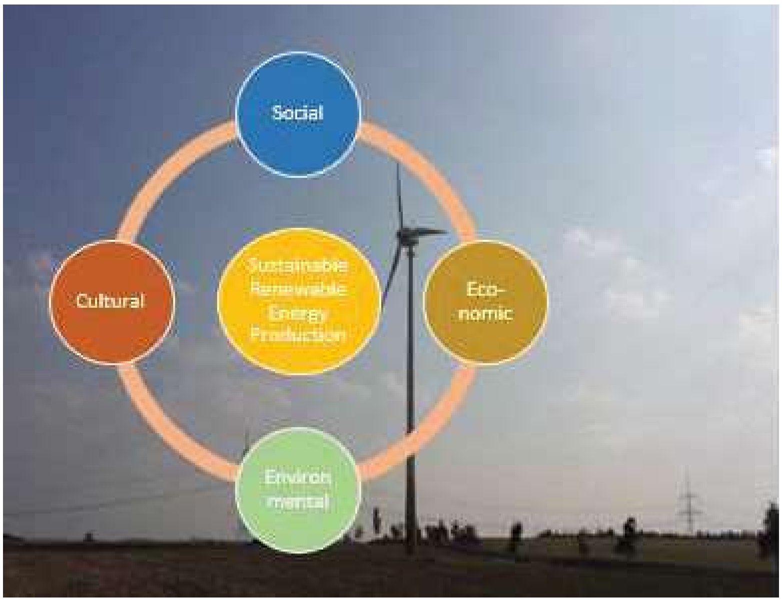


Figure 28. Sustainable Renewable Energy Production (Photo & Montage: Pia Otte 2016)

Source

Evans, A., Strezov, V., Evans, T.J. 2009: Assessment of sustainability indicators for renewable energy technologies. Renewable and Sustainable Energy Reviews, 19: 1082–1088.

Botelho, A., Pinto, L. M., Lourenço-Gomes, L., Valente, M., Sousa, S. 2016: Social sustainability of renewable energy sources in electricity production: An application of the contingent valuation method. Sustainable Cities and Society, 26: 429–437.

Translations	
Bosnia and Herzegovina: Održiva proizvodnja energije iz obnovljivih izvora Bulgarian: Устойчиво производство на възобновяема енергия Croatian: Održiva proizvodnja energije obnovljivim izvorima Czech: Udržitelná výroba obnovitelné energie Danish: Bæredygtig vedvarende energiproduktion Dutch: Duurzame hernieuwbare energieproductie Esperanto: Daŭrigebla (ekvilibra) produktado de renovigebla energio Estonian: Jätkusuutlik taastuva energia tootmine Finnish: Kestävä uusiutuvan energian tuotanto French: Production durable d'énergie renouvelable German: Nachhaltige Produktion Erneuerbarer Energien Greek: Βιώσιμη παραγωγή ενέργειας από ανανεώσιμες πηγές Hebrew: ייצור מקיים של אנרגיות מתחדשות Hungarian: Fenntartható megújulóenergia-termelés Italian: Produzione energetica sostenibile da fonti rinnovabili	Icelandic: Sjálfbær vinnsla endurnýjanlegrar orku Latvian: Ilgtspējīgas atjaunīgās enerģijas ražošana Lithuanian: Tvari atsinaujinančios energijos gamyba Montenegrin: Održiva proizvodnja iz obnovljivih izvora energije Polish: Zrównoważona produkcja energii ze źródeł odnawialnych Portuguese: Produção sustentável de energia renovável, Produção sustentada de de energia a partir de fontes renováveis Romanian: Producerea durabilă de energie regenerabilă Russian: Производство возобновяемой энергии Slovakian: Udržateľná výroba energie z obnoviteľných zdrojov Slovenian: Trajnostna proizvodnja energije iz obnovljivih virov Serbian: Одржива производња енергије из обновљивих извора Spanish: Producción de energías renovables sostenible Swedish: Hållbar produktion av förnybar energi

WIND ENERGY

Definition

Wind power refers to the extraction of kinetic energy from the wind to generate electricity.

In early 2017, the total installed capacity reached 153.7GW, placing wind energy as the second largest form of power generation capacity in Europe.

Wind energy generation is categorized by the type of wind turbine (horizontal or vertical axis), and the on- or off-shore location of the turbines. The predominant use is of horizontal axis turbines, with vertical axis turbines more commonly used in urban or built environments.

(a) Onshore wind energy generation is land-based with developments ranging in the size (height of tower and diameter of rotor blades) and the number of turbines. Energy capacity of turbines (currently) range up to 3.6MW, with a rotor diameter of 130m. Developments may be classified as small, medium or large scale the definitions of which vary by country.

(b) Offshore wind energy generation is marine, sea or lake, typically employing turbines of a larger capacity than onshore, with capacity up to 8MW, and a rotor diameter of 164m.

Related terms

Energy landscape, Visual impact, Visual impact assessment, Marine energy

Keywords

Wind farm, Wind park, Wind turbine

Figure 29a. Onshore wind farm near Diepholz, Germany, with the currently world's highest performing onshore wind turbine, i.e. the Enercon-126, with a hub height of 135m (443 ft), rotor diameter of 126m (413 ft) (Photo: Olaf Schroth 2015)

Figure 29b. Offshore wind production in Wirral Penninsula – West Kirby, Wales, United Kingdom (Photo: Elsie Roulston 2016)

Figure 29c. Old and new wind power use in Terras Altas de Fafe, Portugal (Photo: Filipa Soares 2013)

Source

http35: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_wind

http36: https://windeurope.org/about-wind/statistics/

Translations: Wind onshore energy	
Bosnia and Herzegovina: Energija vjetra na kopnu	Italian: Energia eolica on-shore
Bulgarian: Енергия от вятърни генератори	Icelandic: Vindorka á landi
Croatian: Energija vjetra na kopnu/na obali	Latvian: Sauszemes vēja enerģija
Czech: Větrná vnitrozemská energie	Lithuanian: Vėjo energetika sausumoje
Danish: Landvindmøller	Montenegrin: Energija vjetra na kopnu
Dutch: Wind op land	Polish: Energia wiatrowa on-shore
Esperanto: Venta energio surtera	Portuguese: Energia eólica em terra
Estonian: Maismaa tuuleenergia	Romanian: Energie eoliană terestră
Finnish: Tuulivoima (general term)	Russian: Ветроэнергетика на суше
French: Energie éolienne terrestre	Slovakian: Veterná energia
German: Onshore-Windenergie	Slovenian: Vetrna elektrarna na kopnem
Greek: Αιολικό Πάρκο	Serbian: Енергија ветра на копну
Hebrew: אנרגיית רוח יבשתית	Spanish: Energía eólica
Hungarian: Szárazföldi szélenergia	Swedish: Onshore vindkraft
Translations: Wind offshore energy	
Bosnia and Herzegovina: Energija vjetra u priobalju	Italian: Energia eolica off-shore
Bulgarian: Енергия от вятърно морски генератори	Icelandic: Vindorka á sjó
Croatian: Energija vjetra u/na moru	Latvian: Jūras vēja enerģija
Czech: Větrná pobřežní energie	Lithuanian: Vėjo energetika jūroje
Danish: Havvindmøller	Montenegrin: Energija vjetra na moru
Dutch: Wind op zee	Polish: Energia eólica no mar
Esperanto: Venta energio ekstertera (surmara)	Portuguese: Energia eólica em terra
Estonian: Avamere tuuleenergia	Romanian: Energie eoliană maritimă
Finnish: Merituulivoima	Russian: Офшорная ветроэнергетика
French: Energie éolienne en mer (offshore)	Slovakian: Veterná pobrežná energia
German: Offshore-Windenergie	Slovenian: Vetrna elektrarna na morju
Greek: Θαλάσσιο Αιολικό Πάρκο	Serbian: Енергија ветра на мору
Hebrew: אנרגיית רוח בים	Spanish: Energía eólica marina (offshore)
Hungarian: (nyílt)Tengeri szélenergia	Swedish: Offshore vindkraft

BEST PRACTICE

Definition

In a general sense, best practice (also used good practice) is an approach that, through scientific evidence and practical experience, showing processes and outcomes, which are superior to those achieved by other means, and which are used as models and recommendations for others.

In order to speak about best practice, it is necessary to define the parameters, why and how an example can be a best one. E.g. in the context of waste prevention, the European Commission has given the following benchmarks:

"Practices have been selected to demonstrate excellent examples of informational, promotional and regulatory measures to stimulate the prevention of waste. They were selected in consideration of the following criteria:

- Targeted: Practices have a strong waste prevention focus, clearly distinct from other waste management strategies or broad environmental goals.
- Innovative: Practices use original or resourceful techniques for waste prevention.
- Replicable: Practices can be easily reproduced and are similarly relevant in regions across Europe.
- Representative: Practices originate from a wide range of countries, operate at national, regional and local level, and target a variety of waste streams.
- Effective: Practices have clearly defined objectives and measurable results.

Best practice in the context of renewable energy development and landscape quality can be defined as the process and outcome of the production of renewable energy with minimal negative impact on people and at all stages of its life cycle (including planning, and the extraction, manufacturing, transport, and construction of the site, its operation and decommissioning). Furthermore, they have to be compatible with the landscape (as well with its character), and preventing or minimizing potential negative impacts on people and ecosystems.

In the COST action RELY best practice of renewable energy development is understood with respect to the elements underpinning landscape quality.

Related terms

Ecological engineering, Energy-conscious design, Environmental Impact Assessment

Keywords

Achievement, Evidence, Landscape compatible, Model case, Smart practice experience

Figure 30a. The ´Floating´ solar power plant in Kagoshima Bay, Japan can be considered as a good example for saving space. The panels over water have a cooler temperature which makes them more efficient. Finally the blue colour of the panels matches with the blue of the water, hence the panels do not disturb aesthetically. (Photo: © KYOCERA Corporation)

Figure 30b. PV-Panels in parallel to the airstrip of Athens Airport. This can be considered as best practice as the installation respect at best the already given rectangular layout of infrastructure and agriculture. (Photos: Alexandra Kruse 2017)

Source
Definition developed by COST RELY Action.
http37: http://ec.europa.eu/environment/waste/prevention/practices.htm

Translations

Bosnia and Herzegovina: Najbolje prakse	Italian: Buona pratica
Bulgarian: Най-добри практики	Icelandic: Bestu starfsvenjur
Croatian: Najbolja Praksa	Latvian: Labā prakse
Czech: Nejlepší praxe / osvědčená praxe	Lithuanian: Geroji/geriausia praktika
Danish: Bedste praksis	Montenegrin: Primjeri najbolje prakse
Dutch: Best practice	Polish: Najlepsze praktyki
Esperanto: Plej bona praktiko	Portuguese: Boas práticas
Estonian: Hea praktika näited	Romanian: Bună practică
Finnish: Hyvät käytännöt	Russian: Лучшая практика, Лучший пример
French: Bonne pratique, meilleur example	Slovakian: Osvedčené postupy
German: Leuchttumprojekt (we use the EN term)	Slovenian: Primeri dobre prakse
Greek: Βέλτιστες Πρακτικές	Serbian: Најбоље праксе
Hebrew: פרקטיקות מיטביות	Spanish: Buenas prácticas
Hungarian: Jó gyakorlat	Swedish: Best practice

CULTURAL MAPPING

Definition

It is exploration of the complexity of local meanings of place through engagement with people and artistic practices, often combined with other sources of data. Aims at identifying local cultural resources supported by the communities, including landscape and cultural heritage. Usually forming a crucial part of the cultural planning process and has been recognized by UNESCO as a crucial tool and technique in preserving the world's intangible and tangible cultural assets. It encompasses a wide range of techniques and activities from community-based participatory data collection and management to sophisticated mapping using GIS (Geographic Information Systems).
In the context of COST RELY, cultural mapping might be considered during planning processes for renewable energy facilities.

Related terms

Cultural planning

Keywords

Cultural diversity, Cultural landscape mapping, Cultural resource mapping, GIS, participation

Figure 31a. Categories of the cultural resources (Source: http39)

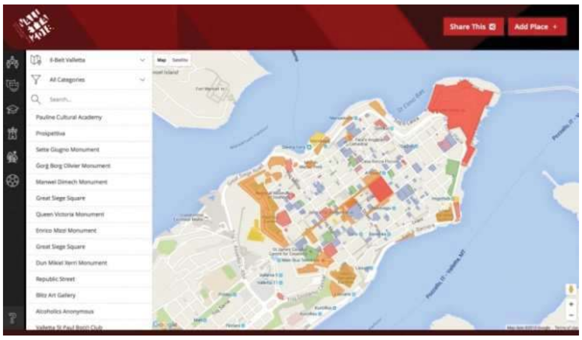


Figure 31b. Example of cultural mapping in Valletta, Malta (Source: http38)

Figure 31c. Álagablettur (FI) at the gate of Sturly-Reykir farm. Proposals for straightening the road were not implemented due to tales about "hidden people", passed on through the generations, living on the area which would be affected (Photo: Laura Puolamäki 2012)

Sources

http39: http://www.unescobkk.org/culture/tools-and-resources/tools-for-safeguarding-culture/culturalmapping/

Translations

Bosnia and Herzegovina: Mapiranje kulturnih potencijala Bulgarian: Набелязване на карти за културни забележителности Croatian: Mapiranje kulturnih sadržaja Czech: Kulturní mapování Danish: Kultural kortlægning Dutch: Culturele kartering Esperanto: Mapado de kulturo Estonian: Kultuuriväärtuste kaardistamine Finnish: Kulttuurikartoitus French: Cartographie culturelle German: Erfassung kultureller Werte Greek: Πολιτισμική χαρτογράφηση Hebrew: מיפוי תרבותי Hungarian: Kulturális térképezés	Italian: Mappatura culturale Icelandic: Kortlagning menningarverðmæta Latvian: Kultūrvides kartēšana Lithuanian: Kultūrinis kartografavimas Montenegrin: Mapiranje kulturnih vrijednosti Polish: Mapowanie kultury Portuguese: Mapeamento cultural Romanian: Cartare culturală Russian: культурная картография Slovakian: Kultúrne mapovanie Slovenian: Identifikacija kulturnih potencialov z udeležbo prebivalcev Serbian: Мапирање култура Spanish: Cartografia cultural Swedish: Kulturell kartläggning

CULTURAL PLANNING

Definition

It is strategic and iterative planning process of a locality, based on wide participation and cross-sectoral and building on the definition of culture as a way of life. Aims at collaborative and culturally sensitive planning, sustainable use and development of cultural resources and empowerment of local communities.

In comparison with the term cultural mapping, cultural planning is a public process in which representatives of a community undertake a comprehensive community assessment and create a plan of the cultural assets existing in their locality. Cultural planning is a process of inclusive community consultation and decision-making that helps local governments to identify cultural resources and to think strategically about how these resources can help a community to achieve its civic goals. In addition, it is a strategic approach that integrates the community's cultural resources into a wide range of local government planning activities httpxx – add to literature.

Related terms

Cultural mapping

Keywords

Creative cities, Cultural resources planning, Urban planning

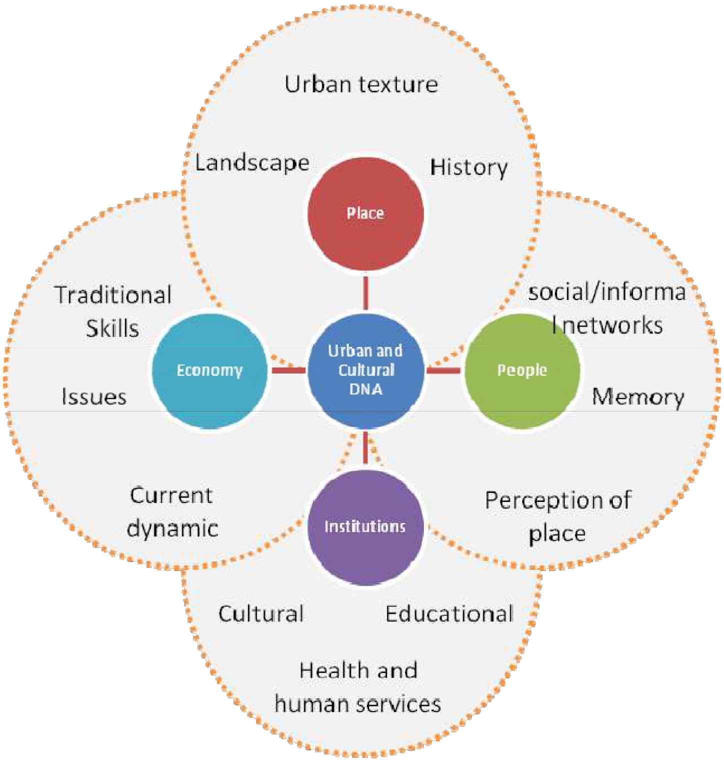


Figure 32. The Elements to consider during cultural planning (Source: http40)

Sources

Go, F., Lemmetyinen, A., Hakala, U. 2015: Harnessing place branding through cultural entrepreneurship. Palgrave Macmillan UK, London.

http41: https://www.creativecity.ca/database/files/library/cultural_planning_toolkit.pdf

Translations	
Bosnia and Herzegovina: Planiranje kulturnih potencijala Bulgarian: Планиране на културни забележителности Croatian: Planiranje kulturnih sadržaja Czech: Kulturní plánování Danish: Kultural planlægning Dutch: Culturele planologie Esperanto: Kultura planado Estonian: Kultuuriväärtuste kasutuse ja kaitse planeerimine Finnish: Kulttuurisuunnittelu French: Planification culturelle German: Planung unter Berücksichtigung kultureller Werte Greek: Πολιτισμικός σχεδιασμός Hebrew: תכנון מוטה תרבות	Hungarian: Kulturális tervezés Italian: Pianificazione culturale Icelandic: Skipulag með tilliti til menningarverðmæta Latvian: Kultūrvides plānošana Lithuanian: Kultūrinis planavimas Montenegrin: Planiranje u kulturi Polish: Planowanie kulturowe Portuguese: Planeamento cultural Romanian: Planificare culturală Russian: Культурное планирование Slovakian: Kultúrne plánovanie Slovenian: Participativno načrtovanje s poudarkom na kulturnih potencialih Serbian: Планирање култура Spanish: Planificación cultural Swedish: Kulturell planering

ECOLOGICAL ENGINEERING

Definition

I is the design of sustainable ecosystems that integrate society with its natural environment for the mutual benefit of humans and nature. It is a recent branch of engineering that has developed with two goals:

1. The restoration of ecosystems that have been significantly disturbed by human activities (e.g. pollution); and
2. The development of new sustainable ecosystems that allow human activities.

The term has been introduced in connection with the restoration of rivers and other water bodies. In relation to Renewable Energy it can refer to shaping and forming the landscape to perform an engineering or RE function.

Related terms

Energy-conscious design

Keywords

Ecosystem based adaptation, Eco-technology, Ground-bioengineering, Environmental planning, Restoration

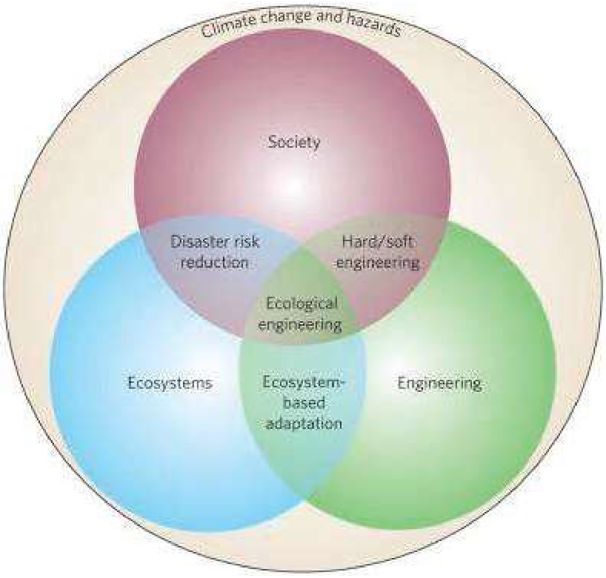


Figure 33. Ecological Engineering within the climate change and hazard framework (Source: Cheong et al. 2013)

Sources

Mitsch, W. J. 2012: What is ecological engineering? Ecological Engineering 45: 5–12.

Mitsch, W.J., Jørgensen, S.E. 1989: Ecological Engineering: An Introduction to Ecotechnology. John Wiley and Sons, Hoboken, New Jersey.

Translations	
Bosnia and Herzegovina: Ekosistemske tehnologije/Eko-inžinjering Bulgarian: Еко-технология или еко-инженеринг (в смисъл на използване на ландшафта като платформа за инженерно строителство/възобновяеми източници за енергия) Croatian: Ekoloski inženjering Czech: Ekologické inženýrství Danish: No translation provided Dutch: No translation provided Esperanto: Ekteknologio aŭ ekoinĝenierio Estonian: Ökotehnoloogiad Finnish: Ekoteknologia French: Eco technologie, éco-ingénierie German: Umweltingeneering (as a mix of DE and EN) Greek: Οικοτεχνολογία Hebrew: הנדסה סביבתית	Hungarian: Ökológiai szemléletű tervezés /környezettudatos tervezés Italian: Tecnologia ecocompatibile Icelandic: Visttækni / vistverkfræði Latvian: Eko-tehnoloģija vai eko-inženierija Lithuanian: Eko-technologija; eko-inžinerija Montenegrin: Ekološki inženjering Polish: Ekotechnologia lub ekoinżynieria Portuguese: Engenharia Ecológica; ecotecnologia Romanian: Ecotehnologie sau ecoinginerie Russian: Эко-технология или эко-инженерия Slovakian: Ekologické inžinierstvo Slovenian: Okoljski inženiring Serbian: Екосистемске технологије Spanish: Eco-tecnología o Eco-ingeniería Swedish: Miljöteknik

ENERGY-CONSCIOUS DESIGN

Definition

Energy-conscious design and planning refers to the inclusion of energy, embodied-energy and energy efficiency in the planning and design of the built environment. It is relevant to design and planning at different scales, reaching from individual buildings to the regional scale.

The term refers to the ongoing transition towards a low-carbon energy future that is pursued through the increase of energy efficiency as well as the increase in renewable energy sources. Strategies for sustainable energy transition have implications for environmental design.

Energy-conscious design can be considered as part of ecological engineering but it also bridges the gap between ecological engineering (mainly in rural/natural surrounding/infrastructure context) and energy efficiency (mainly urban/man-made/building context).

Related terms

Ecological engineering

Keywords

Ecological design, Embodied-energy, Energy-efficient landscaping, Environmental design

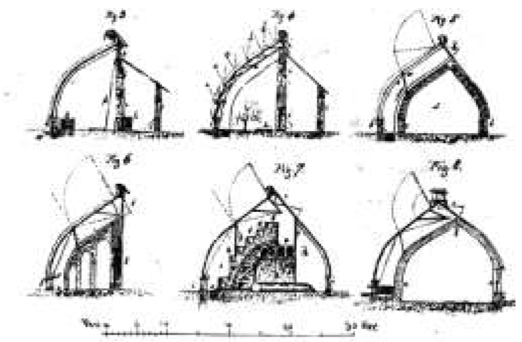


Figure 34a. Sir John Claudius Loudon's designs have been fundamental in the typological and technological definition of greenhouses. His famous "ridge and furrow" roof design is a zigzag glass construction able to maximize the access of sunlight and therefore heat, particularly in the early morning and late evening, when the sun was low in the sky. (Source: http42)

Figure 34b. Historic-Ecological Education Center Papenburg/Germany, built in 1988: Towards the North there are earth walls as energetic protection, towards the south a winter garden, which serves as semi-tropical greenhouse and as corridor between the accommodation units and common facilities. The bricks which store the temperature have been recycled. (Photo: http43)

Sources

De Waal, R., Stremke, S. 2014: Energy Transition: Missed Opportunities and Emerging Challenges for Landscape Planning and Designing. Sustainability 6(7): 4386–4415.

Hagan S. 2001: Taking Shape. A new contract between architecture and nature. Butterworth Heinenmann, Oxford.

Ingersoll, R. 2003: A postapocalyptic view of ecology and design. Harvard Design Magazine, Fall18.

Kallipoliti, L. 2010: "No more Schisms". EcoRedux. Design Remedies for an Ailing Planet 80(6): 14–24.

Ryn, S. V. D., Cowan, S. 1996: Ecological design. Island Press, Washington.

Stremke, S. 2017: Energy Transition at the Regional Scale: Building Sustainable Energy Landscapes. In: Ruby, I., Ruby, A. (eds.) Infrastructure: Space, Ruby Press, Berlin: pp. 217–28.

Stremke, S., Koh, J. 2011: Integration of Ecological and Thermodynamic Concepts in the Design of Sustainable Energy Landscapes. Landscape Journal 30(2): 194–213.

Translations	
Bosnia and Herzegovina: Energetski-svjesno planiranje Bulgarian: Дизайн по отношение на енергийни източници Croatian: Projekt u skladu s očuvanjem energije Czech: Energeticky uvědomělý design Danish: Energibevist design Dutch: Energiebewust ontwerp Esperanto: Konsciaj energoprojektoj Estonian: Energiateadlik disain Finnish: Energiaa säästävä suunnittelu (closest match) French: Conception éco-énergétique German: Niedrigenergiebauweise Greek: Ενεργειακός Σχεδιασμός Hebrew: עיצוב אנרגטי Hungarian: Energiatudatos tervezés	Italian: Progettazione energeticamente consapevole Icelandic: Önnun með tilliti til orkusjónarmiða Latvian: Enerģo-effektīvs dizains Lithuanian: Eko-energetinis projektavimas Montenegrin: Dizajn koji uvažava pitanje energije Polish: Projektowanie świadome energetycznie Portuguese: Design que tem em consideração questões energéticas Romanian: Proiectare cu conștiința energiei Russian: Эко-энергический дизайн Slovakian: Energeticky orientovaný dizajn Slovenian: Energetsko zavedno oblikovanje Serbian: Енергетски одговоран дизајн Spanish: Diseño ecoeficiente Swedish: Energimedveten design

ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

Definition

An Environmental Impact Assessment is a procedure evaluating the effects on the environment of an infrastructure project. The aim is to ensure that plans, programmes and projects likely to have significant effects on the environment are made subject to an environmental assessment, prior to their approval or authorisation. Consultation with the public is a key feature of environmental assessment procedures.

Within the European Union, the Directive 2011/92/EU Environmental assessment regulates the EIA for individual projects, such as a dam, motorway, airport or factory, and the Directive 2001/42/EC (known as 'Strategic Environmental Assessment' – SEA Directive) regulates the assessment for public plans or programmes.

Landscape impacts are the impacts or effects on the ‘landscape in its own right’ (LI and IEMA 2013). Renewable energy landscape impacts use the methodologies of EIAs in the planning and assessment of proposed renewable energy production systems.

Related terms:

Strategic Environmental Assessment, Visual Impact Assessment

Keywords

Environmental factors, Environmental law, Renewable energy, Landscape impact, Sustainable development

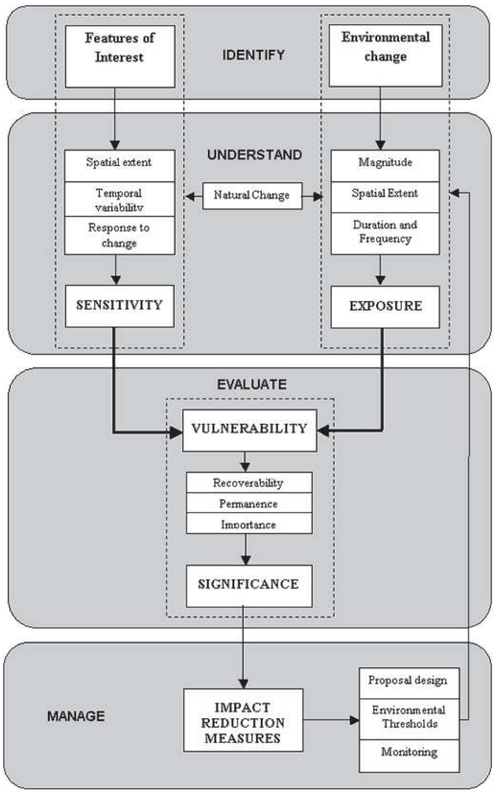


Figure 35. Procedure of Environmental Impact Assessment (Source: http44)

Sources

http45: http://ec.europa.eu/environment/eia/home.htm

LI and IEMA 2013: Guidelines on Landscape and Visual Impact Assessment, 3rd Edition, Landscape Institute and Institute of Environmental Management and Assessment. Routledge, London, New York.

Translations	
Bosnia and Herzegovina: Procjena utjicaja na životnu sredinu/Procjena utjecaja na okoliš Bulgarian: Оценка на въздействието върху околната среда Croatian: Studija zaštite okoliša Czech: Hodnocení vlivu na životní prostředí Danish: Miljøvurdering Dutch: Milieu-effect-rapportage Esperanto: Takso de influo al medio Estonian: Keskkonnamõju hindamine Finnish: Ympäristövaikutusten arvionti French: Étude de l'impact sur l'environnement / évaluation environnementale German: Umweltverträglichkeitsprüfung Greek: Ανάλυση Περιβαλλοντικής επιβάρυνσης Hebrew: תסקיר השפעה על הסביבה	Hungarian: Környezeti hatásvizsgálat Italian: Valutazione di impatto ambientale Icelandic: Mat á umhverfisáhrifum / umhverfismat Latvian: Ietekmes uz vidi novērtējums Lithuanian: Poveikio aplinkai vertinimas Montenegrin: Procjena uticaja na životnu sredinu Polish: Ocena oddziaływania na środowisko Portuguese: Avaliação de Impacte Ambiental Romanian: Studiu de impact asupra mediului Russian: Экологическая Оценка Slovakian: Posudzovanie vplyvov na životné prostredie Slovenian: Presoja vplivov na okolje Serbian: Процена утицаја на животну средину Spanish: Evaluación de impacto ambiental Swedish: miljökonsekvensbedömning

LANDSCAPE ASSESSMENT

Definition

The purpose of landscape assessment in landscape planning is to support the identification of landscape values, development opportunities and management options. It is a broad term referring to various assessment types that may be classified by their objective as resource (opportunities for specific uses), capacity (constraints for specific uses) and other (not necessarily planning orientated) assessments (e.g. formal aesthetic, character, ecological assessments). Assessments can take account of quantitative and qualitative (descriptive or depictive) factors.

Related terms

Environmental Impact Assessments, Landscape capacity, Landscape character, Social Impact Assessment, Visual assessment

Keywords

Landscape quality, Renewable Energy systems, Landscape identity

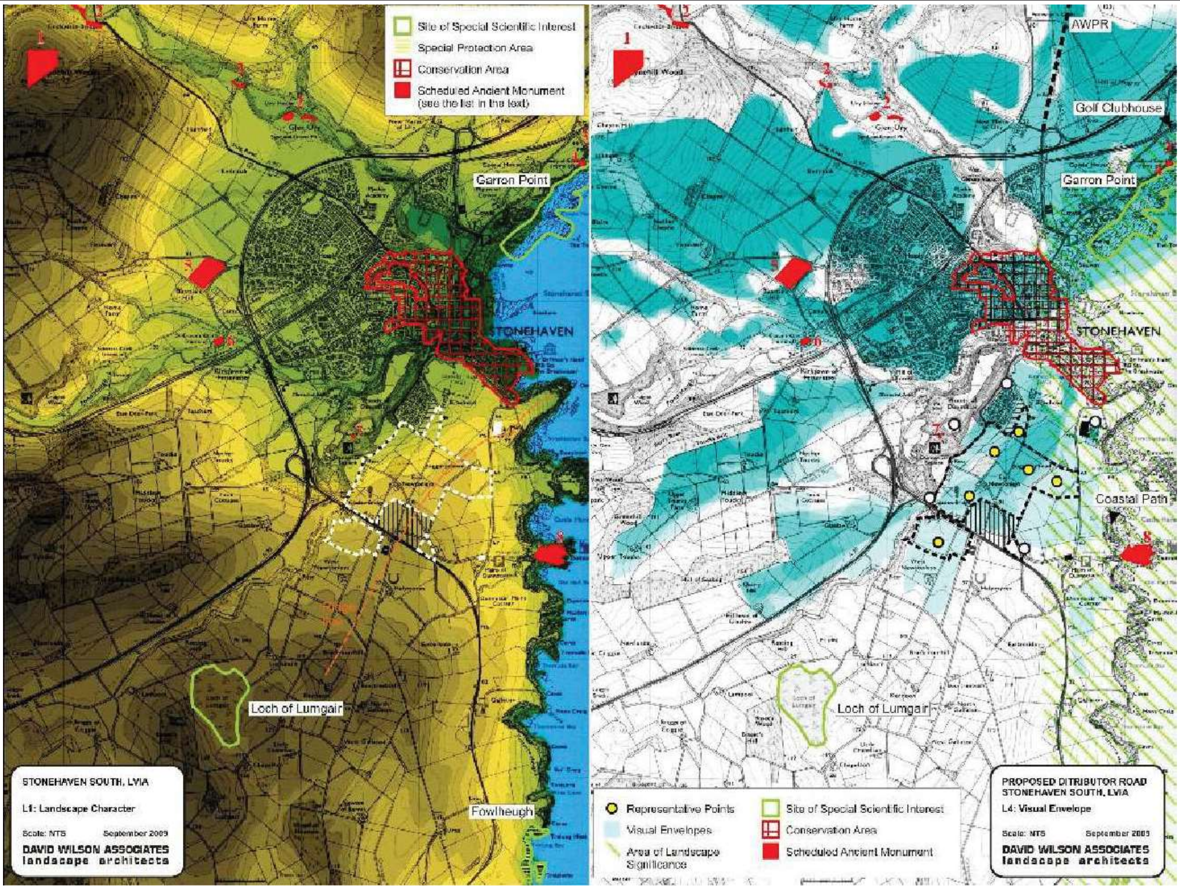


Figure 36. Maps showing the relationship between landscape and sites of special scientific interest, protection areas, ancient monuments, visual envelopes, etc.
(Source: Diagram from Stonehaven South LVIA, UK © David Wilson Associates)

Source

Definition developed by COST RELY Action.

Translations	
Bosnia and Herzegovina: Procjena pejzaža/okoliša	Italian: Valutazione apesaggistica
Bulgarian: Оценка на ландшафта	Icelandic: Mat á landslagi / landslagsmat
Croatian: Studija utjecaja na krajolik	Latvian: Ainavas novērtējums
Czech: Hodnocení krajiny	Lithuanian: Kraštovaizdžio vertinimas
Danish: Landskabsvurdering	Montenegrin: Procjena pejzaža
Dutch: Landschappelijke beoordeling	Polish: Waloryzacja krajobrazu
Esperanto: Pritakso de pejzaĝo	Portuguese: Avaliação paisagística
Estonian: Maastiku hindamine	Romanian: Evaluarea peisajului
Finnish: Maisema-arviointi	Russian: Оценка ландшафта
French: Evaluation du paysage	Slovakian: Hodnotenie krajiny
German: Landschaftsbewertung	Slovenian: Vrednotenje krajine
Greek: Κατανόηση Τοπίου	Serbian: Процена пејзажа
Hebrew: הערכה נופית	Spanish: Evaluación del paisaje
Hungarian: Tájértékelés	Swedish: Landskap bedömning

LANDSCAPE GOVERNANCE

Definition

Landscape governance is the process of goal-oriented formulation, coordination, management and decision-making about utilisation and protection of landscape involving governmental and non-governmental actors (general public, NGOs, private sector etc.).

The trend is of reducing responsibility of the state government for public spaces or common land, progressive decentralization of decision-making regarding landscape issues, transparency and citizen participation (bottom-up decision-making). This is consistent with Art. 6 para. D of the European Landscape Convention, “Each Party undertakes to define landscape quality objectives for the landscapes identified and assessed, after public consultation in accordance with Article 5.c.”

The European Landscape Convention provides a framework for landscape governance, implementing subsidiarity, defining principles and concepts, promoting citizen participation and co-operation at different administrative levels, without imposing specific rules and methodologies.

Related terms

Planning process, Public participation, Public participation processes and tools

Keywords

Decision-making, Landscape planning, Landscape policy, Landscape protection, Landscape quality

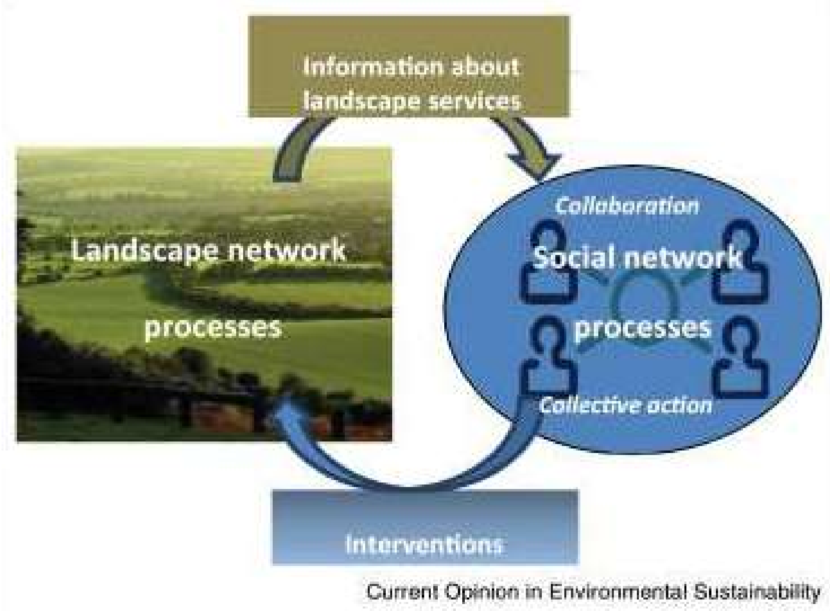


Figure 37. Landscape governance: interactions between natural and social-political aspects (Source: Opdam et al. 2016)

Sources

Buizer, M., Arts, B., Westerink, J. 2016: Landscape governance as policy integration “from below”: A case of displaced and contained political conflict in the Netherlands. Environment and Planning. C, Government & Policy 34(3): 448–462.

Castree, N., Rogers, A., Kitchin, R. 2013: A dictionary of human geography. Oxford University Press, Oxford.

Council of Europe. 2000: European Landscape Convention. Council of Europe, Florence. (also 9th Council of Europe Conference on the European Landscape Convention, 23-24 March 2017)

Görg, C. 2007: Landscape governance. Geoforum; Journal of Physical, Human, and Regional Geosciences 38(5): 954–966.

Puolamäki, L. 2012: Individual views and shared landscape of folklore in Reykholtsdal, Iceland. European Countryside 2: 162–178.

Translations	
Bosnia and Herzegovina: Upravljanje zemljištem/ Upravljanje okolišem Bulgarian: Управление на ландшафта Croatian: Upravljanje krajolikom Czech: Správa krajiny Danish: No translation provided Dutch: Wijze van besturen van het landschap Esperanto: Regado pri pejzaĝoj Estonian: Maastiku valitsemine Finnish: Maiseman hallinta French: Gouvernance du paysage German: Landschaftsgouvernanz - but not very common Greek: Διοίκηση τοπίου Hebrew: משילות נופית Hungarian: Tájtervezés	Italian: Amministrazione del paesaggio Icelandic: Stjórnun landslags / landslagsstjórnun Latvian: Ainavas pārvaldība Lithuanian: Kraštovaizdžio reguliavimas Montenegrin: Upravljanje pejzažom Polish: Zarządzanie krajobrazem Portuguese: Regulação de paisagem, Governação da paisagem Romanian: Administrarea peisajului Russian: Ландшафтное управление Slovakian: Správa krajiny Slovenian: Upravljanje krajine Serbian: Управљање земљиштем / пејзажом Spanish: Gobernanza del paisaje Swedish: Landskapsstyrning

LIFE CYCLE ANALYSIS (LCA)

Definition

Life Cycle Analysis (also called Life Cycle Assessment) is a technique to assess environmental impacts associated with all the stages of an asset's life, from cradle to grave, from raw material extraction, materials processing, manufacture, distribution, use and landscape context, repair and maintenance, and disposal or recycling.

LCA provides a wider consideration of environmental issues by:

- Compiling an inventory of relevant energy and material inputs, and environmental gains and losses;
- Evaluating the potential impacts associated with identified inputs and losses;
- Interpreting the results to help make a more informed decision.

Examples of relevance to COST RELY are: (i) the timescale required to balance the energy to produce photovoltaic systems and the energy saved through their use; (ii) assessing the carbon budgets of wind farms on peatlands.

Related terms

Sustainable renewable energy production, Energy conscious design, Environmental Impact Assessment

Keywords

Ecobalance, Amortization, Energy production, Energy recovery

Figure 38. Product/asset life cycle (Source: GE Healthcare Life Sciences, http46)

Sources

Bowe, S. 2010: A gate-to-gate life-cycle inventory of solid hardwood flooring in the Eastern US. Wood and Fiber Science, March 2010. Society of Wood Science and Technology, Madison.

Nayak, D.R., **Miller, D.R.,** Nolan, A.J., Smith, P., Smith, J.U. 2010: Calculation carbon budgets of wind farm on Scottish petlands. **Mires and Peat 4**: 1–23.

http47: https://www.ise.fraunhofer.de/content/dam/ise/de/documents/publications/studies/aktuelle-fakten-zur-photovoltaik-in-deutschland.pdf	
Translations Bosnia and Herzegovina: Analiza životnog ciklusa Bulgarian: Анализ на жезнения цикъл Croatian: Analiza zivotnog ciklusa Czech: Analýza životního cyklu Danish: Livscyklus analyse Dutch: Kringloop Esperanto: Analizo de ciklo de la vivo Estonian: elutsüklianalüüs Finnish: Elinkaarianalyysi French: Analyse du cycle de (la) vie German: Ökobilanz Greek: Ανάλυση Κύκλου Ζωής Hebrew: חיים מחזור הערכת Hungarian: Életciklus-elemzés	Italian: Analisi del ciclo di vita Icelandic: Vistferilsgreining; lífsferilsgreining Latvian: Dzīves cikla analīze Lithuanian: Gyvavimo ciklo analizė Montenegrin: Analiza životnog ciklusa Polish: Analiza cyklu życia Portuguese: Análise de ciclo de vida Romanian: Analiza ciclului de viață Russian: Анализ жизненного цикла Slovakian: Analýza životného cyklu Slovenian: Konflikt med rabami zemljišč Serbian: Анализа животног циклуса Spanish: Análisis de ciclos de vida Swedish: Livscykelanalys

PLANNING PROCESS

Definition

A planning process, also called a planning procedure, is a legal framework by which a plan is developed from a start to its completion. It is defined in relevant national legislation. Such a process has a number of stages, depending on the type of plan (e.g. urban, environmental), scale (e.g. strategic, detailed), legal requirements for public participation (e.g. frequency and types of public consultation, public integration, types of stakeholders), assessment requirements (e.g. strategic environmental assessment), and stages at which administrative approval is required (e.g. ministerial or departmental).

Related terms

Public participation, Public participation procedure, Stakeholder, Strategic Environmental Assessment

Keywords

Legal framework

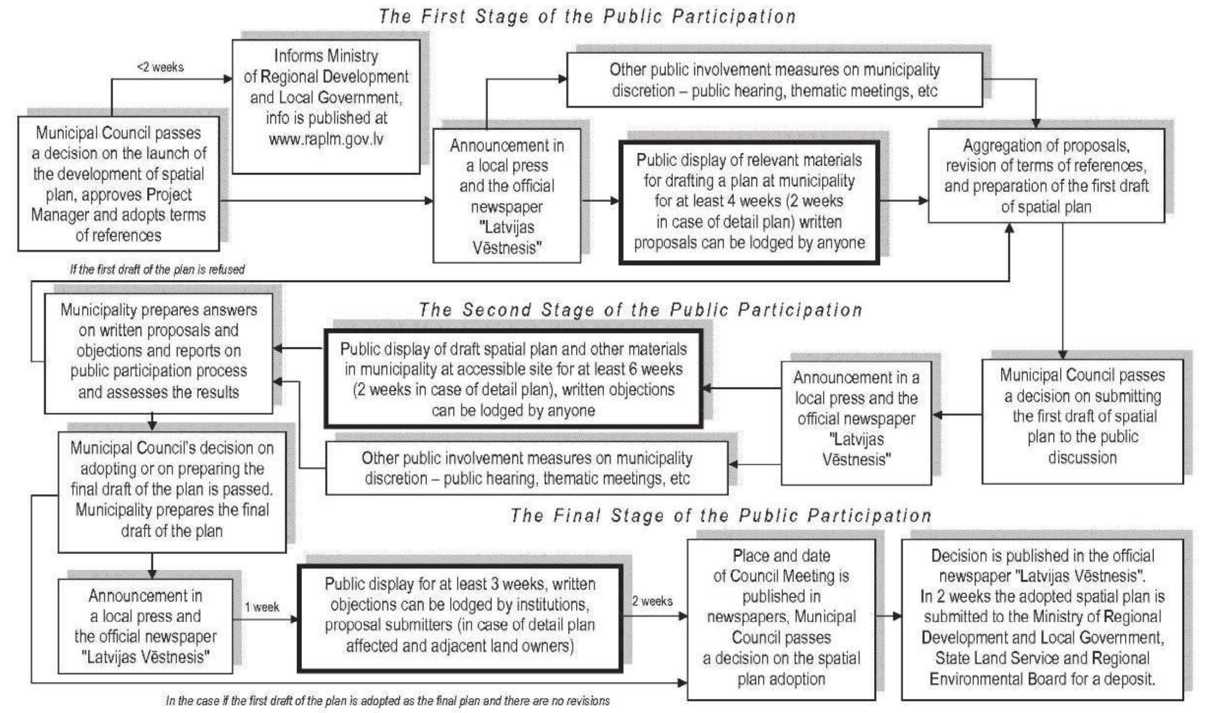


Figure 39. Scheme of the planning process in Latvia according to the COMMIN glossary (Source: http48)

Source

Definition developed by COST RELY Action.

Translations	
Bosnia and Herzegovina: Proces planiranja Bulgarian: Планирани процеси Croatian: Proces planiranja Czech: Plánovací proces Danish: /not used Dutch: Planproces Esperanto: Procezo de planado Estonian: Planeerimisprotsess Finnish: Suunnitteluprosessi French: Processus de planification German: Planungsprozess Greek: Ενεργειακός Σχεδιασμός Hebrew: תכנון תהליך Hungarian: Tervezési folyamat Italian: Processo progettuale	Icelandic: Skipulagsferli Latvian: Plānošanas process Lithuanian: Planavimo procesas Montenegrin: Proces planiranja Polish: Proces planowania Portuguese: Procedimentos do planeamento Romanian: Proces de planificare Russian: Процесс планирования Slovakian: Plánovací proces Slovenian: Načrtovalski proces Serbian: Процес планирања Spanish: Proceso de planificación/ordenación del territorio Swedish: Planeringsprocess

PUBLIC PARTICIPATION

Definition

It is a process that directly engages the public in decision-making and gives full consideration to public input in making that decision. The level and nature of participation is usually described in terms of the openness of the process to the public, explained with respect to typologies such as eight-level scale of Arnstein (1969), Figure 39a, or five-level scale of the International Association of Public Participation (2017), Figure 39b.

Public: One or more natural or legal persons, and, in accordance with national legislation or practice, their associations, organisations or groups.

The public concerned: The public affected or likely to be affected by, or have an interest in, the environmental decision-making; for the purposes of this definition, non-governmental organizations promoting environmental protection and meeting any requirements under national law shall be deemed to have an interest.

Related terms

Landscape governance, Land use conflicts, Public participation process, Scenario techniques, Stakeholder

Keywords

Community involvement, Ladder of participation, Public involvement, Stakeholder involvement

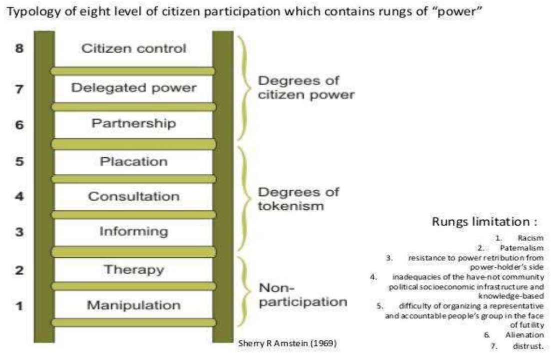
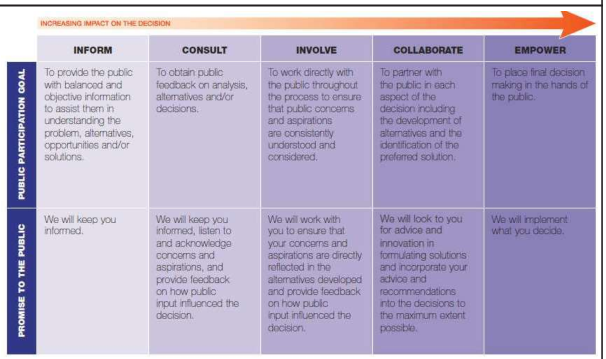


Figure 40a. Ladder of Participation
(Source: Arnstein 1969)



INCREASING IMPACT ON THE DECISION

	INFORM	CONSULT	INVOLVE	COLLABORATE	EMPOWER
PUBLIC PARTICIPATION GOAL	To provide the public with balanced and objective information to assist them in understanding the problem, alternatives, opportunities and/or solutions.	To obtain public feedback on analysis, alternatives and/or decisions.	To work directly with the public throughout the process to ensure that public concerns and aspirations are consistently understood and considered.	To partner with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.	To place final decision making in the hands of the public.
PROMISE TO THE PUBLIC	We will keep you informed.	We will keep you informed, listen to and acknowledge concerns and aspirations, and provide feedback on how public input influenced the decision.	We will work with you to ensure that your concerns and aspirations are directly reflected in the alternatives developed and provide feedback on how public input influenced the decision.	We will look to you for advice and innovation in formulating solutions and incorporate your advice and recommendations into the decisions to the maximum extent possible.	We will implement what you decide.

Figure 40b. IPA2'S Public Participation Spectrum
(Source: http49)

Sources

Arnstein, S.R. 1969: A Ladder of Citizen Participation, JAIP 35(4): 216–224.
European Parliament and of the Council 2003: Public Participation Directive. European Parliament, Strasbourg. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0004)
http50: www.epa.gov/international-cooperation/public-participation-guide-introduction-public-participation
http51: https://www.unece.org/fileadmin/DAM/env/pp/documents/cep43e.pdf
http52: https://www.iap2.org/?page=pillars

Translations Bosnia and Herzegovina: Građanska participacija/Sudjelovanje javnosti Bulgarian: Участие на обществеността Croatian: Sudjelovanje javnosti Czech: Účast veřejnosti Danish: Borgerindragelses Dutch: Publieks participatie Esperanto: Publika partopreno Estonian: Avalikkuse kaasamine Finnish: Osallistamis French: Participation publique German: Bürgerbeteiligung Greek: Διαδικαδία δημόσιας διαβούλευσης Hebrew: ציבור שיתוף הליך Hungarian: Közösségi részvétel	Italian: Partecipazione pubblica Icelandic: þátttaka almennings/ opinber þátttaka Latvian: Sabiedrības līdzdalības Lithuanian: Visuomenės dalyvavimo Montenegrin: Učešće javnosti Polish: Partycypacji społecznej Portuguese: Participação pública Romanian: Participare publică Russian: Участие общественности Slovakian: Účasť verejnosti Slovenian: Sodelovanje javnosti Serbian: Учешће јавности Spanish: Participación pública Swedish: Allmänhetens deltagande

PUBLIC PARTICIPATION PROCESS

Definition

Public participation process is a cycle or iterative process for stakeholders' engagement in decision-making. It usually comprises several phases which can be repeated: (i) a contextual (social and territorial) appraisal; (ii) participatory situation analysis; (iii) discussion and development of action plans (alternative or future plans). These phases can involve one or more stakeholder groups (generally as collective actions but possibly as individuals), operating in parallel or consecutively.

The following techniques can be used to facilitate public participation: sociograms (social maps), discussion groups, SWOT analysis, semi-structured interviews, life stories, participatory mapping and visualisation, future scenario development, and participation stairway.

Related terms

Landscape governance, Land use conflict, Planning process, Public participation, Scenario technique, Stakeholder

Keywords

Public consultation process, Public engagement process

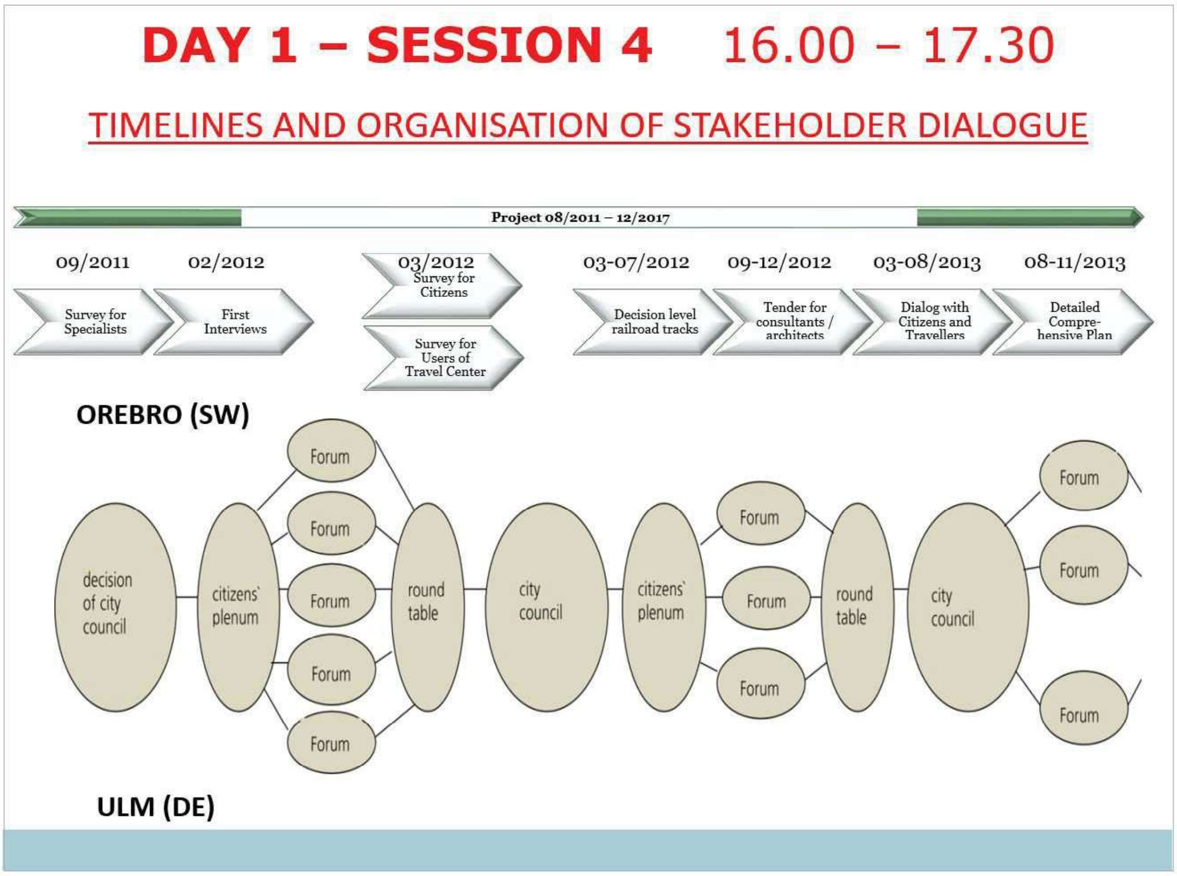


Figure 41a. Stakeholder dialog, including different steps and means with timeline (Source: COMUS – 1st Stakeholder Workshop in Regensburg/Germany, presented by Philip Stein 2015)

Figure 41b. Often public participation is restricted to one/several public presentation of plans. Public hearing in Heiligenblut (Austria) during the World Heritage nomination process of the Großglockner High Alpine road. (Photo: Alexandra Kruse 2016)

Figure 41c. Public participation should be more active and shall start early, like in this example from the James Hutton Institute (UK): Identifying benefits from the land, annotating aerial photographs, Aboyne, Aberdeenshire/UK (Photo: David Miller)

Figure 41d. (on your left) Participation uses different technical means – with respect to the (envisaged) audience. Young people voting on benefits associated with different land users in Aboyne, Aberdeenshire/UK. (Photo: David Miller)

Sources

Hewitt, R., Hernandez-Jimenez, V., Zazo-Moratalla, A., Ocón-Martín, B., Román-Bermejo, L., Encinas-Escribano, M. 2017: Participatory Modelling for Resilient Futures, Action for Managing Our Environment from the Bottom-Up. Developments in Environmental Modelling (series editor Brian D. Fath), Volume 30. Elsevier, Amsterdam.

Translations

Bosnia and Herzegovina: Proces građanske participacije/Sudjelovanje javnosti
Bulgarian: Процес на участие на обществото
Croatian: Sudjelovanje Javnosti
Czech: Proces zapojení veřejnosti
Danish: Borgerindragelsesprocess
Dutch: Publieks participatie
Esperanto: Procezo de publika partopreno
Estonian: Avalikkuse kaasamine
Finnish: Osallistamisprosessi
French: Processus de participation publique
German: Öffentlichkeitsbeteiligung
Greek: Διαδικαδία δημόσιας διαβούλευσης
Hebrew: ציבור שיתוף הליך
Hungarian: Közösségi részvétel
Italian: Processo di partecipazione pubblica
Icelandic: Bátttaka almennings
Latvian: Sabiedrības līdzdalības process
Lithuanian: Visuomenės dalyvavimo procesas
Montenegrin: Proces učešća javnosti
Polish: Proces partycypacji społecznej
Portuguese: Processo de participação pública
Romanian: Proces de participare publică
Russian: Процесс участия общества
Slovakian: Proces účasti verejnosti
Slovenian: Postopek sodelovanja javnosti
Serbian: Партиципација јавности
Spanish: Proceso de participación pública
Swedish: Allmänhetens deltagande

RENEWABLE ENERGY POLICY DOCUMENTS

Definition

Policy documents on local, regional, national and transnational level refering to the use of renewable energy are the following major policies on EU level:

- Energy 2020 A strategy for competitive, sustainable and secure energy,
- Renewable Energy Directive (2009/28/EC), and
- Directive to reduce indirect land use change for biofuels and bio liquids (EU 2015/1513).

According to these policies, EU countries should together reach a binding target of 20% final energy consumption from renewable sources by 2020. In order to do so they have committed themselves to their own targets ranging from 10% in Malta to 49% in Sweden. Additionally, they are required to reach at least 10% of their transport fuel comes from renewable sources by 2020.

On the national level countries adopt national renewable energy strategies/operational programmes/action plans presenting their objectives and measures to implement to meet the targets. These plans include sectorial targets for electricity, heating and cooling, and transport; planned policy measures; the different mix of renewables technologies they expect to employ; and the planned use of cooperation mechanisms.

On the lower administrative levels, regions can adopt regional energy plans, and on the local level local communities can prepare local energy concept.

Local energy concept (LEC), called as well (local) sustainable energy plan, assesses opportunities and proposes solutions for the energy supply of the local community, taking into account the long-term development of the local community in various fields and existing energy capacity. Local energy concepts are designed to raise awareness of energy consumers, to prepare measures in the field of energy efficiency, and to introduce new energy solutions. They include an analysis of the current situation in the field of energy use and energy supply. LEC examines the possibility of using local renewable energy sources, which increase the security of supply of heat and electricity in the local community. The proposed projects simultaneously bring the reduction of emissions and environmental pollution. Local energy concept includes an Action Plan (where projects are economically evaluated) and a schedule.

Related terms

Planning process

Keywords

Policy making, Sustainable energy, Renewable energy, Local authority

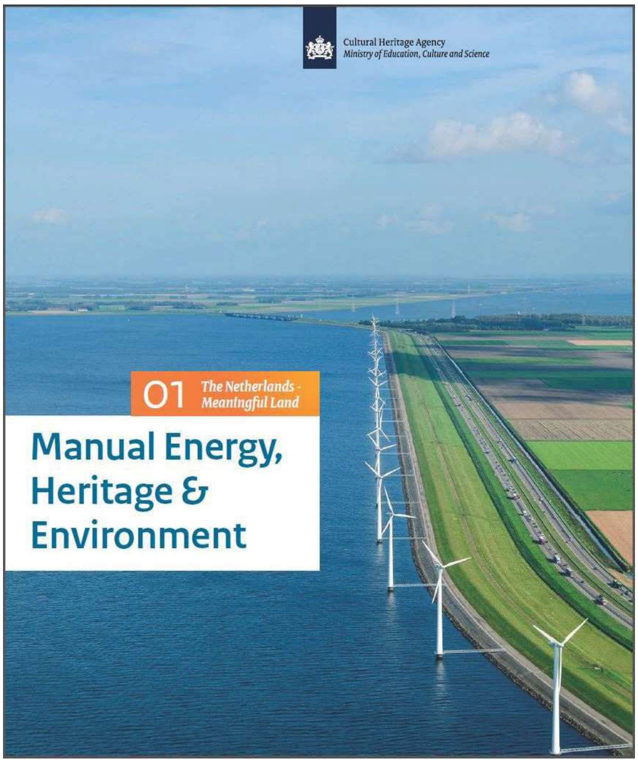


Figure 42. Cover of National policy statement for renewable energy, heritage and environment by the Dutch Agency for Cultural Heritage (Source: http53)

Sources

European Commission 2009: Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources. European Commission, Brussels.
European Commission 2010: Energy 2020 A strategy for competitive, sustainable and secure energy. European Commission, Brussels.
http54: http://www.lea-ptuj.si/en/services/local-energy-concept/

Translations

Bosnia and Herzegovina: Zakonska regulativa u vezi obnovljivih izvora energije
Bulgarian: Политически документ за възобновяема енергия
Croatian: Regulativa iz obnovljivih izvora energije
Czech: Politické dokumenty týkající se obnovitelných zdrojů
Danish: Vedvarende energi politisk document
Dutch: Beleidsdocumenten
Esperanto: Dokumentoj politikaj pri produktado de renovigebla energio
Estonian: Taastuvenergia-alane seadusandlus
Finnish: Uusiutuvan energian politiikka-aineistot
French: Documents politiques sur l'Énergie renouvelable
German: Positionspapier zu Erneuerbaren Energien
Greek: Κείμενα πολιτικής για τις ΑΠΕ
Hebrew: מסמכי מדיניות על אנרגיות מחדשות
Hungarian: Megújulóenergia-irányelv dokumetumai
Italian: Documenti di indirizzo per l'energia rinnovabile
Icelandic: Stefnuskjöl um endurnýjanlega orku
Latvian: Atjaunīgās enerģijas (AE) politikas dokumenti
Lithuanian: Atsinaujinančios energetikos teisės aktai
Montenegrin: Zakonska regulativa o obnovljivim izvorima energije
Polish: Dokumenty polityki źródeł odnawialnych
Portuguese: Documentos de orientação política para Energia Renovável
Romanian: Documente politice privind energia regenerabilă
Russian: Документы по политике использования возобновляемых источников энергии
Slovakian: Politické dokumenty o obnoviteľných zdrojoch energie
Slovenian: Dokumenti politik za obnovljive vire energije
Serbian: Законска регулатива у вези обновљивих извора енергије
Spanish: Normativa sobre energias renovables
Swedish: energipolicy

SCENARIO TECHNIQUES

Definition

A scenario as a plausible description of how the future may develop based on a coherent and internally consistent set of assumptions about key relationships and driving forces. Scenarios enable: (i) the envisioning of future pathways and accounting for critical uncertainties; (ii) addressing real-world questions for which the future is subject to human actions and choices and not preordained. The objective is to encourage people to consider and discuss alternative futures. The focus is on the internal consistency of the scenario storyline rather than on their likelihood of coming true. In COST RELY, pathways and choices relate to the development of renewable energy systems in different landscape settings.

A range of techniques may be employed in development of scenarios. Two broad approaches are defined:

1. Non-participatory: Non-participatory scenario development usually involves a model with some kind of exploratory or predictive capacity which is projected forward to a future date, usually after calibration against historical (observed) data. The output of various climate models under Intergovernmental Panel on Climate Change (IPCC) scenarios is a good example of this technique. It is non-participatory in the sense that it uses only data collected by researchers, and participatory processes are not formally used for information gathering or scenario construction.
2. Participatory: Participatory scenario development differs from the above in that scenarios are constructed by, or based on information supplied by stakeholders engaged in some kind of participatory process. For example, the European Environment Agency PRELUDE project (2004-2005) engaged stakeholders from multiple backgrounds from across Europe to create five scenarios for a Europe affected by changing patterns of land use, climate change, agriculture and demographics. In Spain, local stakeholders developed four "Ecofuture" scenarios for the threatened Doñana natural area in the year 2035 under an ecosystem services approach. They then illustrated the scenarios on posters using a range of materials, like press and magazine cuttings. A Follow-up project mapped these scenarios inside a land use model.

Related terms

Landscape Governance, Public participation, Planning process, Public participation process

Keywords

Participatory scenario planning, Future scenarios, Scenario modelling, Strategy formulation

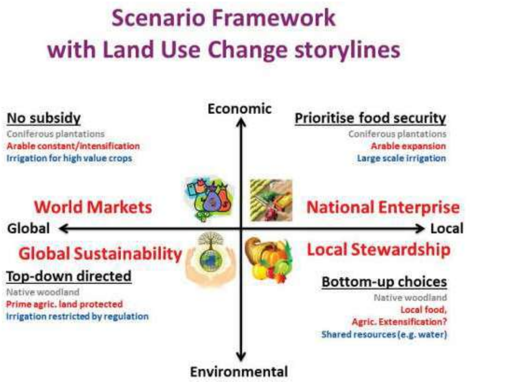


Figure 43a. Scenarios of alternative development pathways for land use. Developed from the UKCIP/Foresight socioeconomic scenarios (Source: Brown and Castellazzi 2014)

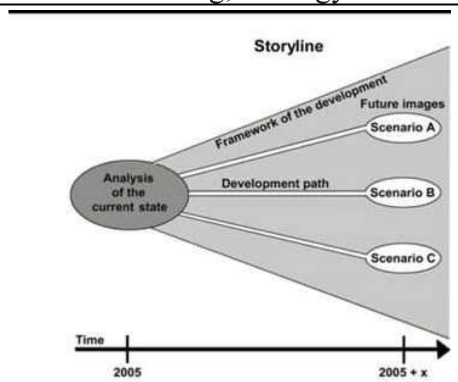


Figure 43b. Scenario technique (Source: Schroth 2010)

Figure 43c. Workshop participants in Doñana, Spain locating hypothesized land use change under EcoFuture scenario “Trademark Doñana” (Photo: Verónica Hernández Jiménez 2012)

Sources

Hewitt, R., Van Delden, H., Escobar, F. 2014: Participatory land use modelling, pathways to an integrated approach. Environmental Modelling & Software 52: 149–165.

Nakicenovic, N., Swart, R. 2000: Emissions Scenarios 2000 - Special report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge.

Palomo, I., Martín-López, B., López-Santiago, C., Montes, C. 2011: Participatory scenario planning for protected areas management under the ecosystem services framework: the Doñana social-ecological system in southwestern Spain. Ecology and Society 16(1): 23.

Raskin, P., Monks, F., Ribeiro, T., van Vuuren, D., Zurek, M. 2005: Global scenarios in historical perspective, Millennium Ecosystem Assessment. UNEP, New York.

Ringland, G. 1998: Scenario Planning. John Wiley & Sons, Chichester.

Volkery, A., Ribeiro, T., Henrichs, T., Hoogeveen, Y. 2008: Your vision or my model? Lessons from participatory land use scenario development on a European scale. Systemic Practice and Action Research 21(6): 459–477.

Translations

Bosnia and Herzegovina: Tehnike scenarija	Italian: Tecnica di scenario
Bulgarian: Техника на сценария	Icelandic: Sviðsmyndagreining
Croatian: Scenariji	Latvian: Scenāriju tehnika
Czech: Technika scénáře	Lithuanian: Scenarijai
Danish: Scenario teknik	Montenegrin: Scenario (tehnike)
Dutch: Scenario-technieken	Polish: Technika scenariuszy
Esperanto: Tekniko de scenaro	Portuguese: Metodologia de cenário
Estonian: Stsenaarium / tulevikuväljavaade	Romanian: Tehnica scenariului
Finnish: Skenaariotekniikka	Russian: Технический сценарий
French: Scénario technique	Slovakian: Technika scenára
German: Szenario Methode	Slovenian: Orodja in tehnike sodelovanja javnosti
Greek: Σενάριο	Serbian: Технике сценарија
Hebrew: תרחישים מתודת	Spanish: Escenarios técnicos
Hungarian: Szenáriók technika	Swedish: Scenarioteknik

SOCIAL IMPACT ASSESSMENT (SIA)

Definition

It is a process of analysing, monitoring and managing the intended and unintended social consequences (either positive or negative) of planned interventions (policies, programmes, plans, projects) and/or any social change processes invoked by those interventions. Its primary purpose is to create a more sustainable and equitable biophysical and human environment.

Related terms

Environmental Impact Assessment, Landscape governance, Landscape assessment

Keywords

Interventions, Social consequences, Sustainability

Figure 44. Social Impact Assessment: Due to mining of lignite the medieval city of Most in Western-Bohemia was demolished in 1960s and a new city made of prefab houses was built (Photo: Stanislav Martinat 2013)

Source

Vanclay, F. 2003: International principles for social impact assessment. Impact Assessment and Project Appraisal 21(1): 5–12.

Translations

Bosnia and Herzegovina: Translation not provided
Bulgarian: Оценка за социалното въздействие
Croatian: Procjena utjecaja na društvo
Czech: Hodnocení dopadu na společnost
Danish: Social konsekvensanalyse
Dutch: Sociale effectstudie (no Dutch instrument)
Esperanto: Takso de socia efiko
Estonian: Sotsiaalsete mõjude hindamine
Finnish: 'Sosiaalisten vaikutusten arviointi
French: Etude de l'impact social
German: Sozialverträglichkeitsprüfung
Greek: Ανάλυση κοινωνικών επιπτώσεων
Hebrew: חברתית השפעה הערכת
Hungarian: Szociális hatás vizsgálata
Italian: Valutazione di impatto sociale
Icelandic: Mat á samfélagsáhrifum
Latvian: Sociālās ietekmes novērtējums
Lithuanian: Socialinio poveikio vertinimas
Montenegrin: Procjena socioloških uticaja
Polish: Ocena wpływu społecznego
Portuguese: Avaliação de Impacto Social
Romanian: Evaluarea impactului social
Russian: Оценка социального воздействия
Slovakian: Posudzovanie sociálneho vplyvu
Slovenian: Presoja vplivov na družbo
Serbian: Процена социолошких утицаја
Spanish: Evaluación del impacto social
Swedish: Social konsekvensanalys

STAKEHOLDER

Definition

A stakeholder is an individual, a group of individuals, a company or an institution that has a stake in a plan, project or any other planning related matter. A stakeholder can be either public (e.g. planning department of the local community) or private (e.g. construction company). The stake can be defined according to the property (e.g. ownership of the land), spatial proximity (e.g. neighbouring parcel), development interest (e.g. investment companies), political interest or values and principles (e.g. engagement of NGO's in the planning process). Stakeholders are defined with the method of stakeholders' mapping.

Related terms

Planning process, Public participation, Public participation process

Keywords

Public participation, Policy making, Buttom-up decision making process

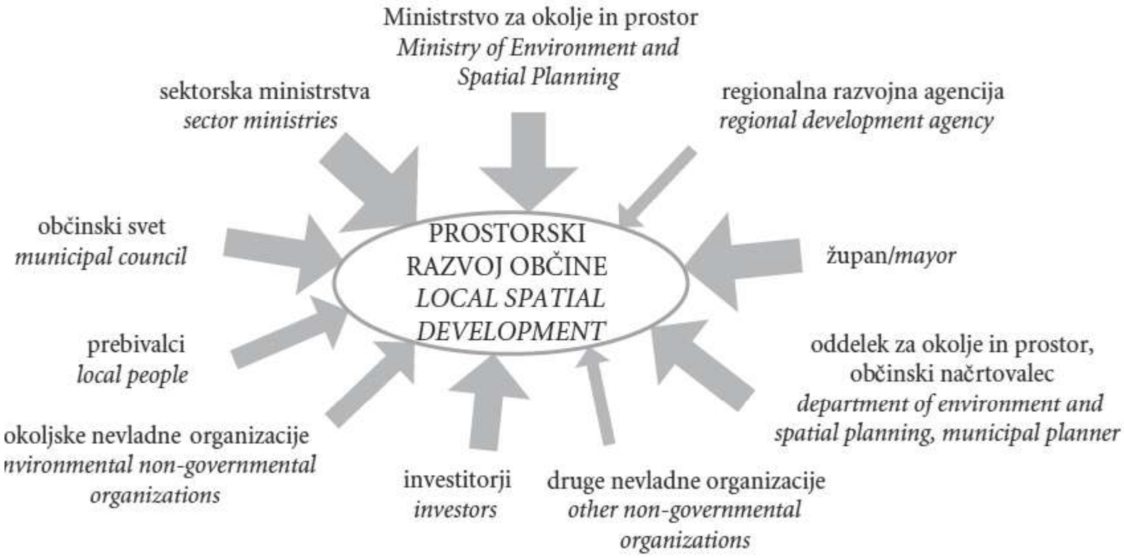


Figure 45. Example of the stakeholders' representation and their power in the local spatial development (Source: Marot 2010)

Source

Developed by COST RELY Action.

Translations

Bosnia and Herzegovina: Zaineteresovane strane
Bulgarian: Заинтересовани страни
Croatian: Interesni sudionik
Czech: Podílník/účastník /zájmové strany
Danish: /not used
Dutch: Belanghebbende (ook Stakeholder)
Esperanto: Interesitaj partioj
Estonian: Asjaline
Finnish: 'Osallinen
French: Partie prenante
German: Interessenvertreter (we also use stakeholder)
Greek: Μέτοχοι
Hebrew: בעל עניין
Hungarian: Érintett
Italian: "Soggetto interessato" or Stakeholder
Icelandic: Hagsmunaaðili; haghafi
Latvian: Ieinteresētās puses
Lithuanian: Suinteresuotoji šalis
Montenegrin: Zainteresovana strana
Polish: interesariusz
Portuguese: Atores/ Stakeholders
Romanian: Actor
Russian: заинтересованная сторона
Slovakian: Zainteresovaná strana / subjekt
Slovenian: Deležnik
Serbian: Заинтересована страна
Spanish: Agentes sociales implicados
Swedish: Intressent/stakeholder

STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

Definition

According to Organisation for Economic Co-operation and Development (OECD) Strategic Environmental Assessment (SEA) is defined as analytical and participatory approach to strategic decision-making that aims at integrating environmental considerations into policies, plans and programmes and evaluates the inter linkages with economic and social considerations. It involves stating objectives of the policies, plans and programmes (PPP), describing the baseline environment, predicting the likely environmental impacts of the PPP (and of alternatives), and proposing ways of mitigating these impacts. It is generally carried out by (or for) the PPP proponent, with consultation of other relevant agencies.

According to the EU directive on SEA, a SEA is mandatory for plans and programs which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste/ water management, telecommunications, tourism, town & country planning or land use and which set the framework for future development consent of projects listed in the EIA Directive, or have been determined to require an assessment under the Habitats Directive.

Video introduction to EU SEA is available here:
http://ec.europa.eu/environment/temp/SEA_protocol_v5_ENG.mp4.

Related Terms

Environmental Impact Assessment, Landscape assessment

Keywords

Assessment, Landscape changes

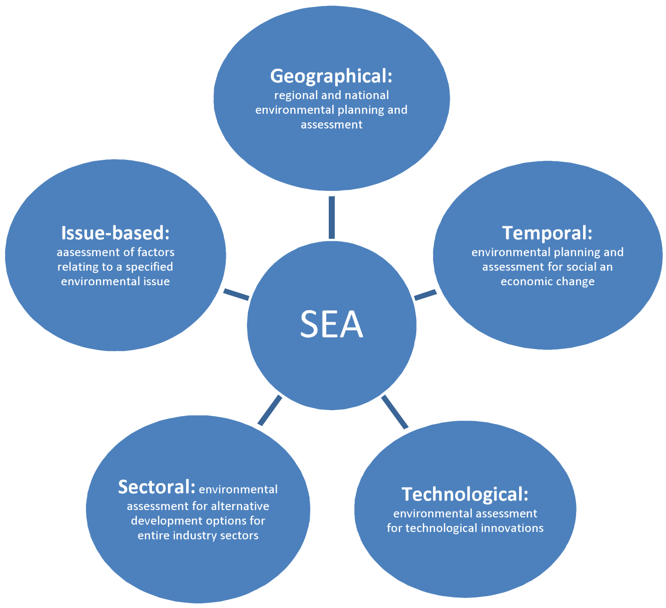


Figure 46. Strategic Environmental Assessment (Source: Buckley 1998)

Sources

Buckley, R. 1998: Strategic Environmental Assessment. In: Peter, A.L., Fittipaldi, J.J., Environmental Methods Review: Retooling Impact Assessment for the New Century. The Press Club, USA.

European Commission 2001: Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive). European Commission, Brussels.

http55: http://sba-int.ch/1274-Strategic_Environmental_Assessment

Thérivel, R. 1997: Strategic environmental assessment in Central Europe. Project Appraisal 12(3): 151–160.

Translations

Bosnia and Herzegovina: Strateška procjena uticaja na životnu sredinu/ Strateška procjena utjecaja na okoliš
Bulgarian: Стратегическа оценка на околната среда
Croatian: Strateška procjena utjecaja na okoliš
Czech: Strategické environmentální hodnocení (Posuzování vlivů koncepcí na životní prostředí)
Danish: Strategisk miljøvurdering
Dutch: Strategische milieubeoordeling (nu plan-m.e.r.)
Esperanto: Strategia takso de influo al medio
Estonian: Strateegiline keskkonnamõjude hindamine
Finnish: Strateginen ympäristövaikutusten arviointi
French: Evaluation stratégique de l'environnement
German: Strategische Umweltprüfung (SUP)
Greek: Στρατηγική περιβαλλοντικής ανάλυσης
Hebrew: תסקיר אסטרטגי להשפעה על הסביבה
Hungarian: stratégiai környezetértékelés
Italian: Valutazione ambientale strategica
Icelandic: umhverfismat áætlana
Latvian: Stratēģiskais vides novērtējums
Lithuanian: Strateginis poveikio aplinkai vertinimas
Montenegrin: Strateška procjena uticaja na životnu sredinu
Polish: Strategiczna ocena oddziaływania na środowisko
Portuguese: Avaliação ambiental estratégica
Romanian: Evaluarea impactului strategic
Russian: Стратегическая Экологическая Оценка
Slovakian: Strategické environmentálne hodnotenie
Slovenian: Strateška presoja vplivov na okolje / celovita presoja vplivov na okolje
Serbian: Стратешка процена утицаја на животну средину
Spanish: Evaluación Ambiental Estratégica
Swedish: Strategisk miljöbedömning

TERRITORIAL IMPACT ASSESSMENT (TIA)

Definition

It is an assessment approach, developed by several projects in the frame of the ESPON program. It aims at informing policy makers on the impacts of (EU) policies, e.g. Directive 2009/28/EC on the promotion of the use of energy from renewable sources, on different geographical areas ('territorial units'), comprising the assessment of environmental and spatial, economic, social and administrative impacts. It consists of four phases, namely screening, scoping, assessment and evaluation, and can be performed in either *ex-ante* or *ex-post* manner.

An on-line ESPON TIA tool combines the expert knowledge and judgements about the potential impact with a set of statistical data describing the characteristics of regions. Based on the different sensitivity of regions the expert judgments are translated into maps showing the territorial impact of EU policy on NUTS3 level. These maps can serve as starting point for further discussion of different impacts of a concrete EU policy on different regions. The tool is available here: https://www.espon.eu/tools-maps/espon-tia-tool

Related terms

Environmental Impact Assessment (EIA), Social Impact Assessment (SIA)

Keywords

EU directives, Policy making, Territorial approach

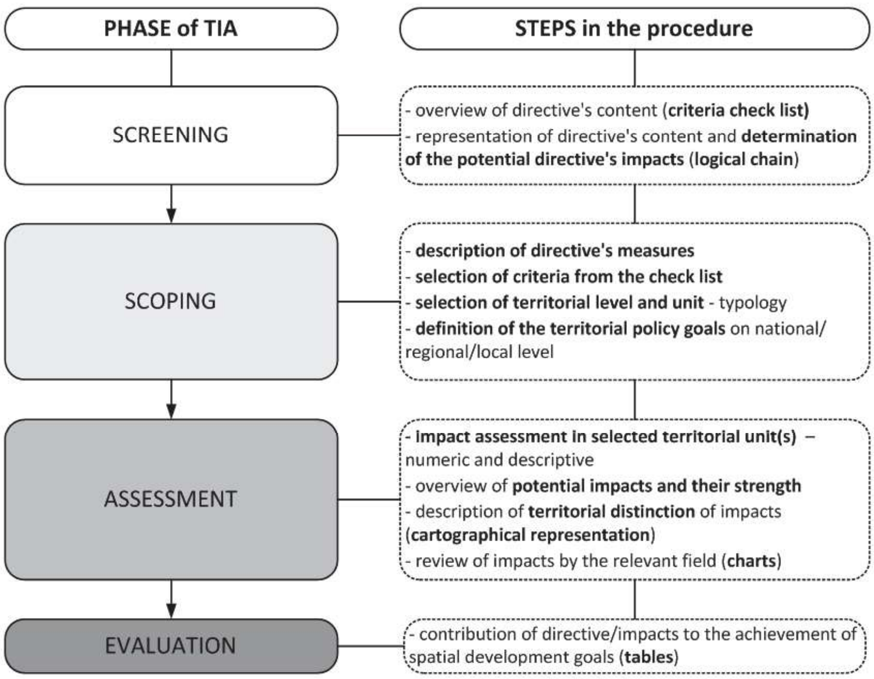


Figure 47. Territorial Impact Assessment procedure (Source: Golobič et al. 2015)

Sources

Fischer, T.B., et al. 2012: ESPON EATIA: ESPON and Territorial Impact Assessment. Final Report. ESPON, Luxembourg.

Golobič, M., Marot N., Kolarič, Š., Fischer, T.B. 2014: Applying territorial impact assessment in a multi-level policy-making context – the case of Slovenia. Impact Assessment and Project Appraisal 33(1): 43–56.

http56: https://www.espon.eu/tools-maps/espon-tia-tool

Translations

Bosnia and Herzegovina: Studija uticaja na teritoriju
Bulgarian: Оценка на въздействието върху околната среда за територията
Croatian: Studija utjecaja na teritorij
Czech: Hodnocení dopadů na území
Danish: /not used
Dutch: Territoriale effectrapportage
Esperanto: Takso de teritoriaj efikoj
Estonian: Territoriaalse mõju hindamine
Finnish: /not used
French: Etude d’impact territorial
German: Raumverträglichkeitsprüfung
Greek: Περιφερική Ανάλυση Επιπτώσεων
Hebrew: הערכת ההשפעה על פני השטח
Hungarian: területi hatásvizsgálat (not in use)
Italian: Valutazione di impatto territoriale
Icelandic: /not used
Latvian: Teritoriālās ietekmes novērtējums
Lithuanian: Teritorinio poveikio vertinimas
Montenegrin: Teritorijalna procjena uticaja
Polish: Ocena oddziaływania terytorialnego
Portuguese: Avaliação de Impato Territorial
Romanian: Evaluarea impactului teritorial
Russian: Оценка воздействий территории
Slovakian: Hodnotenie územného dosahu
Slovenian: Presoja učinkov na prostor
Serbian: Процена територијалног утицаја
Spanish: Evaluacion de impacto territorial
Swedish: Territoriell konsekvensanalys

VISUAL ASSESSMENT

Definition

Visual assessment (called also Visual Impact Assessment – VIA) is the process (including analysis) of taking account of the effects of certain types of development on the visual landscape, usually prior to implementation. The term Visual Impact Assessment was coined as part of Environmental Impact Assessment in the US National Environmental Policy Act of 1969.

In COST RELY, it concerns with how the visual characteristics of landscape are influenced by the development of renewable energy systems. The process identifies and evaluates these effects, and uses the data gathered to support informed decision making.

Related terms: Landscape assessment, Environmental Impact Assessment, Visual impact

Keywords

Visual effects, Visual amenity, Experience, Perception, Viewpoint analysis, Zones of visual influence

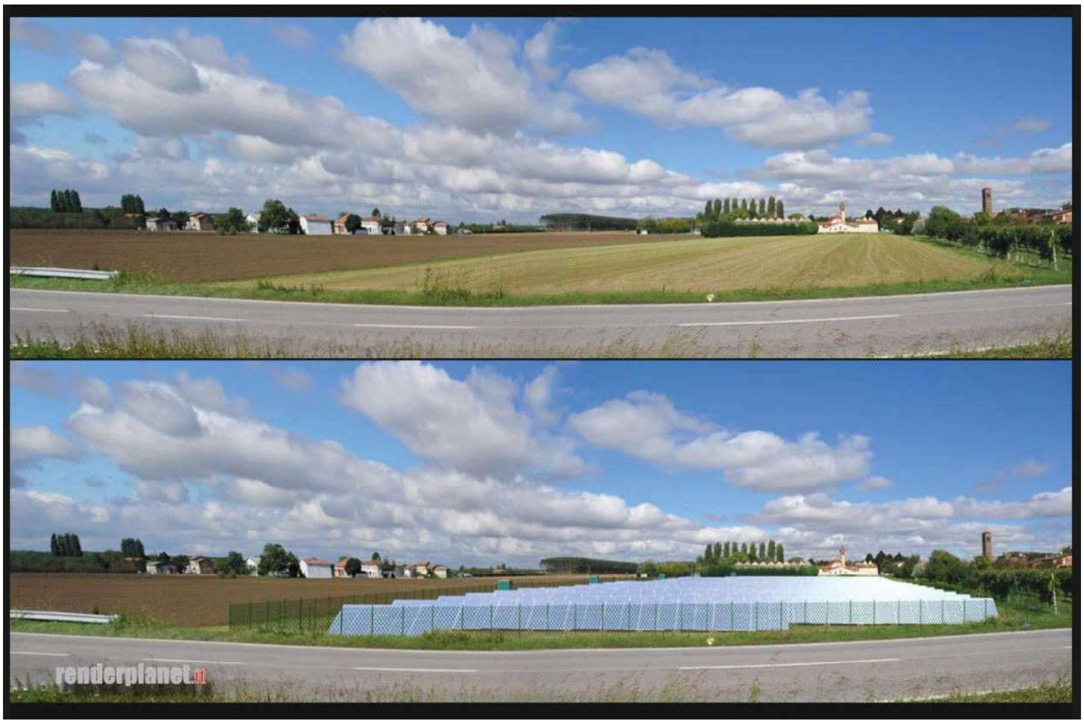


Figure48a. Model to give an impression of how a solar panel installation would look like – today an often used tool for a visual assessment (Source: http57)

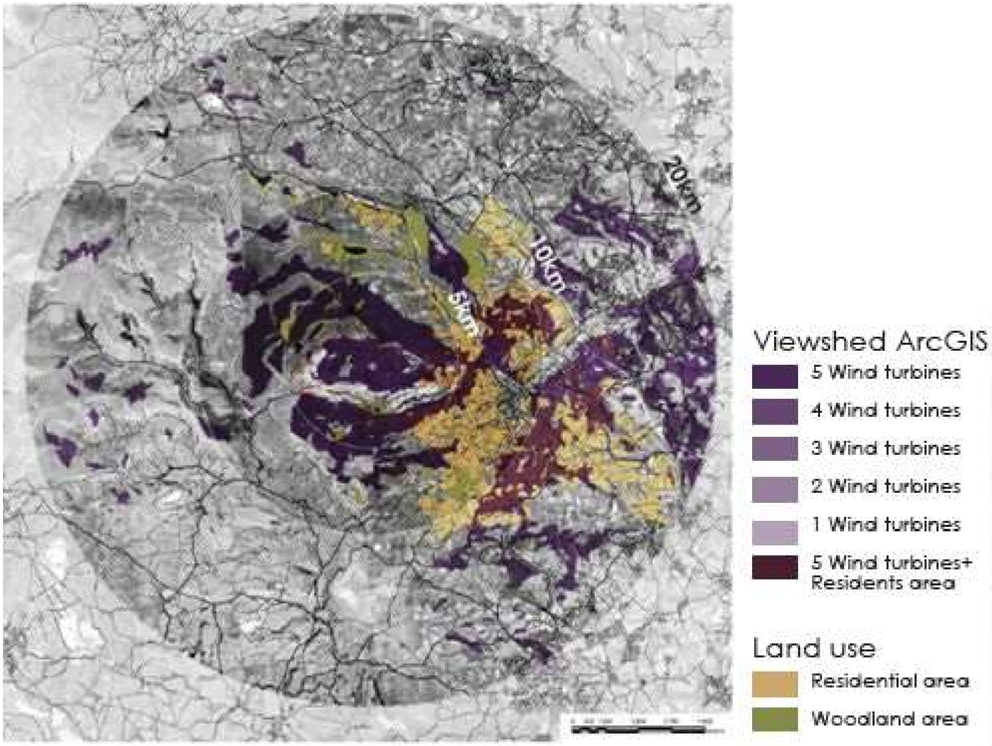


Figure 48b. Viewshed (or Zone of Theoretical Visibility) indicating the number of wind turbines in purple colours (the darker the more turbines are visible) overlaid with settlement area (yellow) and forest (green) (Source: University of Sheffield 2016)

Sources

Elaborated by the COST RELY Action members on the base of
Landscape Institute, Institute of Environmental Management 2013: Guidelines for Landscape and Visual Impact Assessment 3rd edition- consultation draft". Landscape Institute, London.
http58: http://www.saratogaassociates.com/visual-assessment/visual-assessment/16452900
http59: www.macaulay.ac.uk/ccw/task-three/via.html#ref
http60: https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act US United Environmental Agency 1969: Summary of the National Environmental Policy Act, 42 U.S.C. §4321 et seq. United States Environmental Agency, Washington DC.

Translations

Bosnia and Herzegovina: Vizuelna procjena/ Procjena vizuelnih efekata
Bulgarian: Оценка на устойчивостта
Croatian: Procjena vizualnog utjecaja
Czech: Vizuální hodnocení
Danish: virsualisering
Dutch: visuele beoordeling
Esperanto: Vida takso
Estonian: visuaalne hindamine
Finnish: Visuaalinen arviointi
French: Evaluation de la visibilité
German: Landschaftsbildbewertung
Greek: Οπτικής ανάλυση
Hebrew: חזותית השפעה הערכת
Hungarian: vizuális értékelés
Italian: Valutazione visiva
Icelandic: sjónrænt mat
Latvian: Teritoriālās ietekmes novērtējums
Lithuanian: Vizuālais novērtējums
Montenegrin: Vizuelna procjena
Polish: Vizualna procjena
Portuguese: Ocena wizualna
Romanian: evaluare vizuală
Russian: визуальная оценка
Slovakian: Vizuálne hodnotenie
Slovenian: vizualna presoja
Serbian: Визуелна процена
Spanish: Evaluación de la visibilidad
Swedish: visuell bedömning

References

Arnstein, S.R. 1969: A Ladder of Citizen Participation, JAIP 35(4): 216–224.
Bastian, O., Grunewald, K., Syrbe, R-U., Walz, U., Wende, W. 2015: Landscape services: the concept and its practical relevance. Landscape Ecology 29(9):1463–1479.
Bevk, T. 2015: The use of automated classification for landscape typology in the case of regional distribution of landscape types in Slovenia: Master thesis. Biotechnical Faculty, University of Ljubljana, Ljubljana.
Bolliger, J., Kienast, F. 2010: Landscape Functions in a Changing Environment. Landscape Online 21: 1–5.
Botelho, A., Pinto, L. M., Lourenço-Gomes, L., Valente, M., Sousa, S. 2016: Social sustainability of renewable energy sources in electricity production: An application of the contingent valuation method. Sustainable Cities and Society 26: 429–437.
Bowe, S. 2010: A gate-to-gate life-cycle inventory of solid hardwood flooring in the Eastern US. Wood and Fiber Science. Society of Wood Science and Technology, Madison.
Brown, I., Castellazzi, M. 2014: Scenario analysis for regional decision-making on sustainable multifunctional land uses. Regional Environmental Change 14(4): 1357–1371. (Figure 43a)
Buckley, R. 1998: Strategic Environmental Assessment. In: Peter, A.L., Fittipaldi, J.J. (eds.) Environmental Methods Review: Retooling Impact Assessment for the New Century. The Press Club, USA.
Buizer, M., Arts, B., Westerink, J. 2016: Landscape governance as policy integration "from below": A case of displaced and contained political conflict in the Netherlands. Environment and Planning. C, Government & Policy 34(3): 448–462.
Castree, N., Rogers, A., Kitchin, R. 2013: A dictionary of human geography. Oxford University Press, Oxford.
Cheong, S. M., Silliman, B., Wong, P. P., Van Wesenbeeck, B., Kim, C. K., Guannel, G. 2013: Coastal adaptation with ecological engineering. Nature Climate Change 3(9): 787–791. (Figure 33)
Council of Europe. 2000: European Landscape Convention. Council of Europe, Florence.
Countryside Agency and Scottish Natural Heritage 2002: Landscape character assessment guidance for England and Scotland, Cheltenham, Countryside Agency; Edinburgh, Scottish Natural Heritage, Paragraph 7.8; Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity.
Daniel, T.C. 2001: Whither scenic beauty? Visual landscape quality assessment in the 21st century. Landscape and Urban Planning 54: 267–281.
de Andrés-Ruiz, C., Iranzo-García, E., Espejo-Marín, C. 2015: Solar thermoelectric power landscapes in Spain: A new kind of renewable energy landscape? In: Frolova, M., Prados, M.-J., Nadaï, A. (eds.) Renewable Energies and European Landscapes: Lessons from Southern European cases. Springer, New York, London, pp. 237–254.
De Waal, R., Stremke, S. 2014: Energy Transition: Missed Opportunities and Emerging Challenges for Landscape Planning and Designing. Sustainability 6(7): 4386–4415.
Environmental Agency 1969: Summary of the National Environmental Policy Act, 42 U.S.C. §4321 et seq. United States Environmental Agency, Washington DC.
Eurelectric 2011: Hydro in Europe: Powering Renewables. Union of the Electricity Industry, Brussels, pp. 66.
European Commission 2001: Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (SEA Directive). European Commission, Brussels.
European Commission 2009: Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources. European Commission, Brussels.
European Commission 2010: Energy 2020 A strategy for competitive, sustainable and secure energy. European Commission, Brussels.
European Parliament and of the Council 2003: Public Participation Directive. European Parliament, Strasbourg. (http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0004)
Evans, A., Strezov, V., Evans, T.J. 2009: Assessment of sustainability indicators for renewable energy technologies. Renewable and Sustainable Energy Reviews 19: 1082–1088.
Fairclough, G. 2010: Complexity and contingency: classifying the influence of agriculture on European landscapes. In: Pungetti, G., Kruse, A. (eds.): European Culture expressed in Agricultural Landscapes. Palombi Editori, Roma, pp. 115–148.
Fischer, T. B. et al. 2012: ESPON EATIA: ESPON and Territorial Impact Assessment. Final Report. ESPON, Luxembourg.
Go, F., Lemmetyinen, A., Hakala, U. 2015: Harnessing place branding through cultural entrepreneurship. Palgrave Macmillan UK, London.
Golobič, M., Breskvar Zaucer, L. 2010: Landscape Planning and Vulnerability assessment in the Mediterranean; http://www.pap-thecoastcentre.org/pdfs/Landscape%20Vulnerability.pdf
Golobič, M., Marot, N., Kolarič, Š., Fischer, T. B. 2014: Applying territorial impact assessment in a multi-level policy-making context – the case of Slovenia. Impact Assessment and Project Appraisal 33(1): 43–56.
Gonzalez Bernaldez, E. 1981: Ecologia y Paisaje. Blume, Madrid.

Görg, C. 2007: Landscape governance. Geoforum; Journal of Physical, Human, and Regional Geosciences 38(5): 954–966.
Gunderson, L.H. 2000: Ecological resilience — in theory and application. Annual Review of Ecology and Systematics 31: 425–439.
Hagan, S. 2001: Taking Shape. A new contract between architecture and nature. Butterworth Heinenmann, Oxford.
Hewitt, R., Hernandez-Jimenez, V., Zazo-Moratalla, A., Ocón-Martín, B., Román-Bermejo, L., Encinas-Escribano, M. 2017: Participatory Modelling for Resilient Futures, Action for Managing Our Environment from the Bottom-Up. Developments in Environmental Modelling (series editor Fath, B. D.), Volume 30. Elsevier, Amsterdam.
Hewitt, R., Van Delden, H., Escobar, F. 2014: Participatory land use modelling, pathways to an integrated approach. Environmental Modelling & Software 52: 149–165.
IEA and the Landscape Institute 1995: Guidelines for landscape and visual impact assessment. E and FN Spon, London.
Ingersoll, R. 2003: A postapocalyptic view of ecology and design. Harvard Design Magazine, Fall18.
Jacques, D. L. 1980: Landscape Appraisal: The Case for a Subjective Theory. Journal of Environmental Management 10: 107–113.
Kallipoliti, L. 2010: "No more Schisms". EcoRedux. Design Remedies for an Ailing Planet 80 (6): 14–24.
Kruse, A. (ed.), Centeri, Cs., Renes, H., Roth, M., Printsmann, A., Palang, H., Benito Jorda, L., Velarde, M. D., Kruckenberg, H. 2010: Glossary on agricultural landscapes. Hungarian: Journal of Landscape Ecology (Special Issue): 99–127.
Krovakova, K., Semeradova, S., Mudrochova, M., Skalos, J. 2015: Landscape functions and their change - a review on methodological approaches. Ecological Engineering 75: 378–383.
Landscape Institute, Institute of Environmental Management 2013: Guidelines for Landscape and Visual Impact Assessment 3rd edition- consultation draft". Landscape Institute, London.
Learmonth, R., Whitehead, R., Boyd, W., Fletcher, S. 2007: Living and working in rural areas: a handbook for managing land use conflict issues on the NSW North Coast. Department of Primary Industries, Wollongbar.
LI and IEMA 2013: Guidelines on Landscape and Visual Impact Assessment, 3rd Edition, Landscape Institute and Institute of Environmental Management and Assessment. Routledge, London, New York.
Marot, N. 2010: Planning capacity of Slovenian: municipalities. Acta Geographica Slovenica 50(1): 131–157. (Figure 45)
Martinez de Pison, E. 2000: Estudios sobre el paisaje. Fundacion Duques de Soria – Ediciones Universidad Autonoma de Madrid, Madrid.
Martinopoulos, G. 2016: Solar Energy in Buildings. In: Elias, S. A. (ed.) Reference Module in Earth Systems and Environmental Sciences, Elsevier, Amsterdam.
Mitsch, W. J. 2012: What is ecological engineering? Ecological Engineering 45: 5–12.
Mitsch, W. J., Jørgensen, S.E. 1989: Ecological Engineering: An Introduction to Ecotechnology. John Wiley and Sons, Hoboken, New Jersey.
Nakicenovic, N., Swart, R. 2000: Emissions Scenarios 2000 - Special report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge.
Nayak, D. R., **Miller, D. R.,** Nolan, A. J., Smith, P., Smith, J. U. 2010: Calculation carbon budgets of wind farm on Scottish petlands. **Mires and Peat 4**: 1–23.
Olwig, K. R. 1996: Recovering the substantive nature of landscape. Annals of the association of American geographers 86(4): 630–653.
Opdam, P., Coninx, I., Dewulf, A., Steingröver, E., Vos, C., van der Wal, M. 2016: Does information on landscape benefits influence collective action in landscape governance? Current Opinion in Environmental Sustainability 18: 107–114. (Figure 37.)
Palomo, I., Martín-López, B., López-Santiago, C., Montes, C. 2011: Participatory scenario planning for protected areas management under the ecosystem services framework: the Doñana social-ecological system in southwestern Spain. Ecology and Society 16(1): 23.
Pérez-Soba, M., Petit, S., Jones, L., Bertrand, N., Briquel, V., Omodei-Zorini, L., Contini, C., Helming, K., Farrington, J. H. M., T. M., Wascher, D., Kienast, F., de Groot, R. S. 2008: Land use functions - a multifunctionality approach to assess the impact of land use changes on land use sustainability. In: Helming, K., Pérez-Soba, M., Tabbush, P. (eds.): Sustainability impact assessment of land use changes. Springer, Berlin Heidelberg, pp. 376-404.
Puolamäki, L. 2012: Individual views and shared landscape of folklore in Reykholtsdal, Iceland. European Countryside 2: 162–178.
Raskin, P., Monks, F., Ribeiro, T., van Vuuren, D., Zurek, M. 2005: Global scenarios in historical perspective, Millennium Ecosystem Assessment. UNEP, New York.
Ringland, G. 1998: Scenario Planning. John Wiley & Sons, Chichester.

Ryn, S. V. D., Cowan, S. 1996: Ecological design. Island Press, Washington.
Schroth, O. 2010: From information to participation: interactive landscape visualization as a tool for collaborative planning (Vol. 6). vdf Hochschulverlag AG, Zürich. (Figure 43b)
Scognamiglio, A. 2012: Chapter 6 – Building-Integrated Photovoltaics (BIPV) for Cost-Effective Energy-Efficient Retrofitting, In: Pacheco-Torgal, F., Granqvist, C., Jelle, B., Vanoli, G., Bianco, N., Kurnitski, J. (eds.) Cost-Effective Energy Efficient Building Retrofitting. Woodhead Publishing, Sawston, Cambridge, pp. 169–197.
Scognamiglio, A., Bosisio, P., Di Dio, V. 2013: Fotovoltaico negli edifici, Edizione 2013 (Photovoltaics in buildings. Edition 2013). Edizioni Ambiente, Milano.
Somogyi, V., Sebestyén, V., Nagy, G. 2017: Scientific achievements and regulation of shallow geothermal systems in six European countries – A review. Renewable and Sustainable Energy Reviews 68: 934–952.
Steinitz, C. 1967: Computers and regional planning: the DELMARVA study. MA: Graduate School of Design, Harvard University, Cambridge.
Stremke, S. 2017: Energy Transition at the Regional Scale: Building Sustainable Energy Landscapes. In: Ruby, I., Ruby, A. (eds.) Infrastructure: Space, Ruby Press, Berlin, pp. 217–228.
Stremke, S., Koh, J., 2011: Integration of Ecological and Thermodynamic Concepts in the Design of Sustainable Energy Landscapes. Landscape Journal 30(2): 194–213.
Thérivel, R. 1997: Strategic environmental assessment in Central Europe. Project Appraisal 12(3): 151–160.
Vanclay, F. 2003: International principles for social impact assessment. Impact Assessment and Project Appraisal 21(1): 5–12.
Valles-Planells, M., Galiana, F., Van Eetvelde, V. 2014: A Classification of Landscape Services to Support Local Landscape Planning. Ecology and Society 19(1): 44.
Volkery, A., Ribeiro, T., Henrichs, T., Hoogeveen, Y. 2008: Your vision or my model? Lessons from participatory land use scenario development on a European scale. Systemic Practice and Action Research 21(6): 459–477.
Yang, H., Cui, P., Fang, Z. 2010: Vertical-borehole ground-coupled heat pumps: A review of models and systems. Applied Energy 87(1): 16–27.

Links

Numbering starts with 5 because the glossary presents in terms of references with the preface one item as a whole.

http5: https://www.earthmirrors.com
http6: www.snh.gov.uk/docs/B858929.pdf
http7: www.ccwwdaonb.org.uk/outstanding-landscapes/landscape-character/
http8: http://www.snh.gov.uk/docs/B1118160.pdf
http9: www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-resource-library/glossary-of-terms/
http10: https://www.toposmagazine.com/yanweizhou-park-a-resilient-lanscape/#05-yanweizhou-birdeye-view2-631x440
http11: http://landuse.co.uk/sectors/energy-infrastructure/
http12: http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/communities/talking-about-our-place/
http13: https://www.ap.org/en-gb
http14: http://newatlas.com/enerken-edmonton-waste-to-biofuels/14393/#gallery
http15: http://biofuel.org.uk/glossary.html
http16: https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels
http17: http://www.alternative-energy-news.info/technology/biofuels/
http18: www.gov.uk/guidance/industrial-energy-and-non-food-crops-business-opportunities-for-farmers
http19: https://de.pinterest.com/pin/312015080408785184/, with permission of Enerkem
http20: http://enerkem.com/about-us/technology/[12/06/2017
http21: www.biogas-info.co.uk/ (UK Government portal on aerobic digestion)
http22: http://european-biogas.eu/biogas/ (European Biogas Association)
http23: https://www.nortisgroup.com/services/biomass/
http24: www.treehugger.com
http25: www.ehpa.org (European Heat Pump Association)
http26: http://egec.info/ (European Geothermal Energy Council)
http27: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_geothermal (EU Research and Innovation, Geothermal Energy)
http28: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_hydro
http29: www.small-hydro.com/about/small-scale-hydrpower.aspx
http30: www.aquaret.com

http31: http://www.emec.org.uk/marine-energy/
http32: http://www.oceanenergy-europe.eu/
http33: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_solar
http34: http://standards.globalspec.com/std/9996054/ds-en-50583-1
http35: https://ec.europa.eu/research/energy/index.cfm?pg=area&areaname=renewable_wind
http36: https://windeurope.org/about-wind/statistics/
http37: http://ec.europa.eu/environment/waste/prevention/practices.htm
http38: https://www.culturemapmalta.com/#/
http39: http://www.unescobkk.org/culture/tools-and-resources/tools-for-safeguarding-culture/culturalmapping/
http40: https://saadaqeelalzaroonimapping.wordpress.com/2011/04/14/cultural-planning/
http41: https://www.creativecity.ca/database/files/library/cultural_planning_toolkit.pdf
http42: http://www.parksandgardensuk.wordpress.com
http43: http://www.hoeb.de/index.php/bildergalerie
http44: http://www.estuary-guide.net/guide/chapter7_assessing_impacts.asp
http45: http://ec.europa.eu/environment/eia/home.htm
http46: https://promo.gelifesciences.com/gl/BP/UP_art4.html#.VvvPeuIrKUk
http47: https://www.ise.fraunhofer.de/content/dam/ise/de/documents/publications/studies/aktuelle-fakten-zur-photovoltaik-in-deutschland.pdf
http48: http://commin.org/en/planning-systems/national-planning-systems/latvia/1.-planning-system-in-general/1.5-basic-elements.html
http49: https://c.ymcdn.com/sites/www.iap2.org/resource/resmgr/foundations_course/IAP2_P2_Spectrum_FINAL.pdf
http50: www.epa.gov/international-cooperation/public-participation-guide-introduction-public-participation
http51: https://www.unece.org/fileadmin/DAM/env/pp/documents/cep43e.pdf
http52: https://www.iap2.org/?page=pillars
http53: https://cultureelerfgoed.nl/sites/default/files/publications/manual_energy_heritage_and_environment.pdf
http54: http://www.lea-ptuj.si/en/services/local-energy-concept/
http55: http://sba-int.ch/1274-Strategic_Environmental_Assessment
http56: https://www.espon.eu/tools-maps/espon-tia-tool
http57: Renderplanet.it
http58: http://www.saratogaassociates.com/visual-assessment/visual-assessment/16452900
http59: www.macaulay.ac.uk/ccw/task-three/via.html#ref
http60: https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act (US United States)

Sources of illustrations

Here are listed the sources of illustrations which do not come from printed/published sources or html but generally refer to persons, companies or institutions.

Akuo Energy (Figure 25d)
ARCON/ESTIF (Figure 24b)
Bostenaru, Maria (Figure 23a)
Bottarelli, Michelle (Figure 21a)
David Wilson Associates (Figure 36.)
Ertex Solar (Figure 25b)
Exit (Figure 25a)
Frantal, Bohumil (Figure 3b)
Juwi Solar GmbH (Figure 25c)
Kruse, Alexandra (Figures 3a, 3c, 9., 11., 17., 19c, 20a, 30b, 41b)
KYOCERA Corporation (Figure 30a)
Marot, Naja (Figure 4., 23b, 27.)
Martinat, Stanislav (Figure 44.)
Miller, David (Figures 41c, d)
Observatory for a Culture of the Territory (Figure 10.)
Ostman, David (Figure 22a, 22b)
Otte, Pia (Figure 28.)
Perth and Kinross Council, UK (Figure 7a)
Puolamäki, Laura (Figure 31c)
Rojas, Jose M. (Figure 9.)
Roulston, Elsie (Figure 29b)
Schrot, Olaf (Figure 29a)
Soares, Filipa (Figure 29c)

Solahart/ESTIF (Figure 25a)
Stein, Philip (Figure 41a)
University of Sheffield (Figure 48b)