

Invest in Fife

Property Event

9th November 2018

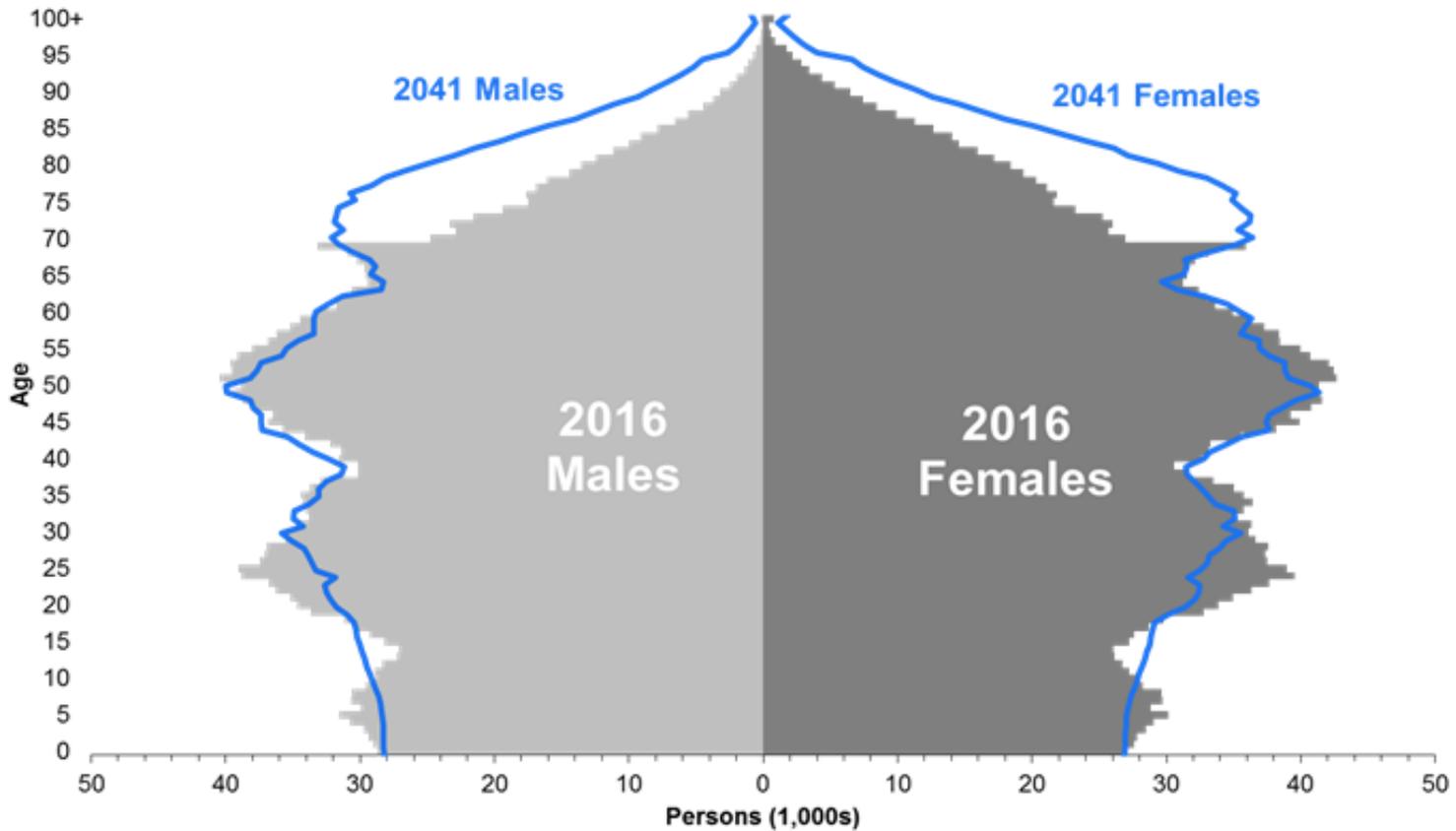
Innovation & Future Proofing Designs

Strategic Context

- Scotland's Economic Strategy – focus on growth driven by
 - Investment
 - Innovation
 - Internationalisation
 - Inclusion
- Scottish Enterprise Role
 - Raise awareness of challenges
 - Promote understanding of solutions
 - Support early adopters to stimulate best practice behaviours
 - Leave it to business to embed market momentum.

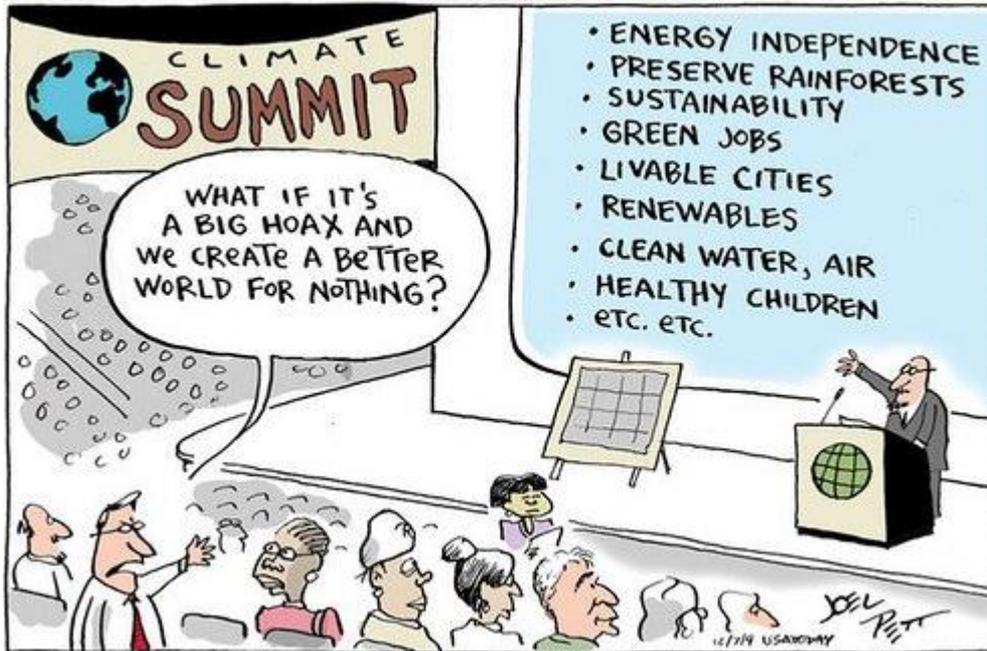
Demographic Challenge

Estimated and projected age structure of the Scottish population, mid-2016 and mid-2041



Source: National Population Projections (2016-based), National Records of Scotland

Environmental challenge

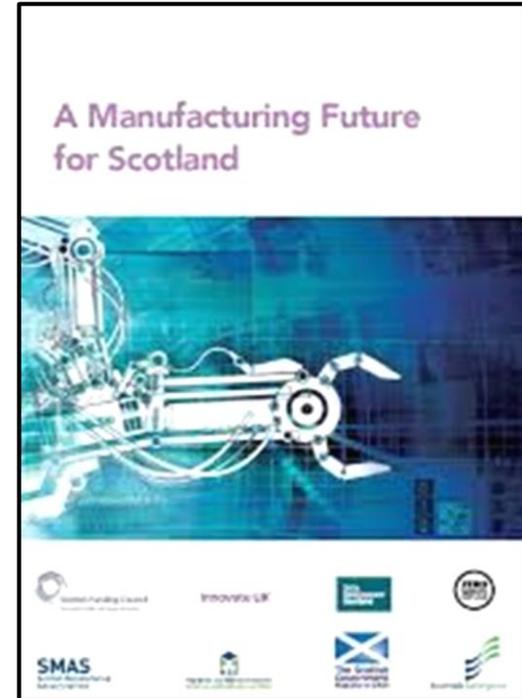


IPCC Report 2018 – net zero carbon economy by mid century is only option.

Built environment responsible for 50% of energy use.

Industry challenge

- Industry 4.0
 - Digital connectivity
 - Big Data & analytics
 - Automation
 - Artificial Intelligence
 - Additive Manufacturing
 - Product Customisation
- Services are not immune
 - Online self service
 - Digital assistants.



The nature of work is changing.

Built Environment

The Innovation Challenge:

- Public sector build history for industrial premises
- Obsolescence levels & limited market activity
- Private Sector finance – risk aversion.

The Goals:

- UK Construction Industry vision 2025:
 - 33% reduction in capital and whole life costs
 - 50% faster delivery from concept to build completion
 - 50% reduction in GHG footprint
 - Rebalance domestic and imported materials mix.
- Private sector led development market.

Industrial Premises Design Commission

The Brief:

- All designs are fully compliant with all Health & Safety and Environmental Protection regulations and Building Standards.
- Consider “beyond current building standards” certification such as BREEAM or LEED methodologies and standards.
- Design out waste, at all stages of the project & building lifecycles.
- Design in layers, such that shorter life components can be easily repaired or replaced.
- Design for resilience and durability, including off grid solutions, and giving full consideration to the cost trade off between quality and life expectancy of components.
- Design for modern methods of construction (off site fabrication of 1D, 2D and 3D components).
- Design for adaptability in the layout and uses of the building.
- Design for deconstruction, including recovery and re-use or recycling of resources at all stages in the lifecycle of the building.
- Design with and for digital-twin BIM records, including provision for augmented and virtual reality simulations of in-use maintenance processes, and / or layout alterations.
- Consideration of health, safety, accessibility, equality and general wellbeing issues for human operatives, including visitors, must be fully reflected.

Industrial Premises Design Commission

The Outputs:

- Modular and scalable design templates with a portfolio of recommended characterisation options to suit city core, suburban and edge of settlement site locations.
- Evidence how green / blue infrastructure options should be used to minimise and offset adverse environmental impacts, including surface flooding and air, ground water, soil, noise or light pollution.
- Production space layouts should allow for extensive use of automated tools and processes (by occupiers) and optimum segregation of human operatives from automated processes.
- Work management, process control and records systems, used by occupiers, should anticipate use of advanced ICT with state of the art internal and external network connectivity.
- Business case models detailing how the approach achieves lower capex, lower whole life costs and financial investment viability.

What's Next

- Design templates complete by end Q1 2019.
- Construction Scotland Innovation Centre will promote the design concepts to the construction supply chain.
- SE, HIE, ZWS will promote the design concepts to their customer bases to stimulate market demand.
- Fife Council is committed to leading the way with early demonstrator units to prove the models.

Construction Sector Outcomes

Innovation

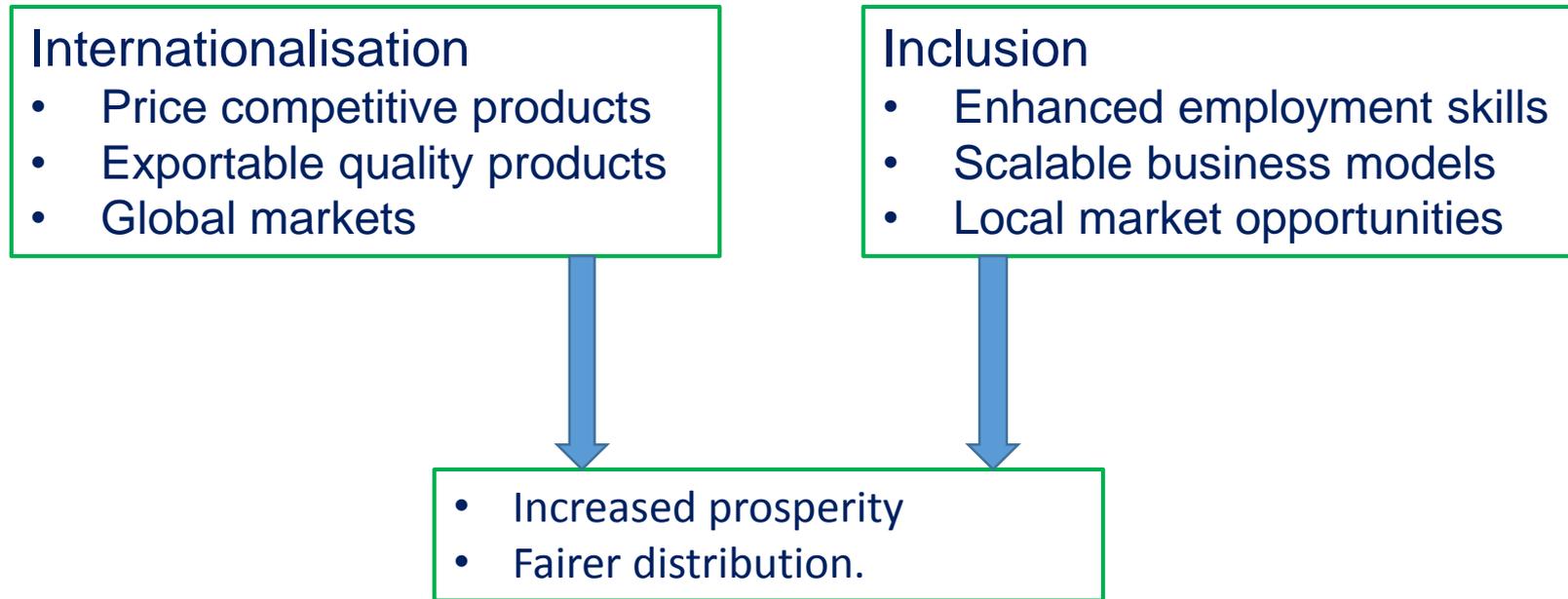
- Better products
- Better processes
- Better materials
- New business models

Investment

- Better buildings
- Better equipment
- Better connectivity
- Better logistics

- More efficient resource use
- Increased productivity
- Economic growth

Construction Sector Outcomes



Overall – aiming for a Construction Sector and Manufacturing Economy fit for the 21st Century.

Innovate and Invest
in Fife

Thank You.