Carbon lock-in: redux

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The case of Ireland

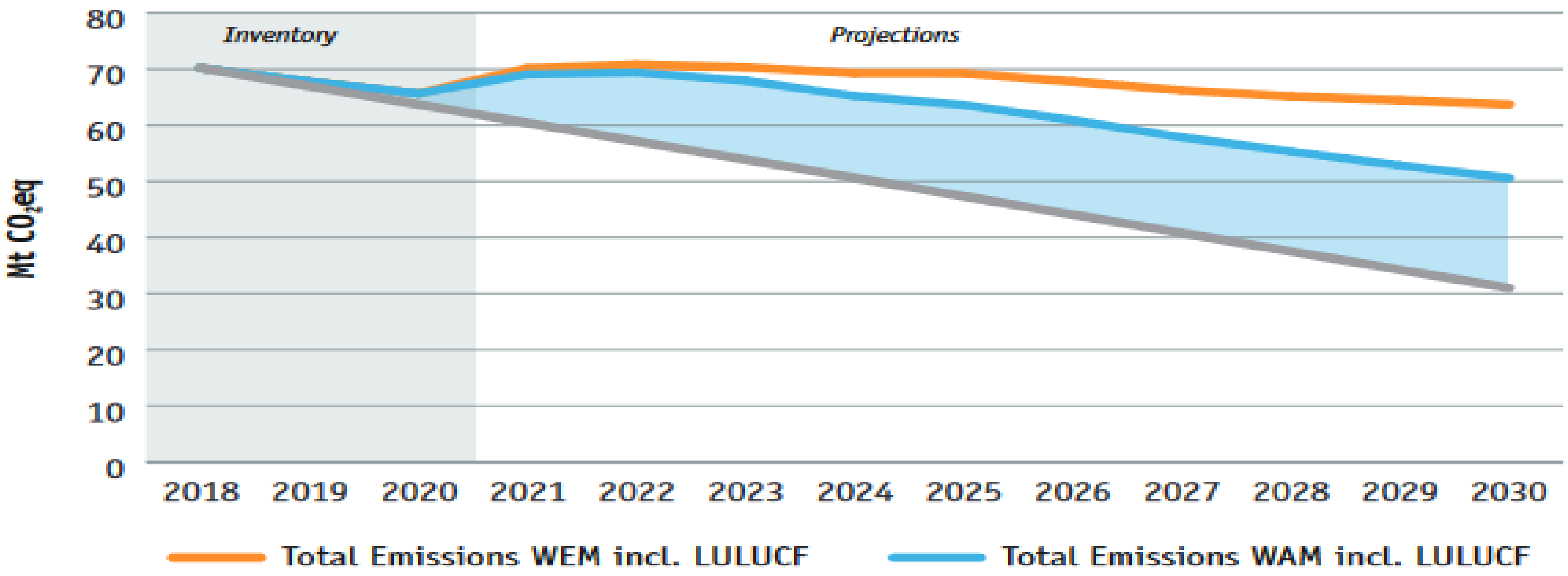
- Well known that Ireland is a poor performer in emissions terms:
  - 3rd worst in EU27 in per capita terms total GHG
  - Persistant low performer on CCPI (46th 2022 index).

- There have been some moves to begin to rectify this situation - the Climate Action and Low Carbon Development (Amendment) Act 2021.
  - Commits government to 5 year carbon budgets.
  - Target of 51% reduction in emissions over 2018 levels by 2030.
  - Evidence of widespread acknowledgement and concern about climate change issues among the Irish public (EPA 2021).

- Have we turned a corner?

Irish emissions projections (EPA 2022)

Figure 1: Total Greenhouse Gas Emissions (Mt CO_2 eq) including LuLuCF under the *With Existing Measures* and *With Additional Measures* scenarios



What is going on?

- In many ways, Ireland is not unique in this respect.

- As the IPCC and others report, while many polities recognise the threat of climate change, global plans remain insufficient to avoid the worst effects of climate change:
  - 19-23 billion tonne (CO_2 equivalent) climate ambition gap in 2030 (Climate action Tracker 2022).

- Suggestive of widespread, general drivers:
  - Generalised social drivers of emissions like economic growth, inequality
  - Carbon lock-in

Carbon lock-in

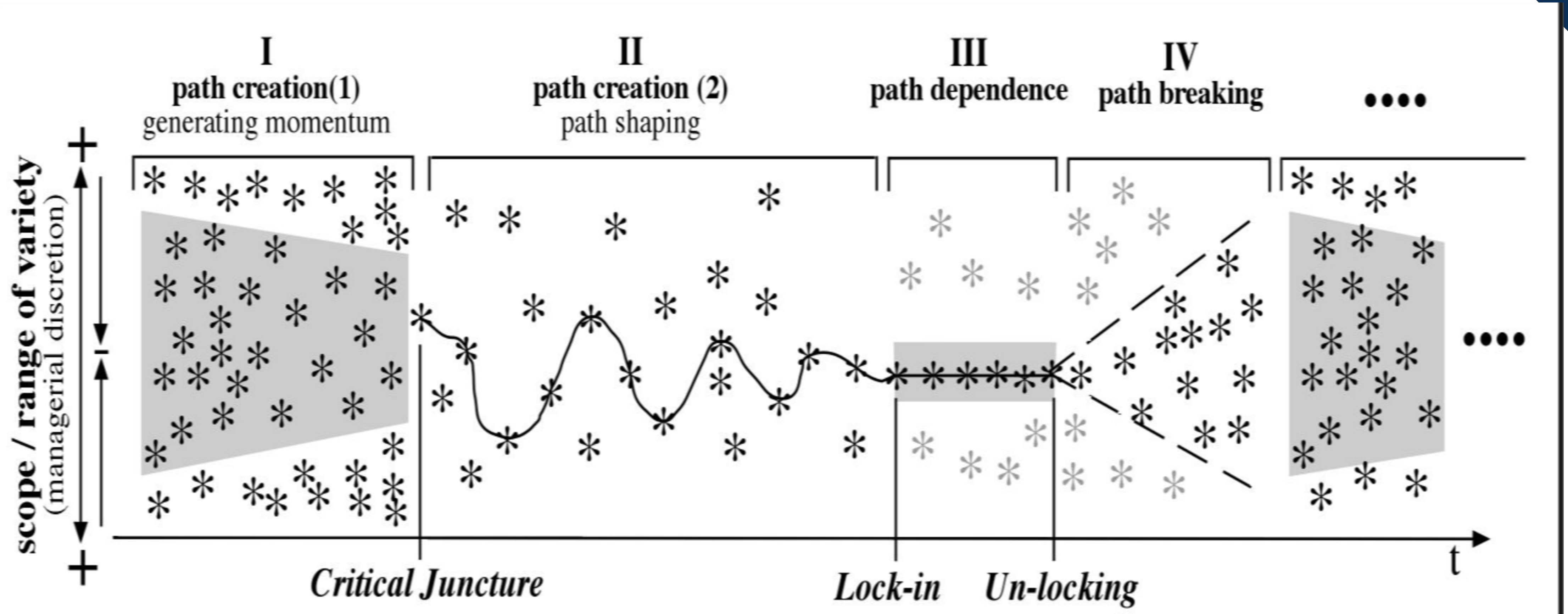
- An inertia brought about by interactions between existing technologies, institutions and behaviours limit the pace of change regarding emissions (Seto et al. 2016).

- This is seen as a specific case of path dependency.

- Perhaps a form of carbon lock-in explains Ireland's laggard status, as well as the global inability to reduce emissions.

- Focusing on the institutional element of this process:
  - Institutions are designed to lock-in outcomes.
  - Institutions are the subject of political contest.
  - Political actors seek to maintain the status quo, or shift to a new status quo they find more favourable.

Path dependency and institutions



Source: Sydow, J., Schreyögg, G., & Koch, J. (2005)

Institutional change

- Mahoney (2000) points out that different theories of institutional continuity/reproduction have implications for change:
  - Functionalist explanation – likely requires some external shock.
  - Utilitarian explanation– competition and learning by actors.
  - Elite explanations – challenge to existing power relations.
  - Legitimation – alternative frames
- Endogenous vs exogenous change explanations:
  - Punctuated equilibrium in which critical periods disrupt longer periods of stasis.
  - Mahoney and Thelen (2012) argue this can obscure continuous endogenous change, contests over the interpretation/enforcement of rules. These gradual changes can lead to transformational shifts.

Institutional configurations

- Path dependency in institutions also implies co-evolution within general institutional frameworks.

- Comparative political economy may offer resources here.

- A comparative approach may reveal what is particular about a given case of carbon lock-in:
  - Different combinations of factors may explain lock-in.
  - Certain configurations may be more or less likely to result in carbon lock-in.
  - Possible question of degrees of lock-in.

Varieties of capitalism and ecology

- VoC literature (Hall and Solskice 2001):
  - Liberal market economies – UK,USA, Ireland, Australia
  - Coordinated market economy – Austria, Denmark, Sweden, Germany

- A major difference between the two types concerns innovation systems:
  - Conflictual, path breaking innovation pattern (LME)
  - Continuous, incremental and path dependent cooperative process between firms, creditors and research institutions (CME)

- Former tend to show comparative advantage in high tech industries and services, while latter in “medium tech” industries (Witt and Jackson 2016).

Varieties of capitalism and ecology

- Mikler and Harrison (2012) argue that CME configurations are more conducive to the sorts of technological advance demanded by carbon mitigation efforts.
  - LME firms tend to be dissuaded from investment in incremental R&D until developed markets exist.
  - State industry relations in CMEs more conducive to the broader diffusion of renewable tech.
  - Contend this is more in line with carbon mitigation, which will primarily be about take up of existing alternatives in established industries.

- Scruggs (2003) finds CMEs outperform LMEs on environmental metrics:
  - Adjusted for income, political mobilisation around environmental issues.
  - 1970-1995

Varieties of capitalism and ecology

- Ćetković and Buzogány (2016) argue that Germany's CME capitalism gave it a competitive advantage in renewable industrial sectors.

- Feldman (2014) argues that firm governance in CMEs favours environmental investment:
  - Stakeholder governance (rather than shareholder value governance) offers more scope for pursuit of longer term goals.
  - Less risk of takeover, less impetus to cut or sell off "unprofitable" divisions like R&D.

- Feldman (2014) also argues that these features are tied to international financial developments:
  - Differentiation in capitalist economies enabled by systems such as Bretton woods.
  - Structural convergence in financial markets may erode CME advantages.

Other PE frameworks

- VoC sometimes criticised as insufficiently attentive to institutional diversity, and they lack of theory if institutional change (Streeck 2018).

- Other comparative political economy frameworks may be useful:
  - Business systems
  - Regulationalist theories

- New frameworks such as Cahen-Fourot (2020) with relationship of economy to nature included:
  - Social relation to environment included as a factor in PCA alongside factors like monetary regime, wage-labour nexus, forms of competition, Forms of the state and Insertion into the international regime.

Returning to lock-in

- Notions of lock-in may draw attention to processes of change/continuity which aren't as apparent in PE typologies.
  - Could offer some explanation as to how lock-in occurred.
  - An understanding of potential path-breaking processes.

- PE could offer a general lock-in theory specifics, an attentiveness to country/regional/sectoral specifics.

- Perhaps some lessons:
  - The efficacy of policy moves may depend on context.
  - If we understand the environmental implications of certain institutional designs, we could be better equipped to align ecological and social goals.

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