High Nature Value Farmland in Ireland:

Marginal farming or central role in combating climate and biodiversity challenges?

James Moran

The Signpost Webinar Series- Teagasc 02/07/2021

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Outline

- 20 years
- HNV farmland research, policy and practice
  - Ecosystem services from HNV farmland
  - Result based payments-realising value of ecosystem service provision
- Challenges and Solutions-proposals for CAP green architecture

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Progress to date: work of range of project teams and partners

Finding solutions to some of the most challenging agri-environment priorities in the country.

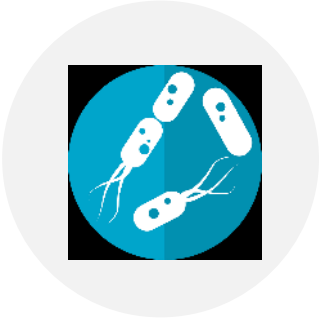
Scale of the Challenge

Interactions / cause-effect feedbacks

Changing Climate; summer droughts, winter floods

Habitat Loss and Pollution

Land conversion, intensification and abandonment



Invasive Species and disease

Economics and viability

…. Leading to Depletion of biodiversity, contributing to climate change

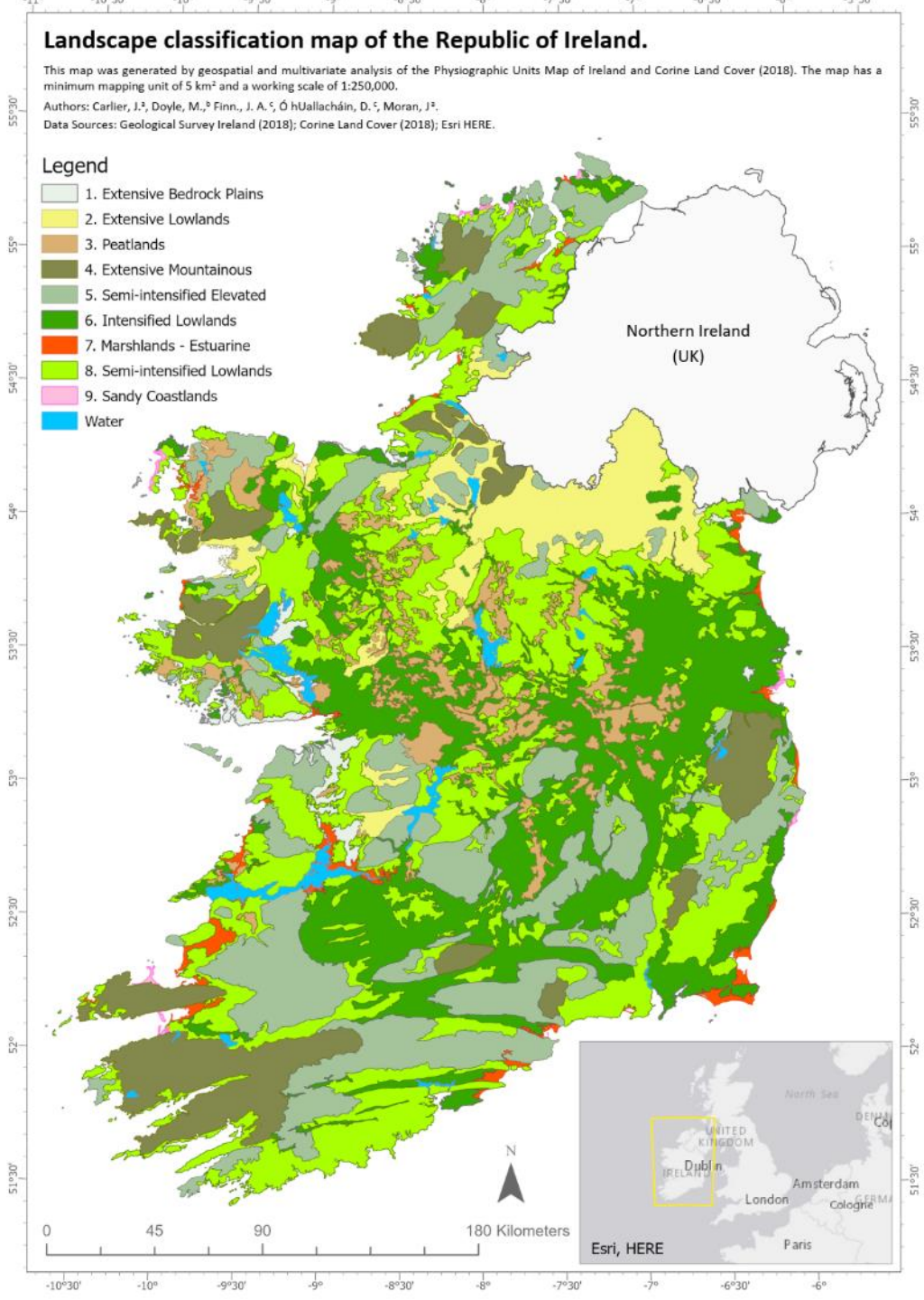
and reducing supply of Ecosystem Services for current and future generations

State of Nature In Ireland and Interactions with Agriculture

- Unfavourable conservation status with a declining trend.
- Large areas of semi-natural vegetation completely undervalued in policy framework (semi-natural grasslands ~30% of area monitored lost in last 10-15 yrs)
- No clear policy/land use targets for high nature value farmland
- Legacy issues and inadequate policy response to date
- Positive moves - locally adapted pilots, results based payments for biodiversity and related ecosystem services.
- Threats identified, solutions identified but scale of implementation?

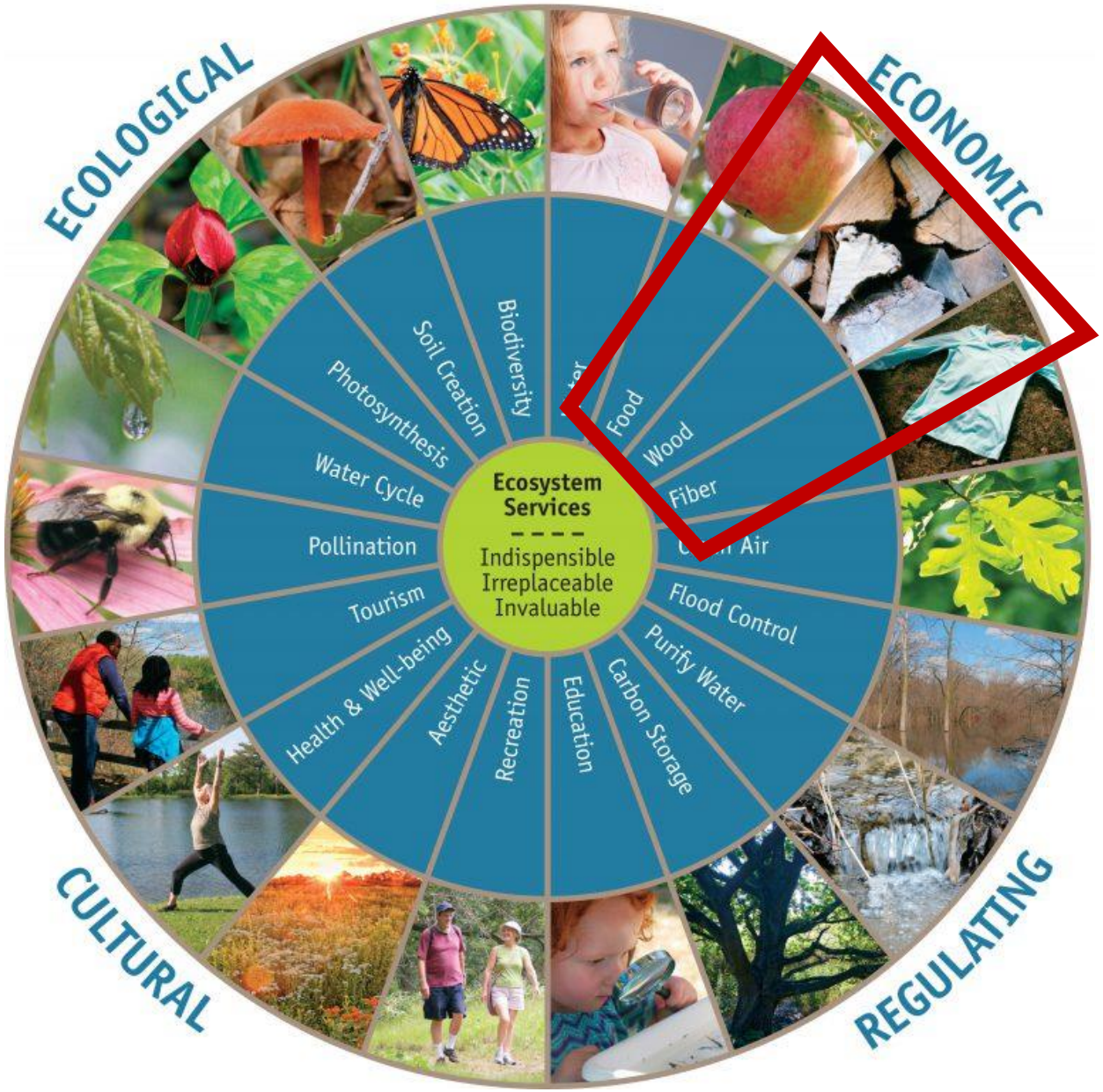
Landscape Diversity

- Broad landscape classification of the country in 9 classes
- Range from intensified lowlands to extensive mountainous areas
- Characterised by difference in geology, soils, climatic variation and land cover with a wide range in land use capacity.
- All land cannot be all things to all people!
- One size does not fit all!



Diverse land base -provides range of Ecosystem Services

- **Diversity of Irish farmed landscapes**
- **Need to provide range of goods and services**
- **Under supply of non-market ecosystem services/public goods**

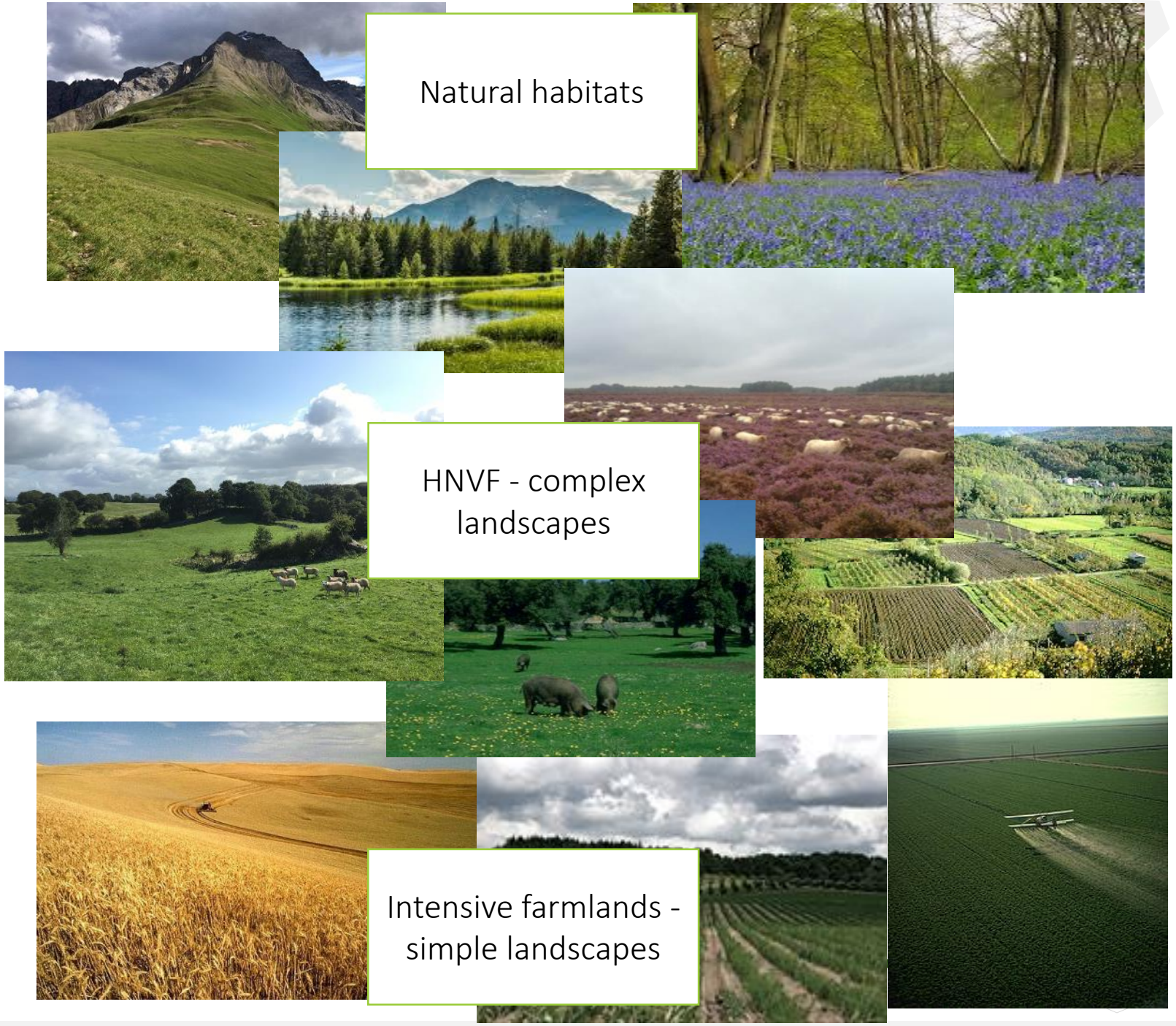


Source: winnebagoforest.org

High Nature Value (HNV) Farmland

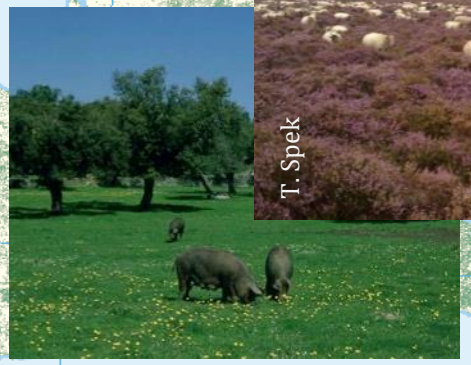
"those areas where low-intensity agricultural practices maintain or contribute to a high level of biodiversity"

HNV farmlands are areas characterized by a high proportion of semi-natural vegetation and complex landscapes which DEPENDS on low-intensity farming practices

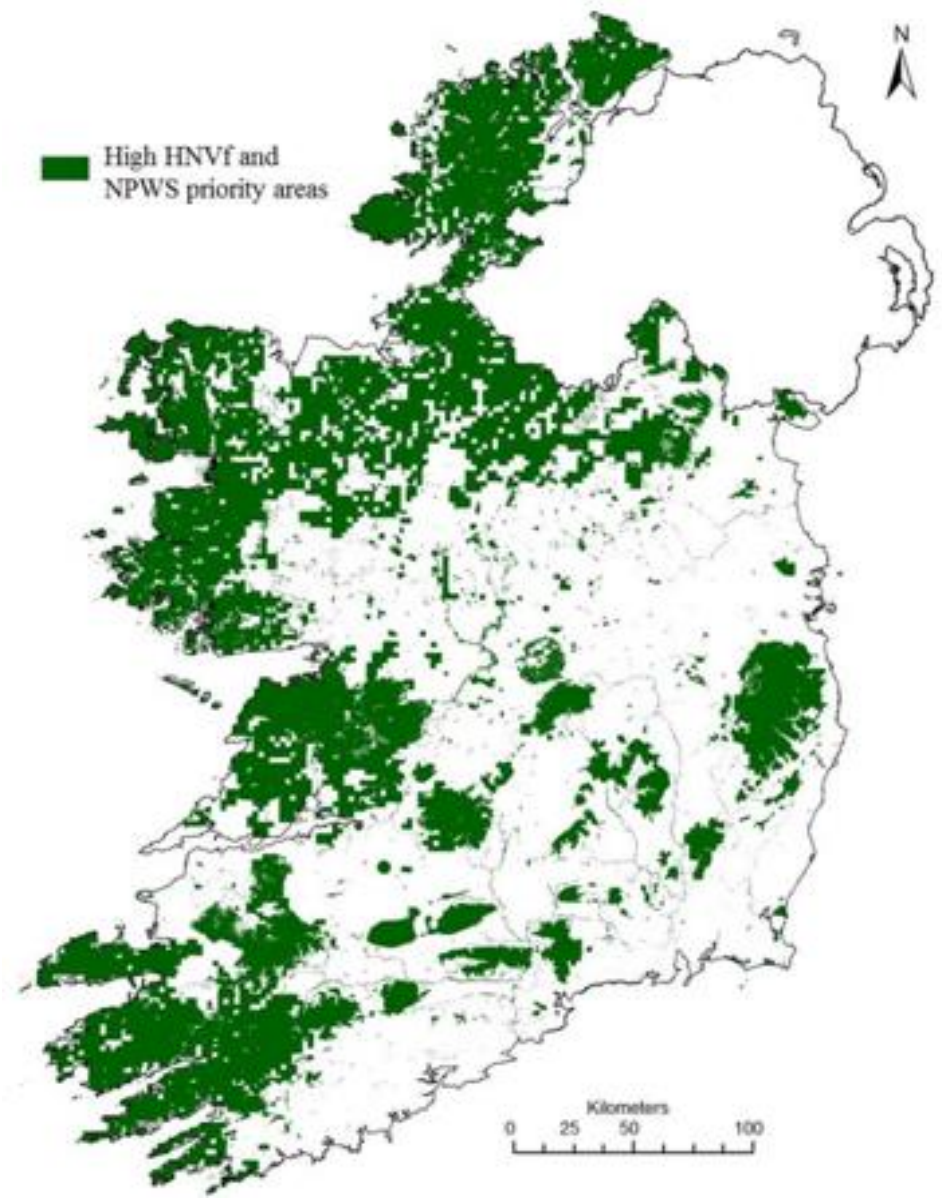


HIGH NATURE VALUE FARMLAND

*"Areas in Europe where **agriculture is a major** (usually the dominant) land use and where agriculture sustains or is associated with either **a high species and habitat diversity**, or the **presence of species of European conservation concern**, or both"(Andersen et al. 2003)*



HNV: Range of Nature Value of Agricultural Land



HNV Farmland

33% of agricultural area = HNV farmland

Approximately 50% of total HNV farmland is part of Natura 2000 network

Approximately 50% of HNV farmland occurs in upland areas

Dual Threats: Abandonment and intensification of land use

Department of Agriculture, Food and the Marine
An Roinn Talmhaíochta, Bia agus Mara

IT Sligo
An Institiúid Teicneolaíochta, Sligeach

Teagasc
Agriculture and Food Development Authority

Extensive upland areas


Semi-natural vegetation
extending to sea level in west

Agricultural Mosaic Landscape

FARMECOS: ES in agricultural landscapes

Identifying novel measures for future AEC measures across land use intensities

Modelling ecosystem services: habitat quality; pollination, C storage and food production

Testing scoring systems for results based payment schemes

Department of Agriculture, Food and the Marine
An Roinn Talmhaíochta, Bia agus Mara

Teagasc
Agriculture and Food Development Authority

NUI Galway
OÉ Gaillimh

Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

DCU

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Galway-Mayo Institute of Technology

Detailed Land Use Land Cover Maps / Habitat Maps Produced

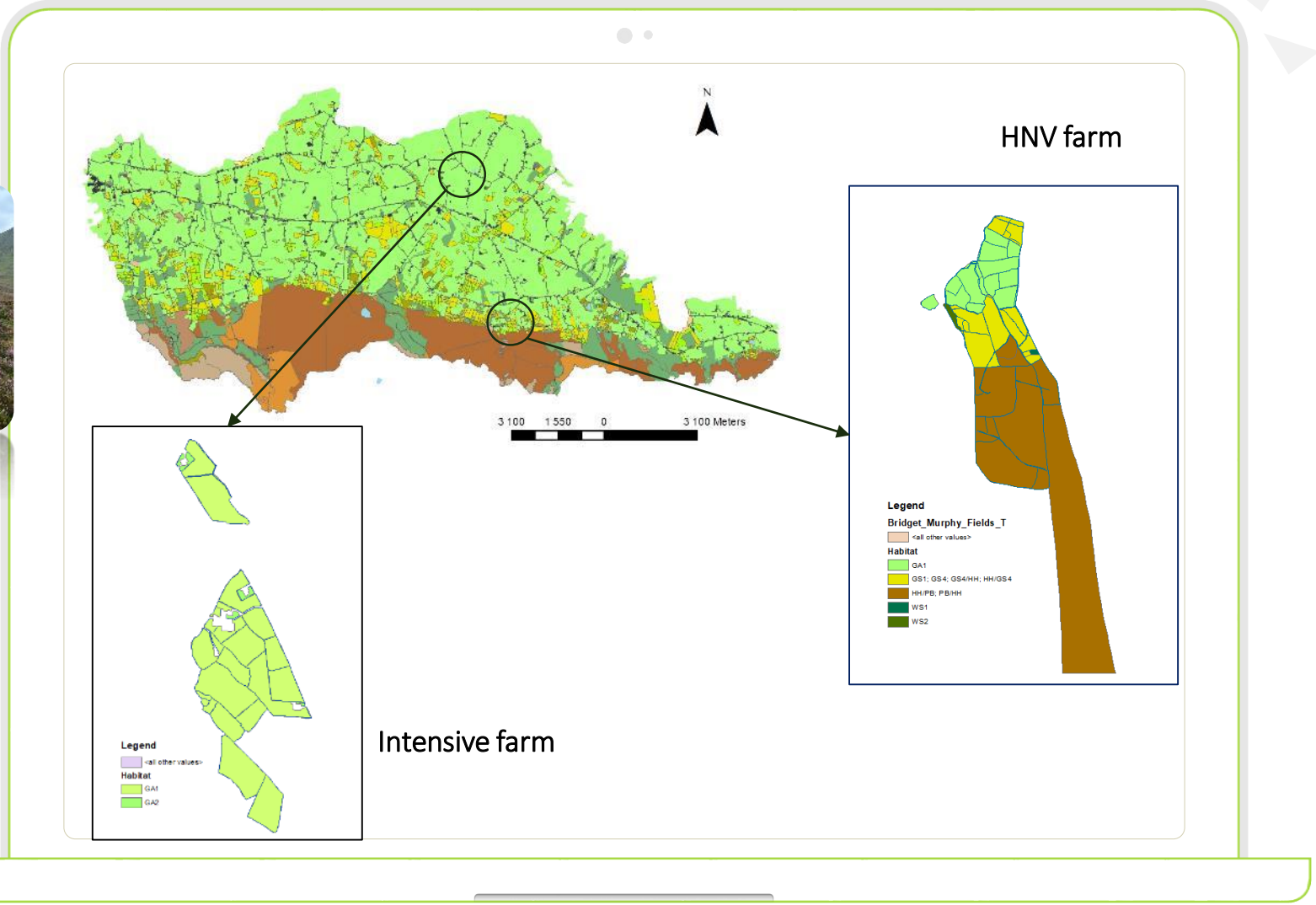
Habitat maps in an HNV farm

(extensively managed: Semi-natural grasslands; Heathlands and Peatlands)

Vs

Habitat map in an intensive farm

(intensively managed: Improved grasslands)



Habitat Quality Model

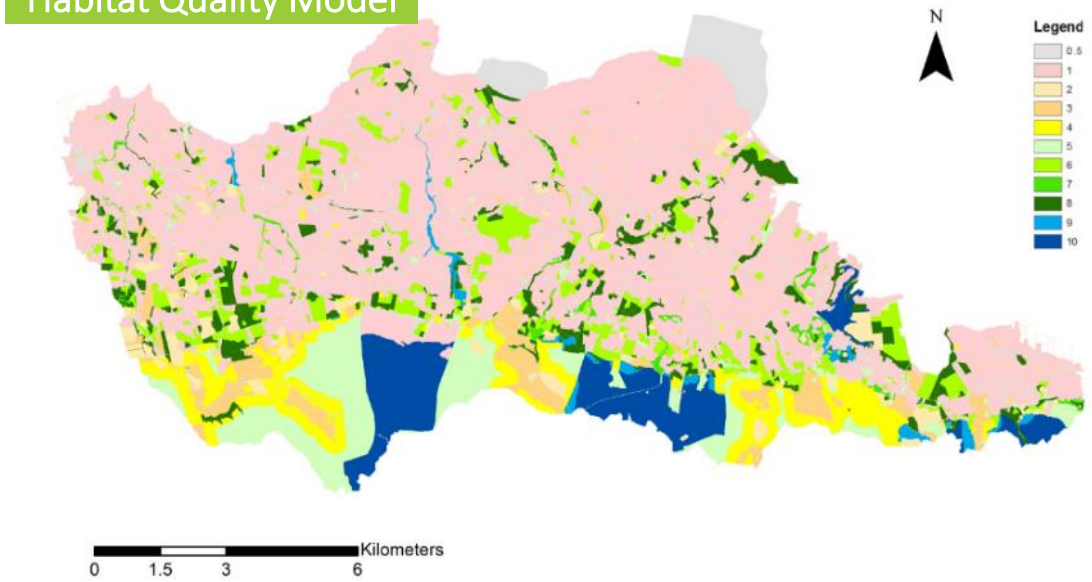


Figure 4.3. Results of the habitat quality model for Co. Sligo sub-catchment.

C Storage Model

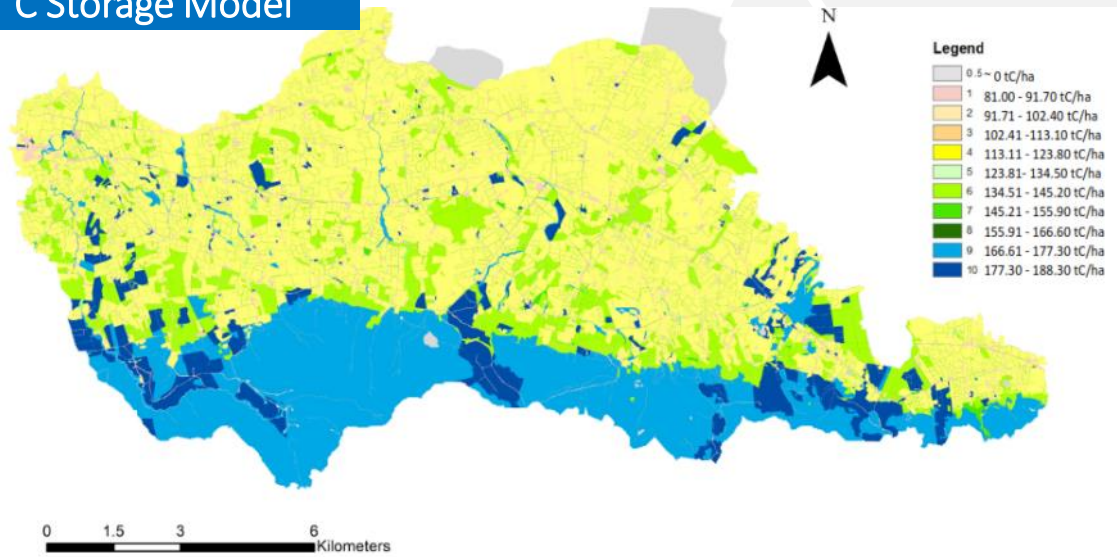


Figure 4.19. Results of the Carbon storage model (InVEST) for Co. Sligo sub-catchment.

Pollination Model

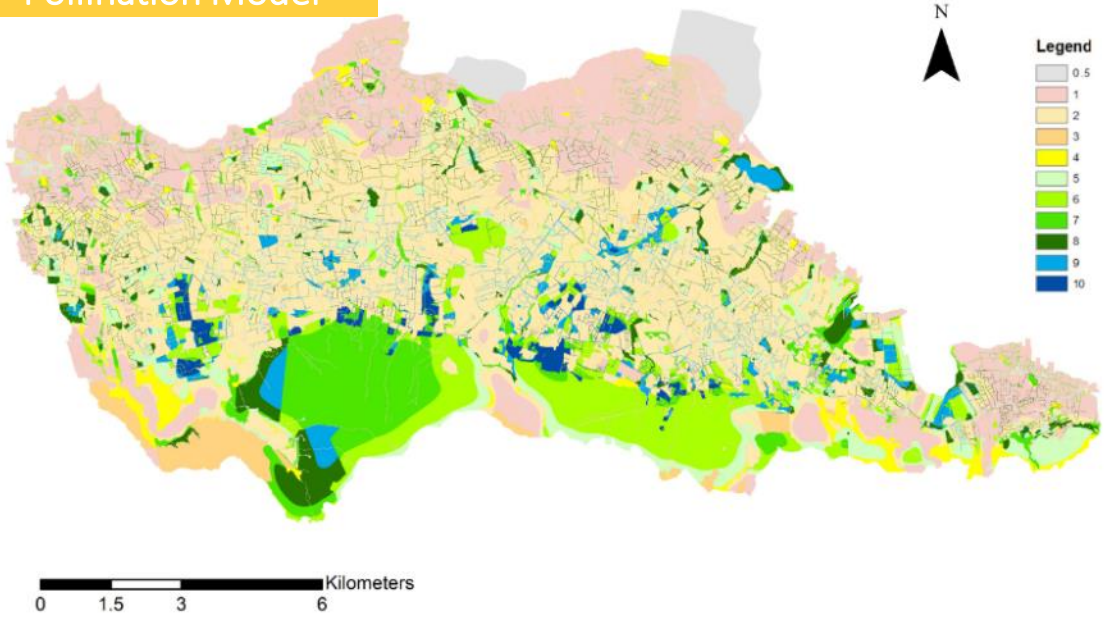


Figure 4.23. Results of the pollinator abundance model (InVEST) for Co. Sligo sub-catchment.

Production Model

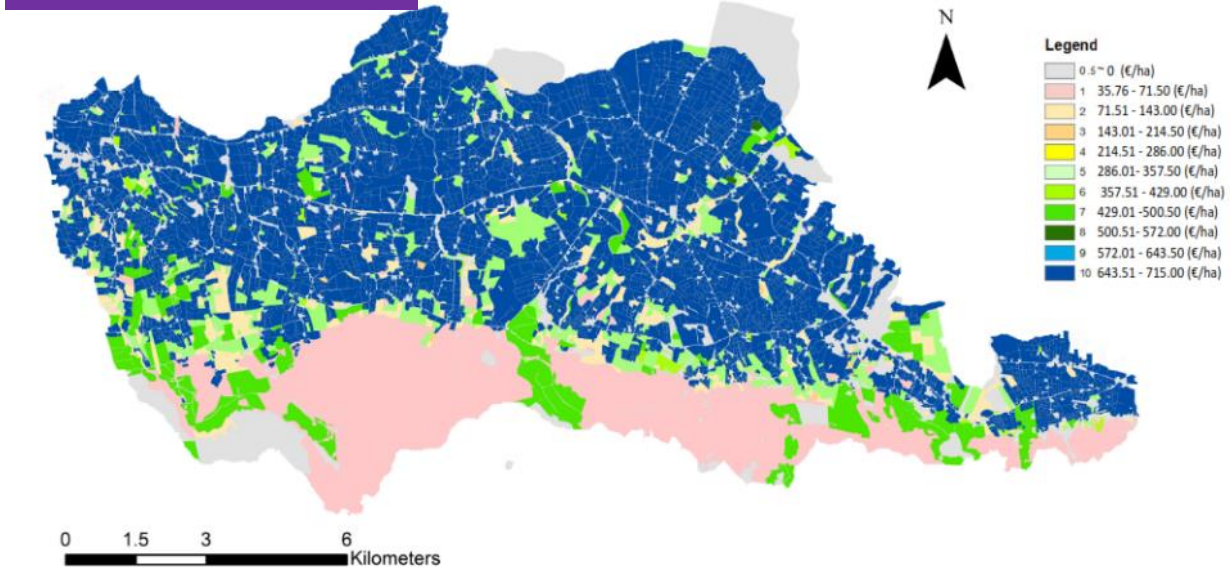


Figure 4.27. Results of income per habitat type (€/ha/annum) related to food and fibre production for Co. Sligo sub-catchment.

Clear synergies and trade offs

- Habitat quality correlates positively with carbon storage and pollinator abundance
- Weak negative correlations with food and fibre production values
- Some habitat/areas can provide some income from food production while having moderate habitat quality
- In general semi-natural areas have greatest potential to produce multiple ecosystem (hotspots of ES)

Habitat Quality/ C Storage/ Pollination ES Ranking
1. Semi-natural grasslands
2. Woodland (non-production)
3. Heathland and peatland
4. Hedgerows and treelines
5. Commercial forest plantation

Food and Fibre Production ES Ranking
1. Improved grasslands/Tillage
2. Commercial forest plantation
3. Semi-natural grasslands
4. Heathland and peatland
5. Woodland (non-production)

HNV FARMLAND & FORESTRY
FARMFORBIO

HNV Farmland and Forests

HNV FARMLAND

High Nature Value farmland supports the presence of habitats and species of European, and/or national, and/or regional conservation concern whose survival depends on the maintenance or continued existence of the feature.

HNV FORESTS

High Nature Value forests are all natural forests and those semi-natural forests in Europe where the management (historical or present) supports a high diversity of native species and habitats, and/or those forests which support the presence of species of European, and/or national, and/or regional conservation concern.

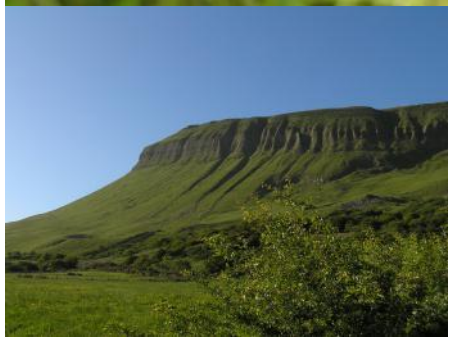
https://hnvfarmforbio.ie/ (Website Launch today!)

GMIT Teagasc Agriculture and Food Development Authority UCD Dublin An Roinn Talmhaíochta, Bia agus Mara Department of Agriculture, Food and the Marine

HNV Ireland Programme (Heritage Council and EFNCP)

- **Awareness raising:** Identify threats, opportunities and practical solutions for HNV farmland
- **Network and capacity building:** Local partnerships working together
- **Improving understanding and knowledge building**: Series of case studies and demonstration projects
- **Policy and advocacy work**: Formal responses to call for submissions on RDP 2014-2020
  - integration of targeted results based payments in AE;
  - proposal for pilot projects using co-operation articles-EIPs
- **CSP 2023-2027:** Farming For Nature Technical Group 2020-2021
- **Overall aim:** HNV farming in Ireland receives workable, appropriately funded CAP support, complementary well-designed measures



European Forum on Nature Conservation and Pastoralism

An Chomhairle Oidhreachta
The Heritage Council

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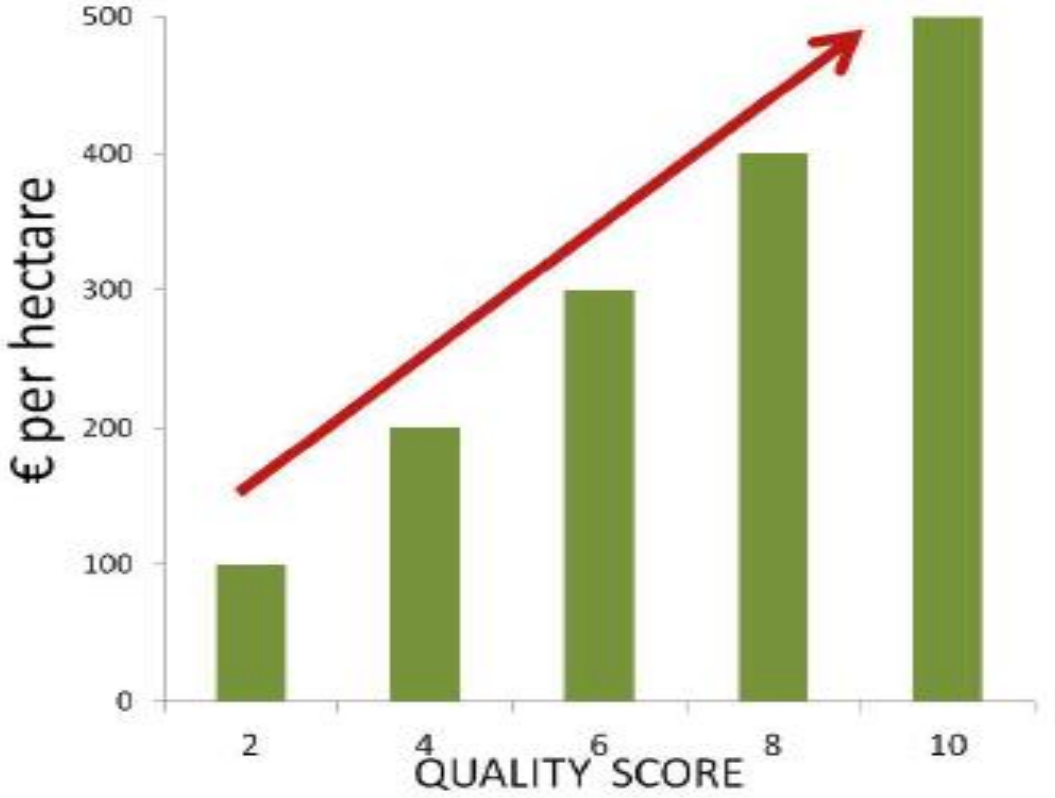
What are Results Based Payments

Agri-environment schemes where payments are linked directly to delivery of results rather than actions expected to deliver result.

Higher Nature Quality = Higher Payment



RBPS Targets

Biodiversity +

Associated Ecosystem Services

e.g. habitat quality, water, soil carbon, pollination

General Scorecard Structure

Ecological Integrity (Positive plant indicators and vegetation/ indictors of ecosystem structure important for specific target taxa)

Ecological Integrity (Negative Plant Indicators e.g. non-native invasive species)

Soil Integrity e.g. % bare soil, erosion

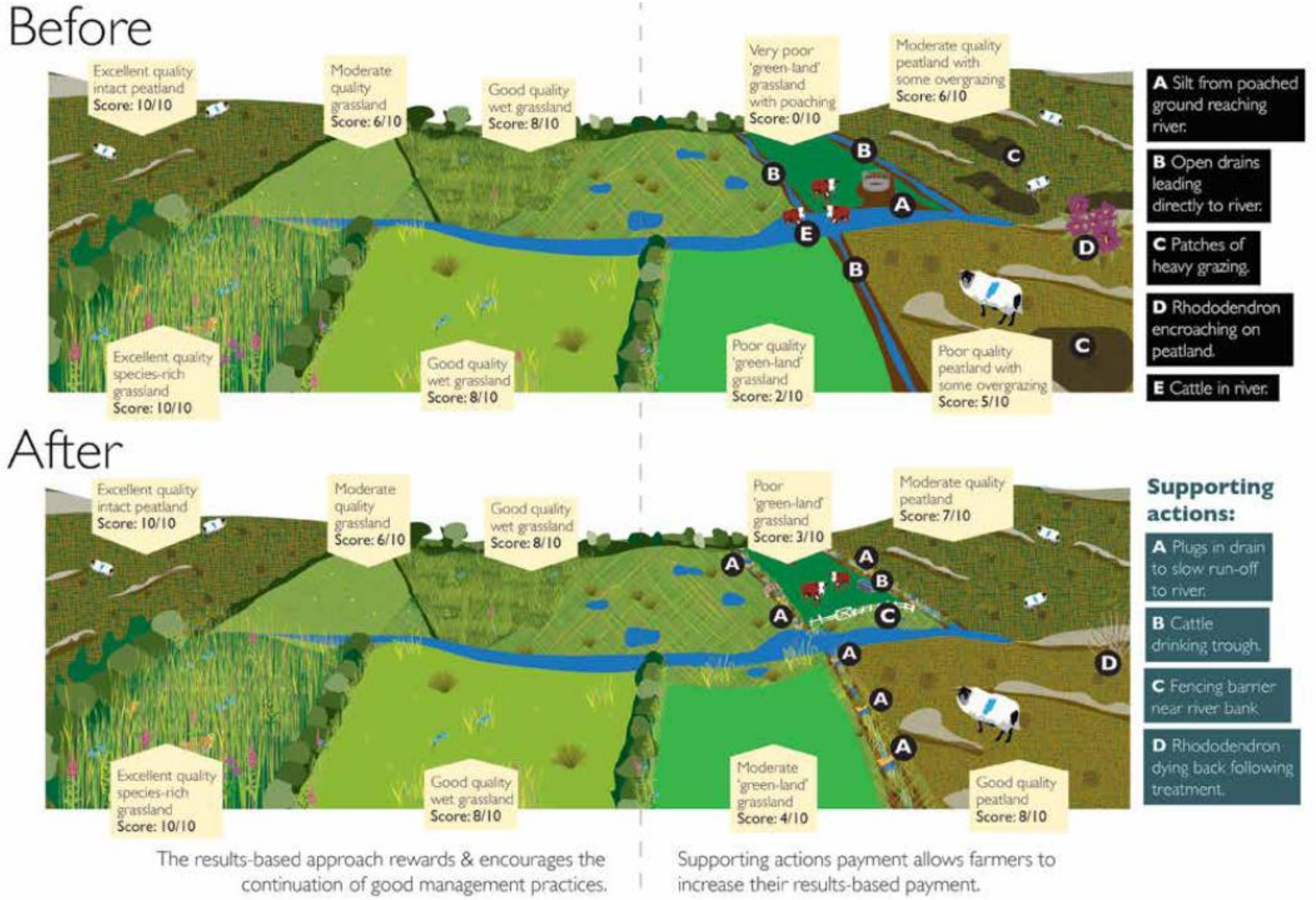
Hydrological Integrity e.g. water features and drainage system near natural to highly modified

Damaging activities e.g. burning, feed site damage, dumping, evidence of inappropriate herbicide/pesticide use

Incentivising and rewarding provision of multiple ecosystem services

FARM ECOS
Farming and Natural Resources: Measures for Ecological Sustainability

Biodiversity, Water and Climate Targets



Making CAP work better for everyone

An ecological evidence base to inform the future of the Common Agricultural Policy in Ireland

1. FARM FOR FOOD SECURITY

Biodiversity underpins the delivery of multiple ecosystem services that benefit society

Farming has the capacity to solve the climate and biodiversity crises that undermine food security. In doing so, we can enhance farmer livelihoods. By farming with nature, we secure a future for our children and the landscapes on which we depend. These landscapes provide priceless ecosystem services that are consistently undervalued. CAP should incentivise farming that produces high quality food and enhances habitats, sequesters carbon, improves water quality, maintains soil health and alleviates flooding. This kind of farming has the potential to deliver landscapes that improve our own health and wellbeing, and nourish generations to come.

2. NATURE HAS LIMITS

Global trends indicate we are facing a mass extinction, and Ireland is similarly affected

Over a million species are at risk of extinction globally. Priority Irish species and habitats are also threatened, in poor condition and declining. Declines in biodiversity impact on the critical ecosystem services provided to people. Nature can resist some threats and given the right circumstances can recover from impacts of intensive land-use, land-use change and pollution. However, nature is being pushed beyond its limits and some habitats may collapse entirely or require substantial investment for successful restoration. It is cheaper and more effective to keep what you have than pay to restore what you have lost.

4. ONE SIZE CAP DOESN'T FIT ALL

Targeted interventions are essential to ensure ecosystem service delivery across the Irish landscape.

We need local-level solutions for landscape-level challenges because the Irish agricultural landscape is diverse. These solutions should be informed by the best possible evidence and knowledge that is appropriate for the local environment. Good examples already exist - many have been co-created by farmers, advisors and scientists working together, and have been demonstrated across Ireland. For effective and efficient administration, a national framework is needed for implementation of local-level solutions throughout the country.

Ecological Evidence

3. QUANTITY, QUALITY & CONNECTIVITY MATTER

Ecosystem type, condition and extent determine the services that are delivered in any one area.

A particular ecosystem type, such as a blanket bog or semi-natural grassland, can vary from low to high quality. Quality is assessed as the diversity, richness and identity of species within the ecosystem, and consequent ability of that ecosystem to provide services. High ecosystem quality depends on appropriate management. Landscape-scale connectivity increases habitat quality for species, and enhances the resilience of populations to threats. Monitoring of ecosystem quantity, quality and connectivity is essential to ensure expected outcomes are realised. Effective maintenance and enhancement of ecosystem quality needs to be evidence-based, and can also be incentivised by results-based payments.

Ecological Evidence

6. NATURE NEEDS LONG TERM BUT FLEXIBLE PLANNING

Support for the natural processes that deliver beneficial ecosystem services requires long term planning

Long-established ecosystems are generally of higher quality than newly established or recently restored ecosystems; thus, it is a priority to maintain existing high quality ecosystems. Long term land-use objectives, together with continuous CAP instruments and measures and reliable payments can incentivise commitment to maintain and improve ecosystems. Production systems are exposed to changeable social, economic and environmental forces and CAP measures need to be flexible to achieve objectives for ecosystem quality and service delivery.

Ecological Evidence

10 Billion
2021-2027

Draft Proposal Key Issues for the CAP Green Architecture and Implementation in Ireland

Our proposal is informed throughout by the following Six Core Considerations for the CAP green architecture in Ireland

Value For Money
Our proposal ensures value for the public funding paid to farmers
1

Farmer Engagement
Ensure better buy-in from farmers and other stakeholders
2

Evidence Based
Built on many years of research and programme delivery
3

Integrated and Simplified
Integrated across the CAP framework and a simple 'one plan' interface
4

Results-based and auditable
Use of scorecards and indicators to generate reliable, real-time data
5

Relevant
Consistent with a range of strategies at national and EU level
6

Draft Proposal Key Issues for the CAP Green Architecture and Implementation in Ireland

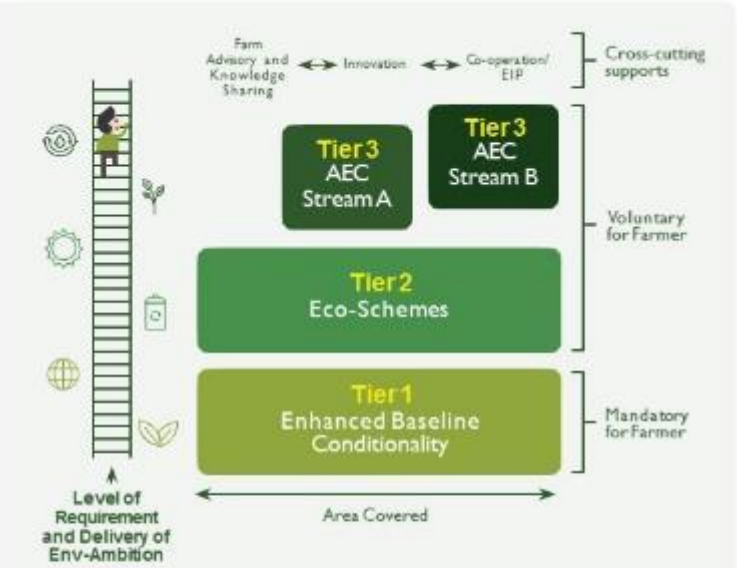
We propose Three Tiers in this green architecture

With increasing levels of environmental ambition and delivery as you progress from Tier 1-3

Tier 1 Enhanced Baseline Conditionality
Minimum standards to keep agricultural land in GAEC

Tier 2 Eco-schemes
Practices that are beneficial to the environment and climate

Tier 3 Agri-Environment Climate Measure
A national agri-environment scheme and a locally-adapted farming for nature scheme



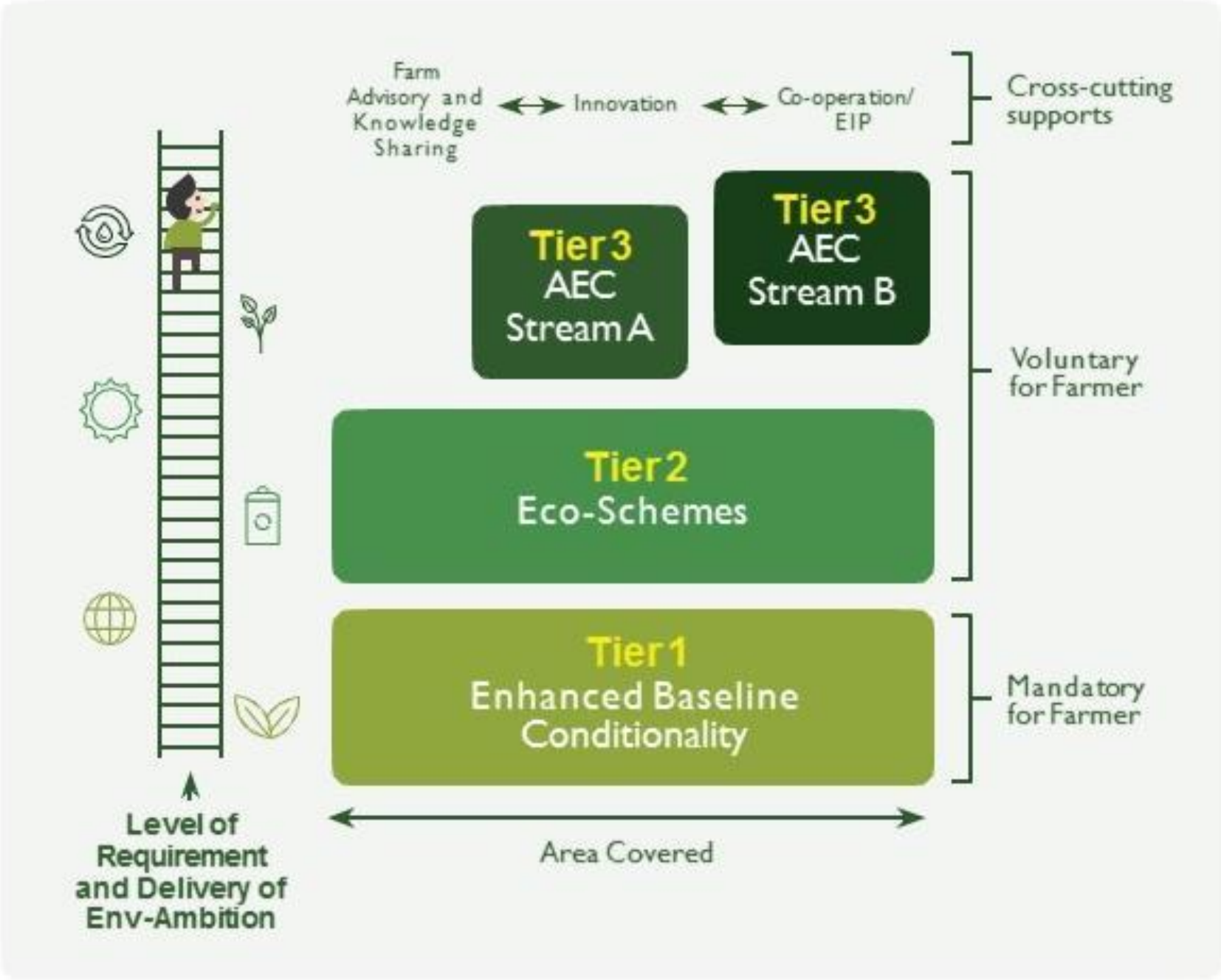
We propose that the **Tier 3** AEC measure be divided into **2 streams**

Tier 3 Stream A Builds on Ireland's 25 years of experience with national agri-environment schemes

Tier 3 Stream B Builds on 10 years of experience with locally-adapted, hybrid results based agri-environment payments.

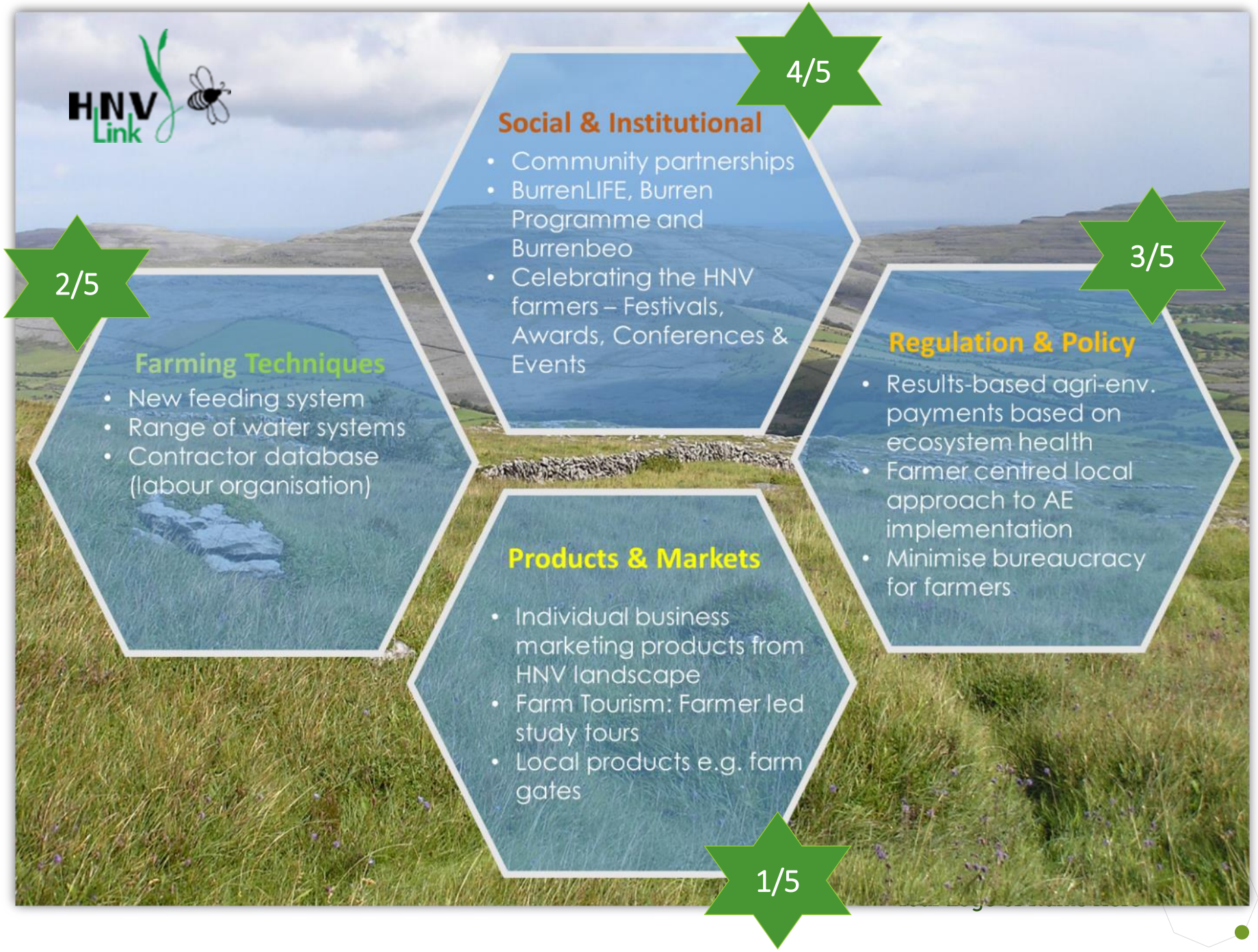
The Farming for Nature Technical Group

Ambitious CAP Green Architecture



Innovation Gaps

- RBPS create a market for ecosystem services
- More needed to realise viable HNV farmlands
- Foster innovation



Shaping a new narrative around Farming and Nature

Current Ambassadors

The Farming For Nature Ambassadors since 2018

Their products

The products and services from our Ambassadors

Useful links

Policy, research and practice of Farming for Nature in Ireland

How To Do Guides

Guidance on how you can make changes on your farm by land type

FARMING FOR nature

Bord Bia supported National Farming For Nature awards recognising the central role of farmers

Summary

Moran, J., D. Byrne, J. Carlier, B. Dunford, J. A. Finn, D. Ó hUallacháin, and C. A. Sullivan. 2021. Management of high nature value farmland in the Republic of Ireland: 25 years evolving toward locally adapted results-orientated solutions and payments. *Ecology and Society* 26(1):20. https://doi.org/10.5751/ES-12180-260120

Synthesis, part of a Special Feature on High Nature Value Farming Systems in Europe

Management of high nature value farmland in the Republic of Ireland: 25 years evolving toward locally adapted results-orientated solutions and payments

James Moran[1], *Dolores Byrne*[2], *Julien Carlier*[1], *Brendan Dunford*[3], *John A. Finn*[4], *Daire Ó hUallacháin*[4] *and Caroline A. Sullivan*[5]

- Agriculture policy framework needs to enable positive action and incentivize delivery of results to combat biodiversity and climate crisis, while supporting viable HNV farms
- Solutions are developed but need to be scaled up
- HNV farmland as part of the diversity of farming landscapes in Ireland can play a central role
- Targets for provision of ecosystem services (food, fiber, pollination, C sequestration, water regulation etc.) need to match capacity of land + optimize quality accordingly
- Empower HNV farmers and rural communities – capacity building and cooperation
- Promote societal demand and recognition for these areas and the services they provide