Understanding the value of restored quarries for nature and society in the context of green infrastructure provision

Quarries Alive Conference: European Green Infrastructure

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1. RESTORE project
2. European Green Infrastructure
3. Linking quarry restoration and European Green Infrastructure
The RESTORE project
Restoring quarries
— a case for nature-based approaches

- Minerals extraction operates at scale in the EU – 0.3m hectares
  - *It has a strong influence on the landscape*
- Landscapes / ecosystems provide goods and benefits, and support biodiversity
- Damaged landscapes provide less goods and support less biodiversity.
- Sector potential: to contribute more to landscape rehabilitation than it takes – as a legacy
- How to realise the potential?
  - Identify the benefits, and how significant they are?
  - demonstrate that they are real and achievable, and how they are generated
  - ensure they are factored into quarry development and restoration planning
Choices in quarry restoration are context-dependent

Context:
- History & Culture
- Landscape character
- Soil conditions
- Local climate
- Local nature priorities

Services:
- Safeguarding rare species
- Nature experience
- Recreation
- Flood protection
- Carbon capture
- Water supply
- Resource provision
Toolkit for Ecosystem Service Site-based Assessment
Comparing the incomparable – rationale of ESS valuation

- Recreational Woodland
- Farmland
- Nature Reserve

Working together to give nature a home
Working together to give nature a home

UK
1. Whitesands
2. Middleton Lakes
3. Ouse Fen
4. Fen Drayton

BELGIUM
5. `t Pompje
6. Wenduine
7. Mechelse Heide

NETHERLANDS
8. ENCI
9. Curfs
10. Meertens

limestone
sand and gravel
clay
WENDUINE CLAY PITS

are located in the polder area of West-Flanders, Belgium. The abandoned clay extraction site has a size of about 12 ha which has recently been restored as a wetland area and is managed by a Flemish non-governmental nature conservation organisation. To analyse the benefits of the different restoration states, a visitor survey was conducted on site and at a nearby visitor centre. In addition, some ecosystem services were assessed by collecting field data.
Public benefits drive extraction NL - flood relief, with nature and recreation
Spatial planning UK
- to provide multiple benefits
Lessons learnt
– *Ecosystem service knowledge and minerals site restoration*

• Mineral site restoration is a real window of opportunity to raise quality and quantity of open spaces together

• Mineral sites do have the potential to provide important ecosystem services after restoration for nature conservation.

• The results of these assessments will help to inform restoration decisions, but these will take into account many factors.

• Building the evidence base and advocating the outcomes helps to embed ecosystem services into the decision-making processes.
European Green Infrastructure
Relevance of Green Infrastructure

Definition:
- “a strategically planned network of high quality natural and semi-natural areas with other environmental features, which is designed and managed to deliver a wide range of ecosystem services and protect biodiversity in both rural and urban settings”

(European Commission, 2013)

Dimensions of Green Infrastructure
Relevance of Green Infrastructure

Green as soft location factor, image building, tourism

- Green Infrastructure as soft location factor
  *Economic value of green (house price effects etc.)*

- Image building by using Green Infrastructure
  *Regional branding*
Relevance of Green Infrastructure

Biodiversity

- Green Infrastructure as a means of environmental protection
  
  *Creating urban, peri-urban and rural habitats,*
  
  *Stepping stones migration of species etc.,*
  
  *Re-naturalisation of rivers and lakes*
Relevance of Green Infrastructure

Health & well-being, sports

- Green Infrastructure has salutogenic effects
  *cleaning the air, preventing a sedentary lifestyle etc.*

- Important impact on „mental health“
  *general well-being*

- Recreation, leisure and activity within green Infrastructure
  *reduced stress levels, new forms of sporting places*
Green infrastructure, urban green, open spaces...

GI approach

connected/integrated

multifunctional

discrete/separated

unifunctional

traditional approach

(Lennon / Scott, 2014)
Links between quarry restoration and European Green Infrastructure
Working together to give nature a home

Mineral extraction sites in Europe
(based on Conne Land Cover 2012)

11327 mining sites, 8.069.126.257 m²
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Mineral extraction sites in Europe
(based on Corine Land Cover 2012)

11,827 mining sites, 8,069 km²

Population in Europe (2014/15)
(based on Global Human Settlement grid data, 250m)

596,934,045 inhabitants
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Zoomed in (calculated for the whole data set)

Mineral extraction sites in Europe
(based on Corine Land Cover 2012)

11827 mining sites, 8.069 km²

Population in Europe (2014/15)
(based on Global Human Settlement grid data, 250m)

596,934,045 inhabitants

Population living in a 5km buffer around any kind of mineral extraction site

175,926,000 inhabitants

29,47 % of all Europeans
Zoomed in (calculated for the whole data set)

Mineral extraction sites in Europe
(based on Corine Land Cover 2012)

11827 mining sites, 8.069 km²

Population in Europe (2014/15)
(based on Global Human Settlement grid data, 250m)

596,934,045 inhabitants

Population living in a 15km buffer around any kind of mineral extraction site

482,571,645 inhabitants

80.84 % of all Europeans
Our Conclusions

- There is evidence for how the legacy of quarries can endure into the future
- Sites restored for nature have opportunities to contribute public goods
  - *can add value to local communities and their economies*
- These should be recognised for the role they play in delivering regional, national and EU policies
- Restored quarries can play an important role in improving quantity and quality of the European Green Infrastructure
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