RELY Glossary on terms of RE

This is a Working document by COST TU 1401 RELY, stand: 11 Mai 2017
All Comments are welcome!

Content

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1. Preliminary note

This glossary has three functions:

1. To ensure consistency with use of the same terms and terminology
2. To ensure all project participants understand the same things by using this terms
3. To be a major outcome of RELY, publically accessible from the RELY WWW site.

According to our experience with the EUCALAND glossary, we can tell you that even now, more than 10 years after it's publication, it is still used, appreciated and cited for articles and conferences. Following the EUCALAND glossary (http://www.tajokologiailapok.szie.hu/pdf/2010SpecialIssue/15_Kruse.pdf) it therefore contains

1. Common English term
2. Definition – either from a standard work or elaborated by COST RELY
3. Related terms (herewith we refer to other terms defined within this glossary)
4. Keywords (words one would use for a google search)
5. Most important reference(s) (standard work if possible)
6. Illustration(s) – in most cases a photo or a schema
7. Translations into the participants languages (see separate document)

All project partners are encouraged to use this terms in

1. Discussions
2. Disseminations

Kommentiert [A1]: We have all illustrations in a higher resolution, but in order to keep the file in a small seize, so that working with it remains possible, we insert all graphics in a low resolution. In case you need a graphic, please contact WG 4. We will also provide soon a space for downloading the graphics.

All projects participants can contribute, but especially members of WG 1 and WG 4 are asked to cooperate: Any comment welcome!

Round one – first draft: ACHIEVED

We need ONE responsible person PER term. With other words: If EVERYBODY takes care about ONE term, it is a feasible work. Please check the list. If you can provide a definition where a term is still missing, please contact Alexandra (akruse@whconsult.eu). If there are missing terms: Please add them.

Translations:

Please check, if you can provide translations. We have already translated all terms into

FR	**ES**	**PL**	**EE**	**HR**	**CZ**	**HU**	**ME**	**PT**	**FI**	**DE**	**NL**	**BIH***
Heb	**(RUS)**	**EN**	**BG**	**IC**	**IT**	**(SE)**	**RO**	**(DK)**	**Serb**	**IS**	**Lith**	**SL**
(Mac)	**Lat**	**GR**										

*Bosiak, Croatian, Serbian: The three official languages of Bosnia and Herzegovina)

There are some more translations into further languages but only for some terms. During the working process, some terms have changed, have been added or deleted. Therefore we will send the translations once again.

Missing: DK, SE

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Round two - revision: ACHIEVED

To all RELY members: Please read the definitions carefully and give us feedback,

1. if the words and definitions are understandable and
2. acceptable in your understanding
3. if you miss terms or explanations
4. which one we don't need

All comments are welcome – please use track-change modus.

Third round – finalisation

WG 4 – will consider all comments and finalise the glossary in 2017. It is planned to do it at the WG 4 meeting in March. ACHIEVED

The glossary will be accompanied by a general introduction and a list of references (in collaboration with WG 1).

THANK YOU!

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2. List of terms

25/04/2017

Grey: done

Purple: Still some open questions – or points to discuss

Yellow: missing but wanted

Green: Terms had been added later, translation needed

Terms	Responsible person Please chose one term and write your name in
General introduction	Naja Marot, Alexandra Kruse
References	*Marina Frolova, Alain Nadaï, Csaba Centeri and others*?
Landscape Quality terms	
Best Practice	Bohumil Frantal
Cultural Mapping	Bénédicte Gaillard (Maunu Háyrynen)
Cultural Planning	Bénédicte Gaillard (Maunu Háyrynen)
Ecological engineering	Slobodan Mickovski
Energy-conscious design	Nieves Mestre (Sven Stremke)
Energy landscapes	WG4 team
Environmental impact assessment	Bénédicte Gaillard
Landscape	Alexandra Kruse et al. from EUCALAND glossary
Landscape assessment	Róbert Kabai
Landscape awareness	Isidora Karan
Landscape capacity	Slobodan Mickovski
Landscape character	David Miller
Landscape classification	Csaba Centeri
Landscape function	Jose M Rojas
Landscape governance	Stanislav Martinat
Landscape identity	Veronica Hernandez Jimenez, Richard Hewitt
Landscape quality	David Miller, Sina Roehner, Alexandra Kruse (Sebastian Eiter)
Landscape resilience	Slobodan Mickovski
Landscape sensitivity	Two: Na'ama Teschner and Olaf Schroth; Stanislav Martinat
Landscape service	Jose M Rojas
Landscape vulnerability	Slobodan Mickovski
Land use conflicts	Bohumil Frantal
Life Cycle Assessment	Slobodan Mickovski
Public participation	David Miller
Public participation process	Veronica Hernandez Jimenez, Richard Hewitt

Kommentiert [A2]: Still a question to SM open

Kommentiert [A3]: Revision completed, both terms send to the 3 authors, Question to NM open

Kommentiert [A4]: Revised, sent to David for illustration and capture

Kommentiert [A5]: Revision finished, sent to Csaba for Chinese source and his OK

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Scenario	David Miller
Scenario Techniques	Richard Hewitt, Verónica Hernández Jiménez
Social Impact Assessment (SIA)	Stanislav Martinat
Strategic environmental assessment (SEA)	Malgorzata Lachowska
Sustainable renewable energy production	Pia Otte
Visual assessment	Isidora Karan
Visual impact	Nieves Mestre / Olaf Schroth
Visual impact assessment	Nieves Mestre / Olaf Schroth
RE-type-terms	**We took the names from the WG 1 tasks document.** **Please check, if still up to date and if you agree**
Biofuel (BF)	*Csaba Centeri*
Biogas (BG)	Mateusz Slupinski
Biomass (BM)	Paolo Brito *(Zlata Dolacek Alduk)*
Environmental thermal energy source (ET)	Michele Bottarelli
Geothermal power (G)	Karl Benediktsson
Hydropower (HL)	Marcel Hunziker, Mateusz Slupinski, WG 4 team
RE policy documents (REP)	Csaba Centeri
Photovoltaic Solar PV ground-mounted power (SPVG) Solar PV on-roof power (SPVR)	Alessandra Scognamiglio
Solar thermal Solar thermal ground-mounted power (STG) Solar thermal on-roof power (STR)	Georgios Martinopoulos
Solar thermoelectric (ST)	Marina Frolova
Marine energy (M)	
Wind energy On-shore energy (WON) Off-shore energy (WOF)	Marina Frolova

Kommentiert [A6]: New: Not yet revised by WG 4

Kommentiert [A7]: New: Not yet revised by WG 4

Kommentiert [A8]: I am not happy with this definition and I wonder if we need it at all

Kommentiert [A9]: still missing

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3. Empty Template

to be copied and used for each term

1. Term	
Definition **Synonyms (if any)**	
Some Keywords **Source** Of the definition: Can be a standard work, can be from a well-known article or can be elaborated by the RELY COST Action members	**Photo** (or any other kind of graphic demonstration/description) *Figure 1.* Title, Location (Photo: Author, year)
*national further terms/synonyms	

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4. Definitions

Best practice **(Bohumil Frantal)**
Definition: In a general sense, best 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 EC 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 it's character?), and preventing or minimizing potential negative impacts on people and ecosystems. In RELY, best practice of renewable energy development is with respect to the elements underpinning landscape quality. **Related terms:** Ecological engineering, Energy-conscious design, Environmental impact assessment, Landscape impacts of Renewable Energy

Keywords:	**Illustrations**
model case, good practice, smart practice experience, evidence, achievement, landscape compatible	

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Source: Definition developed by RELY COST Action http://ec.europa.eu/environment/waste/prevention/practices.htm	 Figure 1a: The ´Floating´ solar power plant in Kagoshima Bay, Japan can be considered as good example for saving space and 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 which means that they do not disturb aesthetically. (Photo: © KYOCERA Corporation)  Figure 1b: PV-Panels in parallel to the airstrip of Athena's 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)
*osvědčená praxe	

Cultural mapping (Bénédicte Gaillard/Maunu Häyrynen)

Definition

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.

Cultural mapping 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 RELY, cultural mapping might be considered during planning processes for renewable energy facilities.

Related terms

Cultural planning

Some Keywords

GIS, cultural diversity, participation, cultural resource mapping, cultural landscape mapping

Source

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

http://www.maltatoday.com.mt/arts/valletta_2018/57447/valletta_2018_explores_cultural_mapping_with_international_conference_#.WOpoNY6kKHo

Illustration

Figure 2a: http://engagekingsport.com/c-a-m/

Figure 2b: example from "culturemapmalta.com" http://www.maltatoday.com.mt/arts/valletta_2018/57447/valletta_2018_explores_cultural_mapping_with_international_conferenc

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	e_#.WOpoNY6kKHo
*national further terms/synonyms	

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Cultural planning (Bénédicte Gaillard/Maunu Häyrynen)

Definition

Strategic and iterative planning process of a locality, based on wide participation and cross-sectorality 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 cultural mapping (see there), 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, a strategic approach that directly and indirectly integrates the community's cultural resources into a wide range of local government planning activities.

Related terms

Cultural mapping

Some Keywords

cultural resources planning, urban planning, creative cities

Source

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

Illustration

Figure 3: https://saadaqeelalzaroonimapping.wordpress.com/2011/04/14/cultural-planning/

*national further terms/synonyms

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Ecological engineering (Slobodan Mickovski)

Definition:
The design of ecosystems for the mutual benefit of humans and nature.
This has been used "in terms of using the landscape to perform an engineering/RE function".
Ecological engineering as a study of integrating ecology and engineering, concerned with the design, monitoring, and construction of ecosystems.
Xx Ask origin of quotation – Slobodan - AK

Related terms:
Energy-conscious design

Some Keywords:
restoration, ecology, engineering, conservation, landscape architecture, urban planning, eco-engineering, bio-engineering, ground-bioengineering, eco-technology

Source
Journal of Ecological Engineering;

W.J. Mitsch and S.E. Jørgensen (1989). Ecological Engineering: An Introduction to Ecotechnology. John Wiley and Sons.

Illustration

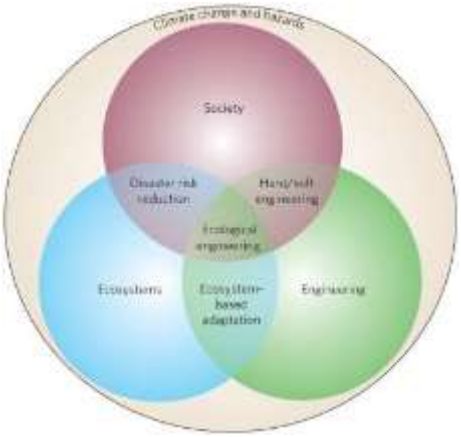


Figure 4: Ecological Engineering within the climate change and hazard framework. Source (Cheong et al., 2013. Nature Climate Change 3, 787–791 (2013) doi:10.1038/nclimate1854)

*national further terms/synonyms

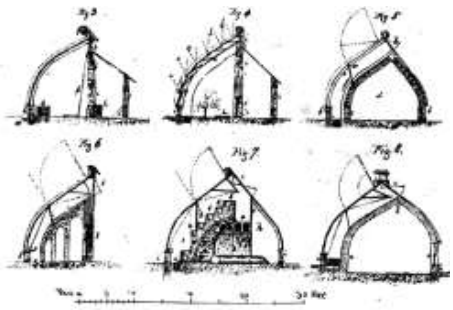
Energy-conscious design (Nieves Mestre)	
Definition Energy-conscious design and planning refers to the inclusion of energy, embodied-energy and energy efficiency in the planning and design of the built environment. It is relevant to design and planning at different scales, reaching from individual buildings 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. Design education, academia and practice are working on energy transition in relation to adaptation to climate change. 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). Nieves: Can you refer to Reference to EU regulation 2010/31.? **Related terms**: Ecological engineering	
Some Keywords embodied-energy, environmental design, ecological design, energy-efficient landscaping energy efficient design, ecological design	 Figure 5a. 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. (Sir John Claudius Loudon. *Sketches of Curvilinear Hot-Houses* . From Loudon's Remarks on the Construction of Hothouses, London 1817. http://www.parksandgardensuk.wordpress.com)

Figure 5b: 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 used bricks which stock the temperature have been recycled. (Photo: http://www.hoeb.de/index.php/bildergalerie)

Kommentiert [A10]: I will replace it by one of my owns.

Sources

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 Fall 2003 nº 18.

Kallipoliti, L. (2010). "No more Schisms". EcoRedux. Design Remedies for an Ailing Planet. AD vol 80 nº 6. Pp.: 14-24.

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

Stremke, Sven. 2017. "Energy Transition at the Regional Scale: Building Sustainable Energy Landscapes." In Infrastructure: Space, edited by I. Ruby and A. Ruby, 217–28. Berlin: Ruby Press.

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

De Waal, Renée, and Sven Stremke. 2014. "Energy Transition: Missed Opportunities and Emerging Challenges for Landscape Planning and Designing." Sustainability 6 (7): 4386-4415.

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Energy landscape (WG 4 team)

Definition:

An energy landscape is one 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 RELY, energy landscape is focused on RE and the impact on landscape quality.

Related terms:

Landscape resilience, Landscape sensitivity, Landscape vulnerability

Keywords:

renewable energy sources, multi-layer, multi-functional, sustainable energy landscape, landscapes of carbon neutrality, energyscapes

Source:

Definition adapted from Frantál, B., Pasqualetti, M., & Van der Horst, D. (2014). New trends and challenges for energy geographies. Moravian Geographical Reports, 22(2), 2–6.

Illustrations

Figure 6a: Three layers of energy production: Foreground agriculture with oil pumping. Middle: open brown coal mining with a coal-fired power plant. Background: Wind turbines (as I have reduced the resolution for this working version of the glossary, one cannot see the wind turbines well, but in the original they are OK for publication). (Photo: Garzweiler II/Germany, Alexandra KRUSE 2016)

Figure 6b. Wind energy landscape, Ore Mountains, Czech Republic (Photo: Frantal, 08/2012)

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	 Figure 6c: This energy landscape 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. This very intensive and close layers are dominating the Alpine valleys in Austria. (Photo: Mölltal in Carinthia/Austria Alexandra KRUSE 2016)
*national further terms/synonyms	

Environmental Impact Assessment (Bénédicte Gaillard)

Definition

An Environmental Impact Assessment (EIA) 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 means 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

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Some Keywords
environmental factors, environmental law, sustainable development, renewable energy landscape impact

Source
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.

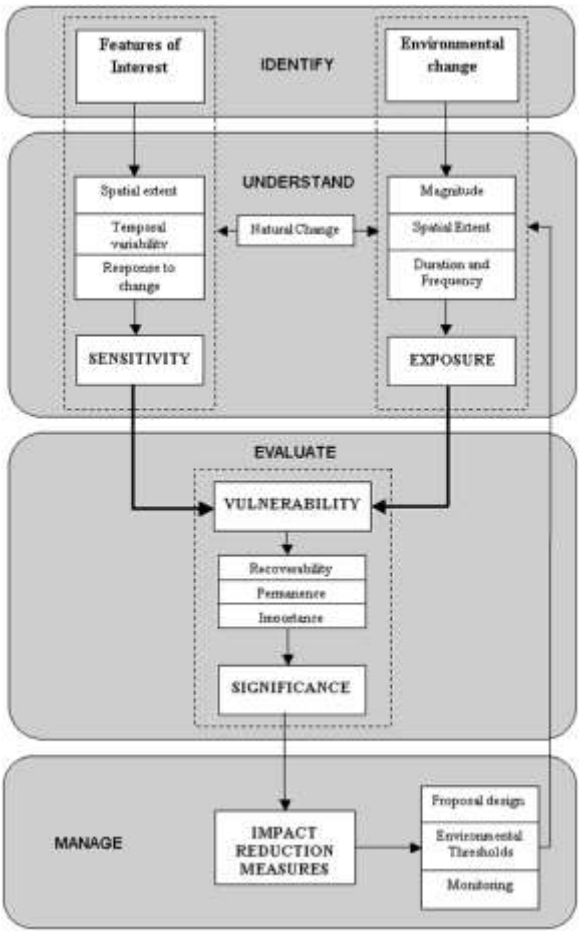

Figure 7: http://www.estuary-guide.net/guide/chapter7_assessing_impacts.asp

*national further terms/synonyms

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Landscape (from the EUCALAND Glossary, Kruse et al. 2010)	
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 (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, 1996b). Landskap was a social space that denoted a territory and its people, and connoted aspects of custom, value, and everyday life." **Related terms** Landscape identity, Landscape quality, Landscape sensitivity, Landscape service, Landscape vulnerability	
Some Keywords **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: http://www.tajokologiailapok.szie.hu/pdf/2010SpecialIssue/15_Kruse.pdf	 Figure 2. Landscape – composed by villages, single houses, forest, bushes, single trees and meadows, Ukrainian Carpathians, Rakhiv (Photo: Kruse 2009)
*national and other terms	

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Landscape assessment *(Robert Kabai)*

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 non-quantitative (descriptive or depictive) factors.

Related terms:

Visual assessment, landscape capacity, Environmental Impact Assessments, Social Impact Assessment

Keywords:
landscape quality, landscape character, landscape capacity, impact assessment, RE systems and facilities

Source:
© David Wilson Associates

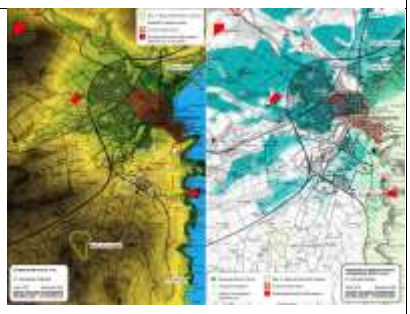

Figure 3*:* Maps showing the relationship between landscape and sites of special scientific interest, protection areas, ancient monuments, visual envelopes, etc. Diagram from Stonehaven South LVIA, UK (© David Wilson Associates)

*national further terms/synonyms

21

Kommentiert [A11]: Please complete!

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Landscape awareness (Isidora Karan)

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 defines as 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

Some Keywords

perception, knowledge-spreading process, ecological awareness

Source

Elaborated for COST RELY on the basis of the European Landscape Convention CEP-CDCPP.

Illustration

Figure 10. "Re-Storying the Landscape" landscape awareness-raising among children (Photo: https://www.earthmirrors.com, 2017)

*national further terms/synonyms

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Landscape capacity *(Slobodan Mickovski)*

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

landscape sensitivity, landscape service, Suitability of landscape for renewable energy production, Environmental impact assessment

Keywords:

Nature of landscape change, magnitude of landscape change cumulative effects capacity thresholds, cumulative effects, capacity thresholds, development opportunities, development constraints

Source:

Swanick, C. and Land Use Consultants (2002). Landscape Character Assessment

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

Guidance for England and Scotland.

Illustration

Figure 4. Example of Landscape Capacity toolkit used by Scottish National Heritage, Source: Scottish Natural Heritage, 2016 (www.snh.gov.uk/docs/B858929.pdf)

Countryside Agency and Scottish Natural Heritage	
*national further terms/synonyms	

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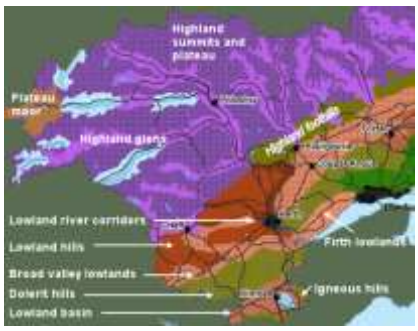
Landscape character (David Miller)	
Definition: The distinct and recognisable pattern of elements that occurs consistently in a particular type of landscape. It is a standard methodology for identifying, describing, classifying and mapping what is distinctive about landscapes. It is used in the assessment of landscape impacts for land use changes. For RELY, it is a basis of considering some of the landscape impacts of renewable energy developments (e.g. the UK). **Related term:** Landscape identity	
Some Keywords landscape quality, landscape value, Landscape Character Assessment (LCA). **Source** Countryside Agency and Scottish Natural Heritage (2002): Landscape character assessment guidance for England and Scotland, Paragraph 7.8 Cranborne Chase AONB (www.ccwwdaonb.org.uk)	 Figure 5a: Map of Landscape Character, from Tayside Landscape Character Assessment, produced for Scottish Natural Heritage (Perth and Kinross Council, UK)  Figure 6b: www.ccwwdaonb.org.uk/outstanding-landscapes/landscape-character/
*national further terms/synonyms	

Landscape classification (Csaba Centeri)

Definition
Landscape classification is a mean to group different types or landscape into categories in order to be able 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 researches 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

Some Keywords
landscape units,

Sources
Graham Fairclough (2010): Complexity and contingency: classifying the influence of agriculture on European landscapes. – Pungetti, G. & A. Kruse (ed.) (2010): European Culture expressed in Agricultural Landscapes. Palombi Editori: 115-148.

https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=09000016802fc11d

http://www.waikato.ac.nz/fass/about/staff/larsb/New-Zealand-Landscape-Classification-v2.1.pdf
https://www.ncbi.nlm.nih.gov/pubmed/21941769
http://landscape.forest.wisc.edu/LandscapeEcology/Articles/v07i04p253.pdf

Liang and Liu, 2011, article in Chinese

Figure 7a: Recent landscape classification in Hungary (Source: https://rm.coe.int/CoERMPublicCommonSearchServices/DisplayDCTMContent?documentId=09000016802fc11d

Figure 8b: Airborne photographs help landscape classification processes, Italy (Photo: Csaba Centeri, 2nd of July, 11:50 CET, 2016)

Kommentiert [A12]: #Csaba: Do we need this one? If so, can you provide it completely?

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*national further terms/synonyms

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Landscape function **(José M. Rojas)**

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 services, landscape capacity

Some Keywords

sustainability, assessment, service, multi-functional landscapes; land-use functions; landscape goods and services

Sources

Bolliger, J. & F. Kienast (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., 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

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

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changes. Springer, Berlin Heidelberg, 376-404	
*national further terms/synonyms	

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Landscape governance (Stanislav Martinat)

Definition:
The processes 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 States for public spaces or common land, progressive decentralization of decision-making regarding landscape issues, transparency and citizen participation. This is consistent with Art. 6 para. D of the ELC, "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 (if any)
Public participation
Public participation processes and tools
Landscape planning, Landscape policy, Landscape protection

Some Keywords
Governance, public participation, decision-making

Source
Definition created by authors of Oxford Dictionary of Human Geography (Castree et al., 2013); European Landscape Convention, Florence, 20.X.2000

9th Council of Europe Conference on the European Landscape Convention, 23-24 March 2017

Puolamäki, Laura (2012): Individual views and shared landscape of folklore in

Illustration

Figure 10a: Álagablettur at the gate of Sturly-Reykir farm. The road could be straightened, but there are tellings about "hidden people" that have been passed on for generations, why the road finally was not changed. (Source: Puolamäki, Laura (2012)

Reykholtsdal, Iceland. - In: Europ. Countryside 2 2012: 162-178

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.

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

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.

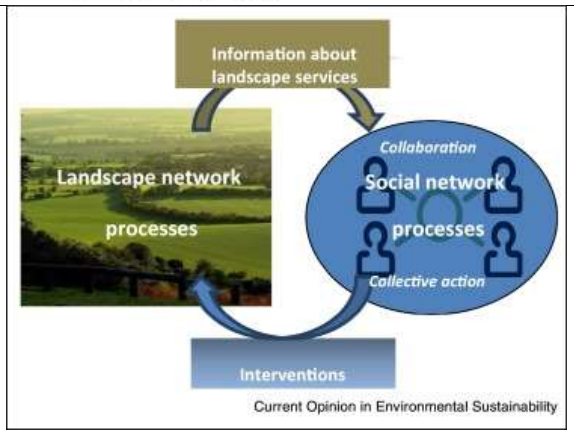

Figure 11b: Landscape governance: interactions between natural and social-political aspects (Opdam et al., 2016)

*national further terms/synonyms

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Landscape identity (Veronica Hernandez-Jimenez, Richard Hewitt)

Definition

Identity is related with 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), Gonzalez Bernaldez have referred to this concept saying landscape identity come with the person, it is a bag full of information of what we are carrying.

Related terms

landscape awareness, landscape resilience, landscape sensitivity

Keywords

sense of place, roots, feeling of belonging, motivation, people and place, recognition, attachment, belonging, place making,

Source

SNH: Talking about our Place – Topic Sheets (http://www.snh.gov.uk/docs/B1118160.pdf)

European Landscape Convention

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.

Illustration

Figure 12a: 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 been 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)

*national further terms/synonyms

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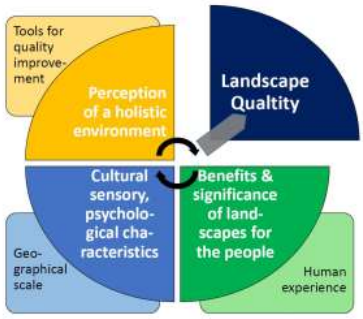
Landscape quality (WG 4 team, 2017)	
Definition The perception of the holistic environmental, cultural, sensory and psychological characteristics of a landscape with respect to their benefits or significance to people. It is relative, not absolute, requiring interpretation in the context of geographic scale (i.e. local, regional, national) and, or human experience. **Related terms (if any):** *Landscape value, landscape resource, landscape service.*	
Keywords *Perception, benefits, character* **Sources** Elaborated by 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.* Jacques, D.L. (1980) Landscape Appraisal: The Case for a Subjective Theory. *Journal of Environmental Management*, **10**, 107-113. *SNH www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landsca*	**Illustration**  Figure 137: Landscape quality is made up by different components and perception. (Illustration by COST-RELY, A. KRUSE)

pe-resource-library/glossary-of-terms/	
*national further terms/synonyms	

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Landscape resilience (Slobodan Mickovski)	
Definition: Landscape resilience is it's capacity for renewal in a dynamic environment. Its characteristics are flexibility, adaptability, and ability to withstand change. In the context of RELY, such change focuses on renewable energy systems. **Related terms:** Landscape vulnerability, Renewable Energy Landscape Impact.	
Some Keywords Regeneration, resistance, adaptation, risk*. *No definition of landscape risk is included in 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). **Source** Gunderson, L.H., 2000. Ecological resilience — in theory and application. Annual Review of Ecology and Systematics 31:425-439.	**Illustration**  Figure 14. Yanweizhou Park gives new life to the riparian wetland of Jinhua City, China (Photo: Turenscape, 2015), Source: (https://www.toposmagazine.com/yanweizhou-park-a-resilient-lanscape/#05-yanweizhou-birdeye-view2-631x440)
*national further terms/synonyms	

COST is supported by EU Framework Program Horizon 2020

Landscape sensitivity (Olaf Schroth, Na'ama Teschner, Stanislav Martinat)

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 RELY, such change is the development of renewable energy systems.

Related terms: Landscape vulnerability, landscape character, landscape quality

Some Keywords
Development, planning, capacity

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

Scottish Natural Heritage, & The Countryside Agency. (2002). Landscape Character Assessment - Guidance for England and Scotland. Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity. Cheltenham & Edinburgh.

LUC: http://landuse.co.uk/secgy-infrastructure/

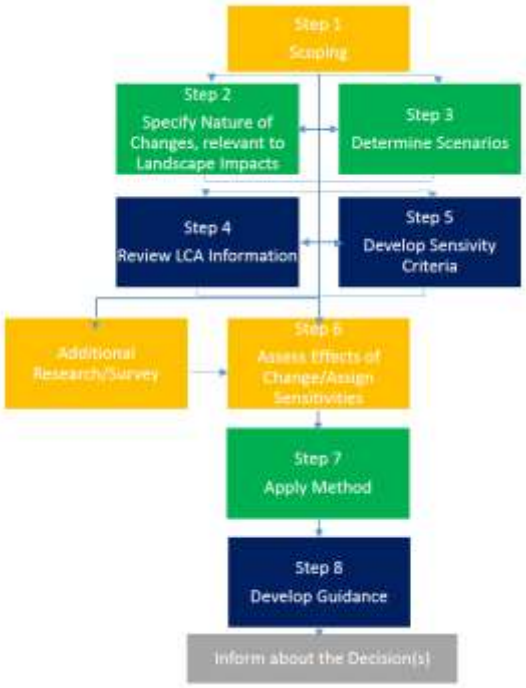

Figure 15a: Steps in a landscape sensitivity study (Source: Adapted by COST RELY, based on: Land Use Consultants (LUC), 2011)

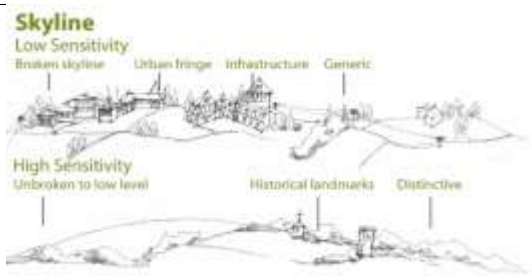

Figure 16*b*: Sketch on sensitivity with regard to the skyline as landscape element (O. Damsell, S. Griffiths, X. Jiao, G. Passarelli, 2014).

*national further terms/synonyms

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Landscape services **(José M. Rojas)**

Definition

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

Related terms:

Ecosystem Services

Some Keywords

Landscape Scale; Landscape Functions; Landscape Processes;

Source

Bastian, O. Grunewald, K. Syrbe, R-U. Walz, U. Wende, W. (2015). Landscape services: the concept and its practical relevance. *Landscape Ecology* (2014) 29:1463–1479

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

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

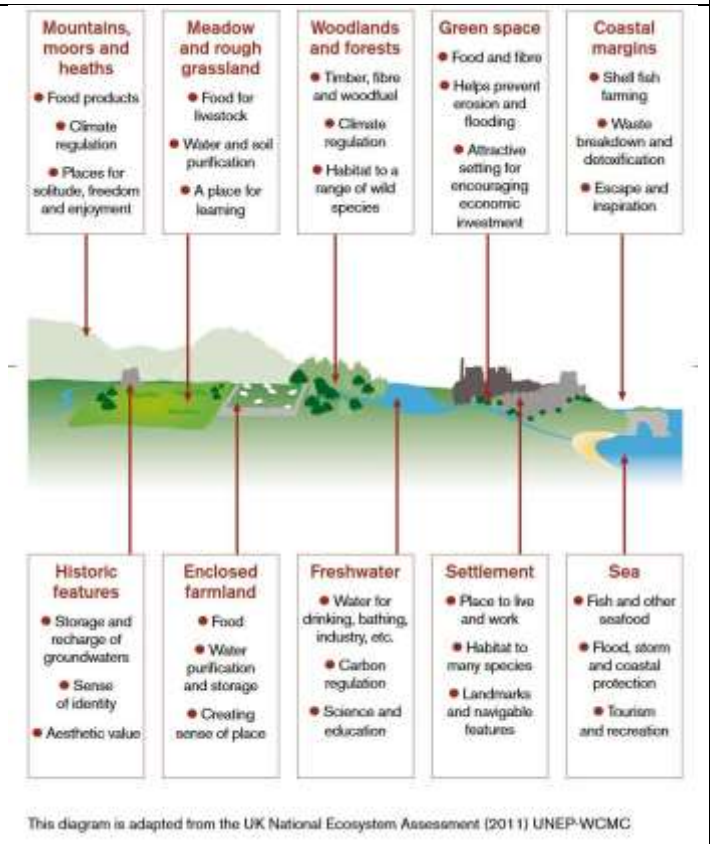

Figure 17. Landscape and their benefits (Source: SNH: Talking about our place – Topic sheets)

*national further terms/synonyms

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Landscape vulnerability **(Slobodan Mickovski)**

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 RELY it relates to the potential negative impact of renewable energy developments on landscapes.

Related terms

Landscape sensitivity

Some Keywords:

Impact models, development constraints, risk, hazard.

Source

Golobic, M and Zaucer, L.B. 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.

Illustration

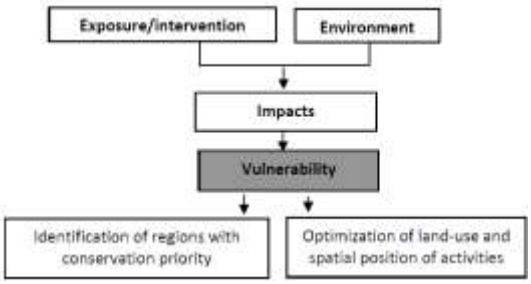

Figure 18. Vulnerability concept within the spatial planning context (Source: Golobic, M and Zaucer, L.B. 2010. Landscape Planning and Vulnerability assessment in the Mediterranean; http://www.pap-thecoastcentre.org/pdfs/Landscape%20Vulnerability.pdf)

*national further terms/synonyms

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Land use conflict (Bohumil Frantal)

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, public participation

Keywords:
planning, disagreement, dispute, incompatibility, dysfunctionality, landscape conflict

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.

Illustration

Figure 19. Public protest against a proposed project of large wind park (130 wind turbines) at Nantucked Sound, Massachusetts (USA) taken on February 2, 2010 at Woodshole, MA.
(Source: "The Associated Press", https://www.ap.org/en-gb/).

*national further terms/synonyms

Life Cycle Assessement (LCA) (Slobodan Mickovski)	
Definition: LCA 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. LCAs provide 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 RELY are: (i) the timescale required to balance the energy to produce photovoltaic systems and that saved through their use (Fraunhofer, 2017); (ii) assessing the carbon budgets of wind farms on peatlands (Nayak et al., 2010). **Related terms** Sustainable renewable energy production, energy conscious design, environmental impact assessment	
Some Keywords Ecobalance, amortization, energy production, energy recovery **Source** Bowe, Scott. 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. Retrieved 25 October 2011. Nayak, D.R., Miller,	**Illustration**  Figure 20. Product/asset life cycle, Source: GE Healthcare Life Sciences, 2016; https://promo.gelifesciences.com/gl/BP/UP_art4.html#.VvvPeuIrKUk)

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D.R., Nolan, A.J., Smith, P. and Smith, J.U. 2010. Calculating carbon budgets of wind farms on Scottish peatlands. Mires and Peat 4, 1-23. Fraunhofer, 2017, Aktuelle Fakten zur Photovoltaik in Deutschland, (https://www.ise.fraunhofer.de/content/dam/ise/de/documents/publications/studies/aktuelle-fakten-zur-photovoltaik-in-deutschland.pdf)	
*national further terms/synonyms	

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Public participation **(David Miller)**

Definition: A process that directly engages the public in decision-making and gives full consideration to public input in making that decision (US EPA, 2015).

Public: One or more natural or legal persons, and, in accordance with national legislation or practice, their associations, organisations or groups (UNECE, 1998; and, European Union, 2003).

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 (UNECE, 1998).

Related terms:
Landscape governance, land use conflict, scenario, public participation process

Some Keywords
Ladder of Participation, community involvement; stakeholder involvement; public involvement.

Source (s)
Arnstein, S.R. (1969) A Ladder of Citizen Participation, JAIP, 35(4) pp. 216-224.
Public Participation Guide: Introduction to Public Participation, US Environment Protection Agency, www.epa.gov/international-cooperation/public-participation-guide-introduction-public-participation.

United Nations Economic Commission for Europe (UNECE), 1998, Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters

Illustration

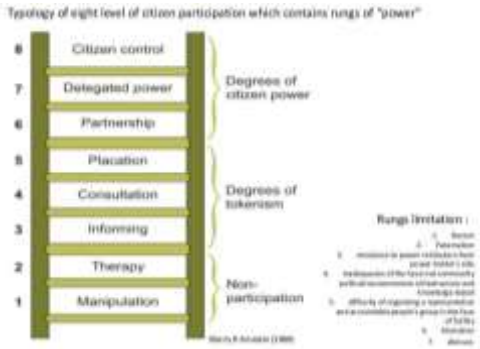

Figure 21. Ladder of Participation, Arnstein, 1969.

European Parliament and of the Council, Public Participation Directive, 2003, http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32003L0004	
*national further terms/synonyms	

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Public participation process (Veronica Hernandez-Jimenez, Richard Hewitt)

Definition

A cycle or iterative process for stakeholder 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

Public participation, Landscape governance, land use conflict, scenario technique

Some Keywords

Public consultation process, Public engagement process

Source

Of the definition: Can be a standard work, can be from a well-known article or can be elaborated by the RELY COST Action members

Illustrations

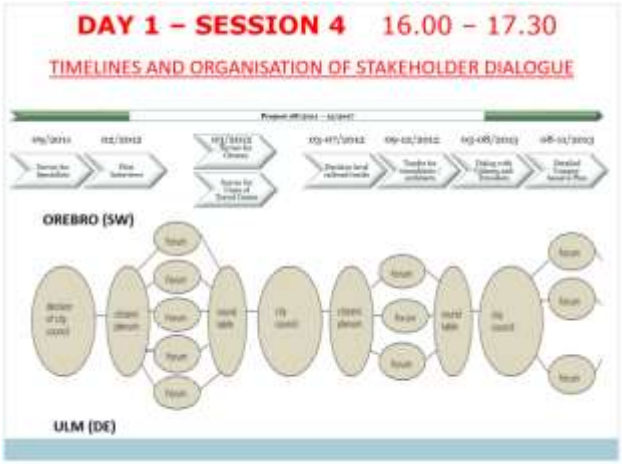

Figure 22a: Stakeholder dialog with timeline. Source: COMUS – 1st Stakeholder Workshop in Regensburg/Germany 2015 (Presented by Philip Stein 2015)

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Figure 23b: 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: Kruse, 2016)

Figure 24c: 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)

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Figure 25d: 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)*

*national further terms/synonyms

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Scenarios **(David Miller)**

Definition: Plausible descriptions of how the future may develop based on a coherent and internally consistent set of assumptions about key relationships and driving forces (Nakicenovic and Swart 2000). 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 (Ringland, 2010). 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 RELY, pathways and choices relate to the development of renewable energy systems in different landscape settings.

Related terms:
Scenario technique, Landscape governance, public participation, public participation tools and techniques

Some Keywords
Consequence assessment; early warning; strategy formulation; envisioning futures

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

Ringland, G. (1998) Scenario Planning, Chichester, John Wiley & Sons.
Raskin, P. et al. (2005) Global scenarios in historical perspective, Millennium Ecosystem Assessment, UNEP.

Illustrations

Figure 26a: Scenarios of alternative development pathways for land use. Developed from the UKCIP/Foresight socioeconomic scenarios; Brown and Castellazzi (2014) Scenario analysis for regional decision-making on sustainable multifunctional land uses. *Regional Environmental Change* 14(4): 1357-1371.

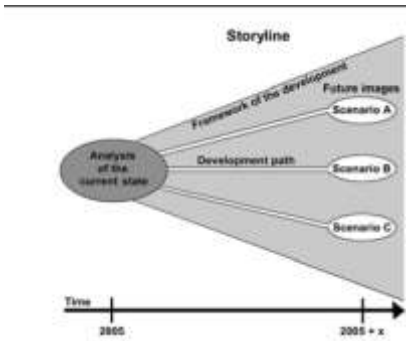

	Figure 27b: Scenario technique. Schroth, O. (2007): *From Information to Participation - Interactive Landscape Visualization as a Tool for Collaborative Planning*.
*national further terms/synonyms	

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Scenario Techniques (Richard Hewitt, Verónica Hernández Jiménez)

Definition

A range of techniques may be employed in development of different scenarios. In general, two broad approaches can be 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 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 (2004-5) 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 (Volkery et al 2008). 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 (Palomo et al 2011). A Follow-up project mapped these scenarios inside a land use model (Hewitt et al 2014)

Synonyms (if any)

PARTICIPATORY SCENARIO PLANNING, FUTURE SCENARIOS, SCENARIO MODELLING

50

Some Keywords

Source

Richard Hewitt.

Citing:

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

Palomo, I., B. Martín-López, C. López-Santiago, and C. Montes. (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. [online] URL: http://www.ecologyandsociety.org/vol16/iss1/art23/

Volkery, A., Ribeiro, T., Henrichs, T., & Hoogeveen, Y. (2008). Your vision or my model? Lessons from participatory land use scenario development on a

Photo (or any other kind of graphic demonstration/description)

Figure 1. Workshop participants in Doñana, Spain locating hypothesized land use change under EcoFuture scenario "Trademark Doñana" (Photo: OCT, 2012)

European scale. Systemic Practice and Action Research, 21(6), 459-477.	
*national further terms/synonyms	

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Social impact assessment (SIA) (Stanislav Martinat)

Definition: 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. It´s primary purpose is to create a more sustainable and equitable biophysical and human environment.

Related terms
Environmental Impact Assessment, landscape governance, landscape assessment

Some Keywords
Social consequences, interventions, sustainability

Source
International Principles for Social Impact Assessment (Vanclay, 2003)

Illustration

Figure 27. 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 MATINAT, 2013)

*national further terms/synonyms

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Strategic environmental assessment (SEA) (Malgorzata Lachowska)

Definition

According to OECD Strategic environmental assessment (SEA) is defined as analytical and participatory approaches 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.

In other words it broadly involves stating objectives of the policies, plans and programmes (PPP), describing the baseline environment, predicting the likely environmental impacts of the PPP (and possibly of alternatives), and proposing ways of mitigating these impacts. It is an important step in the decision making and planning process, generally carried out by (or for) the PPP proponent, with consultation of other relevant agencies, and its results are used in decision-making regarding the PPP.

Related Terms

Environmental Impact Assessment (EIA), landscape assessment,

Some Keywords
assessment, landscape changes,

Sources
http://sba-int.ch/1274-Strategic_Environmental_Assessment;
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;
Thérivel R., 1997, (http://www.tandfonline.com/toc/tiap18/12/3 DOA:05.05.2016])

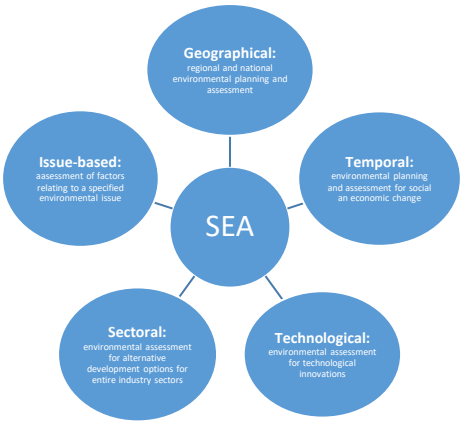

Figure 28: Strategic Environmental Assessment (Source: Buckley 1998)

*national further terms/synonyms

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Sustainable Renewable Energy Production (Pia Otte)

Definition

The production of renewable energy in line with the principles of sustainability.
Economic sustainability, which encompasses the price of renewable energy production at sustainable levels, and efficient processes characterized by lower process requirements, capital and operating costs.
Social sustainability, with regard to social acceptance, energy democratization, equality of access to energy.
Environmental sustainability, which includes an assessment of the full environmental footprint when producing renewable energy (e.g., LCA; EIA). 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, which should conform to local cultural values and not adversely impact on cultural landscapes and heritage.

Related terms

Life Cycle Analysis (LCA), Environmental Impact Assessment (EIA), Social Impact Assessment (SIA)

Some Keywords

Sustainable Development

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., et al. 2016. Social sustainability of renewable energy sources in electricity production: An application of the contingent valuation method, *Sustainable Cities and Society* 26, 429–437.

Illustration

Figure 29: Sustainable Renewable Energy Production (Photo: Pia Otte, 2016)

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Visual assessment (Isidora Karan)

Definition: Visual assessment is the process (including analysis) of taking account of the effects of certain types of development on the visual landscape. In RELY, it is concerned 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 information gathered to support informed decision making.

Related terms: Landscape assessment, Environmental Impact Assessment, visual impact, renewable energy landscape impact

Some Keywords
visual effects, visual amenity, experience, perception

Source
Elaborated by the RELY COST Action members on the base of "Guidelines for Landscape and Visual Impact Assessment 3rd edition-consultation draft" elaborated by the Landscape Institute & Institute of Environmental Management, 2013.

Nobles Environmental Power, Chautauqua County, New York (Saratoga Associates, 2016) (http://www.saratogaassociates.com/visual-assessment/visual-assessment/16452900

Illustration

Figure 30: Model to give an impression of how a Solar panel installation would look like – today an often used tool for a visual assessment. (Source: Renderplanet.it)

*national further terms/synonyms

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Visual impact (Nieves Mestre)	
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** Visual assessment, visual impact assessment, landscape assessment, landscape capacity	
Some Keywords Scenery, visual amenity, viewsheds **Source** IEA and the Landscape Institute (1995) Guidelines for landscape and visual impact assessment. Londdon: E and FN Spon.	**Illustration**  Figure 31*:* This former natural landscape on Iceland is now dominated through energy production by hydro power. (Photo: Alexandra Kruse 2016).
*national further terms/synonyms	

Visual Impact Assessment (Nieves and Olaf Schroth)

Definition

A systematic analysis of the possible impacts on the environment resulting from a proposed development and the investigation of the means available to mitigate the effects of such proposals prior to implementation. In RELY, such developments are of renewable energy systems.

The term Visual Impact Assessment was coined as part of Environmental Impact Assessment in the US National Environmental Policy Act of 1969.

Related terms

Visual assessment, visual impact, Environmental Impact Assessment, renewable energy landscape impact

Some Keywords

Zones of visual influence (ZVI), viewpoint analysis, visualization

Sources

Macaulay Land Use Research Institute, 2014. www.macaulay.ac.uk/ccw/task-three/via.html#ref

US Summary of the National Environmental Policy Act, 42 U.S.C. §4321 et seq. (1969)

https://www.epa.gov/laws-regulations/summary-national-environmental-policy-act

Illustration

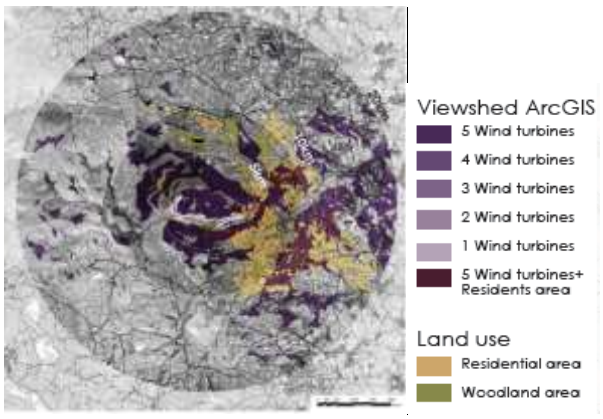

Figure 32. Viewshed (or Zone of Theoretical Visibility) indicating the number of wind turbines in purple colours (the darker the more turbines are visible) overlayed with settlement area (yellow) and forest (green) (University of Sheffield, 2016).

*national further terms/synonyms

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5. RE-Terms

Biofuel (Csaba Centeri & WG 4 team)	
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 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	
Some Keywords Carbon fixation, bioethanol, biodiesel, transportation fuel, heating fuel **Sources** Biofuel.org.uk (http://biofuel.org.uk/glossary.html) https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels http://www.alternative-energy-news.info/technology/biofuels/ http://www.greenfacts.org/en/biofuels/l-2/1-definition.htm https://en.wikipedia.org/wiki/Biofuel UK Government Guidance on Industrial energy and non-food crops: business	**Illustrations**  Figure 33a: (http://newatlas.com/enerken-edmonton-waste-to-biofuels/14393/#gallery)

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opportunities for farmers www.gov.uk/guidance/industrial-energy-and-non-food-crops-business-opportunities-for-farmers	 Figure 34b. Biofuel, ready to be transported, Bükk National Park, Hungary (Photo: Csaba Centeri, 21st of May, 2016)

Biogas (Mateusz Slupinski & WG 4 team)

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 industry 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

Some Keywords

Methane, landfill gas, agricultural wastes, GHG emissions

Source

UK Government portal on aneorbic digestion, www.biogas-info.co.uk/

European Biogas Association, http://european-biogas.eu/biogas/

Illustration

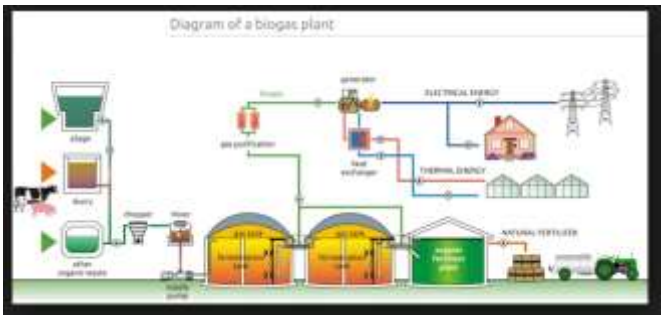

Figure 355a. Diagram of a biogas plant (https://de.pinterest.com/pin/312015080408785184/)

Figure 36b: Silage in the foreground and small biogas plant on a farm in Altscheid, Germany (Photo:M. Slupinski, 2011

Figure 37c: Bigger biogas plant on a farm in Oberscheid, Germany
(Photo: Alexandra KRUSE, 2016)

*national further terms/synonyms

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Biomass (Paulo Brito & WG 4 team)

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
- 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

Some Keywords	**Illustrations**
Bioenergy, land use for energy **Sources** http://www.portal-energia.com http://biofuel.iggesund.co.uk/biomass-crops-can-enhance-landscape-	

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biodiversity/

Figure 38a: Biomass production, Erftkreis, Germany (Alexandra KRUSE, 2003).

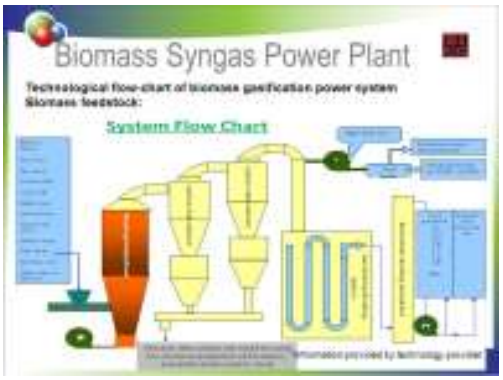

Figure 39b: Biomass power plant – Scheme. (Source: https://www.google.fr/search?q=biomass&client=firefox-b&source=lnms&tbm=isch&sa=X&ved=0ahUKEwiDho3ut7_TAhUhM8AKHehzDo0Q_AUICCgB&biw=1280&bih=666#tbm=isch&q=biomass+power+plant&imgdii=Y1NOqybNNac_kM:&imgrc=LSonUya4HYowSM [visited 04/25/2017].

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Environmental thermal energy source (José Rafael Morenes Munoz-Rojas)

Environmental thermal energy source refers to the availability of very low enthalpy of air, water and ground that can be commonly exploited by convertible heat pump systems for air conditioning proposals, and therefore to aerothermal, hydrothermal, and geothermal heat source, as defined by the DIRECTIVE 2009/28/EC.

Air-source heat pumps are the easiest solution, according to the simplicity of the exchanger that is normally installed into the heat pump. When water or ground are selected, the main difference and costs are related to the heat exchanger exploiting the primary heat source/sink. Water has to be diverted, canalized into piping toward the heat pump and then released at the initial location. Furtherly complicated is the exploitation of the ground, where special piping is installed into boreholes drilled up to hundreds meter deep in the ground. Only for shallow ground heat exchangers the installation is easier, according to a horizontal laying carried out few meter below the soil surface.

The thermal exploitation has different impacts, according the kind of system and source. Air is the most diffused solution, because the source is always available, even if its exploitation contributes toward the urban heat island. Water represents a more efficient solution, due to its high specific heat, but it may affect thermally the local environment, especially if it is groundwater. Similar exploitation, carried out also via boreholes heat exchangers by geothermal systems, causes thermal plumes according to the kind of environment. This modification affects marginally very shallow ground heat exchangers, which don't use a geothermal source but the solar energy stored in the first metres of ground during summertime.

Related terms

Geothermal energy

Some Keywords

Air-source heat pumps, ground coupled heat pumps, surface water heat pumps, ground-source heat exchangers

Sources

Illustrations

Figure 39a: Air source heat pump, Ferrara (Photo: M. Bottarelli, 2017)

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European Heat Pump Association
www.ehpa.org

European Geothermal Energy Council
http://egec.info/

Scientific achievements and regulation of shallow geothermal systems in six European countries – A review, V. Somogyi, V. Sebestyén, G. Nagy, Renewable and Suistanable Energy Reviews 68 (2017) 934-952

Vertical-borehole ground-coupled heat pumps: A review of models and systems, Yang, H., Cui, P., Fang, Z., Applied Energy 87(1) 16-27

Figure 39b: Water heat exchanger using a pond (Photo: www.treehugger.com)

Figure 39c: Types of vertical ground heat exchangers (Photo: fishing on Internet)

Figure 39d: Types of shallow ground heat exchangers (Photo: fishing on Internet)

*national further terms/synonyms

Geothermal energy (Karl Benediktsson)	
Definition Geothermal energy is that 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	
Some Keywords Renewable heat **Source** EU Research and Innovation, Geothermal Energy, https://ec.europa.eu/research/energy/eu/index_en.cfm?pg=research-geothermal	**Illustration**  Figure 40. Geothermal energy plant on Iceland (Photo: David Ostman)

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Hydropower (Mateusz Slupinski, Marcel Hunziker, WG 4 team)

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.

(a) 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).

(b) 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:

- Flow - the minimum amount of water that is constantly available throughout the year,
- 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

/

Some Keywords

Hydroelectric, water energy

Source

EU Research and Innovation, hydropower, https://ec.europa.eu/research/energy/eu/index_en.cfm?pg=research-hydropower

Eurelectric 2011, Hydro in Europe: Powering

Illustrations

Figure 41a: Small scale hydropower plant producing electricity in Sierra Nevada (Andalucia), although this h/p plant, small by Spanish standards, it has an installed capacity of 12.8 MW. (Photo: Marina Frolova, 2013)

Kommentiert [A13]: I would prefer one with building and installations visible, I will ask Mateusz and I have asked Csaba

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Renewables, pp. 66. www.eurelectric.org/media/26690/hydro_report_final-2011-160-0011-01-e.pdf Small scale hydro, International Gateway, www.small-hydro.com/about/small-scale-hydrpower.aspx International Energy Agency	 Figure 41b: Dam of large hydropower plant, Zervreila reservoir Graubünden, CH (Photo: X)
*national further terms/synonyms	

Kommentiert [A14]: Please provide full caption: Name, Year)
If this is not from yourself, we can take some of the COST RELY visits of hydropower plants

Renewable energy policy documents (REP) (Csaba Centeri)	
Definition Policy documents on local, national and international level that regulate RE. The use of renewable energy forms require certain technics that effect various forms of everyday life (e.g. it can be inviting or it can be disturbing if it is close to a settlement, transportation lines (e.g. highways, train lines etc.) and various interests (e.g. energy provider companies, tourism, nature conservation, landscape protection, built cultural heritage protection), through building pylons for wind energy use, dams for water energy use etc. Most European countries formulated its own policy related to renewable energy. One of the aims of the WG1 of the COST Action RELY is to collect and analyze these policy related documents. **Related terms** /	
Some Keywords feed-in-tariff, environment, landscape, nature conservation, ecology, energy price	**Illustration**  Figure 42: Cover of National policy statement for renewable energy infrastructure (EN-3) by Great Britain. Department of Energy and Climate Change. 2013. (Source: https://archive.org/details/officialdocuments_uk_9780108510793)

Kommentiert [A15]: Generally speaking we don't need this. But if we have this link, we can formulate: „Within RELY there was a collection of national policy papers which can be consulted on the hompeage" (or ... which will be published in...)
What do you think?

Photovoltaic (Alessandra. Scognamiglio)

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 connected in series and in parallel. The modules mostly have a frame, and the supporting structures are usually built out of galvanized steel or aluminum. The structures are attached to the ground via a foundation. Most of the time this type of systems are grid connected. 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.

We distinguish between two types:

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*. This definition suggests that such photovoltaics do not use additional land areas not included within the building's footprint. These *on buildings* systems (either called *added on photovoltaics*, or *building attached photovoltaics-BAPV*) standard modules do not have any building's function.

In the case on *in buildings systems* (so called *building integrated photovoltaics-BIPV*) the photovoltaic modules replace conventional buildings' technological units; therefore in this case special photovoltaic components, suited for building integration have to be used. This condition is a requisite because the photovoltaic modules have to fulfill a number of function, such as mechanical and thermal that 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.

Related terms

Solar thermal, Solar thermoelectric

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Some Keywords	Illustrations
Building Integrated Photovoltaics (BIPV); Building Added Photovoltaics (BAPV); Building Attached Photovoltaics (BAPV). **Source** https://ec.europa.eu/research/energy/eu/index_en.cfm?pg=research-photovoltaics Scognamiglio A, Chapter 6 - Building-Integrated Photovoltaics (BIPV) for Cost-Effective Energy-Efficient Retrofitting, In Cost-Effective Energy Efficient Building Retrofitting, Woodhead Publishing, 2017, Pages 169-197, ISBN 9780081011287, http://dx.doi.org/10.1016/B978-0-08-101128-7.00006-X Standard: DS/EN 50583-1, Photovoltaics in buildings Scognamiglio A Bosisio P, Di Dio V, Fotovoltaico negli	 Figure 43a*: Type a)* Roof integrated photovoltaics, Tabià in Selva di Cadore (IT). Design Exit. Special BIPV opaque components (modules + framing system) replace the traditional wooden tiles of the roof. (Picture courtesy of Exit)  *Figure 43b*: *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).

edifici (Edizione 2013) (Photovoltaics in buildings. Edition 2013), Edizioni Ambiente, Milano, 2013, ISBN 978-88-6627-025-6.	 Figure 44c. *Type b)* Waldpolenz solarpark (40MW), Leipzig (DE). This PV system is a typical image for 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 they face the South with an optimal tilt inclination of about 30°. (Photo source: Juwi Solar GmbH)  *Figure 43d. 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 allowed 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 source: Akuo Energy)
*national further terms/synonyms	

Kommentiert [A16]: Is it copyright free?

Kommentiert [A17R16]: Isidora suggests to take the photo from Innsbruck field trip

Kommentiert [A18]: Did he agree to using it?, year?

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Solar thermal (Georgios Martinopoulos)

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, which 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) 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) This technical principles 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

Some Keywords
sun energy, solar energy; hot water, roof-top solar, domestic solar thermal systems, solar combi systems

Source
G. Martinopoulos, «Solar Energy in Buildings», In Reference Module in Earth Systems and

Illustrations

Figure 45a. *Type a)* Domestic Solar Hot Water System on the roof of a

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Environmental Sciences, Elsevier, 2016, http://dx.doi.org/10.1016/B978-0-12-409548-9.09731-1	building (Photo: Solahart / ESTIF, 2016))  Figure 44b Type a) In Greece, XX % of private houses have Solar Thermal Collectors on rooftops in order to heat water. Here: Island of Milos (Photo A. KRUSE, 2015)  Figure 46c. *Type b)* Solar Thermal Collector field on the ground (Photo: ARCON/ESTIF, 2016)
*national further terms/synonyms	

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Solar thermoelectric (concentrated) power (Marina Frolova)

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 and silvi-industrial landscapes

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

Illustration

Figure 47. Solucar PS10 is the first solar thermal power plant based on tower in the world that generates electricity in a commercial way, 2007 (Photo: © SOLUCAR PS10 (2)).

* osvědčená praxe

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Wind energy (Marina Frolova, WG 4 team)

Definition:

Wind power refers to the extraction of kinetic energy from the wind to generate electricity.
In early 2017, the total installed capacity reached 153.7 GW, 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 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 164m.

Related terms

Energy landscape, visual impact, visual impact assessment,

Some Keywords

Wind farm, wind park, wind turbine

Source

EU Research and Innovation, https://ec.europa.eu/research/energy/eu/index_en.cfm?pg=research-wind-background

Wind Europe, https://windeurope.org/about-wind/statistics/

Figure 448a. Wind farm, Tarifa (Photo: S. Briffaud, 2015)

Figure 49b: Rhyl Flats Offshore with Gwent-Y-Mor in distance_from Llandudno Pier, Wales, United Kingdom

	(Photo: Elsie Roulston Feb 2016)
* national further terms/synonyms	

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