Sustainable Intensification of Irish Agriculture

Pat Murphy - Teagasc
What is Sustainable Intensification

“Sustainable agricultural intensification is defined as producing more output from the same area of land while reducing the negative environmental impacts “
“Food production needs to increase 70-100% by 2050”

“All EU water bodies must reach at least ‘good’ status by 2015, 2021, 2027”

“Loss of biodiversity must be halted by 2020”

“Greenhouse gas emissions must be reduced by 30% by 2030”

“Climate Change is having increased impact around the world”
What is Sustainable Intensification

- In many countries the idea of “Sustainable Intensification” is discussed as a desirable outcome.

- In Ireland Sustainable Development has become an Absolute Necessity.

- Food Harvest 2020 – Set us on a path to growth.
Food Harvest 2020

- Increasing the value of primary output €1.5 billion (33%)
  - 2016 + 30%

- Achieving an export target of 42% increase on 2007
  - 2016 + 42%

- Increasing milk production by 50%;
  - 2017 + 40%
Food Harvest 2020 – Food Wise 2025

- Food Harvest
  - “Smart Green Growth”

- Food Wise
  - “Environmental protection and economic competitiveness are equal and complementary”

- Water quality: Static – at best
- greenhouse gases: Increasing
- Biodiversity: Continuing to Decline
Facing Reality

- Irish agriculture will not be allowed to continue to grow unless positive environmental outcomes are achieved.

Danish Agriculture

Problems with Agreeing Nitrates action plan

The Dutch dairy sector has come up with a significant package of measures aimed at substantially reducing the production of phosphate by the dairy farming sector in the year 2017.

In order to meet their phosphate limits in 2017 and to safeguard the renewal of phosphate derogations next year, the Dutch dairy herd will need to be culled by over 170,000 head.
Pressure Points

- GHG emissions
  - -20% by 2020
  - -30% by 2030
- Ammonia emissions
  - -5% by 2030
- Water Quality
  - All water bodies at good status by 2027
- Halting Biodiversity Losses

Not Soft Targets

- Financial Penalties
- Loss of Derogation
- Increased regulation
- Other potential restrictions
Options for the Industry – Regulatory Approach

- EU Regulates
- Consult
- Transpose into Irish regulation
- Implement
- Inspect and Penalise
- Report outcomes and suggest change

Will Fail
Why a new approach is needed

- Confrontational
  - Buy in poor

- 1 Size fits all
  - Too much cost with no benefit

- Much of what needs to be done cannot be legislated for
  - Limits scope to small proportion of problem
  - Becomes even more draconian to achieve desired outcomes

- Expensive

- Part of solution – but not the whole solution
The Toolset

➢ For Best results - Use the *right tool* for the job

➢ if the only tool you have is a hammer, to treat *everything* as if it were a *nail*
The Toolset

Environmental Law

Agri–environment Schemes

Research

Knowledge Transfer

Industry

Farmers
Example 1- Losses of Nutrient from Land to Water

- Initial Approach – Nitrates Regulation & AES
  - Limit Fertiliser based on requirement
  - Don’t spread when not being used – Closed period
  - Stay back from watercourses
  - Learn More about the issue – Agricultural Catchment Programme and other research

- We have learned that we need to look at a number of factors
  - Source → Mobilisation → Pathway
  - Risk is very different in different places
  - Risk different for different nutrients
  - Resolving the problem will require new approach
  - Targeted Approach

- Different Actions required for different farms –
- Lot of action from some – little for others
Example 1- Losses of Nutrient from Land to Water

- **Regulatory Approach**
  - Fencing and buffer zones from all watercourses
  - Buffer zones for the use of fertiliser
  - Further restrictions on derogation farmers

- **Problem**
  - 1 size fits all – Regulation will apply to 90% where not a problem
  - Very Costly and Confrontational
  - Low benefit relative to cost
  - Cost on Farmer – Cannot support implementation of Law of Land

- **Need to come up with a better way – But it gets tricky**
**Combined Action on Losses of Nutrient from Land to Water**

<table>
<thead>
<tr>
<th>Range of Targeted actions – Based on Location</th>
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</thead>
<tbody>
<tr>
<td>Compensation for farmers for Targeted Actions</td>
</tr>
</tbody>
</table>

| Identification of cost effective measures |
| Identification of where measures should be targeted |

| Support and encourage farmers to participate |
| Assist in implementation |
| Educate to achieve full impact |

| Encourage participation as part of Sustainability Initiative |

| Farm Organisations – Support Targeted AES |
| Embrace action as part of Sustainable Irish Agriculture |
Example 2 – Replacement of CAN with Treated Urea

- **Why**
  - 50% replacement – 5% reduction in Agricultural GHGs (Full Replacement – 10%)
  - Urea – Problem with Ammonia emissions
  - No cost to agriculture – Win - Win
  - Too big GHG saving to ignore

- **Consensus**
  - Knowledge Transfer approach
# Combined Action on use of Treated Urea

<table>
<thead>
<tr>
<th><strong>Timeline for usage as proportion of N</strong></th>
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<tbody>
<tr>
<td><strong>No role as cost saving involved?</strong></td>
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<tr>
<td><strong>Assess Risk of finding in food</strong></td>
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<tr>
<td><strong>Continue to assess best practice for achieving best agronomic and environmental outcomes</strong></td>
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<tr>
<td><strong>Improve nutrient management planning to incorporate</strong></td>
</tr>
<tr>
<td><strong>Demonstrate best practice and effectiveness</strong></td>
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<tr>
<td><strong>Support through individual and group activities</strong></td>
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<tr>
<td><strong>Fertiliser Industry – Ensure availability of quality product</strong></td>
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<tr>
<td><strong>Supply Industry – Promote &amp; Stock</strong></td>
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<tr>
<td><strong>Dairy Industry – Integrate and pay for sustainable product</strong></td>
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<tr>
<td><strong>Farm Organisations – Support</strong></td>
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<tr>
<td><strong>Embrace as a positive change for Irish agriculture</strong></td>
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</table>
Example 3 – Improved Upland Habitat Management

Why

- Protection of upland habitats require balanced grazing
- Too High Stocking → Damage → Destroyed Habitat & Erosion
- Too Low Stocking → Overgrown → Destroyed Habitat
- Sustainable Management required
## Combined Action on Upland Management

<table>
<thead>
<tr>
<th>Provision for Commonage Management Plans?</th>
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</thead>
<tbody>
<tr>
<td>Financial Support for farmers for effective management</td>
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<tr>
<td>Setting out effective management plans</td>
</tr>
<tr>
<td>Ensure viability of Hill farming systems</td>
</tr>
<tr>
<td>Best Management (in the context of …)</td>
</tr>
<tr>
<td>Socio-economic issues and challenges</td>
</tr>
<tr>
<td>Assist farmers in implementing best practice</td>
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<tr>
<td>Development of Group Approach</td>
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<tr>
<td>On-going education support</td>
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<tr>
<td>Increasing returns from a differentiated product</td>
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<tr>
<td>Support farmers under pressure</td>
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<tr>
<td>Engage in and support Collaborative approach</td>
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Each potential action required has a mix of actions

- **Water**
  - Eliminating Point Source Losses from farmyards
  - Pesticides in water
  - Siltation of Riverbeds
  - Additional Protection of Drinking water sources
  - Etc

- **GHG and Ammonia**
  - N efficiency
  - Emissions from slurry storage & Spreading
  - Extended Grazing
  - Increased sequestration into grassland, forestry and hedgerow/trees
  - Etc.
We have come a long way

- Regulation
- Growing realisation that regulation alone won't work
  - Shift of emphasis to KT
  - But KT won't work on its own
  - Needs to be resourced
- EIP – Shift to locally led
- Industry Initiatives
  - SDAS
  - IDIA Dairy Sustainability
- GLAS – Start in targeting
- EPA & LA – support for knowledge based approach
- IFA Smart Farming
But to reach the targets - we must do better

- Consensus across industries – work together
- Targets set → Targets Met
- Make the hard decisions
- Focus resources on where they are needed
  - 225 M Spent annually
  - Costs and benefits need to be better quantified
- Innovative solutions
- Farmer Leadership
  - Most to gain / Most to lose
- Continue to support achievements in demonstrating sustainability
Conclusion

- Sustainable Intensification – Not an option
  - Delivering intensification
  - Sustainable ??

- A lot done – but not enough

- Existing approach will not work

- Collaborative focus on problems and embedding solutions

- In the last 20 years the Irish Agricultural industry has been transformed

- We need Sustainability Intensification to continue that transformation