



# Review of Large System Change and Green Growth Strategies

*A Sustainable Built Environment National Research Centre (SBEnc) Literature Review*

University Research Team

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## 1. Considering “Green Growth”

### 1.1. Responding to future imperatives for development

The 2013 report by the OECD titled ‘Putting Green Growth at the Heart of Development’ asked the question: ‘*What type of growth can generate both wealth and well-being for all citizens of current and future generations, while at the same time respecting the environment?*’<sup>1</sup> Answering this question will be crucial if we are to sustain the conditions on our planet that we take for granted in the 21<sup>st</sup> century. Advances towards this type of growth have been made with the OECD estimating that in 2011 the global trade in ‘environmental goods’ was in the order of US\$880 billion in 2011.<sup>2</sup>

The defining question of the 21<sup>st</sup> century will be whether we can deliver economic growth that significantly reduces a range of environmental impacts, ends poverty, and transitions our economies away from fossil fuel use. There is much investigation and debate internationally as to the answer to this question with the term ‘*Green Growth*’ being created to encapsulate how global development can be achieved with strong environmental outcomes. At its heart green growth is focused on ‘*...encouraging economic activity to take place where it is of best advantage to society over the long-term.*’<sup>3</sup>

The OECD considers green growth to be an ‘*approach to economic growth [that] puts human well-being at the centre of development, while ensuring that natural assets continue to provide the resources and environmental services to support sustainable development.*’<sup>4</sup> Much of the focus on green growth is targeted at developing countries as they are most vulnerable to environmental impacts and often rely on natural resources. The OECD points out that ‘*the pursuit of green growth by developing countries is vital for their future and can lead to large economic and social benefits over time, including for the poorest of citizens.*’<sup>5</sup>

However much can be learned from this valuable growing field of understanding that can inform developed countries, some of which is outlined in this section. It is understood that green growth is a response to a future imperative and that despite the potential for greater short term gains the longer term impacts are becoming apparent. The OECD cautions that ‘*Development that is not based on green growth may lead to prosperity, but only in the short term, and will soon be undermined by insecurity and vulnerability.*’<sup>6</sup>

The green growth agenda relies heavily on the valuing of natural capital in economic decision making, especially important in developing countries where the wealth generated from natural capital can be as much as 25% of per capita wealth, compared to 2% in OECD countries.<sup>7</sup> The OECD suggests that green growth ‘*integrates environmental considerations and the value of natural capital into economic decision making and development planning.*’<sup>8</sup>

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<sup>1</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, Forward.

<sup>2</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p136.

<sup>3</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, Box 1.4.

<sup>4</sup> OECD (2011), Towards Green Growth, OECD, Paris

<sup>5</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing.

<sup>6</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, Forward.

<sup>7</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p23.

<sup>8</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p13.

*'Because the contribution of natural assets to production or human well-being is typically not fully valued market incentives are insufficient to direct investment to sustaining natural assets, this suggest a role for public sector investment'. OECD (2013)<sup>9</sup>*

However as this area of economics is in its early stages of development there can be diminishing returns on such a focus as identifying numerical values to be applied to ecosystem services is highly complex and in reality may be unachievable. This is not to say that the economics of natural resources and ecosystem services should not be considered, but rather to caution that it needs to be complimented by other considerations.

## **1.2. Key areas of Green Growth strategies**

According to the OECD, green growth demands holistic strategies that include:<sup>10</sup>

1. Equitable and efficient tax systems (including green taxes),
2. Phase out of environmentally harmful subsidies (including reconsideration of fossil fuel subsidies),
3. Free and open trade including environmental products and services (and note that eco-labelling may in fact create non-tariff trade barriers),
4. Policies that incentivize investment in green technologies and practices (including forest management and organic agriculture),
5. Industrial and other sector policies that promote innovation,
6. Risk assessment and management,
7. Labour market and skills policies that maximize the benefits for workers to help to ensure that adjustment costs are equitably shared, and
8. A host of flanking and complementary policies to explicitly address poverty reduction and social equity issues.

Each of these strategies will have economy wide implications and given the imperative to respond to climate change in the coming decades such changes need to be fast tracked.

*"The challenge is to waste no time in embarking on this transformative journey. An urgent goal will be to manage the difficult trade-offs between short-term demands and longer-term impact, and the need to make choices that will deliver a more stable and sustainable future while also securing immediate gains."* Angel Gurría, OECD Secretary-General<sup>11</sup>

Hence rather than piecemeal approaches a systemic economy wide approach is needed with the OECD pointing out that green growth *'... must support the structural transformation of the economy to achieve higher productivity and more value-added products.'*<sup>12</sup> This calls for what could be referred to as 'green structural transformation' strategies such as those associated with

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<sup>9</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p22.

<sup>10</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p18-19.

<sup>11</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing.

<sup>12</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p25.

green growth. A key part of such an agenda will be strategies related to inducing and accelerating a transition towards greater uptake of low carbon technologies and processes.

### **1.3. Green Growth questions for the Built Environment Sector**

#### **How do subsidies impact the greenhouse gas emissions?**

The potential to reduce and even eliminated fossil fuel related subsidies has been well explored with the OECD estimating that the removal of such subsidies would lead to a reduction in greenhouse gas emissions of 6% globally by 2050.<sup>13</sup> Economic investigations by the OECD suggest that, *'in most cases countries removing their consumer subsidies on fossil fuels would realize a net economic benefit, measured both in terms of GDP and real income effects'*.<sup>14</sup> Considering strategies to reduce the greenhouse gas emissions in the built environment sector three key questions are raised:

- What specific subsidy needs to be reconsidered?
- How are the costs and benefits of the subsidy distributed?<sup>15</sup>
- How can short-term impacts from subsidy changes be mitigated?

#### **How can public procurement contribute to reductions in greenhouse gas emissions?**

According to the OECD, *'Sustainable public procurement can shape consumption and production trends, generate new domestic markets for green technology and business, and provide examples of good practice for business and consumers'*.<sup>16</sup> There has been much investigation of the use of public procurement to drive environmental outcomes, particularly the reduction of greenhouse gas emissions. A study by the International Institute for Sustainable Development suggests that key questions raised in this area include:

- Can the long-term benefits of 'green' procurement be demonstrated?
- Can high-impact goods and services be selected rather than taking a blanket approach?
- How can procurer provide suppliers with advanced information on future needs?

Further the OECD points out that *'Demand-side policies, such as public procurement and campaigns to educate consumers, can also help foster markets for new products and services, including green goods and services'*.<sup>17</sup> This then raises the question of:

- Can consumer behavior be changed to align to reductions in greenhouse gas emissions?
- If, so then what are effective mechanisms that would be suitable for the built environment sector in Australia?

#### **How knowledge and skills development policies affect greenhouse gas emissions?**

According to the OECD, *'Economies moving towards production based on sustainable use of natural assets can maximise job creation if they can anticipate structural changes and provide*

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<sup>13</sup> OECD (2012) OECD Economic Surveys: Indonesia 2012, OECD Publishing

<sup>14</sup> OECD (2012) OECD Environmental Outlook to 2050: The Consequences of Inaction, OECD Publishing, Paris.

<sup>15</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p69.

<sup>16</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, p80.

<sup>17</sup> OECD (2013) Putting Green Growth at the Heart of Development, OECD Green Growth Studies, OECD Publishing, 137.

*the support needed to shift workers to new occupancies.*<sup>18</sup> As the built environment sector around the world takes action to reduce greenhouse gas emissions and shift from fossil based fuels there will be a requirement for substantial knowledge and skills development. Desha and Hargroves (2014) refer to the opening decades of the 21st Century as ‘*an era of major transition*’, and call for ‘*greater effort to be made to investigate, document, and support the design of curriculum renewal strategies aimed at sustainable development*’.<sup>19</sup> The authors caution that ‘*it is important in this process that industry is included to provide a quality assurance check on proposed priority graduate attributes*’.

Following a decade of research and collaboration with many of the world’s leading environmental and sustainability educators Desha and Hargroves call for what they refer to as a ‘dual-track approach’ to knowledge and skills development. Such an approach involves a focus on both postgraduate education and professional development in areas to achieve the ‘*short term peaking of greenhouse gas emissions in the current decade*’, along with school and undergraduate education on the ‘*gradual tailing of emissions over the coming two to three decades*’ to reach preferred stabilization levels. This work suggests a number of questions to be raised to support the built environment sector in Australia to transition to low carbon operation:

- What topics should postgraduate and professional development training focus on?
- What topics should schools, vocational education and undergraduate programs focus on?
- How can education institutions be supported to deliver education for low carbon operation of the built environment sector?

#### **1.4. How can green growth inform a transition to low carbon operation?**

Given the compelling imperative to reduce greenhouse gas emissions the ideal response would be to make rapid shifts in policy and regulation to achieve a rapid reduction in fossil fuel use and a transition to low carbon operation in order to reduce the likelihood of dangerous climate change. However despite this understanding such efforts are in the early stages internationally and are yet to grow to levels that will impact global greenhouse gas emissions. Hence as the countries of the world consider their response to the challenge of climate change there is much investigation that can be carried out that will both inform such efforts in the future (when they are taken seriously) and also provide benefits to businesses and organisations across all sectors.

In light of this, and considering the recommendations to achieve green growth, the following research agenda is recommended to inform a transition to low carbon operation in the built environment sector:

- Identify structures that affect the development of the built environment sector in Australia and assess the current and anticipated alignment to low carbon operation.
- Identify trends that stand to affect the built environment sector in Australia and investigate those related to low carbon operation,
- Identify low carbon opportunities for the Australian built environment sector.

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<sup>18</sup> ILO (2011) Skills for Green Jobs: A Global View, International Labor Organisation, Geneva.

<sup>19</sup> Desha, C., and Hargroves, K (2014) A Peaking and Tailing Approach to Education and Curriculum Renewal for Sustainable Development, *Sustainability* 2014, 6(7):4181-4199, Special Issue "Education and Skills for the Green Economy".

- Identify enabling factors that will support low carbon operation in the Australian built environment sector.

A particular focus is recommended in two areas:

- 1) Target fossil fuel intensive operations: Identify options for reducing greenhouse gas emissions in the most fossil fuel intensive areas of the sector that are well informed and have strong economic cases for change and focus there to build momentum while acting to prepare the more complex and expensive areas of the sector for future change. This may involve:
  - Identifying key areas of the sector that are contributing to greenhouse gas emissions and identify options to cost-effectively reduce emissions.
  - Investigating the economics of such options, such as through a marginal abatement cost curve investigation for the built environment sector.
  - Identifying multiple benefits through combinations of options, such as a focus on a shift to low carbon cement that then delivers embodied energy savings to buildings.
- 2) Enhance innovation that leads to reduced greenhouse gas emissions: Identify leading innovations that are delivering cost-effective or profitable reductions in greenhouse gas emissions and investigate ways to enhance the uptake of such options. This may involve:
  - 1) Identifying innovations in the sector that are leading to meaningful reductions in greenhouse gas emissions.
  - 2) Identifying common barriers to greater uptake across the built environment sector.
- 3) Identify methods to reduce such barriers and foster innovation in a way that enhances sector wide capacity.