



**Life cycle assessment (LCA) in policies,
with a focus on sustainable/green public procurement
Report**

***Research assignment by UN Environment
(Life Cycle Initiative)***



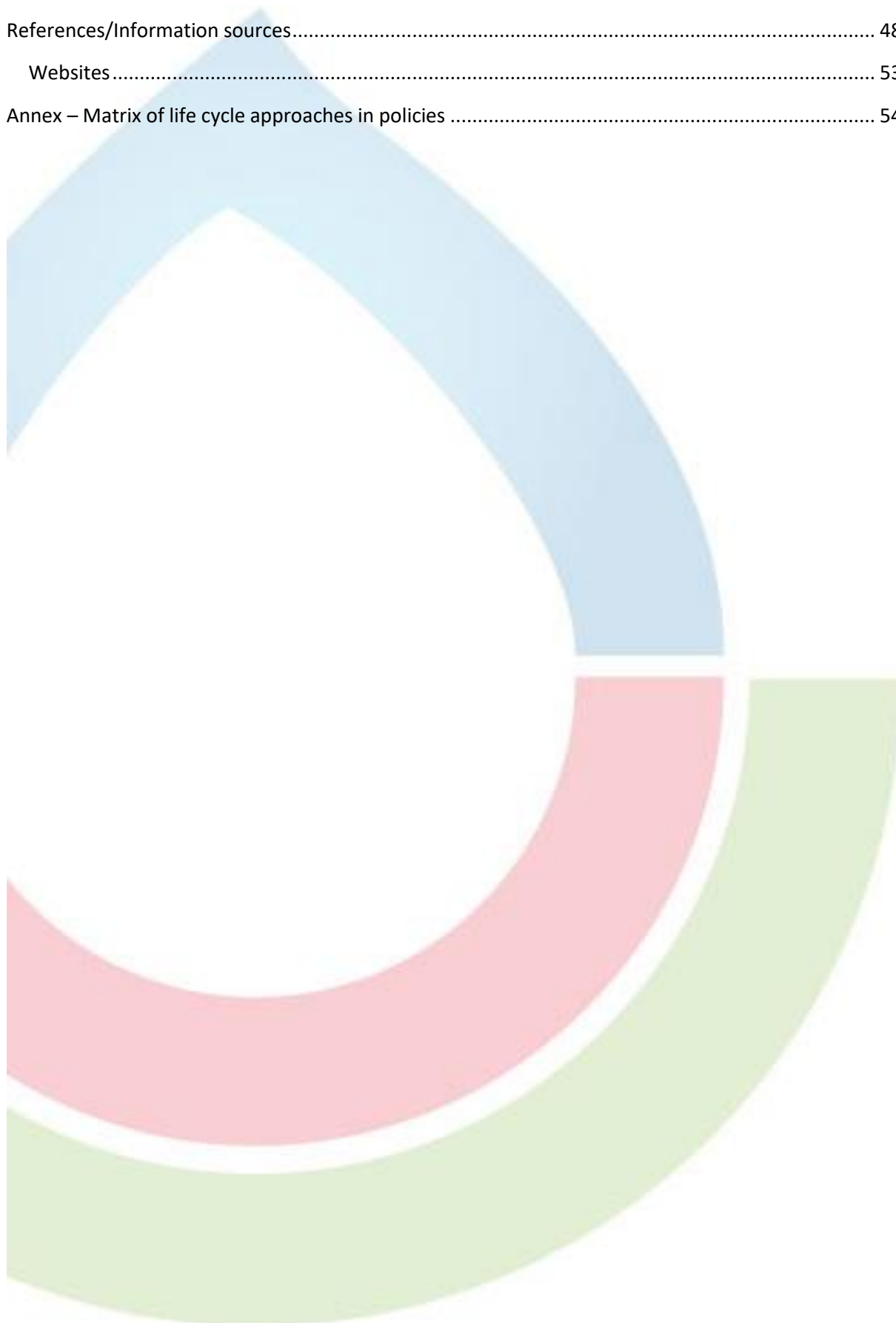
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Content

| | | |
|--------|--|----|
| 1. | Background..... | 5 |
| 2. | Analysis of life cycle approaches in policies..... | 6 |
| 2.0. | Methodological approach | 6 |
| 2.0.1. | Defining the terms..... | 6 |
| 2.0.2. | Data/information sources | 10 |
| 2.0.3. | Selection of best practices..... | 11 |
| 2.1. | Best practices all over the world | 12 |
| 2.1.1. | Africa..... | 13 |
| | Sustainable/Green Public Procurement policies in Africa..... | 13 |
| 2.1.2. | Asia | 16 |
| | Sustainable/Green Public Procurement policies in Asia | 17 |
| 2.1.3. | Europe | 21 |
| | Sustainable/Green Public Procurement policies in Europe | 22 |
| 2.1.4. | Latin America and the Caribbean | 26 |
| | Sustainable/Green Public Procurement policies in Latin America..... | 27 |
| 2.1.5. | Northern America..... | 30 |
| | Sustainable/Green Public Procurement policies in Northern America..... | 31 |
| 2.1.6. | Oceania..... | 33 |
| | Sustainable/Green Public Procurement policies in Oceania | 33 |
| 2.0. | Categorizing LCA in policies..... | 35 |
| 2.0.1. | Life cycle approaches used in policy..... | 35 |
| 2.0.2. | Policy fields and approaches | 36 |
| 2.0.3. | Policy framing processes and actors | 37 |
| 2.0.4. | Sustainable/Green Public Procurement policies..... | 38 |
| 2.1. | Potential of public authorities in specific countries | 38 |
| | Sustainable/Green Public Procurement policies | 39 |
| | Identification of specific countries | 41 |
| 3. | The policy cycle: enabling the environment | 42 |
| 3.1. | Strengths, weaknesses, opportunities and threats of S/GPP..... | 42 |
| 3.2. | Further analysis leading to define enabling conditions | 44 |
| | Sustainable/Green Public Procurement policies..... | 45 |

| | |
|---|----|
| 4. Conclusions and recommendations | 46 |
| References/Information sources..... | 48 |
| Websites | 53 |
| Annex – Matrix of life cycle approaches in policies | 54 |



1. Background

As described in the Terms of Reference of this research assignment: *“Life Cycle Thinking (LCT) and life cycle knowledge are essential to achieving the 2030 Development Agenda for Sustainable Development, and Sustainable Consumption and Production (SCP) patterns, because they facilitate the identification and prioritization of environmental policies and practices to deliver SCP, while also highlighting potential trade-offs between life cycle stages, geographical areas, or environmental impacts.”* Indeed, ‘Transforming our world: the 2030 Agenda for Sustainable Development’, including in the targets of the Sustainable Development Goals (United Nations, 2015), does have several references to the 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP). Furthermore, different opportunities to use life cycle approaches can be identified.¹ Even though LCT is linked to many of the SDG proposed targets, SDG 11 (Sustainable Cities and Communities) and SDG 12 (Sustainable Consumption and Production) can be highlighted.² Therefore it has been stated: *“The SDGs (...) provide a renewed confirmation of the importance of Life Cycle Thinking to achieve sustainable development and thus of the mission of the Life Cycle Initiative.”*³

Aim of the research assignment

The aim of the work is to carry out a desk research assignment on the status of usage of Life Cycle Assessment and other related tools in policies worldwide. The research shall identify all policies relevant to LCA and have a special focus on sustainable/green procurement policies.

Specific duties related to this position include:

1. Compile a report on the status of life cycle approaches in policies worldwide. The report should in particular:
 - a. Identify best policy practices for the usage of life cycle approaches in policies, in particular sustainable/green procurement policies, including contact persons in national government or organization;
 - b. Describe and categorize life cycle approaches used;
 - c. Describe and categorize policy fields and approaches uses, including policy objectives pursued and outcomes achieved (e.g. economic savings, greenhouse gas emissions savings, etc.);
 - d. Describe the policy framing process and actors involved and identify enabling conditions as well as obstacles to the policy framing process;
 - e. Identify specific countries where such policies could be developed and advanced, based on existing work of the 10YFP Sustainable Public Procurement program and the Partnership for Action on Green Economy (PAGE);

¹ See <https://sustainabledevelopment.un.org/post2015/transformingourworld>.

² Note that at one place of the document A/70/L.1 there is an explicit reference to ‘life cycle thinking/approaches’. See SDG 12.6: *“By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.”*

³ See <https://www.lifecycleinitiative.org/paris-agreement-sustainable-development-goals-life-cycle-thinking/>.

- f. Identify and describe gaps with regard to the application of life cycle approaches in policies.
2. Participate in the meeting of the International Forum on LCA Cooperation to take place on 26-27 April 2018 in Brussels, Belgium, including the following tasks:
 - a. Present preliminary research results during the meeting;
 - b. Draw conclusions from the meeting and incorporate those into the report, based, where relevant, on interviews with meeting participants;
 - c. Provide substantive support to the meeting (identification of topics, potential speakers, and other items as required).
3. Prepare a slide presentation based on the report. The presentation will serve as a basis for a future e-learning module and should include the following elements:
 - a. Advantages of LCA based policies;
 - b. Overview of approaches and best practices / success stories, including policy objectives pursued and outcomes achieved;
 - c. Categories of life cycle approaches used and for which purpose;
 - d. Policy framing process and actors involved as well as enabling conditions and obstacles to the policy framing process.

This report is focusing on specific duty 1. *Compilation of a report on the status of life cycle approaches in policies worldwide*. It comes in four major parts inclusive of the background and the conclusion. The next section documents the life cycle approaches in policies worldwide, with a special focus on sustainable/green procurement policies. This is followed by a discussion on enabling conditions and obstacles as well as gaps to the application of LCA in policies in the third section, before the conclusion in the fourth section.

2. Analysis of life cycle approaches in policies

2.0. Methodological approach

As specified above the first duty of this research assignment is the compilation of a report in which best practices are identified, and life cycle approaches, policy fields and policy framing processes are described and identified. Next specific countries where such policies could be developed and advanced should be suggested.

Before highlighting the data/information sources and the way forward when selecting best practices some of the terms will be defined.

2.0.1. Defining the terms

'LCA in policies' is at the center of this research assignment. Considering that the reader of this report is quite familiar with the concept of 'life cycle assessment', within this context the related

terminology will not be explained.⁴ A similar approach can be taken for sustainable/green public procurement.⁵

* * * * *

When looking for ‘best practices’, it should be emphasized that “*There are two primary theories under which public policy is developed.*” Christina Seidel is citing Bras-Klapwijk (1998) in her article on ‘The application of life cycle assessment to public policy development’ (Seidel, 2016):

- “*the discourse theory stresses the need for an open and inclusive process in which stakeholders learn about each other’s perceptions on the issues, with a focus on communication and understanding;*
- *the rational theory emphasizes quantification and objectivity, with technical information being the key factor in the process.*”

One could argue that the *discourse theory* refers to terminology such as ‘approaches’, ‘thinking’ ... used in a LCA context, while the full application of LCA can be situated against the background of the *rational theory*. The question arises where ‘best practices’ can be placed: see 2.0.3. *Selection of best practices*.

* * * * *

In the publication ‘Sustainable Consumption and Production Global edition - A Handbook for Policymakers’ UNEP (2015a) distinguishes 4 main stages of the policy cycle: ‘problem framing’, ‘policy framing’, ‘policy implementation’, and ‘monitoring and evaluation’.⁶

For implementing policy there are different policy tools and instruments “*that governments have at their disposal to influence consumption and production patterns. It covers regulatory tools, economic tools, information-based/educational tools and voluntary agreements.*” (UNEP, 2015a).

The Joint Research Centre of the European Commission (2016) published a slightly different approach.⁷ In Table 1 below the EC-JRC approach is used to compare with the UNEP Handbook: ‘Related possible questions in the impact assessment’ and ‘Current and possible use of LCA’ are linked to the steps in the policy cycle.

⁴ If needed, more information on the LCA terminology can be found at <https://www.lifecycleinitiative.org/resources/life-cycle-terminology-2/>.

⁵ If needed, a glossary regarding S/GPP can be found e.g. in <http://wedocs.unep.org/handle/20.500.11822/20919>.

⁶ For more information on policy development can be found in Chapter 4 at <http://wedocs.unep.org/handle/20.500.11822/9660>.

⁷ For more information see <https://ec.europa.eu/jrc/en/publication/life-cycle-assessment-impact-assessment-policies>.

Table 1 – Steps in the policy cycle linked to the use of LCA, according to EC-JRC (2016), compared to UNEP (2015a)

| Steps in the policy cycle | Related possible questions in the impact assessment Description | Current and possible use of LCA |
|--|---|---|
| Policy anticipation and problem definition (i.e. problem framing) | What is the problem and why is it a problem? Identification of emerging issues | LCA studies in scientific and grey literature, reporting ‘warnings’ to be taken into account |
| Policy formulation (i.e. part of policy framing) | What are the various ways to achieve the objectives? Definition of policy options | Policy options may: be based on LCA results to identify specific ‘hot spots’ include some requirements based on LCA indicators use LCA for identifying key elements to be monitored over time and, possibly, be standardize use LCA results to set a target |
| Policy impact assessment (a) (i.e. part of policy framing) | What are their economic, social and environmental impacts and who will be affected? Comparison of options (a) | Supporting the comprehensive and systematic assessment of environmental aspects, and even beyond environmental aspects if including LCC and SLCA |

| | | |
|--|--|---|
| Policy impact assessment (b) (i.e. part of <i>policy implementation</i>) | How do the different options compare in terms of their benefits and costs? Comparison of options (b) | LCA may spot impacts related to a number of different impact categories and may help avoiding shifting burden from one stage in the life cycle to another Complementary to risk assessment |
| Policy implementation (i.e. another part of <i>policy implementation</i>) | Country level implementation Compliance checks | If LCA indicators are used as requirements of the policy option, LCA studies will be needed |
| Policy evaluation (i.e. <i>monitoring and evaluation</i>) | How will monitoring and retrospective evaluation be organized? Effectiveness of the policy Evaluation of the need to revise (or phase out) the policy | Use of LCA for assessing the benefit of the policy (at macro scale) including systemic aspects Need of modifying/ repealing a legislation |

Note that the following remarks can be made:

- a distinction is needed between ‘policy plan’ and ‘policy implementation’, in other words having a plan doesn’t mean policy is implemented;
- ‘policy instruments’, regardless the category, often have a legislative basis; however, a mentioning in the constitution is a different setting and should be explicitly mentioned;
- in this research assignment, there will be a special focus on S/GPP with a reference, if appropriate, to ‘life cycle costing’ (LCC) and economic sectors;
- if information available, stakeholder involvement will be highlighted.

2.0.2. Data/information sources⁸

Within the context of the United Nations, in case UN Environment, it is important to look for a regional balanced coverage of life cycle approaches in policies. Therefore, a matrix (in MS Excel) was developed in order to perform the analysis in a systematic and coherent manner: see Annex.

A first screening of different sources was the starting point for ‘snowball sampling’.⁹ Cross-references were used for detailing the information in a vertical (within a country) or horizontal (in other countries) manner. By doing so the matrix could be enriched with more details.

This was a desk-research based on, inter alia, literature review. Below the set documents of three main sources are listed that have been used during the first step of the screening exercise.

Voluntary National Reviews (VNRs)¹⁰

The 2030 Agenda for Sustainable Development encourages member states to conduct VNRs (on the implementation of the Sustainable Development Goals). As explained under *1. Background* there are multiple references to the notion of ‘life cycle thinking/approaches’ in the SDGs. Therefore, one could expect countries to report on the use of LCA in policies, incl. on sustainable/green public procurement (S/GPP).

Member States of the United Nations are submitting their reports the High-level Political Forum on Sustainable Development (HLPF), in a first round, during the period 2016-2019. This resulted in the submission of 22 VNRs in 2016 and 43 VNRs in 2017, i.e. 65 in total.^{11, 12}

Researching the VNRs learned that 37 countries did not make a reference to LCA or G/SPP; in 27 VNRs there is (some) (limited) reference.

⁸ Note that all information written in English, French and Spanish could be analyzed.

⁹ It is a non-probability sampling technique that is used to identify potential subjects in primary and secondary data/information sources.

¹⁰ See <https://sustainabledevelopment.un.org/vnrs/>.

¹¹ In reality 62 VNRs, because China and Samoa did register, but they didn’t submit a report. Togo submitted a draft VNR in 2016 and a VNR in 2017.

¹² Note that another 47 VNRs will be submitted in July 2018 and 16 in July 2019.

Global Reporting Initiative (GRI)¹³

The GRI has been established in 1997 by the Coalition for Environmentally Responsible Economies (CERES) and the United Nations Environment (UN Environment). Today the GRI standards refer to due diligence, life cycle assessment, green/sustainable procurement, etc. A SDG Compass, linking the SDGs and GRI, has been developed.

Therefore, it can be expected that organizations under the heading of 'Public Agency' (at different policy levels) are referring to this research topic in their sustainability reports. In the GRI database registered 232 public agencies having submitted 688 sustainability reports since 1999 of which 215 reports by 115 organizations since 2015 (cf. the adoption of Agenda 2030), representing public agencies of 19 countries. During this screening exercise the most recent report of each organization has been evaluated. In 51 sustainability reports there is no or very little reference to LCA or G/SPP; 14 reports of 4 countries are written in a national language. However, 44 sustainability reports refer in a limited or explicit manner to the research topic.

UN Environment

The Global Reviews on Sustainable Public Procurement (UNEP, 2013; UNEP, 2017a) and in particular the factsheets supplementing the global review of 2017 (UNEP, 2017b) have been valuable as a starting point.

Others

Different websites of UN Environment initiatives such as Partnership for Action on Green Economy (PAGE), Global SCP Initiatives Database (incl. SPELL projects), etc.

* * * * *

These countries for which information regarding the research subject could be gathered through one of the channels described above were retained. Next more details regarding LCA in policies for these retained countries were sought through the snowball-sampling technique: see under 'References/Information sources'. Occasionally, because of cross-references, the policies of other countries could be investigated. It has been important to double-check available data to avoid outdated information and/or to identify possible mistakes in the documents.

* * * * *

It can already be stated that there is much more information available on S/GPP than on other policies using LCA.

2.0.3. Selection of best practices

Determining 'best practices' is a commonly used tool of analysis. However, the concept is vague, because the notion 'best' can be subjective. Therefore *"a practice might simply be a smart practice, a good practice, or a promising practice. This allows for a mix and match approach for making recommendations that might encompass pieces of many good practices."*¹⁴

¹³ See <http://database.globalreporting.org/>.

¹⁴ Quote from https://en.wikipedia.org/wiki/Best_practice (retrieved on 21 June 2018).

In this research assignment the label 'best practices' will be handled with caution. Besides, from experience, it can be stated that applying a full set of criteria for policy evaluation might raise the bar at a level no practice at all could be selected.

However, based on literature, in a first round of selection the following (minimum) criteria are used in this research assignment:

- **relevance**
the context of 'LCA in policies' (in particular S/GPP) should be clearly explained;
- **timebound**
it needs to be clear that the practice is still applied today and will be in the future;
- **documented**
the evidence of the practice should be traceable through verifiable information.

In a second round of selection, it has been investigated if the policy development encompasses the characteristics of discourse theory and is moving towards the features of the rational theory. It means that at least three of the four stages of policy development (i.e. problem framing, policy framing and policy implementation) are present (to a certain degree).¹⁵

For the selected practices information has been sought for describing more in detail the different examples as requested by the assignment, taking into account the budget and time constraints.

2.1. Best practices all over the world

In line with the methodological approach (see under 2.0.), the information gathered allows to indicate in the matrix (see MS Excel-file as an annex to this document) best practices of life cycle approaches in policies, including listing contact persons in public agencies (e.g. national government or organization).¹⁶ Special attention is given to the use (of LCC) in public procurement. Note that the practices below are listed in alphabetical order according to the regions in the world.

Note that today, in line with the multilateral agreement on Agenda 2030, countries are expected to report through Voluntary National Reviews (see above) on their progress made so far to meet the SDG targets. Within the context of this research assignment it is interesting to see what countries are highlighting in their VNRs regarding SDG 12 and/or the use of LCA in policies. Since the start the United Nations (UN) are preparing each year a synthesis report of the submitted VNRs in the respective years. Note that own investigation of the VNR's by searching on key words (in respective languages) resulted in 2/3 of the VNRs without a reference to 'LCA in policies' or S/GPP. In the other 1/3 there are limited to sometimes explicit descriptions.

For 2016 the UN did not address the SDGs (incl. targets) in a distinctive manner (UN, 2016), however it was done for 2017 and it was reported in the summary as follows (UN, 2017): *"Countries reported on significant challenges in achieving sustainable consumption and production (SDG 12), and highlighted their aims and policies for achieving circular or green economies. Several countries*

¹⁵ Note that all over the world the stage of 'monitoring and evaluation' is often hard to document and to assess because – *ex ante* - when developing the policy, this stage has not been prepared in a proper manner by formulating targets and setting up a monitoring system.

¹⁶ Practices that are documented and verifiable are indicated with a capital 'X', information which is explicit but rather narrative or for which no results are available receives a small 'x'. An empty cell does not mean there is no indication at all.

reported that green economy represents an opportunity for economic growth and improvement in terms of international competitiveness, while also reducing environmental risks. Several countries also highlighted the roles of awareness-raising, stakeholder engagement and access to information, as ways of changing people's consumption patterns. In addition, countries highlighted policies on sustainable or green public procurement, green taxation and incentives, sustainability reporting, recycling schemes, reduction of food waste, and corporate social responsibility." Below, if available the specific highlights in the synthesis report of countries in the respective regions will be mentioned.

Next to the information below Stefanous Fotiou (N.D.) of UNEP listed in a presentation different examples of the use of LCA in policies, such as Mexico policies on waste management, Costa Rica policy on pesticides, EU policy on ecolabels, Japan system certification scheme, China policies on eco-design, etc.

2.1.1. Africa

There is almost no information on the use of life cycle assessment in policies for the African region. Therefore, it seems little is going on.¹⁷ However in the synthesis report summarizing the submitted VNRs in that year (UN, 2017) Kenya emphasized that it is "... facing significant challenges in achieving sustainable consumption and production. To address these challenges, it stressed its aims to achieve ... a green economy (Kenya ...). ... Kenya ... also highlighted the economic benefits that could be derived from more sustainable consumption and production patterns."

Sustainable/Green Public Procurement policies in Africa

The Global Review of UN Environment (UNEP, 2013; UNEP, 2017a) are making references to practices (in the past) in some countries in Africa, such as Tunisia. Ivory Coast is mentioned as the only African country in the Factsheets of UN Environment (UNEP, 2017b). Within the context of PAGE Ghana, Mauritius and Senegal are embarking on greener and more inclusive growth trajectories. Information on S/GPP can be found in the literature regarding inter alia Kenya (e.g. Kisii County) and Tanzania (e.g. Morogoro Municipal Council). Botswana and Nigeria are the two countries mentioned in the recent publication 'Public Procurement Reform and Governance in Africa' (Nyeck S.N., 2016) with regard to this research topic. Unfortunately, applying the methodological approach, none of these countries could be selected as a 'best practice'. On the other hand, practices in South Africa, at the federal level as well as at the local level, are showing promising ways forward.

South Africa

According to Turley and Perera (2014), in an IISD-report, public procurement spending represents 29 % of South Africa's GDP. Sustainable/Green public procurement (SPP) represents an opportunity for moving in the direction of sustainable development.

In fact, it started already back in 1996 with the following provisions in Section 217 - Procurement of the Constitution of the Republic of South Africa:¹⁸

¹⁷ Although the methodological approach couldn't be used, it is maybe worth mentioning the example of the Western Cape Province where a 110% Green Initiative was launched on June 5, 2012, World Environment Day, by the Provincial Government calling organizations across the province to commit to the Green Economy. See <https://www.westerncape.gov.za/110green/>.

¹⁸ See <https://www.gov.za/documents/constitution-republic-south-africa-1996-chapter-13-finance#217>.

“(1) When an organ of state in the national, provincial or local sphere of government, or any other institution identified in national legislation, contracts for goods or services, it must do so in accordance with a system which is fair, equitable, transparent, competitive and cost-effective.

(2) Subsection (1) does not prevent the organs of state or institutions referred to in that subsection from implementing a procurement policy providing for—

(a) categories of preference in the allocation of contracts;

and

(b) the protection or advancement of persons, or categories of persons, disadvantaged by unfair discrimination.

(3) National legislation must prescribe a framework within which the policy referred to in subsection (2) must be implemented.”

Hereby, mainly the social (and economic) dimension of sustainable development is emphasized.

Some years later the Public Finance Management Act (1999) decentralizes the procurement system and the Municipal Financial Management Act (2003) establishes the regulatory framework for municipalities, namely the functions outlined in the Regulatory Framework for Supply Chain Management (2003). The Preferential Procurement Policy Framework Act (2000) is an important other pillar of the governing framework for public procurement in South Africa empowering historically discriminated individuals (cf. Apartheid) through preferential treatment in procurement activities.

Turley and Perera (2014) are reporting *“the public authorities interviewed largely considered social sustainability to be ‘covered’ already by the provisions of the PPPFA.”* (read: the legal basis at the federal level). Furthermore, the IISD-report clarifies *“Procuring authorities at the provincial and municipal levels are beginning to make progress towards SPP policy and practice, even in the absence of federal leadership.”* focusing on the development of *“the subset of green public procurement (GPP)”*.

The latest change of the legislation at the federal level is the publication of the Preferential Procurement Regulations on January 20th, 2017 (initially promulgated in 2001 and revised in 2011). It has been explained that *“the regulations aim to use public procurement as a lever to promote socio-economic transformation, empowerment of small enterprises, rural and township enterprises, designated groups and promotion of local industrial development.”*¹⁹ Although the text doesn't contain references to G/SPP, various provisions allow for its implementation, as does the overall legal context at the federal level.

There is no factsheet published by UN Environment (UNEP, 2017b).

... at the level of the provinces

- Western Cape Province

¹⁹ Media statement by the National Treasury (23 January 2017): see at http://www.treasury.gov.za/comm_media/press/2017/Default.aspx.

The Provincial Government of the Western Cape seems to be the most advanced province in the implementation of SPP practices. The South African and Western Cape context are well described in a 'Guidebook for supply chain managers' by WWF (2018). The Western Cape published e.g. in 2012 its Provincial Treasury Instructions, further elaborating the elements of the federal legislation. Later on, its Provincial Strategic Plan 2014–2019, in particular the *Provincial Strategic Goal 5: Embed good governance and integrated service delivery through partnerships and spatial alignment*, was the basis for moving towards S/GPP.

... at the level of the metropolitan municipalities

Turley and Perera (2014) report "*Municipalities are governance units making the greatest strides in terms of implementing SPP at present ...*". Agyepong and Nhamo (2017) are confirming that "*... all the metropolitan municipalities have procurement policies in place ...*", be it that in particular the City of Cape Town, Nelson Mandela Bay and eThekweni are having green procurement strategies.

- City of Cape Town

The City of Cape Town is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.²⁰ The factsheet posted on the GLCN-website highlights the strategy, the achievements, the sectoral approaches etc. It seems to include almost all elements of a best practice; however, it is hard to find documents underpinning the data and/or give insight in the current situation, inter alia due to the fact that a substantial number of links to the website of the City of Cape Town or in the 'Document center' are not working.²¹ Further investigation would be needed.

- Nelson Mandela Bay Municipality

The Nelson Mandela Bay 'Green procurement implementation strategy' was developed in 2011 (NMBM). The aim of the strategy is to incorporate environmental aspects into all the metropolitan's procurement activities. NMBM emphasizes in its 'Climate Change and Green Economy Action Plan' (2015): "*Since its adoption, the NMBM has actively promoted green procurement through interactions with procurement departments, participation at supplier awareness events and internal education sessions with municipal officials.*" Here as well it is hard to check the status of the implementation.

- eThekweni

The GPP strategy is part of the 'Supply Chain Management Policy' (EThekweni Municipality, 2016). The policy is rather new, which makes it difficult to evaluate the implementation.

- Tshwane

City of Tshwane Metropolitan Municipality is as well a member of the Global Lead City Network (GLCN) on Sustainable Procurement. There is no fact sheet posted on the GLCN-website and it is difficult to find evidence for its implementation of S/GPP.

²⁰ It is a group of 14 cities committed to drive a transition to sustainable consumption and production by implementing sustainable and innovation procurement: see <http://www.glcen-on-sp.org/home/>. ICLEI act as coordinator.

²¹ See <http://www.capetown.gov.za/> (accessed 12 June 2018).

2.1.2. Asia

The synthesis report summarizing the submitted VNRs in that year (UN, 2017) emphasized for Japan and Thailand the following: *“... Thailand mentioned sustainable or green public procurement to promote more sustainable products and services. ... Sustainability reporting was seen as one good way for engaging the private sector in sustainable consumption and production (SCP) (...Thailand). ... The Stock Exchange of Thailand has formulated the Corporate Governance Code as a guideline to integrate the concept of sustainability into the business sector. ...*

... Thailand were among the countries that highlighted the role of awareness-raising, stakeholder engagement and access to information to change people’s consumption patterns. Thailand, for example, has created school curricula on environment and resource conservation and promoted eco-schools.

... Thailand noted the importance of sound management of chemicals and waste, and the role of the Stockholm, Rotterdam, Basel and Minamata Conventions was mentioned in this regard. ... Japan reported that discussions at the Regional 3R Forum in Asia and the Pacific had facilitated bilateral cooperation for waste treatment and the 3Rs (reduce, reuse, and recycle) and information-sharing in Asia and the Pacific region to mitigate waste-related problems.

Countries also highlighted issues such as ... sustainable transport (... Thailand), eco-labelling (Thailand) In Japan, food-related businesses are working toward achieving numerical targets concerning reduction of food loss and waste and food recycling, in accordance with a law on food recycling.”

Only the Republic of Korea and the United Arab Emirates have GRIs that include life cycle assessments to some extent. For Korea several city regions are addressed, as well as some policy fields. For the United Arab Emirates, the GRIs of Dubai and Abu Dhabi refer to life cycle assessment.

Thailand

Thailand is one of the few developing countries that reports extensively on its efforts regarding sustainable consumption and production, e.g. through its VNR. The SCP policy is embedded as one of the 10 strategies in the ‘Twelfth National Economic and Social Development Plan (2017-2021)’ (Office of the National Economic and Social Development Board, N.D.), but is as well detailed in the ‘Sustainable Consumption and Production Roadmap 2017 – 2036’. Other key national plans are linking with SCP policy as well (e.g. on ‘waste’ and on ‘environmental quality management’).²²

‘Life cycle assessment’ is at the heart of the SCP policy. In the Twelfth National Economic and Social Development Plan (2017-2021) the explicit reference goes as follows: *“Promote firms and other related agencies to perform the Life Cycle Assessment (LCA) of each product. Build a Life Cycle Inventory (LCI) database for the production and transport sectors to be the basis for setting environmental footprint standards. Encourage product designs that are low-carbon and environmentally-friendly.”*

²² Note that *“SCP in Thailand’s context is based on the concepts of sustainable development and the SEP.”* (citation from Thailand’s VNR). SEP or Sufficiency Economy Philosophy *“which has been a vital foundation since the Ninth Plan. The Philosophy promotes balanced development by embracing the following concepts: moderation, reasonableness, and resilience or risk management.”* (citation from the Twelfth Plan).

Unfortunately, the SCP Roadmap is not translated from the national language. Therefore, it is difficult within this research assignment to identify and to get detailed information of all the steps in the SCP policy cycle.

Sustainable/Green Public Procurement policies in Asia

The UNEP report 'Comparative Analysis of Green Public Procurement and Ecolabelling Programmes in China, Japan, Thailand and the Republic of Korea: Lessons Learned and Common Success Factors' (UNEP, 2017d) describes SPP policies in the four mentioned countries. They were selected as illustrative Asian examples because each country has made great efforts to institutionalize green public procurement through legislation, ecolabelling programmes, setting priority green public procurement products, and delivering green public procurement promotion and incentive programmes. The information will be used for discussion the situation in selected countries.

In the Asia Pacific region, significant efforts are being made to implement sustainable public procurement. Through the Asia Pacific Green Public Procurement and Ecolabelling (GPPEL) project (also known as 'Strengthening Capacity and Improving Knowledge of Green Public Procurement and Ecolabelling in the Asia Pacific Region'), regional collaboration in Asia Pacific is already well underway. The project brings together a network of green public procurement stakeholders in Asia Pacific through digital and in-person forums, including webinars, a LinkedIn forum and in-person trainings that took place in Kuala Lumpur in 2015 and in Beijing in December 2016.

Asia Pacific regional activities on green public procurement are also being driven by the SPPEL project ('Stimulating the Demand and Supply of Sustainable Products through Sustainable Public Procurement and Ecolabelling'). The Asian Institute of Technology, a research institution supporting the SPPEL project in Asia Pacific, published the report 'Key Opportunities for Pilot Products in the Region, with Policies and Challenges' (AIT, 2016). This report reviews trade agreements and policies in the Asia-Pacific region to understand opportunities and challenges related to sustainable public procurement and ecolabelling and to identify priority products for the development of mutually-recognized criteria or standards, also known as Common Core Criteria (CCC). The countries that are the with maximum implementation of ecolabels are China, Japan, South Korea, and Singapore; countries with initiatives but with limited implementation are Thailand, Malaysia, Indonesia, Philippines, and Vietnam; and countries without any initiatives are Myanmar, Laos, Cambodia, and Brunei.

China

Although China does not have a single umbrella legislation for green public procurement, since 2002 various ministries and agencies have enacted several policies and regulations to facilitate the promotion and implementation of green public procurement. In the Chinese context, green public procurement is primarily implemented using a framework provided by ecolabels and energy labels. Two lists, namely the Energy Conservation Products List (ECP) and Environmental Labelling Products List (ELP) play an important role in the green public procurement process and create a bridge between the government as the purchaser, and businesses in their role as suppliers. The use of these product lists has greatly facilitated green public procurement implementation, although all the ecolabels frameworks are voluntary and focus on environmental labelling.

Going forward, the Chinese government plans to expand its green public procurement programme to more local government bodies. China is also developing its monitoring and evaluation framework for

green public procurement (UNEP, 2017d). Government procurement shall contribute to the realization of the country's economic and social development policy objectives, including protecting the environment, supporting underdeveloped areas and ethnic minority areas, and promoting the development of small and medium-sized enterprises.

China is mentioned by the OECD (2015) as a country for showing a best practice for the dimension 'introducing environmental standards in the technical specifications, procurement selection and award criteria, as well as in contract performance clauses'. The factsheet published by UN Environment (2017b) seems to be checked.

India

In the VNR of India there is no reference to SDG 12 and/or S/GPP, neither is there a factsheet for the country (UNEP, 2017b).

Though there is a national network²³ on S/GPP, led by an NGO, *"There is no law that governs public procurement in India."* and *"The use of public procurement as a tool to influence market trends in favour of environmentally and socially responsible products and services is a relatively new concept in India."* (OECD, 2015a). E.g. in the 2017 guidelines on procurement by the ministry of finances, there is no reference to S/GPP. Although it includes a definition of life cycle cost, which is mentioned to be considered during the public procurement process.

However, a well-known example for many years is that of Indian Railways, administered by the Ministry of Railways, one of the central ministries in India. Sanjay Kumar (2018) e.g. explained a case study of the 'Use of LCA to determine environment friendly paper' within the context of S/GPP.

At a broader scale the Ministry of Environment and Forests, in collaboration with the CII–ITC Centre of Excellence for Sustainable Development, is developing a S/GPP policy through Public–Private Partnership (IISD, 2017).

Japan

Policies and regulations for the promotion and implementation of green public procurement have been developed and enacted in Japan since 1989 (UNEP, 2017d). The Ministry of the Environment (MOE) is the main government agency managing green public procurement. The Green Purchasing Network (GPN), a non-profit organization with 2 400 member organizations from businesses, local governments, and NGOs, is the agency supporting the government with the implementation and promotion of green public procurement, particularly in the areas of training and awareness-raising. Additionally, legislation for ecolabelling exists. All the ecolabels frameworks are voluntary and focus on environmental labelling.

Under the 'Act on Promoting Green Purchasing', green public procurement is mandatory for government agencies across a wide array of product categories. Public procurement in Japan is undertaken in a decentralized way by each Ministry or Department, so there is no national procurement agency designated to manage green public procurement implementation. A monitoring

²³ Note: there is the Green Purchasing Network India (GPNi), *"an evolving network of professionals interested and active in the general area of Sustainable Consumption and Production – specifically: Green Purchasing and Public Procurement."* See <http://gpnindia.org/> (last accessed on 15 July 2018).

system has been developed for green public procurement and is carried out by the Ministry of Environment (MOE).

Malaysia

In the VNR of Malaysia all the SDGs are mentioned. It includes a summary of key Sustainable Consumption and Production Initiatives in Malaysia, which includes Government Green Procurement (GGP): *“This focuses on government purchases of environmentally-friendly products and services to spur demand for green industries. The GGP is intended to create demand for green products and services, encouraging industries to raise both the standards and quality of their products in order to meet green requirements. GGP guidelines have been adopted in stages since early 2014 and made mandatory at federal level in 2017. By the end of 2016, Government procurement of green products and services stood at RM 429 million.”*

The Ministry of Finance has issued a GGP circular on 10th April 2014. The Short-Term Action Plan initiated to materialize Malaysia's long-term GGP strategy and designed to embrace the nation's GGP policy in 2014 has been approved and is under implementation. In the factsheet published by UN Environment (UNEP, 2017b) needs to be updated.

Philippines

There is no factsheet for the country (UNEP, 2017b), but recently the Technical Support Office of the Government Procurement Policy Board (GPPB-TSO, 2017) explained clearly the S/GPP policy in the Philippines and the ambitious way forward.

... at the level of the metropolitan municipalities

- Quezon City

Quezon City is a member of the Global Lead City Network (GLCN) on Sustainable Procurement. The factsheet posted on the GLCN-website highlights the strategy, the achievements, the sectoral approaches etc. Since 2016 the efforts are supported by a 10YFP Trust Fund Project, led by the Philippine Center for Environmental Protection and Sustainable Development (PCEPSDI)^{24, 25}: *“For 2018, the project aims to finalize the policy framework, guidelines and procedures. There will also be an information, education and communication (IEC) campaign to maximize the reach of the project to other stakeholders.”* Further investigation of the output/outcome of the project is needed.

Republic of Korea

Since the 1990s, Sustainable Consumption and Production (SCP) policies have been introduced in the Republic of Korea to support sustainable and resource-efficient production practices (UNEP, 2017d). Sustainable consumption and production activities have typically had a focus on the creation of new markets for green products and services.

As part of the sustainable consumption and production programming, green public procurement has been introduced and implemented at the national level with a wide range of supports (e.g. policies,

²⁴ See <http://www.oneplanetnetwork.org/initiative/establishment-and-implementation-green-public-procurement-gpp-quezon-city-local> (last accessed 9 July 2018).

²⁵ See <http://pcepsdi.org.ph/projects/green-public-procurement-for-quezon-city/> (last accessed 9 July 2018).

tools and procedures). To achieve successful implementation of green public procurement, the Ministry of Environment, in collaboration with the Korea Environmental Industry and Technology Institute (KEITI) and the Korean Public Procurement Services (PPS), introduced several initiatives. The most prominent include the development of green public procurement guidelines based on ecolabelling criteria, the establishment of a 'Green Products Information Platform' (GPIP) for purchasers, and a nation-wide online monitoring system that has helped guide successful implementation. All the ecolabels frameworks are voluntary and focus on environmental labelling.

Korea has a unique system for public procurement called 'Korea Online E-Procurement System' (KONEPS) through which most of the centralized direct purchases are made. KONEPS also operates an online shopping catalog of green products. The system provides comprehensive information on products, including applicable ecolabels and prices. Green procurement data from different procurement agencies is aggregated through the Green Product Information Platform (GPIP) (UNEP, 2017d).

Korea is mentioned by the OECD (2015) as a country for showing a best practice for the dimension 'setting a GPP legal and policy framework to assist buying entities in incorporating GPP in their procurement procedures'.

... at the level of the metropolitan municipalities

- Seoul

Seoul is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.²⁶ The factsheet posted on the GLCN-website highlights the strategy, the achievements, the sectoral approaches etc. Further investigation would be needed if the formulated ambitious objectives are attained.

Thailand

Since 2005, the Royal Thai Government has adopted strategies, plans and policies to direct Thailand's development towards sustainability (UNEP, 2017d). In 2005, the Pollution Control Department (PCD) within the Ministry of Natural Resources and Environment (MNRE) introduced green public procurement in Thailand.

Two Green Procurement Promotion Plans have been developed since 2008 for the promotion and implementation of green public procurement. The main objective of the Green Procurement Promotion Plan of 2008-2011 was to increase government spending on environmentally preferable products and services. In the 2nd Green Public Procurement Promotion Plan (2013-2016) the target groups were expanded to local authorities, private-sector businesses, and the general public.

The Pollution Control Department has initiated the implementation of green public procurement in the public sector and has carried out several activities under the plan, including training workshops and seminars for procurement staff and the implementation of a voluntary monitoring system to assess the progress towards policy targets for green public procurement. Thailand has very well-developed targets and metrics related to its Green Public Procurement Promotion Plan in terms of

²⁶ See <http://glcn-on-sp.org/cities/seoul/> (last accessed on 10 July 2018).

training workshops and other critical elements of green public procurement programming. All the ecolabels frameworks are voluntary and focus on environmental labelling.

2.1.3. Europe

Norway

It its VNR Norway reports the implementation of policies to 'Ensure sustainable consumption and production patterns' (cf. SDG 12 and targets) in different sectors.

Switzerland

Switzerland is more explicit in its VNR in the use of LCA in policies when it comes to formulate action areas and objectives to achieve targets of the SDG 12 (e.g. *"The economic and technical potential for closing materials cycles is used."*) and the SDGs 9 and 11 (e.g. *"Both underground and over ground structures are planned, built, operated and continuously developed in accordance with recognised standards of sustainability. They provide a solution that is optimised throughout the structure's life cycle."*)

Countries in the European Union

The synthesis report summarizing the submitted VNRs in that year (UN, 2017) brought forward for European Union member countries that they *"reported facing significant challenges in achieving sustainable consumption and production. To address these challenges, many stressed their aims to achieve circular (Belgium, Luxembourg, the Netherlands, Portugal and Sweden) or green economies (... Slovenia). Belgium ... and Slovenia also highlighted the economic benefits that could be derived from more sustainable consumption and production patterns. Slovenia noted that a green economy represents an opportunity for economic growth and improvement in terms of international competitiveness, while also reducing environmental risks.*

Portugal, Sweden, ... mentioned sustainable or green public procurement to promote more sustainable products and services. In Slovenia, a forthcoming decree will make green public procurement mandatory for a wider array of areas, including road rehabilitation, street lighting, textiles, and fittings.

Green taxation and incentives are some of the policy tools used in Belgium and Portugal. In Belgium, the region of Flanders uses economic instruments such as taxes on landfill and incineration, alongside legal instruments such as a must-sort policy and extended producer responsibility.

Sustainability reporting was seen as one good way for engaging the private sector in sustainable consumption and production (SCP) (Belgium, the Netherlands, Sweden ...). In Sweden, all companies of a certain size are required to submit a sustainability report, while in the Netherlands, similar requirements apply and all companies are encouraged to apply the OECD Guidelines for responsible business conduct. ... One prong of Luxembourg's Climate Finance Strategy is the initiative of the Luxembourg Stock Exchange in launching the Luxembourg Green Exchange, the first platform dedicated exclusively to green securities.

Belgium, Portugal, Slovenia ... were among the countries that highlighted the role of awareness-raising, stakeholder engagement and access to information to change people's consumption patterns.
...

Belgium, Sweden, ... noted the importance of sound management of chemicals and waste, and the role of the Stockholm, Rotterdam, Basel and Minamata Conventions was mentioned in this regard. The Netherlands and Sweden referred to the 10-year-framework on SCP. ...

Countries also highlighted issues such as ... de-carbonization of the economy (Portugal), greenhouse gas emissions related to imported goods (Sweden), recycling schemes (Belgium and Portugal), sustainable transport (Slovenia ...), ... and reduction of food waste (...the Netherlands)."

For detailed information about the related policymaking at the level of the European Union and its member states, see http://ec.europa.eu/environment/index_en.htm (last accessed on 15 July 2018). Different policies (integrated product policy, waste, ecolabeling etc.) are using 'life cycle assessment' as a basis in the different steps of a policy cycle.

Sustainable/Green Public Procurement policies in Europe

Norway

The factsheet published by UN Environment (2017) needs to be complemented. At the end of 2017 the Norwegian Government's strategy for green competitiveness has been published.²⁷ One of priorities for promoting green competitiveness regards 'green and innovative public procurement' to encourage the public sector's contribution. It builds upon the Public Procurement Act of 17 June 2016. Therefore, inter alia, Norway increases "*capacity building relating to green procurement through earmarked allocations to the Agency for Public Management and eGovernment.*"

Furthermore, in the VNR of Norway it is highlighted that "*Norway has contributed financially and with expertise to the establishment of the 10-year framework of programmes on sustainable consumption and production patterns (10YFP) ...*" with a reference to sustainable public procurement.

... at the level of the metropolitan municipalities

- Oslo

The City of Oslo is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.²⁸ The factsheet posted on the GLCN-website highlights the strategy, the achievements, the sectoral approaches etc. In the meantime, Oslo developed at the end of last year a new procurement strategy with a prominent role for S/GPP, incl. a monitoring system.

Switzerland

The factsheet published by UN Environment (2017) seems to be up to date. Furthermore, Switzerland reported through its VNR: "*Since 2010, the Swiss Federal Council has been committed to the 'green economy', which makes an important contribution to sustainable development through measures to improve the environment and strengthen the economy. ... The measures translate the cross-cutting strategies enshrined in the SDGs and the Federal Council's Sustainable Development Strategy into concrete action. The measures needed to achieve the green economy focus on the three core areas: consumption and production, waste and raw materials, as well as cross-cutting instruments. They include among other things efforts to be made in the areas of sustainable public procurement, waste prevention, sustainable finance, and higher education.*"

²⁷ See <https://www.regjeringen.no/en/dokumenter/bedre-vekst-lavere-utslipp--regjeringens-strategi-for-gronn-konkurransekraft-engelsk/id2575420/> (last accessed on 10 July 2018).

²⁸ See <http://glcn-on-sp.org/cities/oslo/> (last accessed 10 July 2018).

Countries in the European Union

There is an overall policy framework of the European Union (see http://ec.europa.eu/environment/gpp/index_en.htm), expecting member countries to report on S/GPP through National Action Plans. Some countries that are going further are mentioned below. Other countries are already using the VNR to highlight their efforts or to engage in a process of policy-making. Czech Republic e.g. is reporting it is “... *applying sustainability and CSR criteria in public procurement* ...”. In its turn Estonia “*is looking for possibilities for implementing the environmentally-friendly public procurements more efficiently* ...”. Portugal adopted a national strategy and “*shall include environmental criteria in public procurement in order to reflect the role of public procurement in achieving the objectives of sustainability.*”

Austria

The factsheet published by UN Environment (2017) seems to be up to date. Furthermore, Austria is mentioned by the OECD (2015) as the only member-country for showing a best practice for each of the listed dimensions:

1. *“setting a GPP legal and policy framework to assist buying entities in incorporating GPP in their procurement procedures;*
2. *planning GPP, including understanding market capacity and available technical solutions as well as assessing GPP costs and benefits;*
3. *introducing environmental standards in the technical specifications, procurement selection and award criteria, as well as in contract performance clauses;*
4. *professionalising GPP and increasing know-how and skills;*
5. *raising awareness on GPP solutions and their benefits with buyers, businesses and the civil society;*
6. *monitoring the results of GPP and providing a feedback loop into policy and regulation.”*

The Ministry for Sustainability and Tourism is in charge of S/GPP.²⁹

Austria did not submit yet a VNR.

Belgium

The factsheet published by UN Environment (2017) needs to be complemented. Belgium is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimension ‘professionalising GPP and increasing know-how and skills’. When reporting on the implementation of SDG 12 in its VNR, Belgium highlights explicitly the efforts regarding S/GPP.

²⁹ See <http://www.nachhaltigebeschaffung.at/> (last accessed 10 July 2018).

... at the level of the metropolitan municipalities

- Ghent

The City of Ghent is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.³⁰ The factsheet posted on the GLCN-website highlights the strategy, the achievements, the sectoral approaches etc. S/GPP is a strategic objective of the city.³¹

Denmark

Denmark is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimension 'introducing environmental standards in the technical specifications, procurement selection and award criteria, as well as in contract performance clauses'. In its VNR the country is linking S/GPP to setting-up a circular economy. The national action plan indicates that the factsheet published by UN Environment (2017) needs to be updated.

Finland

... at the level of the metropolitan municipalities

- Helsinki

The City of Helsinki is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.³² The limited factsheet with a focus on climate-friendly goods and services posted on the GLCN-website highlights the key elements.

France

France is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimension 'monitoring the results of GPP and providing a feedback loop into policy and regulation.' When reporting on the implementation of SDG 12 in its VNR, the country is not explicit on S/GPP. The factsheet published by UN Environment (2017) seems to be up-to-date.

Hungary

The factsheet published by UN Environment (2017) seems to be up to date. Although Hungary is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimension 'raising awareness on GPP solutions and their benefits with buyers, businesses and the civil society', there is no National Action Plan in place according to the EU database. The country did not submit yet a VNR.

³⁰ See <http://glcn-on-sp.org/cities/oslo/> (last accessed 10 July 2018).

³¹ See <https://stad.gent/over-gent-en-het-stadsbestuur/stadsbestuur/wat-doet-het-bestuur/uitvoering-van-het-beleid/gent-en-bestuur/gent-voorbeeldconsument/zeven-pijlers-van-strategisch-en-duurzaam-aankopen> (last accessed 10 July 2018).

³² See <http://glcn-on-sp.org/cities/helsinki/> (last accessed on 10 July 2018).

... at the level of the metropolitan municipalities

- Budapest

The City of Budapest is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.³³ The limited factsheet with a focus on climate-friendly goods and services posted on the GLCN-website highlights the key elements.

Italy

Italy is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimensions 'planning GPP, including understanding market capacity and available technical solutions as well as assessing GPP costs and benefits' and 'monitoring the results of GPP and providing a feedback loop into policy and regulation.' When reporting on the implementation of SDG 12 in its VNR, Italy is making a reference to S/GPP. The factsheet published by UN Environment (2017) needs to be complemented if the elements of the national action plan are considered.

Netherlands

The Netherlands is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimension 'introducing environmental standards in the technical specifications, procurement selection and award criteria, as well as in contract performance clauses'. In its VNR the country is reporting on several ways of using S/GPP at different policy levels and in bilateral development cooperation. The factsheet published by UN Environment (2017) needs to be complemented, e.g. in relation to S/GPP targets.

... at the level of the metropolitan municipalities

- Rotterdam

The City of Rotterdam is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.³⁴ The limited factsheet with a focus on climate-friendly goods and services posted on the GLCN-website highlights the key elements. In other documents the societal and ethical principles are explained.^{35, 36}

³³ See <http://glcn-on-sp.org/cities/budapest/> (last accessed on 10 July 2018).

³⁴ See <http://glcn-on-sp.org/cities/rotterdam/> (last accessed on 10 July 2018).

³⁵ See https://www.rotterdam.nl/werken-leren/inkoop-en-aanbesteding/Inkoop-en-aanbestedingsbeleid-2017_def1_MN.pdf (last accessed on 10 July 2018)

³⁶ See <https://www.rotterdam.nl/wonen-leven/duurzaam-en-sociaal-inkopen/> (last accessed on 10 July 2018).

Poland

... at the level of the metropolitan municipalities

- Warsaw

The City of Warsaw is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.³⁷ There is no fact sheet posted on the GLCN-website and it is difficult to find evidence for its implementation of S/GPP.

Slovak Republic

The Slovak Republic is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimension 'professionalising GPP and increasing know-how and skills'. For the time being there is no VNR. The factsheet published by UN Environment (2017) seems to be up-to-date.

Sweden

Sweden is mentioned by the OECD (2015) as a member-country for showing a best practice for the dimension 'introducing environmental standards in the technical specifications, procurement selection and award criteria, as well as in contract performance clauses'. The country highlights explicitly and extensively the efforts regarding S/GPP in its VNR. The factsheet published by UN Environment (2017) needs to be complemented.

2.1.4. Latin America and the Caribbean

Reports are describing LCA in policies for the region (GIZ, 2016; Valdivia and Carrillo, 2018) as well as for some countries in Latin America and the Caribbean. The information will be used for discussion the situation in selected countries.

It can be highlighted that some countries (Argentina, Peru ...) do have promoted LCA-related policies and regulations regarding particular environmental issues such as controlling the use of plastic bags and/or promoting food donation before this becomes waste (Valdivia and Carrillo, 2018). However, it was reported that *"Five LAC countries (Chile, Colombia, Costa Rica, Uruguay and Mexico) have developed SCP action plans and are implementing them which represents a limitation in advancing SCP and BBD approaches."* (Ibid., 2018)

Other countries took a different approach. Panama e.g. published recently (Consejo de la Concertación Nacional para el Desarrollo, 2017), after a consultation process the National Strategic Plan 'Panama 2030' which is compatible with the 17 SDGs. In Peru a law for integrated solid waste management (Ministerio del Ambiente de Perú, 2017) is focusing on the principle of extended produced responsibility.

Chile

Chile holds a National Strategy for Sustainable Construction 2013-2020 (Ministerio de Vivienda y Urbanismo, 2013) with an explicit focus on the life cycle of buildings and infrastructure, and their components. Recently an Action Plan in Sustainable Consumption and Production for the years of 2017 to 2022 was adopted (Ministerio del Medio Ambiente de Chile, 2017). The action plan is

³⁷ See <http://glcn-on-sp.org/cities/warsaw/> (last accessed on 10 July 2018).

focusing on different policy domains. An important instrument regards the extended producer responsibility and improved recycling as outlined in the Law N° 20920 of 2016 (Ministerio del Medio Ambiente de Chile, 2016).

Colombia

Colombia is one of the first country in Latin America to have elaborated a Sustainable Production and Consumption Policy (Ministerio de Ambiente, Vivienda y Desarrollo Territorial de Colombia, 2011). An explicit reference can be made to the Law N° 1672 establishing guidelines to adopt a public policy for the management of waste derived from electric and electronic devices (Ministerio de Ambiente y Desarrollo Sostenible de Colombia, 2013) and subsequently the decree N°1076 established extended producer responsibilities for additional products' clusters (Ministerio de Ambiente y Desarrollo Sostenible de Colombia, 2015).

Costa Rica

Recently the Ministerio de Ambiente y Energía de Costa Rica (2017) after a consultation process has promulgated the National Policy of Sustainable Production and Consumption.

Mexico

Mexico has a National Strategy (SERMANAT, 2013) and a Special Program (Secretaría de Medio Ambiente y Recursos Naturales, N.D.) for Sustainable Production and Consumption. The documents are specifying in a comprehensive way how policy development will be undertaken. Unfortunately, there seems to be no status report available

Uruguay

In 2010 Uruguay was amongst the first countries to publish with the support of UNEP the National Action Plan on Sustainable Production and Consumption (Ministerio de Vivienda, Ordenamiento Territorial y Medio Ambiente, 2010).

Sustainable/Green Public Procurement policies in Latin America

The Global Review of UN Environment (UNEP, 2013; UNEP, 2017a) are making references to practices (in the past) in some countries in Latin America and the Caribbean. Amongst other countries, Antigua and Barbuda, Dominican Republic, Paraguay and Uruguay are mentioned in the Factsheets of UN Environment (UNEP, 2017b). Within the context of PAGE inter alia Barbados and Guyana are embarking on greener and more inclusive growth trajectories. Information on S/GPP can be found in the literature regarding inter alia Honduras, Nicaragua, Panama and Uruguay. Unfortunately, applying the methodological approach, none of these countries could be selected as a 'best practice'. On the other hand, practices in 7 other Latin America countries are showing promising ways forward.

In the case of Brazil, there is a problem of language because almost all information is written in Portuguese. Therefore, it is not possible with regard to this research assignment to make an assessment.

Argentina

The factsheet published by UN Environment (UNEP, 2017b) seems to be up to date.

In the VNR of Argentina (with a reference to SDG 12.7) the Ministerio de Modernización is indicated as the responsible public authority, but no progress is reported.

Argentina is one of the countries where organizations are publishing sustainability reports following the GRI Guidelines. Some of them are explicitly referring to their efforts regarding S/GPP.

... at the level of the metropolitan cities

- Buenos Aires

The City of Buenos Aires is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.³⁸ In the factsheet posted on the GLCN-website it is explained the city has been working on the inclusion of sustainability criteria in public procurement processes since 2012. Strategy, achievements, sectoral approaches etc. are highlighted. All elements of a best practice are in place, the city indicates clearly, e.g. in a report (2017), where improvements can be made.

Chile

The factsheet published by UN Environment (UNEP, 2017b) seems to be up to date. It highlights inter alia the role of ChileCompra and the publication back in 2012 of the 'Socially Responsible Purchasing Policy' providing a general framework for action within the context of S/GPP.

One element that can be added to the factsheet is the publication of the National Action Plan for Sustainable Consumption and Production 2017-2022. It contains a subset of initiatives regarding S/GPP with specific objectives and responsible authorities. Furthermore, recently the OECD (2017) assessed the public procurement system of Chile. In the VNR of Chile there is no reference to SDG 12 and/or S/GPP.

Colombia

The factsheet published by UN Environment (UNEP, 2017b) seems to be up to date.

In the VNR of Colombia there is no reference to SDG 12 and/or S/GPP.

Costa Rica

Some years ago, the country had already made some progress in this area, such as the promulgation of 'Guide for Sustainable Public Procurement' (2011) that establishes sustainability criteria for different categories of priority products / services and 'Guide to social criteria in public procurement processes in Costa Rica' (2014).³⁹

The legal basis for setting up a policy is contained in article 50 of the constitution: "*El Estado procurará el mayor bienestar a todos los habitantes del país, organizando y estimulando la producción y el más adecuado reparto de la riqueza. Toda persona tiene derecho a un ambiente sano y ecológicamente equilibrado.*" (in English: "*The State will seek the greatest welfare of all the inhabitants of the country, organizing and stimulating production and the most appropriate distribution of wealth. Everyone has the right to a healthy and ecologically balanced environment.*")

Furthermore article 29 of the Law for the Integral Management of Solid Waste and article 44 of Executive Decree regarding General Regulations to the Law for the Integral Management of Solid

³⁸ See <http://www.glcn-on-sp.org/home/> (accessed 13 June 2018).

³⁹ See <http://www.hacienda.go.cr/contenido/13023-compras-publicas-sustentables> (accessed 13 June 2018).

Waste articulated the specifics for S/GPP. It resulted in 2015 in a National Policy on Sustainable Public Procurement.

Recently, after a stakeholder consultation the National Policy of Sustainable Production and Consumption 2018-2030 was published and officialized by a Decree (3 May 2018), underpinning the importance of SPP and setting out 'Axes, objectives and strategic actions' (Ministerio de Ambiente y Energía de Costa Rica, 2018).⁴⁰

There is no factsheet published by UN Environment (UNEP, 2017b). In the VNR of Costa Rica there is no reference to SDG 12 and/or S/GPP.

Ecuador

The following provision can be read in the Constitution of Ecuador of 2008:⁴¹

"Art. 288.- Las compras públicas cumplirán con criterios de eficiencia, transparencia, calidad, responsabilidad ambiental y social. Se priorizarán los productos y servicios nacionales, en particular los provenientes de la economía popular y solidaria, y de las micro, pequeñas y medianas unidades productivas."

(in English: "Art. 288.- Public procurement shall meet criteria of efficiency, transparency, quality, and social and environmental responsibility. Priority shall be given to domestic products and services, in particular those originating in the grassroots solidarity economy and in micro, small and medium-sized production units.")

Despite this provision the National Development Plan 2013-2017 nor the National Development Plan 2017-2021 are addressing sustainable public procurement. Although some social considerations are taken into account within the context of public purchasing, there is no specific policy for S/GPP. A report about the situation in Ecuador – not dated, but probably from 2015-2016 – evaluate in a comprehensive way the lack of progress made.⁴²

There is no factsheet published by UN Environment (UNEP, 2017b).

Mexico

The factsheet published by UN Environment (UNEP, 2017b) is up to date. It highlights the National Strategy and the Special Program for Sustainable Production and Consumption (Secretaría de Medio Ambiente y Recursos Naturales, SEMARNAT, 2013), in which the 'increase sustainable public purchases' is one of the six specific objectives.

An element that can be added to the factsheet is the result published within the Execution Reports of the National Development Plan 2013-2018. The goal set for purchases with an eco-label and certified purchases by 2018 is 6,9 %. The figure for 2016 is 7,7 %; for 2017 a new system integration has been set up and therefore the figure is not (yet) available.⁴³ Furthermore, the OECD (2018) has been assessing the e-procurement system CompraNet of Mexico.

⁴⁰ See <http://www.digeca.go.cr/areas/produccion-y-consumo-sostenibles> (accessed 13 June 2018).

⁴¹ See https://www.asambleanacional.gob.ec/documentos/constitucion_de_bolsillo.pdf.

⁴² See http://www.oneplanetnetwork.org/sites/default/files/spp_status_assessment_report_of_ecuador.pdf.

⁴³ See <https://www.gob.mx/shcp/documentos/quinto-informe-de-ejecucion-del-plan-nacional-de-desarrollo-2013-2018> (accessed 13 June 2018).

In the VNR of Mexico there is no reference to SDG 12 and/or S/GPP.

Peru

The 'Ley General del Ambiente' (in English: the General Environmental Law) of 2005 introduced the possibility of assigning a higher score in the selection of suppliers that show an adequate environmental performance. The 'Ley de Contrataciones del Estado' (in English: the State Procurement Law) of 2008 incorporated the principle of environmental sustainability. Finally, the regulation to the new 'Ley de Contrataciones del Estado' of 2015, explicitly mentions in art. 30 the possibility of including "*Las características particulares que se ofrecen para el objeto de contratación, como pueden ser las relacionadas a la sostenibilidad ambiental o social, mejoras para bienes y servicios, entre otras.*" (in English: "*The particular characteristics that arise in relation to the object of contracting, such as those related to environmental or social sustainability, improvements for goods and services, among others.*").

The Agenda de Competitividad 2014-2018 sets a rather vague goal for 2018: "*Se cuenta con un set de bienes calificados como compras públicas ambientalmente sostenibles para los procesos de contrataciones con el Estado.*"

Recently a comprehensive master thesis 'Acciones para impulsar las compras públicas ambientalmente sostenibles en el Perú' (Revilla Vergara A.T., 2017) stressed the importance of expanding S/GPP, involving all governmental and private actors, and improving social and business awareness regarding the advantages of sustainable production and consumption. The author suggests, among other mechanisms, the implementation of a National Environmentally Sustainable Public Procurement Program.

The factsheet published by UN Environment (UNEP, 2017b) needs to be complemented. Recently, the OECD (2017b) has been assessing the public procurement system in Peru, incl. S/GPP. In the VNR of Peru there is no reference to SDG 12 and/or S/GPP.

2.1.5. Northern America

United States

There is no VNR available with possible references to SDG 12 et al.

Referring to a PhD of Reed D (2012) on LCA in government policy in the United States, Seidel C. (2015) reports: "*Specifically, the USA has been relatively slow to integrate LCA into public policy, particularly as compared to Europe, where life cycle thinking is widely encouraged, implemented, and even mandated through policy.*" Furthermore, she indicates that "*... discussions with internal staff at the EPA suggest that this has not in fact led to much increase in incorporation of LCA within the agency to date.*" It remains to see how the current administration will cope with LC approaches in policy. Seidel state that there are numerous examples of the use of LCA at the US state level.

Canada

There is no VNR available with possible references to SDG 12 et al.

Sustainable/Green Public Procurement policies in Northern America

Within the context of the Commission for Environmental Cooperation Canada, Mexico and United States of America are collaborating on S/GPP in the North American Green Purchasing Initiative.⁴⁴ However it is not clear if activities still are undertaken in the initiative.

Canada (incl. provinces and territories)

The factsheet published by UN Environment (UNEP, 2017b) needs to be complemented.

A new version of the federal sustainable development strategy (2016-2019) was adopted.⁴⁵ A 'Review procurement practices to align with green objectives' is announced as a short-term objective. In the Spring 2017 Update it is reported "*The Pan-Canadian Framework on Clean Growth and Climate Change includes a commitment to work with provinces and territories to modernize procurement practices, adopt clean energy and technologies, and prioritize opportunities to help Canadian businesses grow, demonstrate new technologies, and create jobs.*" Their first annual report highlights several actions regarding S/GPP at the level of the federal state, and at the level of the provinces and territories.⁴⁶ Note that S/GPP is often labeled as 'clean procurement'. The Fall 2017 Update of the federal SD strategy brings the efforts even one step further. Under the heading 'Support the transition to a low-carbon economy through green procurement' several actions are listed to support clean technologies and green products and services by taking environmental considerations into account in the purchasing decisions.

Furthermore, the Policy on Green Procurement has recently been updated.⁴⁷ It is calling departments to set targets. Within the Acquisitions Branch of Public Services and Procurement Canada a team has the mandate to coordinate and support its implementation.⁴⁸

The application of LCC is well known in the procurement process.⁴⁹

... at the level of the metropolitan cities

There are several cities in Canada that have developed a S/GPP policy. A comprehensive initiative regards the Municipal Collaboration for Sustainable Procurement (MSCP) founded in 2010.⁵⁰ It is "*a member based network of 20 Canadian municipalities, colleges, and universities, who are striving for operational excellence by collaborating and sharing resources to further sustainable (green, social, and ethical) purchasing. The MCSP is a front-runner in setting new benchmarks and best practices in*

⁴⁴ See <http://www.cec.org/more/outline-north-american-green-purchasing-initiative> (last accessed on 28 June 2018).

⁴⁵ See <http://fsds-sfdd.ca/index.html#/en/intro/> (last accessed on 28 June 2018).

⁴⁶ See <https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework/first-annual-report/annex-1.html> (last accessed on 28 June 2018).

⁴⁷ See <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=32573§ion=html> (last accessed on 28 June 2018).

⁴⁸ See <http://www.tpsgc-pwgsc.gc.ca/app-acq/ae-gp/index-eng.html> (last accessed on 28 June 2018).

⁴⁹ See <https://buyandsell.gc.ca/policy-and-guidelines/supply-manual/section/3/140> (last accessed on 28 June 2018).

⁵⁰ See <http://mcspgroup.com/portal/> (last accessed on 28 June 2018).

the field of sustainable procurement."⁵¹ MSCP publishes every year 'The Annual Report on the State of Municipal Sustainable Procurement in Canada' with the '10 Best Practice Program Areas Progress Chart' (MSCP, 2018).

Note the following interesting initiatives at the level of the cities:

- City of Ottawa stresses the importance of 'ethical purchasing', focusing on labour standards;⁵²
- Société de transport de Montréal, a public transportation enterprise, publishes since 2008 yearly their Sustainable Development Report (using the GRI Guidelines) with a clear objective of practicing sustainable procurement.⁵³

Other local public authorities such as Waterfront Toronto and Commission des normes, de l'équité, de la santé et de la sécurité du travail are highlighting in their respective GRI Sustainability Report the approaches taken on S/GPP.

United States of America

The factsheet published by UN Environment (UNEP, 2017b) needs to be adapted.

The federal policy on S/GPP in the United States of America relies on presidential Executive Orders (EOs). For more than ten years EOs have been issued regarding this policy field. *Executive Order 13834 of May 17, 2018 - Efficient Federal Operations*⁵⁴ rescinds the previous *Executive Order 13693 of March 19, 2015 - Planning for Federal Sustainability in the Next Decade*. The latter was more explicit on S/GPP, incl. LCC, and its objectives. It remains to see how the EO 13834 will be implemented and how progress on S/GPP will be reached. For the time being it is difficult to characterize the U.S.A. federal policy with regard to the policy cycle etc.⁵⁵

Nevertheless, e.g. the National Renewable Energy Laboratory (NREL), the national laboratory of the U.S. Department of Energy, has been proactive regarding S/GPP. Promoting sustainable acquisition and procurement with regard to sustainable building and to electronic stewardship is explicitly mentioned in their sustainability report (NREL, 2016).

Furthermore, public authorities at the intra-national level within the U.S.A. witnesses of good practices: see below. Most of them are member of the Sustainable Purchasing Leadership Council, which is a non-profit organization "*whose mission is to support and recognize purchasing leadership that accelerates the transition to a prosperous and sustainable future.*"⁵⁶

⁵¹ Ibidem.

⁵² See <https://ottawa.ca/en/business/doing-business-city/purchasing/ethical-purchasing#> (last accessed on 28 June 2018).

⁵³ See http://www.stm.info/en/about/financial_and_corporate_information/sustainable-development/annual-sustainable-development (last accessed on 28 June 2018).

⁵⁴ See <https://www.gpo.gov/fdsys/pkg/FR-2018-05-22/pdf/2018-11101.pdf>

⁵⁵ Note that e.g. the page website on greening government procurement of EPA (see <https://www.epa.gov/contracts/greening-government-procurement>, last accessed on 4 July 2018) is still referring to EOs from 10 years ago that both have been revoked.

⁵⁶ See <https://www.sustainablepurchasing.org/about/> (last accessed on 4 July 2018).

... at the level of the states

The National Association of State Procurement Officials (NASPO), a non-profit association dedicated to advancing public procurement through, has been established back in 1947.⁵⁷ It has published a Green Purchasing Guide to help its members and others with information on the adoption of a green purchasing program. It includes guidance to the use of 'total cost of ownership' (read: LCC). There is a reference to 10 states that have been supported by NASPO.

... at the level of the metropolitan cities

Several local public authorities are publishing sustainability reports following the GRI Guidelines, in which they highlight (to some extent) their efforts on S/GPP.

The City of Denver is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.⁵⁸ In the factsheet posted on the GLCN-website it is explained Denver's procurement policies evolved from 1996 till the publication of the Executive Order 123, released on March 11, 2013. Strategy, achievements, etc. are highlighted. It seems all elements of a best practice are in place; however, it is difficult to verify the different claims.

2.1.6. Oceania

Australia and New Zealand each have a professional organization for people involved in the use and development of Life Cycle Assessment (LCA), management and thinking. Both also developed a national Life Cycle Inventory database.

The Australian Life Cycle Assessment Society (ALCAS) was established in 2001, an important milestone in Australia's development of LCA. It was incorporated to promote life cycle practices and sustainable development, and to coordinate the rapidly growing professional community in Australia. A not-for-profit organization, ALCAS has individual and corporate members from industry, government, academia and service organizations.

The Life Cycle Association of New Zealand (LCANZ) was established in June 2009 and aims to promote networking and knowledge sharing between organizations and people. It also promotes and raise the awareness of Life Cycle Thinking amongst the wider public and business.

Another Australian tool is the eToolLCD, which is an intuitive, open-use, web-based, whole building life cycle assessment (LCA) and design software for buildings. It is design focused and performance based. eToolLCD produces comprehensive reports complete with comparable sustainable building data. The tool is open for use to non-Australian practitioners.

Sustainable/Green Public Procurement policies in Oceania

In May 2006, the Australian Procurement and Construction Council (APCC) established a working group to develop an Australian and New Zealand Government Framework for Sustainable Procurement. The Framework delivers an agreed national and trans-Tasman approach to integrating sustainable development considerations in Australian and New Zealand public procurement. The purpose of this Framework is to provide a set of national principles to assist the governments of State, Territory and Commonwealth jurisdictions and New Zealand to integrate the principles of

⁵⁷ See <http://www.naspo.org/>.

⁵⁸ See <http://www.glcen-on-sp.org/home/> (last accessed 4 July 2018).

sustainability into the procurement of goods, services and construction (Australian Procurement and Construction Council, 2007).

Australia

Several states and cities produced a GRI. They differ substantial in adoption of S/GPP policies.

... at the level of the states

Victoria

In August 2011 Victoria produced the Sustainability Procurement Guidelines which take account of the environmental consequences of procurement decisions.

South Australia

The statutory corporation Zero Waste SA, enforced by the Zero Waste SA Act of 2004, has committed to a sustainability management policy and system that identifies environmental impacts of its operations and creates mechanisms to address them. One of the objectives is to support sustainable procurement practices by purchasing reused products and using 100% recycled products.

New Zealand

... at the level of the metropolitan cities

- City of Auckland

The City of Auckland is a member of the Global Lead City Network (GLCN) on Sustainable Procurement.⁵⁹ In the factsheet posted on the GLCN-website the procurement policies of Auckland are explained that were established after the Auckland Council was formed in October 2010, i.e. an *“amalgamation of eight councils into one super city”*. Strategy, achievements, etc. are highlighted. It seems all elements of a best practice are in place. In 2017 the Auckland Council Group Procurement Policy was adopted. This policy was drafted under the direction of the following five principles; working together, value the Maori, be sustainable, act fairly, deliver the best value for every dollar. The Maori people are the only specific group that is mentioned as partner, no other stakeholders are mentioned in the Policy. Under the principle ‘Be sustainable’ sustainable procurement is considered, including the life-cycle cost.

⁵⁹ See <http://www.glcn-on-sp.org/home/> (last accessed 4 July 2018).

2.0. Categorizing LCA in policies

First the 'life cycle approaches used in policy' will be discussed, followed by an overview of 'Policy fields and approaches' from two perspectives. Next the 'Policy framing processes and actors' will be referred to. Finally, the approaches used in S/GPP will be highlighted.

2.0.1. Life cycle approaches used in policy

From the screening of different sources (see for the methodological approach under 2.0.2.) it can be observed that the use of life cycle approaches in policies (outside OECD countries and in particular the European Union) is limited, except for the application within the context of S/GPP (see below).

European Commission (2010) made a distinction between the following 'life cycle approaches in policy':

- Life Cycle Assessment
hereby it can be referred to 'the rational theory' (see above) in which one would expect a full quantification exercise before making decisions in policy
- Life Cycle screening
this approach might rather tend to 'the discourse theory' in which the overall LC Thinking is a part of policymaking
- Footprinting
several formats of footprinting with different objectives can be observed: cf. carbon, water, ecological
- Environmental Input/Output-analysis
an economic Input-Output (I-O) Analysis is combined with environmental data for the respective sectors in a region/country to estimate the environmental impact
- Material Flow Analysis
an examination of the flow of materials through a sector and its supply chain, or through a region to identify key environmental issues
- Life Cycle Costing
this rather an application related to S/GPP: see under 2.2.4

Below examples are given of other than strict LC assessment/screening. The application of these techniques will be illustrated under 2.2.2. Policy fields and approaches.

Footprinting

Screening of the consulted literature learned that some countries are using footprinting for policymaking.

According to the Twelfth National Economic and Social Development Plan (2017-2021) Thailand supports "... the labeling of products regarding their carbon footprint ..." The country is preparing for the building of "a Life Cycle Inventory (LCI) database for the production and transport sectors to be the basis for setting environmental footprint standards."

In Chile LCA has a prominent role in the Energy Public Policy for "Development, adaptation and communication of tools to calculate and report environmental footprints." (Florenzano A., 2018).

At the subnational level South Africa "... metropolitan municipalities globally are now pressed to do the right thing as global consumers now demand greener products that lead to low organisational

and product carbon footprints.” (Owusu Agyepong, A. and Nhamo, G., 2015). It is reported that the City of Johannesburg “has embarked on the establishment of the bus rapid transport (BRT) system and the fully endorsed the Gautrain (rapid rail network) with the aim of reducing the city’s public transport carbon footprint.”

In their VNRs Czech Republic and Denmark e.g. are placing the use of footprinting within the context of striving towards a circular economy.

The Blue Certificate of the National Water Authority in Peru *“promotes the analysis of water footprint as a tool that allows the identification of direct and indirect water consumption in the production of goods and services ...”* (Valdivia, S. and Carrillo S., 2018).

Environmental I/O-analysis

There are not that many applications of environmental I/O analysis leading up to policymaking. This is not surprising, UNEP (2015) emphasizes that although *“This will allow prioritisation of economic activities for SCP interventions, by identifying such economic domains where SCP policy interventions would make the largest difference with regard to national SCP outcomes.”*, it requires *“Advanced analytical skills that may need to be used to disaggregate data include input-output analysis and life-cycle assessment.”*

An in-depth research of Säynäjoki A. et al. (2017) ‘Can life-cycle assessment produce reliable policy guidelines in the building sector?’ seems to add a layer to this observation: *“It thus seems that currently the published building LCAs do not offer solid background information for policy-making without deep understanding of the premises of a certain study and good methodological knowledge.”*

The PAGE report (2015) on Perú: La transición hacia una industria verde. Perspectivas de la industria manufacturera describes in a section on ‘Resultados de la aplicación empírica del modelo input-output extendido por el uso de recursos naturales’ how policy recommendations can be formulated on the basis of Environmental I/O-analysis in relation to the use of natural resources by industrial sectors.

Material Flow Analysis

Although Material Flow Analysis (MFA) is well-known within a research context. Policymaking could take advantage of MFA and showcase the environmental benefits to promote efficient use of materials (UNEP, 2016b).

2.0.2. Policy fields and approaches

There are two perspectives to the notion of ‘policy fields and approaches’: the policy instruments, on the one hand, and the sectoral policy, on the other hand.

Policy instruments

As shown in ‘A handbook for policymakers’ (UNEP, 2015a) four categories can be distinct:

- regulatory tools focusing on ‘command and control’;
- economic tools creating ‘market-based incentives’;
- information-based tools enabling ‘informed choices’;
- voluntary agreements setting ‘negotiated targets’.

In practice, the optimal mix of policy instruments can contribute to reach the objectives of sustainable consumption and production. An example is given in the study of De Camillis, C. and Goralczyk M. (2013): 'Towards stronger measures for sustainable consumption and production policies: proposal of a new fiscal framework based on a life cycle approach.'

The MS Excel matrix attached to this document indicates which kind of policy instruments have been used where (countries/provinces/municipalities). Note that indications sometimes can be found in VNRs and/or GRIs.

Note that other authors are using a different categorization and/or are supplementing the above list of policy fields in which LC approaches are. Valdivia, S. and Carrillo S. (2018) e.g. are describing the use of the policy instruments 'extended producer responsibility', 'zero waste'⁶⁰ and 'sustainable communication' in Latin-America countries.

Sectoral policy

Sectors can be classified according to the International Standard Industrial Classification of All Economic Activities (ISIC) (or e.g. the European equivalent Nomenclature Statistique des Activités économiques dans la Communauté européenne, NACE).⁶¹ However the literature on the application of LCA in policies is not coherent when mapping the different related sectors. Therefore, based on the literature consulted, in the MS Excel matrix subsectors have been grouped as far as possible.

2.0.3. Policy framing processes and actors

As Fotiou S. (N.D.) is indicating there are two important elements of the 'policy framing' phase in the policy cycle:

- identifying and accurately mapping causes and impacts of problems
therefore you need credible quantitative data, scientific analysis and framing solutions
- identifying stakeholders involved in the 'problem chain'
it is imperative to correlate impacts with behaviors and to find dependencies among groups.

This would mean that *ex ante*, i.e. before the policy is decided, these elements would be clearly outlined. However, based on experience with international and intra-national policy evaluation⁶², *"Often at this stage these may be vague but it is desirable that core parts of the goal set are measurable, so that later monitoring, evaluation and learning is possible."* (UNEP, 2015a). Although some (recently formulated) good practices could be identified, looking at the initiatives worldwide the same observation could be made.

Considering the description above, in the MS Excel matrix three columns are important: 'problem framing', 'monitoring and evaluation' and 'stakeholder involvement' to have an appreciation of the country/province/municipality.

⁶⁰ In this example 'zero waste' is referring to 'controlling the use of plastic bags' and 'promoting food donation before this becomes waste'.

⁶¹ It might be a recommendation to do an exercise in categorizing documented LCA policy or strategies according to ISIC (or NACE) categories. It might appeal to other stakeholders who are not familiar with LCA, but rather with sectoral approaches.

⁶² For example, by using guidelines to review outcome to impact.

2.0.4. Sustainable/Green Public Procurement policies

For more detail, see MS Excel file attached to this document.

Legal framework

One can observe that some countries are mentioning S/GPP explicitly in the constitution. However, it does not mean necessarily a legal framework is available, and vice-versa. Quite a lot of countries do not have legislation.

Policy cycle

Regarding the different steps in the policy cycle the selected countries (see under 2.0 for the methodological approach) have been going through problem framing, policy framing and policy planning (to a certain extent). Within the limits of this research assignment, it is often more difficult to identify (in detail) the policy implementation, and definitely the step of monitoring and evaluation.

Life cycle assessment and/or total cost of ownership is often referred to, but it is hard to find some evidence.

Involvement of stakeholders

Interaction with stakeholders is almost always the case for the selected countries. The extent to which this happens varies from country to country.

Sectoral policy

A variation can be observed as well when it comes to the targeted sectors. These are quite different from country to country, besides the fact that the circumscription differs from country to country (cf. the remark above on the possible use of ISIC (of NACE)).

Life cycle costing

Life Cycle Costing (LCC, in S/GPP sometimes called 'Whole Life Costing' or 'Total Cost of Ownership') is an economic application based on Life Cycle Thinking. The technique takes into account all the costs across the lifetime of a product, including purchase, operation, maintenance and disposal. LCC starts to get known, but it is hard to find concrete cases and evidence of application.

2.1. Potential of public authorities in specific countries

In this report on the states of life cycle approaches worldwide one should *"identify specific countries where such policies could be developed and advanced, based on existing work of the 10YFP Sustainable Public Procurement program and the Partnership for Action on Green Economy (PAGE)."* (cf. Terms of Reference of the research assignment).

As stated before the use of life cycle approaches in policies (outside OECD countries and in particular the European Union) is quite limited. Therefore, it is not obvious to use a set of criteria applicable worldwide to select specific countries where such policies could be developed and advanced. This is in contrast to S/GPP policies for which worldwide a lot of examples of (best) practices could be described under 2.1.: see below.

Sustainable/Green Public Procurement policies

From the observations during the research assignment it looks like the following parameters – within a context of sustainable development - are important for a public authority to advance on S/GPP.

*Integration*⁶³

There are many forms of ‘integration’, going from a ‘substantive alignment’ over ‘instrumental integration’ towards ‘administrative-organizational integration’, with different gradations: ‘collaboration’, ‘coordination’, ‘strict integration’. Within the context of this research assignment it has not been possible to identify the details in each and every country, but it could be observed that vertical and horizontal integration are crucial:

- **vertical integration**,
i.e. integration between different policy levels, to a certain extent
- **horizontal integration**,
i.e. integration at the same policy level, to a certain extent, between ministries/departments

Non-exhaustive examples of **vertical integration** can be found within the following context:

- **United Nations – member states**
the adoption of Agenda 2030, incl. the SDGs and their targets, with implicit and explicit references to public procurement, on the one hand, and the Voluntary National Reviews, on the other hand, are stimulating for member states to report on their S/GPP policy;
- **South-Africa – provinces - metropolitan municipalities**
the Constitution and the subsequent regulatory acts offer a framework for provinces (such as Western Cape) and metropolitan municipalities (like Cape Town and Nelson Mandela Bay) to advance on S/GPP, taking into account their particularities;
- **European Union – member states**
the EU Directives on public procurement with the inclusion of common societal goals require member states to act accordingly; monitoring the implementation and publishing good practices of public authorities within member states are an incentive to make progress on S/GPP.

It should be clear that a long-term systematic and coherent follow-up is essential.

When it comes to **horizontal integration** the strength of S/GPP lies in the authority of the department within the (local) government. There are two observations to make: 1) the responsibility for S/GPP should not be ‘on the side’, different from the ‘public procurement’ authority and 2) the more the authority belongs to the center of power the more effect it can generate. In countries like France and Malaysia the Prime Minister’s office has an important role. At the level of (metropolitan) municipalities the mayor can play an important role like e.g. in Quezon City (Philippines).

Furthermore, S/GPP embedded explicitly in a national strategy/plan can contribute to the overall internalization in ministries/departments.

⁶³ Note that this observation is in line with Principle 4 of the Rio Declaration in Environment and Development: “In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.”

Participation⁶⁴

When looking at the description of ‘participation’ the following elements are important to consider:

- taking collective responsibility in a conscious manner;
- conducting an open dialogue from an equal position;
- a relationship of trust between the government and relevant actors;
- a social learning process with a view to broadening support for the planning, execution and evaluation of a policy.

Interesting examples, non-exhaustive, can be found in India⁶⁵, Thailand⁶⁶ and several EU countries⁶⁷.

Innovation⁶⁸

One can observe that linking S/GPP with innovation brings new dynamics to the policy-making. Innovation within a context of sustainable development can have different formats targeting ‘circular economy’, ‘social innovation’, ‘leasing goods’, ‘service procurement’ etc. It involves as well actively other ministries/departments and stakeholders.

E.g. in Costa Rica⁶⁹, Norway⁷⁰, Sweden⁷¹, the GLCN cities⁷² and the City of Vienna⁷³ can be highlighted.

⁶⁴ Note that some elements of Principle 10 (ibid.) are linked to ‘participation’ (and ‘integration’): *“Environmental issues are best handled with the participation of all concerned citizens, at the relevant level. At the national level ... States shall facilitate and encourage public awareness and participation by making information widely available. ...”*

⁶⁵ Cf. Indian Railways, administered by the Ministry of Railways, involves stakeholders for different S/GPP projects (OECD, 2015).

⁶⁶ Cf. the Pracharat policy as repeatedly referred to in Thailand’s VNR.

⁶⁷ Cf. the National Action Plans via http://ec.europa.eu/environment/gpp/action_plan_en.htm (last accessed on 11 July 2018).

⁶⁸ Note that innovation not necessarily provide by definition better products within a context of sustainable development.

⁶⁹ Cf. ‘Política Nacional de Compras Públicas Sustentables y Creación del Comité Directivo Nacional de Compras Sustentables’ via http://www.digeca.go.cr/sites/default/files/de_39310_politica_nal_compras_publicas_sustentables-creacion_comite.pdf (last accessed on 11 July 2018).

⁷⁰ Cf. See <https://www.regjeringen.no/en/dokumenter/bedre-vekst-lavere-utslipp--regjeringens-strategi-for-gronn-konkurransekraft-engelsk/id2575420/> (last accessed on 10 July 2018).

⁷¹ Cf. <https://www.government.se/4aba88/contentassets/9ec42c71c00442a39d67169d3c25faed/national-public-procurement-strategy.pdf> (last accessed on 11 July 2018).

⁷² Cf. *“The Global Lead City Network on Sustainable Procurement is a group of 14 cities committed to drive a transition to sustainable consumption and production by implementing sustainable and innovation procurement.”* (see <http://www.glc-n-on-sp.org/>, last accessed on 11 July 2018).

⁷³ Cf. *“The Viennese strategy for research, technology and innovation (RTI Strategy) was published in 2007 and identifies five relevant fields of action, one of which is to make Vienna a ‘greenhouse’ for research and innovation. Given the volume of public purchases in Vienna, procurement was chosen as a strategic tool to stimulate innovation.”* (OECD, 2015).

Networking

A last parameter that can be essential in advancing S/GPP regards the membership of the respective public authority in an intra-national and/or international network. The peer-to-peer interaction is stimulating in making progress 'at home'.

An example of an intra-national network is the Municipal Collaboration for Sustainable Procurement (MSCP) in Canada; an international network such as the Global Lead City Network on Sustainable Procurement (GLCN) has already been mentioned several times as an example.

Identification of specific countries

Tested against the parameters and linked to the existing initiatives within the context of the 10YFP and PAGE, taking into account a regional balance, the public authorities (at different policy levels) in the following (developing) countries could have a potential to make further progress.

Africa – South Africa

South Africa is involved in PAGE and, inter alia through its province Western Cape, in 'The 10YFP Programme on Sustainable Public Procurement'.

As indicated above, the country complies for a large part with the parameters ('integration', 'participation', 'innovation' and 'networking') and does have a potential to make progress at all levels (federal, provinces, metropolitan municipalities ...). On the basis of the available assessments, taking into account the needs for creating enabling conditions at the different levels all over the country, the focus could lay in the implementation, and monitoring and evaluation.

These efforts might result in setting up the (further) use of LCA in a wider range of policies.

Asia – China and Thailand

China is involved in PAGE as well and, inter alia as a member of the Multi-stakeholder Advisory Committee, in 'The 10YFP Programme on Sustainable Public Procurement'. It has shown an ambitious approach (see above) when it comes to GPP and its support for local public authorities.

As indicated above, Thailand developed an ambitious approach for LCA in policies as well as for S/GPP policy. The country is meeting the defined parameters (see above) and, together with other countries in Southeastern Asia (Malaysia, Vietnam ...), can play a role in making progress in the whole region.

Latin America and the Caribbean – Peru and Costa Rica

Peru in South America is involved in PAGE. There is a lot of information available how the country could make progress when it comes to S/GPP. The country could learn from neighboring countries (Colombia, Chile ...) and others in LAC how to work at the different levels of policy-making.

Costa Rica in Central America has been dealing for a longer period of time with S/GPP but has recently shown ambition in making progress for LCA in policies as well as for S/GPP policy.

In order to contextualize the identification of specific countries with a potential to move forward, two remarks are important:

- there is need to pay attention at the (possible) ‘Matthew effect of accumulated advantage’⁷⁴; within this context it refers to the fact that countries that do have already a potential for making progress in using LCA in policies and/or in S/GPP will move faster with support coming in from different angles than countries that are just having an embryo for policy-making in that field;
- it has been stressed that participation in international networks is valuable; therefore, public authorities of the countries identified above that are not yet involved in these kinds of networks should consider doing so as soon as possible.

3. The policy cycle: enabling the environment

Based on the analysis under 2. and with the input of 6th Meeting of the International Forum on Life Cycle Assessment (LCA) Cooperation, incl. its follow-up, a SWOT-analysis has been conducted to see the various strengths, weaknesses, opportunities and threats of life cycle approaches in policies. Next the obstacles and gaps with regard to the application of life cycle approaches in policies are identified and described, in order to create the enabling conditions.

3.1. Strengths, weaknesses, opportunities and threats of S/GPP

A SWOT analysis is a technique used to help identifying Strengths, Weaknesses, Opportunities, and Threats. Usually the analysis is done through interaction (interviews, focus groups ...) with internal and/or external stakeholders. Within the context of this research assignment it has not been possible to act accordingly. Therefore, the results of a SWOT analysis for the S/GPP policy in Mauritius and Chile (Roos R., 2012) have been used to check against the elements from this research assignment, in particular regarding the best practices listed under 2.1., and where appropriate modified and/or complemented. The overall results are presented in Table 2 below. The focus lays on S/GPP.

⁷⁴ See https://en.wikipedia.org/wiki/Matthew_effect (last accessed on 13 July 2018). The notion stems from the sociology of science.

Table 2 – A SWOT-analysis of LCA in S/GPP
(based on own research, adapted from Roos R., 2012)

| Strengths | Opportunities |
|---|---|
| <ul style="list-style-type: none"> • A national S/GPP policy in place (eventual as part of an overall development or SCP strategy) • A national focal point for S/GPP • A website and news-letter used as communication tool • Strong commitment from and involvement of all partners and stakeholders in the implementation of S/GPP • Centralized and technically supported e-procurement system • Prioritization focusing on product categories • Experience with SPP for a longer time • Market readiness analysis considers the responsiveness of the market • Progress in implementing SPP is measured • Reporting at the international level through VNR's and/or GRI's • The MTF/UNEP support was successful | <ul style="list-style-type: none"> • Membership of a regional multilateral/intergovernmental organization (OECD, EU ...) • SPP implementation with support of IGO's (UNEP ...) or NGO's (IISD, ICLEI ...) • Country and/or provinces/municipalities perform well in terms of economic development and transparency • Strong government buying power (in certain areas) |
| Weaknesses | Threats |
| <ul style="list-style-type: none"> • Need for capacity building of procurement staff • Lack of resources • Lack of previous experience on SPP • Lack of procurement experts for direct support (for preparation of specifications, life cycle costing methodology, scoring criteria, etc.) • Due to lack of local expertise, external support from national and international consultants and development partners still needed • No standard sustainability criteria available • Implementation has hardly started • The MTF/UNEP support was followed by a long period of inactivity | <ul style="list-style-type: none"> • Market readiness: Uneven responsiveness of the market • Limited availability of eco-labels and forms of justification • Reluctance to change, new mindset required • Lack of prioritization • SPP not embedded yet at level of public bodies/procuring entities • No single assessment process and Action Plan for the modernization of public procurement (separate processes and plans for general improvements of the public procurement system facilitated by the World Bank and for SPP; not aligned) • Reluctance to change, new mindset required |

3.2. Further analysis leading to define enabling conditions

After the problem framing, in which “*the policy community and general public debate the issues related to SCP, gather information and agree on the nature of a policy problem*” (UNEP, 2015a), the policy framing process will intend to make progress by taking the following steps (ibid.):

- development of guiding policy principles;
- construction of general policy statement;
- definition of measurable policy goals.

The question arises what are the obstacles and the gaps preventing progress and which enabling conditions are necessary to move to implementation? Below, a distinction is made between the observations of ‘LCA in policies’ and for ‘S/GPP policies’.

* * * * *

In general terms of ‘The application of life cycle assessment to public policy development’ Christina Seidel (2016) states that “*the positive impact of LCA on public policy to date is limited.*” From her study she lists a number of barriers (read: ‘obstacles and gaps’) “*preventing its lack of greater influence*”:

1. decision-makers lack the background or technical literacy to interpret and incorporate the results of the LCA;
2. technical results are not presented in a way that can be positively utilized by decision-makers;
3. decision-makers have a lack of trust of LCA results or the overall process;
4. clear or consistent results may be lacking as outcomes of the LCA;
5. LCA results are not seen as neutral;
6. governments lack a framework for integrating LCA information into the decision-making process;
7. government agencies bring specific interests to the process, potentially limiting the scope based on internal focus and knowledge;
8. comprehensive public LCAs require considerable resources to complete;
9. complete and accurate inventory data may be difficult to find.

To overcome these barriers Seidel formulate several recommendations to create enabling conditions: to involve actively of decision-makers and other stakeholders throughout the LCA process, to translate values and limitations of LCA into their language, to provide case studies of successful applications of LCA, to present assumptions and uncertainties transparently, and to ensure the representation of a full range of stakeholders in the project team.

In fact, the enabling conditions for Resource Efficiency and Cleaner Production (RECP) and Eco-Innovation UNEP formulated in 2015 are additional and in line with these recommendations: “*Through an effective combination of policy instruments, governments can create the enabling conditions to support RECP and eco-innovation. Developing and implementing the appropriate policy framework requires multi-stakeholder participation and combined efforts to understand the economic and business case for engagement*” With the underlined parts the link with Seidel’s recommendations are emphasized.

It is interesting to see the parallel with the success factors for LCA in policies Fotiou (N.D.) brought forward: continuous engagement with stakeholders; participation of industry boosts implementation; financial savings promote upscale of policies; need for quantitative thresholds; measure of impact reduction.

Sustainable/Green Public Procurement policies

Different studies (Roos R., 2012; UNEP, 2013; Owusu Agyepong, A. and Nhamo, G., 2015; OECD, 2015; UNEP, 2016) have been looking into the question of removing obstacles and creating enabling environments for S/GPP, inter alia in developing countries. The results are based on surveys and interviews targeting public authorities and stakeholders.

The goal of the review of these studies was to look into the existing literature on S/GPP, identify the reported obstacles and major gaps in S/GPP policy and to enable understanding of moving towards enabling conditions.

From the review it is clear that it all starts with 'political willingness and leadership' to set up adequate management systems for public authorities in charge with public procurement. Obstacles prevent public authorities from bridging the gaps needed to create enabling conditions for S/GPP. In the studies mentioned above the following major obstacles are commonly emphasized:

- first, the lack of knowledge with regard to sustainable development and about the environment, and how to develop related criteria for S/GPP; therefore capacity-building remains a key issue since the efficiency and effectiveness depends on having qualified and knowledgeable people to manage and implement S/GPP;
- second, related to the previous one, lack of an S/GPP policy (incl. guidelines), without an adequate legal framework and/or regulation; it does not encourage public authorities for a systematic and coherent implementation;
- third, for turning the first and the second obstacle into an enabling environment, sufficient resources and tools for S/GPP through sustained efforts are lacking to bring about successful change; with regard to developing countries, the need for donor support is brought forward;
- fourth, the perception that sustainable/green products and services may/would be more expensive than conventional ones; it requires the use of life cycle costing;
- fifth, the absence of setting objectives and collecting data for S/GPP that can be used to monitor and manage performance; this can be related to a performant system of e-procurement;
- sixth, the lack of interaction with the market on S/GPP, e.g. during the first step of the procurement cycle, i.e. the identification of the needs.⁷⁵

In fact, these obstacles, to be turned into enabling conditions, together with the important parameters ('integration', 'participation', 'innovation', 'networking') to identify the potential of public authorities, observed during this research assignment (see under 2.5.), are similar elements for the steps to be taken when going through the four stages of a SCP policy cycle: see Table 4:1 in Sustainable Consumption and Production Global edition - A Handbook for Policymakers (UNEP, 2015a).

⁷⁵ Within this context is interesting to note the citation of one interviewee during the first SPP Global Review (UNEP, 2013): *"The public procurement functions claim that the market can't supply them with the more sustainable products, but the suppliers of those products say that they can't get into public procurement."*

Almost all countries and/or provinces/municipalities listed under 2.1 can be characterized (to a certain extent) by the effort – sometimes quite recently - of creating enabling conditions and paying attention to the listed important parameters.⁷⁶ However there is a number of countries for which the S/GPP policy has been analyzed that cannot be listed because they are not meeting the requirements contained in the enabling conditions/parameters.

The observation made by UNEP (2013) summarizes the above: *“While many of the drivers and barriers appear to be similar across regions, the enabling conditions needed to implement SPP/GPP in developing countries are more acute. Whereas governments in the more environmentally engaged countries struggle with barriers such as increasing the inclusion of a wider range of aspects, linking databases, creating training programs and synchronising ecolabel information⁸⁵, governments in developing countries are struggling to build more capacity in procurement in general, to build the case for starting work on SPP/GPP, and to link it to economic and political priorities.”*

4. Conclusions and recommendations

The ‘best practices’ highlighted in this report are selected on the basis of the methodological approach as described under 2.0. In research data collection and data quality are, as always, the Achilles tendon of a study. This leads to the following observations regarding ‘LCA in policies’, with a focus on S/GPP:

- information is not always formulated in a ‘SMART’ manner;⁷⁷
- the jargon used worldwide to indicate one and the same is sometimes different;
- the context (institutional, legal, practices, cultural ...) differs from country to country;
- ‘green’ and ‘sustainable’ are quite often used in an interchangeable way;
- all too often there is not really a long-term systematic and coherent follow-up of policies;
- ...

Therefore, it is challenging to identify ‘best practices’ based on the same set of criteria. Furthermore, within the limits of this research assignment, one cannot be exhaustive: there are definitely more best/good/smart examples on this globe.

From the start it was the objective to look worldwide for ‘best practices’ for ‘LCA in policies’, in particular policies in S/GPP. There is a wealth of information on S/GPP, but as different authors emphasized the broader application of ‘LCA in policies’ (maybe except for OECD countries, in particular the EU member states) is just starting.

Nevertheless ‘best practices’ of ‘LCA in policies’, in particular on S/GPP, could be found in each and every region of the world. Taking into account the enabling conditions, some have been suggested as having a potential to make further progress.

The following recommendations can be made:

- update on a regular basis and expand to more countries the UNEP Global Review of Sustainable Public Procurement, incl. the factsheets;

⁷⁶ Note that the list of countries and/or provinces/municipalities is not-exhaustive, i.e. there might be other examples, but within the limits of this research assignment it was not possible to identify these (best) practices.

⁷⁷ ‘SMART’: Specific, Measurable, Assignable, Realistic, Time-related.

- set up a database with 'best practices' in S/GPP at subnational level (states/provinces/municipalities);
- note again the danger of the 'Matthew effect of accumulated advantage': efforts should be made not to leave a country/province/municipality behind;
- support of intra-national and/or international networks on S/GPP is stimulating for public authorities involved in that kind of interaction;
- take into account the elements of SWOT-analyzes and the requirements for enabling the environment of policymaking;
- mirror the efforts on S/GPP to 'LCA in policies' (cf. Global Review, database, network ...);
- stimulate the reporting on LCA in policies, incl. S/GPP, through countries VNRs;
- ...



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Global Reporting Initiative (to access the database of sustainability reports):

see <http://database.globalreporting.org/>.

ICLEI - Local Governments for Sustainability:

see <http://www.iclei.org/>.

International Green Purchasing Network:

see <http://www.igpn.org/>.

International Institute for Sustainable Development:

see <https://www.iisd.org/>.

UN Agenda 2030 - Voluntary National Reviews (to access the database of country reports):

see <https://sustainabledevelopment.un.org/vnrs/>.

Annex – Matrix of life cycle approaches in policies

See MS Excel-file in annex to this document.







Bernard MAZIEN | Going for 'Sustainable Development' - Visiting Professor | www.bernardmaziin.be

Michel Van Hammestraat 76, B-8310 Brugge, Belgium | Mobile +32 479 799 645 - Fax +32 50 35 03 27 - Email bernard.maziin@telenet.be