Environmental Illustrations

Report/Tasks Nr.

Vienna, 07/2013

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ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

CENTRAL EUROPE COOPERATING FOR SUCCESS.

EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

This project is implemented through the CENTRAL EUROPE Programme co-financed by the ERDF

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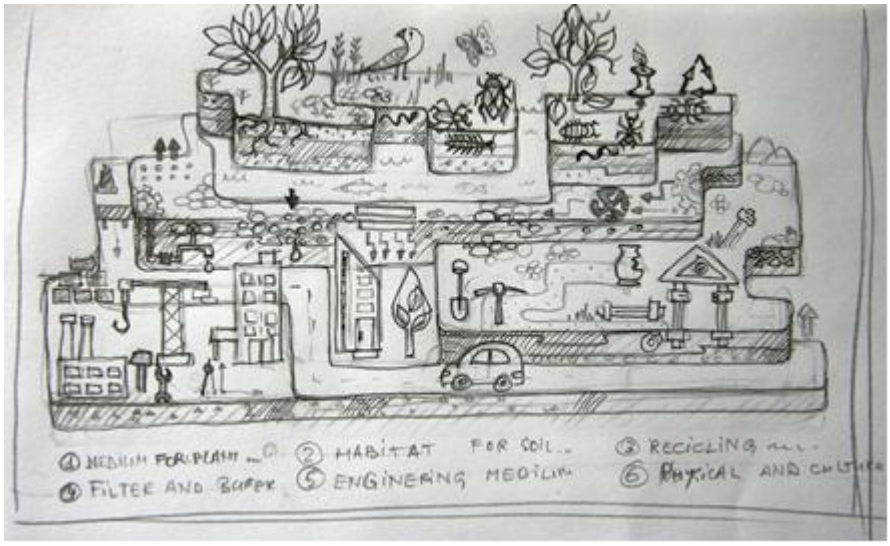
1. Introduction

Within the CircUse project several illustrations were produced to visualise complex issues such as Circular Land Flow, soil functions, land take and mobility, soils and flooding etc... in an appealing and easily understandable format. The aim was to use only little text and have clear pictures that are technically correct, but still appealing to laypersons.

These illustrations may be used as teaching material for young students, or used in public relations work or reports and publications related to Circular Land Use, soil protection or land management to spread the themes of the CircUse project to a wider public.

In order to make transnational use of these illustrations different language versions were produced, whenever text was necessary– therefore illustrations are available with titles and subtitles in the languages of the CIRCUSE partners (English, German, Slovakian, Czech, Polish, Italian) and many more.

In order to produce such illustrations, some efforts were taken to find a good designer who understood how to make such illustrations. The portfolio of the Romanian Designer Stella Caraman was promising in this regard and thus she won the call for bids of the CircUse project.[1]



Example first draft soil functions illustration

[1] http://www.shutterstock.com/portfolio/search.mhtml?gallery_username=stellacaraman&gallery_landing=1

The illustrations were prepared by compiling a briefing document for the designer, followed by a first draft, which was discussed with both the designer and experts of the technical field concerned. After some adaptions a coloured version was produced and published.

The themes that were selected to be subject to illustrations are:

Circular Land Use - is the methodology of the CircUse project. It is well known within the partnership and among experts, but not easy to teach.

Soil Functions - Through soil functions the value of soil is best described. The knowledge on soil functions helps to understand why it is so important to rather re-use land than to build on greenfields and destroy the soil.

Soils and Flooding – one aspect of land reuse is to minimize the level of sealed land, which helps to reduce the risk for floods

Soils and Food – food security and the "import" of land from other countries to Europe are of particular interest nowadays. Urbanization and growing land take are further themes of this illustration.

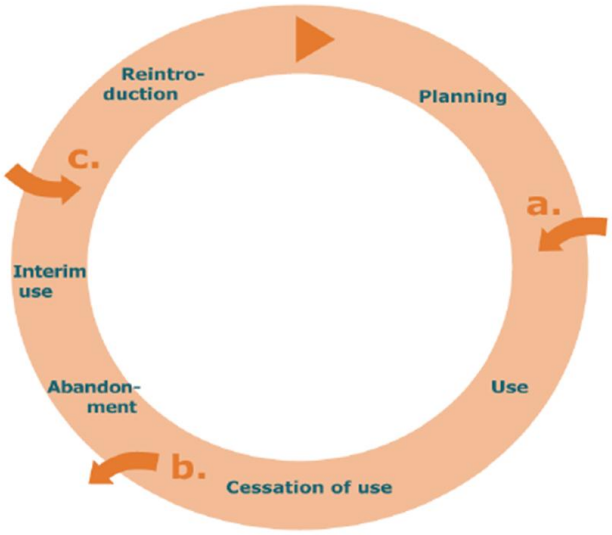
2. The Circular Land Use Illustration

2.1. Demands for the new Illustration

Similarly to the recycling-based principles which have become commonplace in recent years in areas such as waste and water management, "circular land use management" should become an established policy in sustainable land utilization. Materials cycles serve as a model for circular land use management.

This modified land use philosophy can be expressed with the slogan "avoid – recycle – compensate".

This process is currently visualised with the following image:



a. Zoning new "greenfields" (to minimize)
b. Rejection of land not suitable for subsequent use
c. Activating land potentials (to strengthen)
Source: German Institute of Urban Affairs (Difu 2005).

Instead of the current image which is rather academic we prefer to have a new and more lively visualisation; showing the same piece of land undergoing different phases of use.

So the Circular Land Use approach shall be applied to a piece of land, this part of land is undergoing a metamorphosis of different land uses.

(i) Green field: An "untouched" piece of land is visible, for example a pasture or a green field

(ii) Planning and construction: including engineers, caterpillars, etc. a site under construction

(iii) Use: The construction is completed; you can see housing, a commercial site with a parking lot, and above all people using the site etc.

(iv) Abandonment (cessation of use): The people are gone, the buildings are in a state of decline, if nobody intervenes this state will continue forever!!

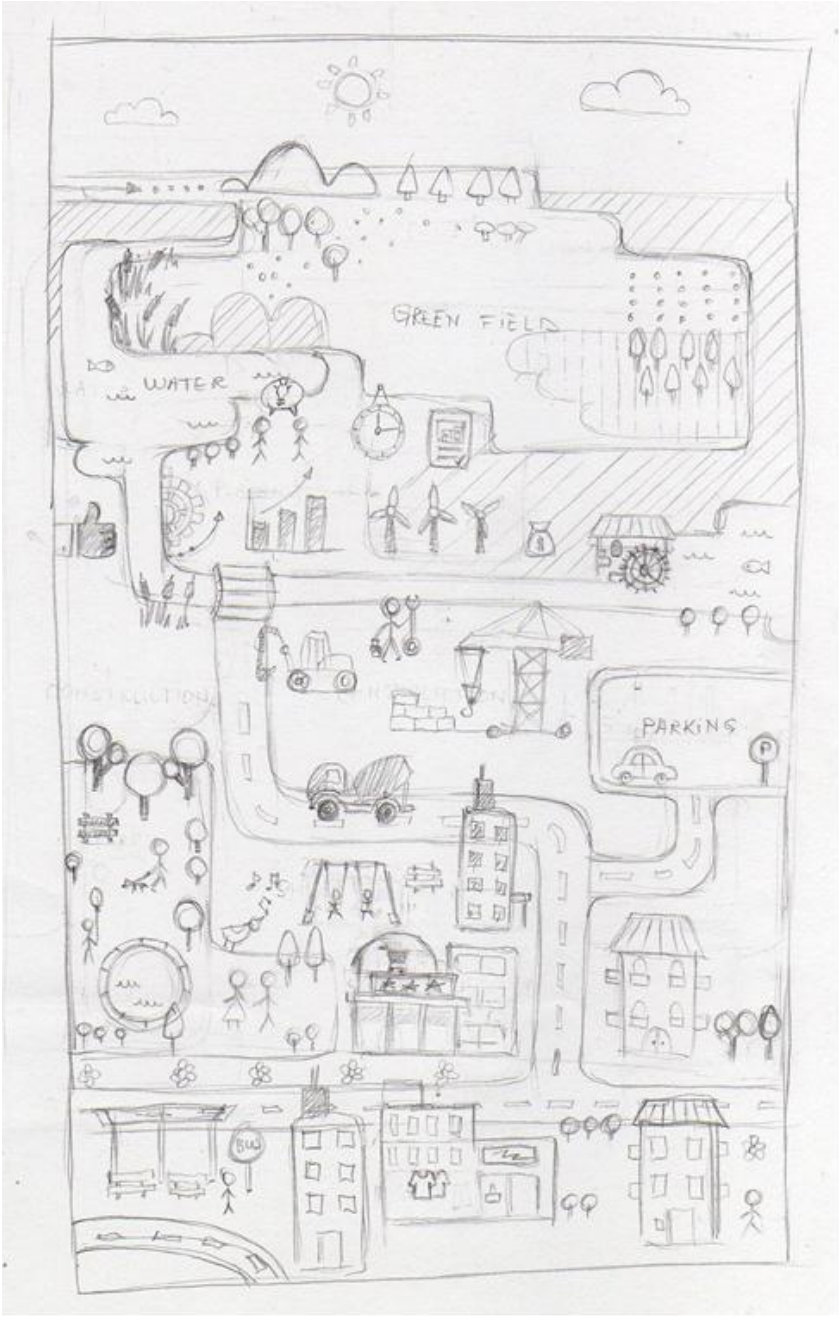
(v) Reuse

- Convincing the local residents and investors (the neighbours) about reanimating the site

- The 2nd planning phase (again egineers, construction works)

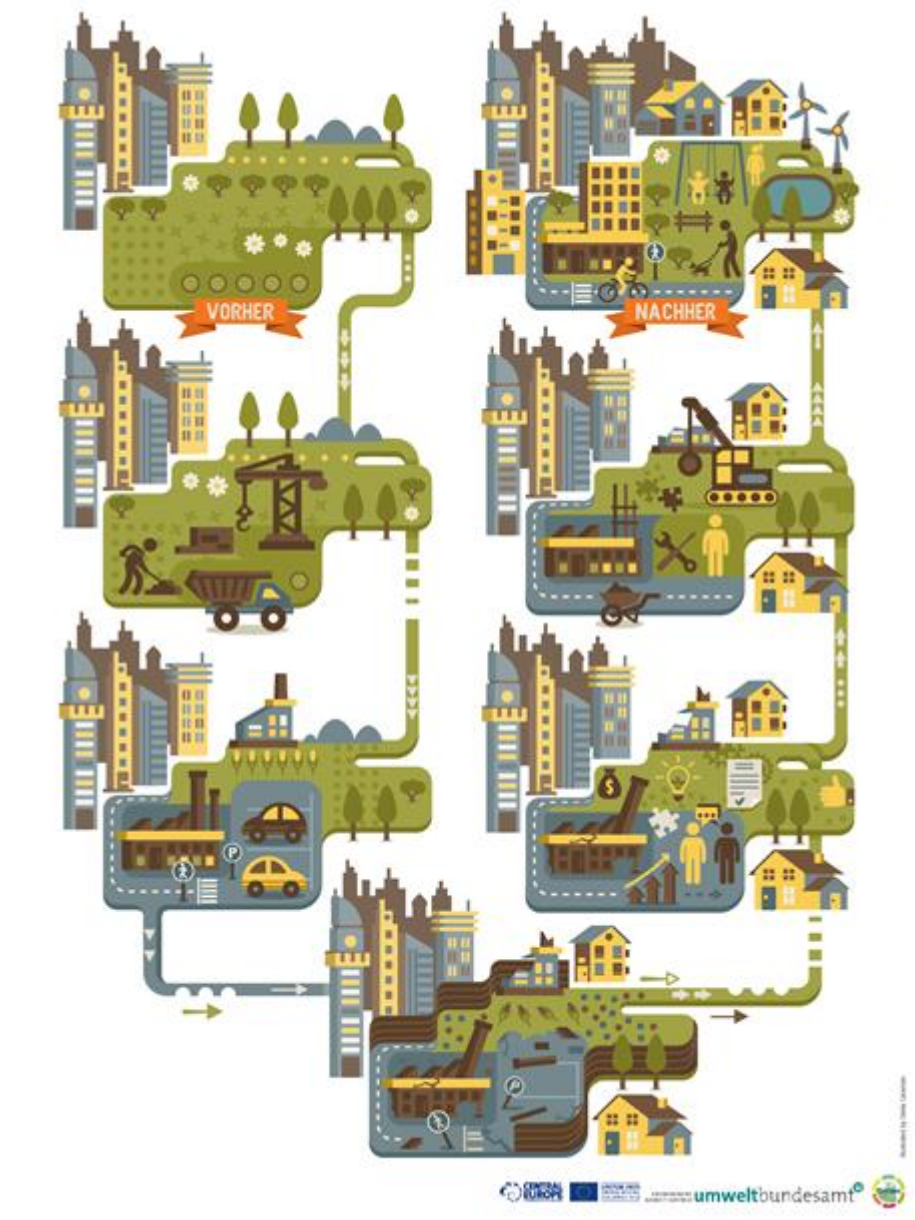
- The "new" land use, there are different options possible, the site is now used as an urban park, or an energy field with solar panels, or instead there is a campus for students and a home for elderly etc...

2.2. First draft Circular Land Use



The discussion of the first draft lead to a new version clearly outlining the process of land re- use. The timeline is more obvious in the final version.

2.3. The final version



This illustration provides the public with the process of land re use in an appealing way. It is read from top left to top right. The principle of Circular Land Use is built into pictures, showing use, cessation of use with development of the city next to the brownfield, redevelopment plans and reconstruction of the same site.

3. The Soil Functions Illustration

3.1. Demands for the new illustration

The illustration should consist of pictures of soil functions, which can be used as single pictures (functions of soil) as well as combined as one illustration (the value of soil)

The illustration should be based on these soil functions:

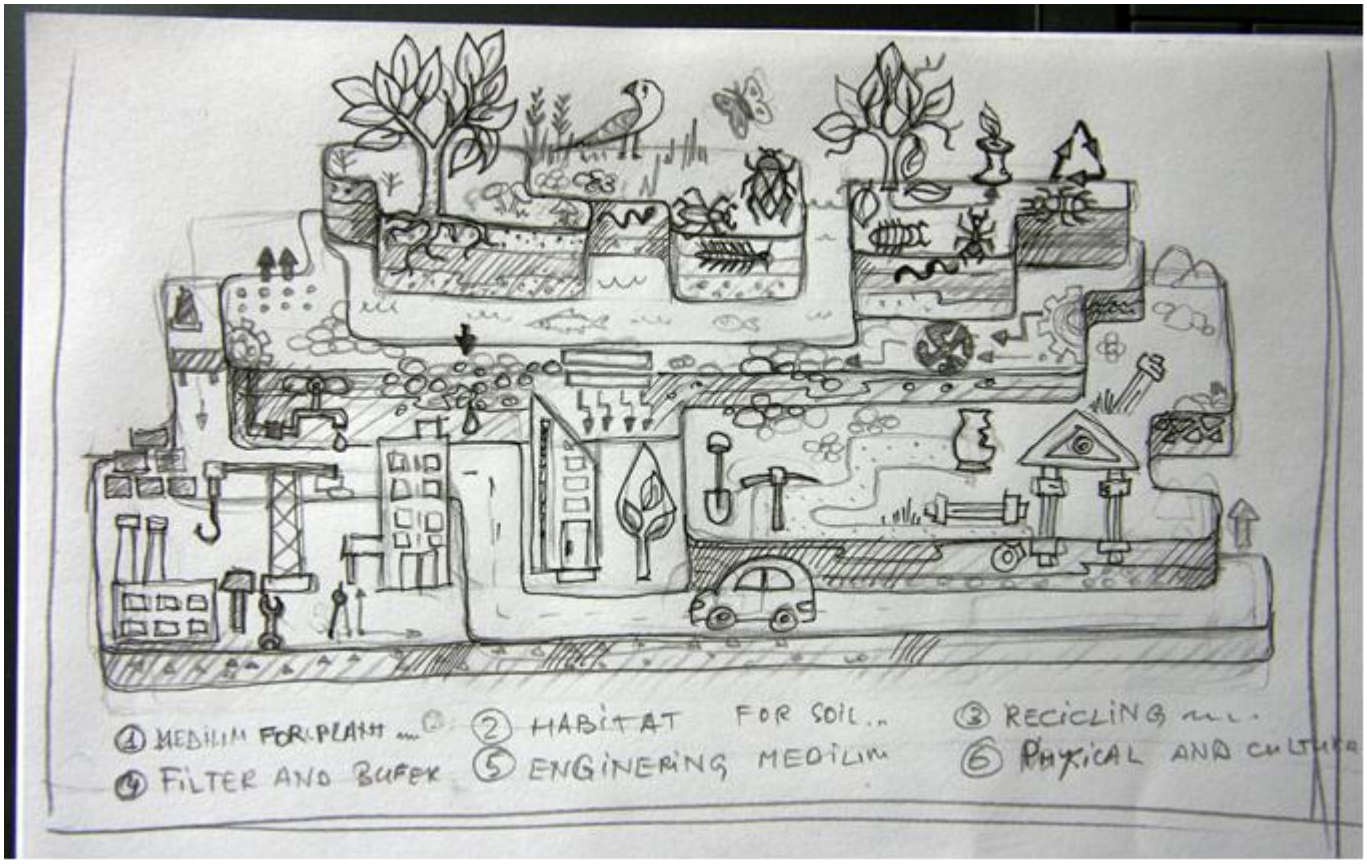
1. Medium for Plant Growth – Soil provides a physical substance that supports plants and enhances plant growth
2. Habitat for Soil Organisms - Soil provides ecological habitats for soil microorganisms, mammals, insects, and reptiles and serves as gene pool.
3. Recycling of Nutrients and Organic Waste - Soil is nature's recycling system for nutrients and organic waste.
4. Filter and Buffer function Soil acts as a filter to protect the quality of water, air, and other resources.
5. Engineering Medium - Soil supplies the foundation for all buildings and infrastructure (roads, bridges, airports, buildings, homes.)
6. Physical and cultural heritage – Soils preserve human activities as well as physical artefacts

The Soil Functions Illustration has the aim to emphasize the value of natural soil and thus to teach the public why it is so important to be protected. As this illustration will also be used as teaching material, a black and white version has been developed as well to serve as drawing model for smaller children.

As in this illustration text is necessary various language versions are available. This will allow the illustration to be used a broad as possible. Please find a table stating translations of all soil functions into 14 languages in the appendix to this report.

3.2.First draft Soil Functions

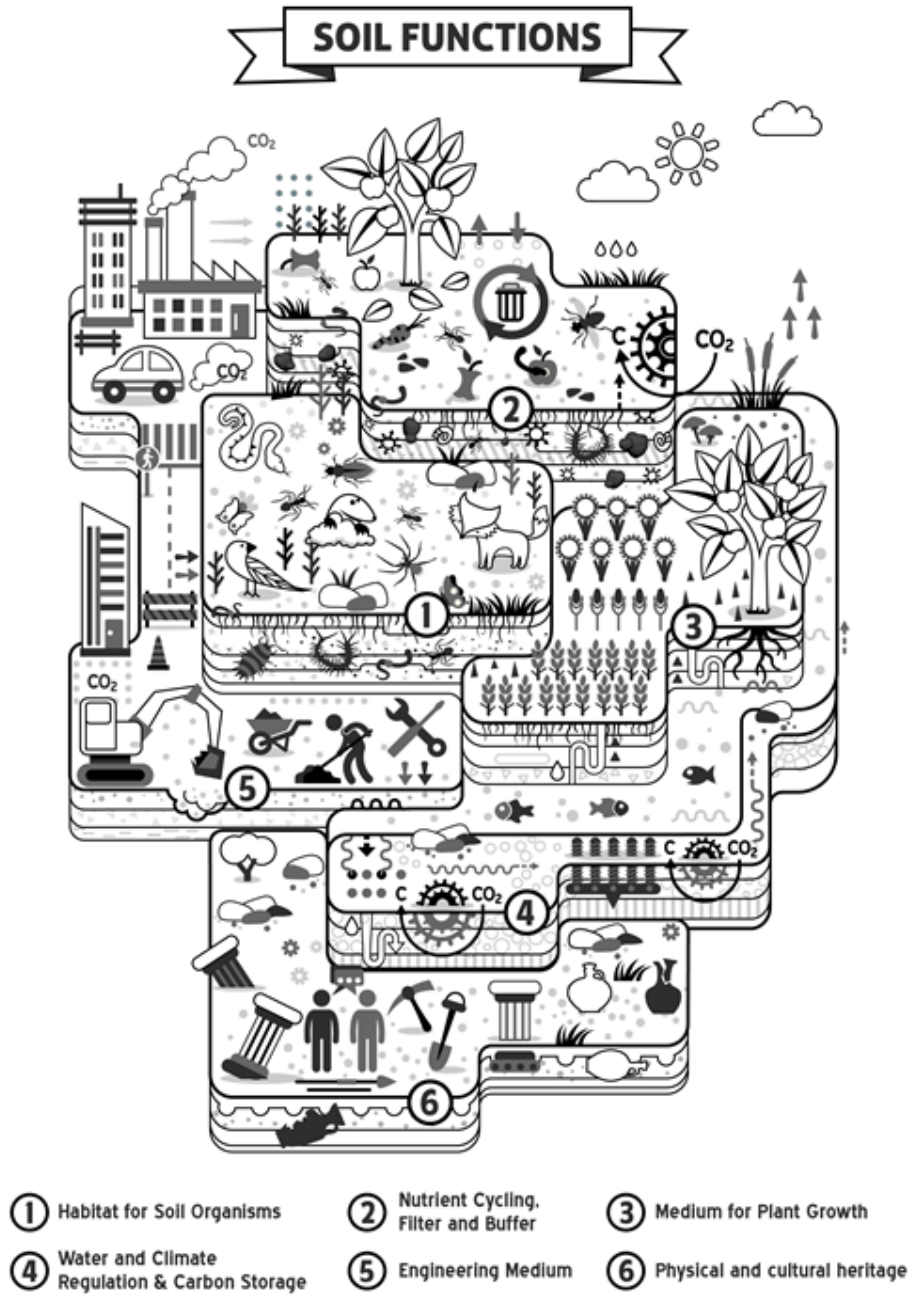
The first draft was changed regarding the format of the illustration and some efforts were taken to combine the single functions to show how they interact. The processes that take place in the soil, like sequestration and filtering were outlined with symbols.



3.3. The final versions

The final version provides an image of the functions of the soil as outlined in 1-6 and the interrelations in between these functions. Not only the piece of land concerned and the products are visible but also the processes within the soil.

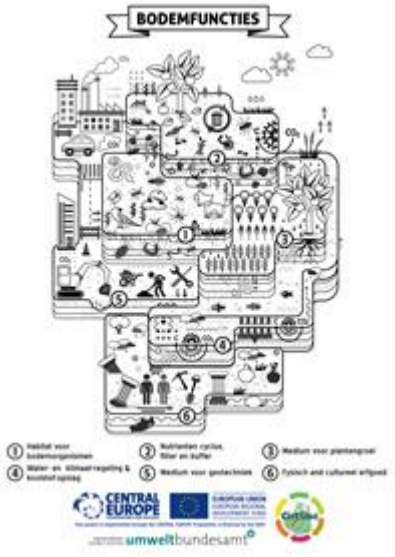
Black and White Version for Drawing



The Black and white version was made to use the soil functions illustration as teaching material for younger children. The original version can be used as model.

Examples for multilingual version, coloured

Examples for multilingual version, black and white "drawing version"



As text was necessary to name the soil functions translations were done by the CircUse partnership and colleagues. This will ensure the transnational use of this new teaching resource. Please find all translations in the appendix to this report

4. The "Soils and Flooding" Illustration

4.1. Demand for the new illustration

The illustration shall consist of sequence of pictures showing the same setting under different conditions.

Scene 1: A natural environment with a river (meadows, grassland etc.), the subsoil should partly be visible
Subtitle "*1 m² healthy soil can store 200 liters of water*"

Scene 2: The same scene as before, it is raining heavily, the water storage capacity of the soil is visible.
Subtitle "*In case of heavy rain flooding is prevented*".

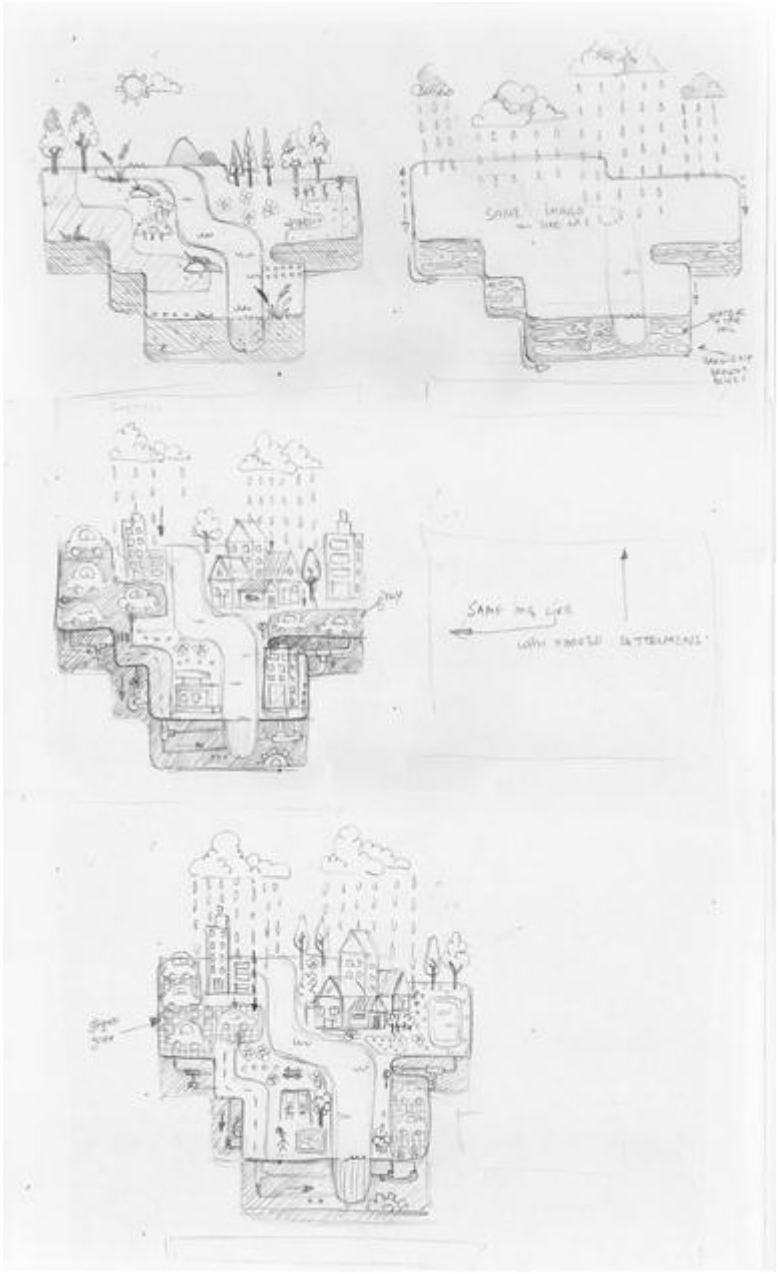
Scene 3: The same setting as scene 1 but land take has progressed significantly, housing, streets, commercial sites etc. are visible. Sealed surfaces replace natural surfaces and rain water needs to be managed with drainage systems.
Subtitle "*Infrastructure and sealed surfaces require water management. Rain water is directed to a sewage system and discharged into a river*".

Scene 4: The same setting as scene 3 but the rain fall is heavier and settlements are partly flooded.
Subtitle "*In case of heavy rain falls the sewage system is overcharged and settlements are partly flooded*".

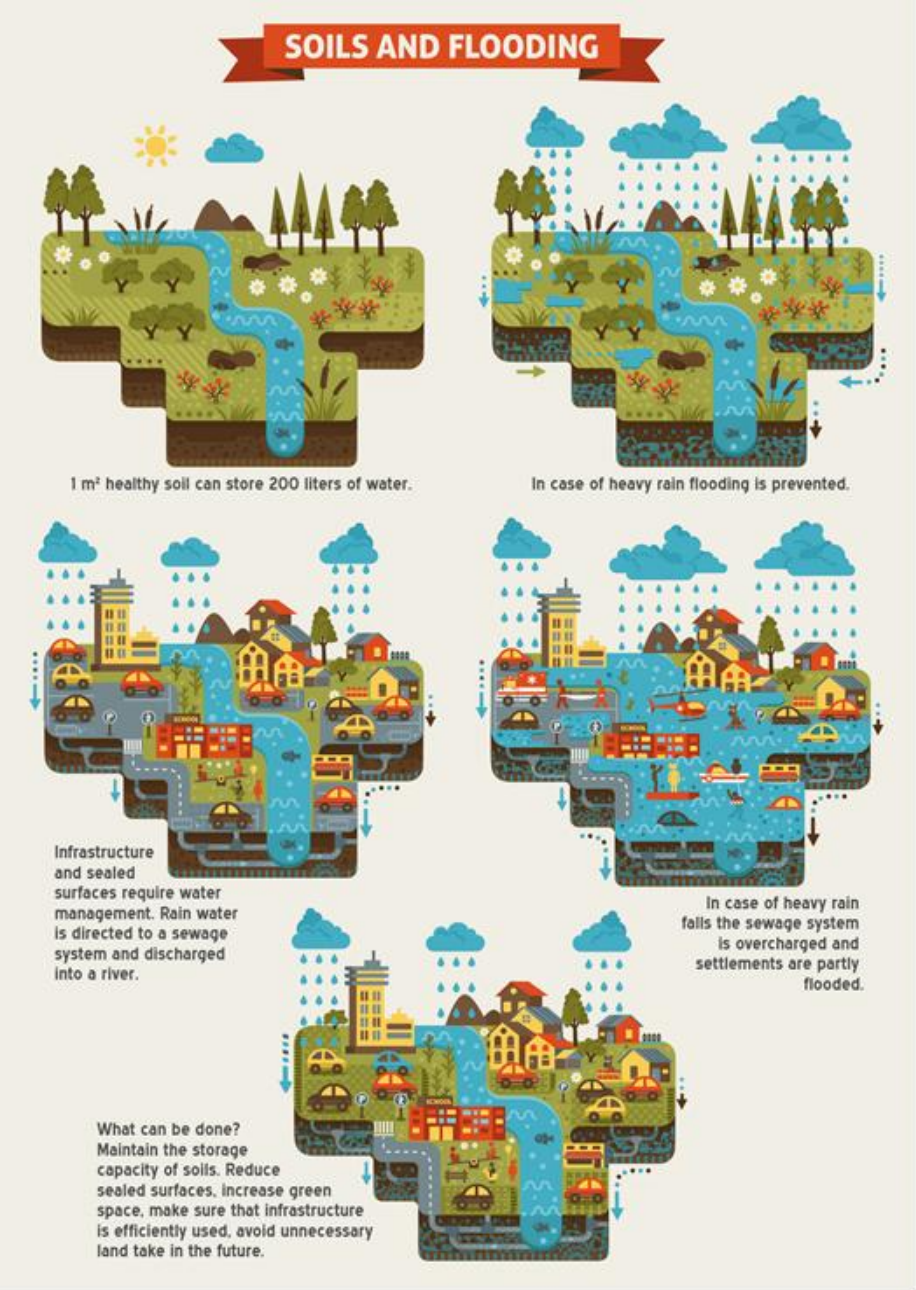
Scene 5: The same setting as scene 4, there is less sealed surface, more permeable surfaces and more front gardens. In one case there is one big house with a garden instead of several terraced houses.
Subtitle "*What can be done? Maintain the storage capacity of soils. Reduce sealed surfaces, increase green space, make sure that infrastructure is efficiently used, avoid unnecessary land take in the future."*

4.2. First draft Soils and Flooding

Some adaptions were proposed regarding the size of the river, the sewage system and the kind of houses.



4.3. The final version



The final version of the soil and flooding illustration has the aim to focus on the role of urban sprawl and soil sealing in the flooding discourse. Of course many parameters are relevant for floods, but in particular growing cities and villages need to be more aware of this relation.

5. The "Soils and Food" Illustration

5.1. Demand for the new illustration

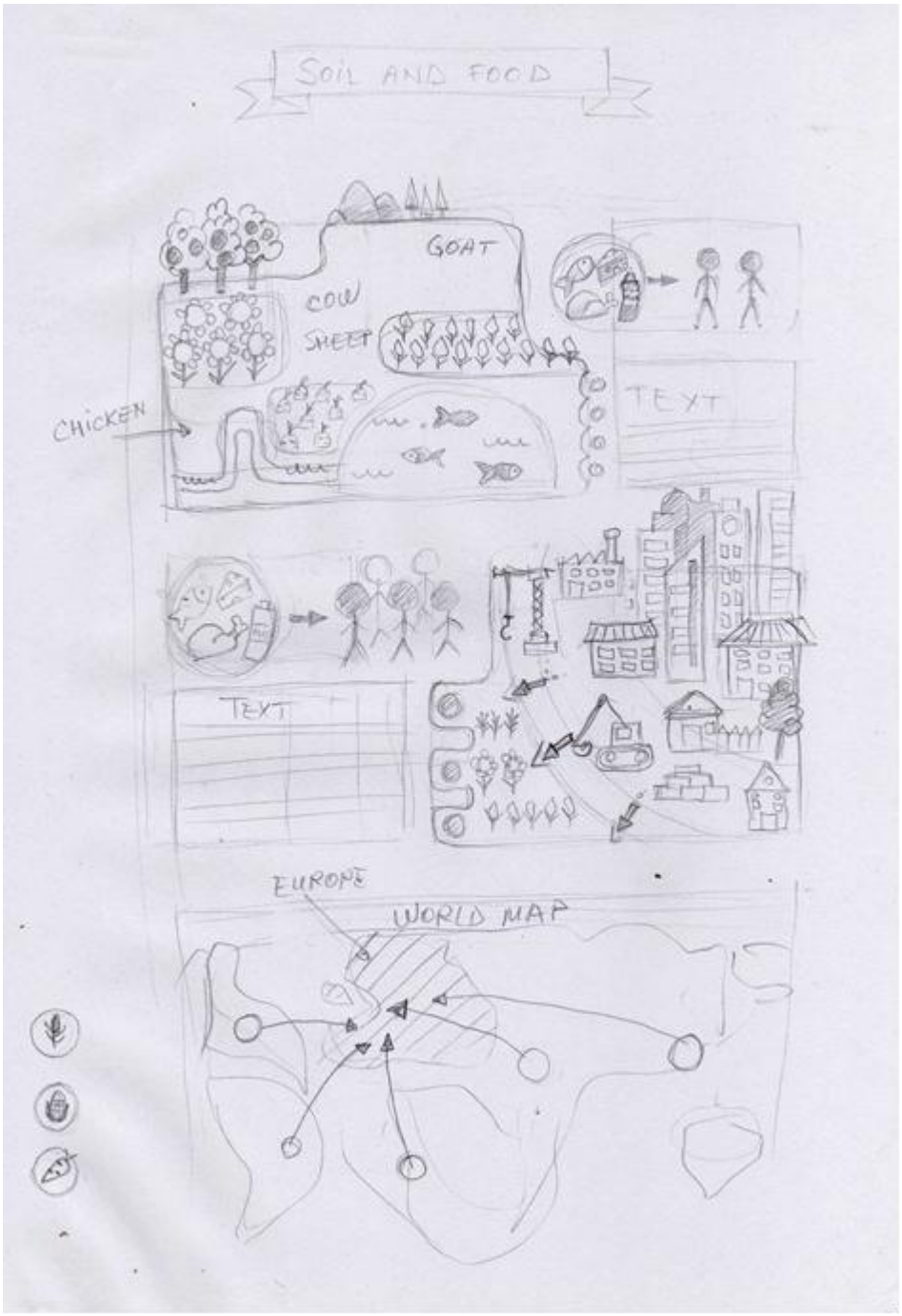
The illustration shall visualise three core messages:

1/ The food capacity of 1 hectare soil, with the subtitle:
"*1 hectare soil of medium quality can feed 2 persons - assuming an average Western European diet with meat and milk products*".

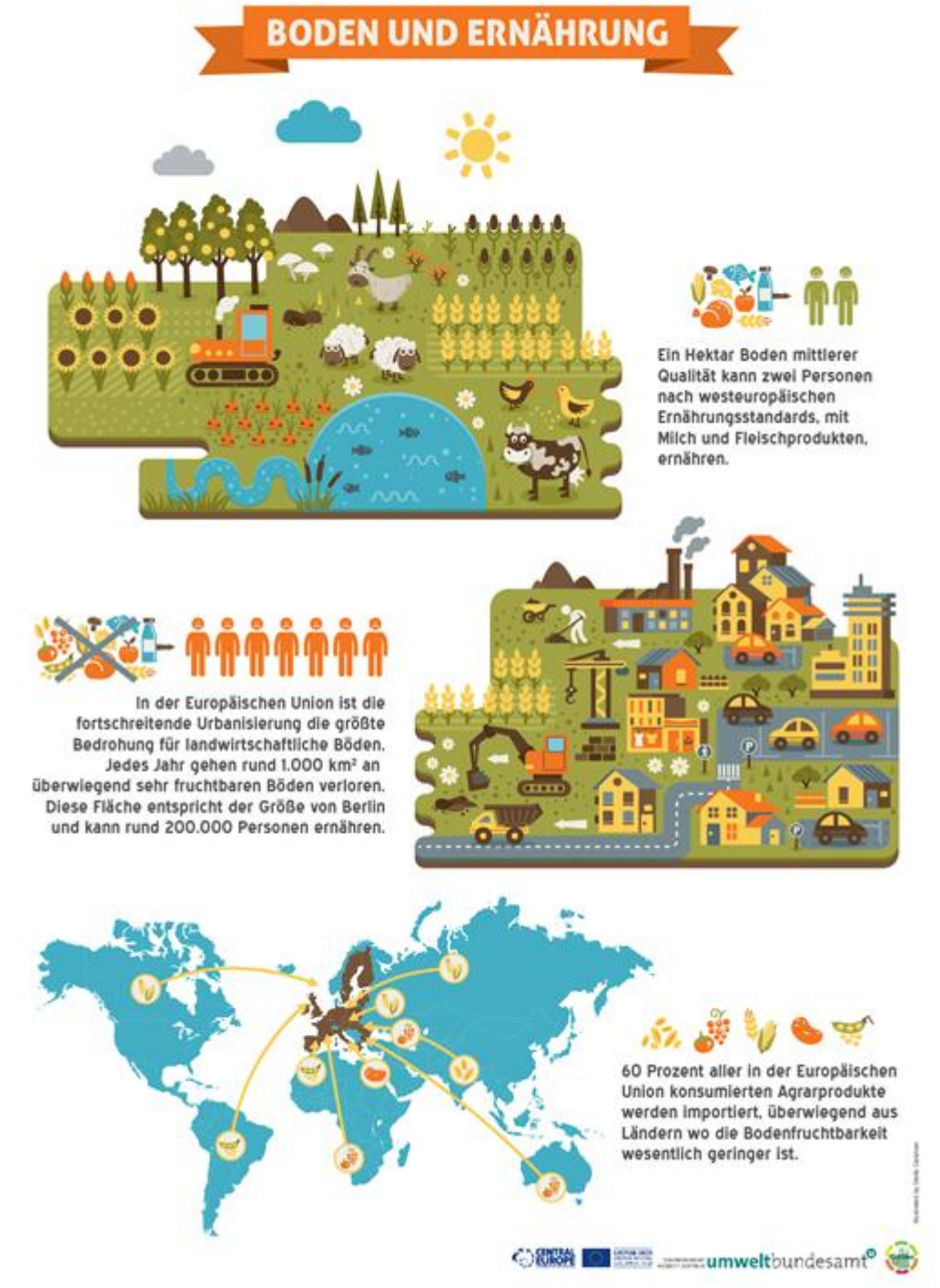
2/ The continuous loss of fertile soils in the European Union, with the subtitle:
"*In the European Union, urbanisation is by large the main threat to agricultural land, with at least some 1,000km² of land – mostly fertile sites – lost annually. This loss amounts to the size of Berlin and could feed 200,000 persons.*".

3/ The fact that the European Union is more and more depending on agricultural land outside the EU shall be visualised. A map of the European Union, arrows towards the European Union indicating that food (like wheat, rice, coffee beans, soy beans, etc...) is imported. Subtitle:
"*60% of agricultural products consumed in the European Union are imported, mainly from Africa and Asia where soil fertility is lower .*"

5.2.First draft Soils and Food



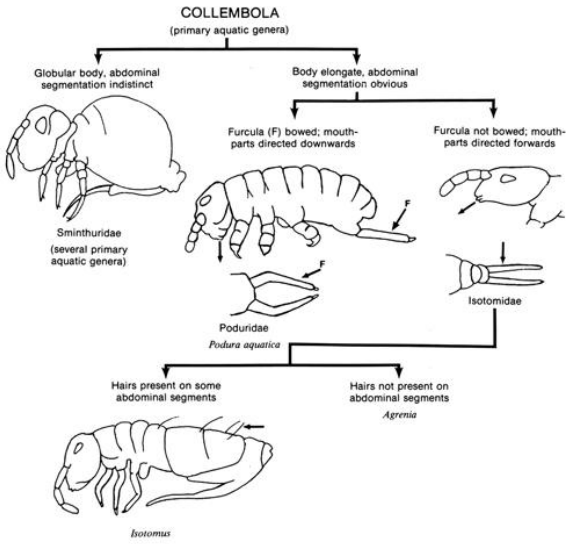
5.3.The final version



6. The Soil Mascot

In order to make teaching material more attractive for young children a soil mascot has been produced.

Basis for the mascot are Collembola, (springtails), small animals of 2-3 mm in length. Springtails are omnipresent members of soil fauna, they inhabit both the surface and the depth of the soil, and often occur in large aggregations.



6.1.The final version

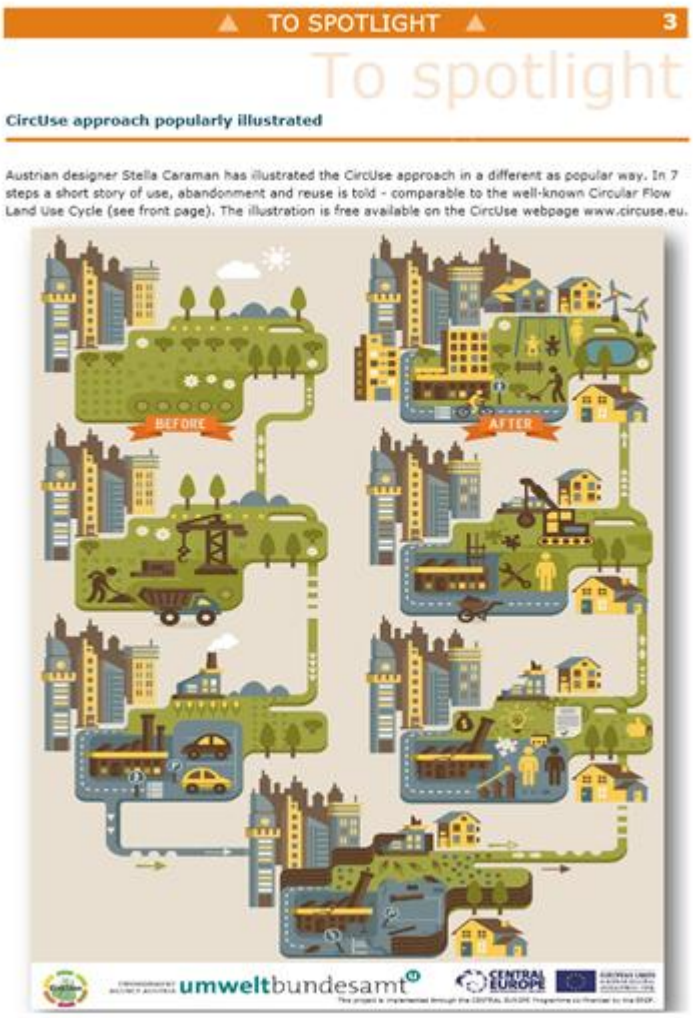
The mascot is based on the appearance of Collembola and provides a clear link to the soil theme. It can be added to any teaching material to make it more appealing for small children.

7. Disseminating the Illustrations

Circuse Illustrations serve both a teaching material and as means for awareness raising.

7.1. CircUse Newsletter

To make the illustrations better known within the CircUse partnership the first one was put into the CircUse newsletter 7.



1 CircUse Illustration Circular land Use in CircUse newsletter 7

7.2.Schulaktionstage – June 2013

The illustration has been used at the Schooldays "Schulaktionstage" in the Vienna Schönbrunn Zoo. During these days school classes are invited to Vienna Zoo and the pupils have to fulfil small tasks. One of these tasks was to answer some questions related to soil and the value of soil. On the stand that was concerned with soil the CircUse Illustration was used.




CircUse Illustration at Soil Stand, Zoo Schönbrunn, Vienna, June 2013

7.3.Artenschutztage – August 2013

In the Vienna Zoo the Artenschutztage – days for the protection of endangered species – the illustrations and the newly developed mascot were used to raise awareness amongst children for the protection of soil and the importance of land reuse.

CircUse Illustration at Soil Stand, Zoo Schönbrunn, Vienna, August 2013

7.4.Web announcements

The illustrations are available on the project web site www.circuse.eu using the following link:

http://www.circuse.eu/index.php?option=com_showdown&typeid=9&Itemid=46

7.5.Poster production

All illustrations were printed on A1 posters to be used at conferences and meetings as tool for awareness raising.

Appendix – Translations

English version	German translation
soil functions	Bodenfunktionen
habitat for soil organisms	Lebensraum für Bodenorganismen
water and climate regulation & carbon storage	Wasser- und CO_2 Speicherung
nutrient cycling, filter and buffer	Filter, Puffer und Transformator
engineering medium	Trägerfunktion
medium for plant growth	Substrat für Pflanzenwachstum
physical and cultural heritage	Archivfunktion

Polish version	Czech translation
Funkcje gleb	Funkce půdy
Siedlisko dla organizmów glebowych	Prostředí pro půdní organismy
Sekwestracja CO_2 i wiązanie wody	Usměrňování vodstva a klimatu a úložiště CO_2
Filtrowanie, buforowanie i transformacja	Filtr, výdech a transformátor
Funkcja nośnika budowli	Základna pro infrastrukturu
Podłoże dla wzrostu roślin	Základna pro pěstování rostlin
Funkcja archiwizacji dziedzictwa kulturowego	Archiv kulturního dědictví

Italian version	Slovakian version
Le funzioni del suolo	funkcie pôdy
Habitat per gli organismi viventi	prostredie pre život pôdnych organizmov
Regolazione del clima, riserve di acqua e stoccaggio di CO_2	kolobeh živín, filtrácia a neutralizácia látok
Ciclo delle sostanze nutritive	stanovište pre rast rastlín
Infrastrutture e opere d'ingegneria	formovanie vodného režimu a klímy krajiny a úložisko uhlíka
Substrato per la crescita delle piante	stanovište pre ľudské aktivity
Patrimonio fisico e culturale	prírodné a kultúrne dedičstvo

Romanian version	Hungarian version
Funcţiile solului	talajfunkciók
Habitat pentru organismele solului	talajlakó organizmusok élőhelye
Ciclul nutrienţilor, filtrare şi amortizare	víz és klíma szabályozás & szénraktározás
Mediu pentru creşterea plantelor	tápanyagforgalom, szűrés és pufferolás
Apa şi clima. Reglarea şi stocarea carbonului	műszaki tevékenységek fizikai közege

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Infrastructură şi inginerie	növényi biomasszatermelés közege
Patrimoniul fizic şi cultural	földtörténeti és tötrénelmi örökség hordozója

Dutch version	**Portuguese version**
Bodemfuncties	Funções do solo
Habitat voor bodemorganismen	Habitat dos organismos do solo
Water- en klimaat-regeling & koolstof-opslag	Regulação da água e do clima/armazenamento de carbono
Nutrienten cyclus, filter en buffer	Ciclagem dos nutrientes, filtração e tamponização
Medium voor geotechniek	Meio para fins de engenharia
Medium voor plantengroei	Meio para o crescimento das plantas
Fysisch and cultureel erfgoed	Património físico e cultural

Spanish version (Jose Luis Rubio)	**Greek version**
funciones del suelo	Λειτουργίες Εδάφους
hábitat para los organismos del suelo	Βιότοπος για τους Οργανισμούς του Εδάφους
regulación del clima, del agua y almacenamiento de carbono	Ρυθμιστής για το νερό, το κλίμα και την αποθήκευση του Άνθρακα
ciclo de nutrientes, filtro y amortiguador	Κύκλος θρεπτικών στοιχείων, φιλτράρισμα και ρύθμιση
medio para la ingeniería	Μέσο έδρασης
medio para el crecimiento de las plantas	Μέσο ανάπτυξης φυτών
patrimonio físico y cultural	Φυσική και πολιτισμική κληρονομιά

French version	**Finish version**
Les fonctions des sols	maaperän toiminnot
Habitat pour les organismes du sol	maaperän organismien elinympäristö
Régulation du cycle de l'eau, du climat et stockage de carbone	vesien ja ilmaston prosessien säätely & hiilivarasto
Cycle des nutriments, filtre et tampon	ravinnekierrot, suodatus ja puskurointi
Support et matériau	rakennustekninen käyttö
Support pour la croissance des plantes	kasvien kasvualusta
Environnement physique et patrimoine culturel	fyysinen ympäristö ja kulttuuriperintö

Bulgarian (Български)	**Russian**
почвени функции	функции почв

местообитание на почвените организми	местообитание для почвенных организмов
регулиране на водата и климата и съхранение на въглерод	регулирование водного и климатического режимов, а также хранилище углерода
кръговрат на хранителните вещества, филтър и буфер	круговорот питательных веществ, фильтрация и буферность
среда за инженерни дейности	среда для инженерных приложений
среда за развитие на растенията	среда для роста растений
физично и културно наследство	материальное и культурное наследие

Lithuanian	**Latvian**
Dirvožemio Funkcijos	Augsnes funkcijas
Aplinka dirvožemio organizmams	Vide augsnes organismiem
Vandens ir klimato rėžimo reguliavimas bei anglies saugykla	Ūdens un klimata regulācija, oglekļa piesaiste
Maistingųjų medžiagų apytakos ciklas, filtravimas ir buferingumas	Barības elementu aprite, aizture un bufermehānisms
Inžinerinė aplinka	Vide inženierdarbībām
Aplinka augalams augti	Augu augšanas vide
Gamtos ir kultūros paveldas	Kultūrvēsturiskā mantojuma glabātuve

Croatian	**Slovenian (Marko Zupan)**
uloge tla	funkcije tal
stanište za organizme tla	habitat talnih organizmov
Utjecaj na vodu i klimu, te na skladištenje ugljika	reguliranje vode in klime ter shranjevanje ogljika
ciklus hraniva, filter i pufer	kroženje hranil, filtriranje in blaženje
tehnička funkcija za izgradnju i rudarstvo	medij inženirskih dejavnosti
medij za rast biljaka	medij za rast rastlin
fizičko i kulturno nasljeđe	naravna in kulturna dediščina

Bosnian	**Albanian version (Pandi Zdruli)**
funkcije tla/zemljišta	funksionet e dhéut
životni prostor zemljišnih organizama	vendbanim per organizmat e dhéut
regulacija vode i klime, rezervoar ugljika/karbona	rregullimi i ujit dhe klimës & depositimi i karbonit ne tokë
ciklus nutrienata, filtererska i puferna svojstva	qarkullimi i elementeve ushqyes, filtrimi dhe rregullimi i raporteve kimike ne kompleksin

	tokësor
prostor gradnje	mjedis per ndertime
prostor za rast biljaka	mjedis per rritjen e bimëve
graditeljsko i kultirno nasleđe	trashëgimia fizike dhe kulturore

Basque language	**Catalàn**
Lurraren funtzioak	Funcions del sòl
Lur organismoentzako habitata	Habitat pels organismes del sòl
Ur eta klimaren arauketa eta karbono pilaketa	Regulació hídrica i climàtica; emmagatzematge de carboni
Elikagai zikloa, iragaztea eta indargetzea	Reciclat de nutrients, filtrat i tampó
Injinerutza ingurunea	Material per la construcció
Landareen hazkunderako ingurunea	Medi pel creixement de les plantes
Ondare fisiko eta kulturala	Herència física I cultural

Danish version	**Swedish translation**
Jordfunktioner	Markens funktioner
Habitat for jordbundsorganismer	Livsmiljö för markorganismer
Regulering af vand og klima samt kulstoflagring	Vatten- och klimatreglering. Kollager.
Filter- og bufferfunktion for næringsstoffer	Näringscirkulation. Lagra och filtrera
Medium for støtte af fysiske konstruktioner	Plats för tekniska verksamheter
Substrat for plantevækst	Plats för biomassaproduktion
Arkiv for kulturarv	Arkiv för det geologiska och kulturella arvet

Norwegian translation	**Estonian version**
Jord egenskaper	mulla funktsioonid
Habitat for jordorgansimer	mullaorganismide elukeskkond
Vann og klimaregulering & karbonlagring	vee ja kliima reguleerimine & süsiniku talletamine
Næringssykluser, filter og buffer	toitainete ringe, filtreerimine ja puhverdamine
Løsmasser for konstruksjon	taristu aluspind
Substrat/medium for plantevekst	taimede kasvu alus
Fysisk og kulturell arv. (Kulturminner)	füüsilise ja kultuurikeskkonna alus