

Lean-Sustainable Procurement

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Procurement
Management

Questions?

Objectives of this Class

- Revue Lean and Digitize
- Sustainable Procurement
- Lean and Clean Procurement
- Some Solutions
- Future of Sustainable Procurement

The Lean Thinking Principles

VALUE

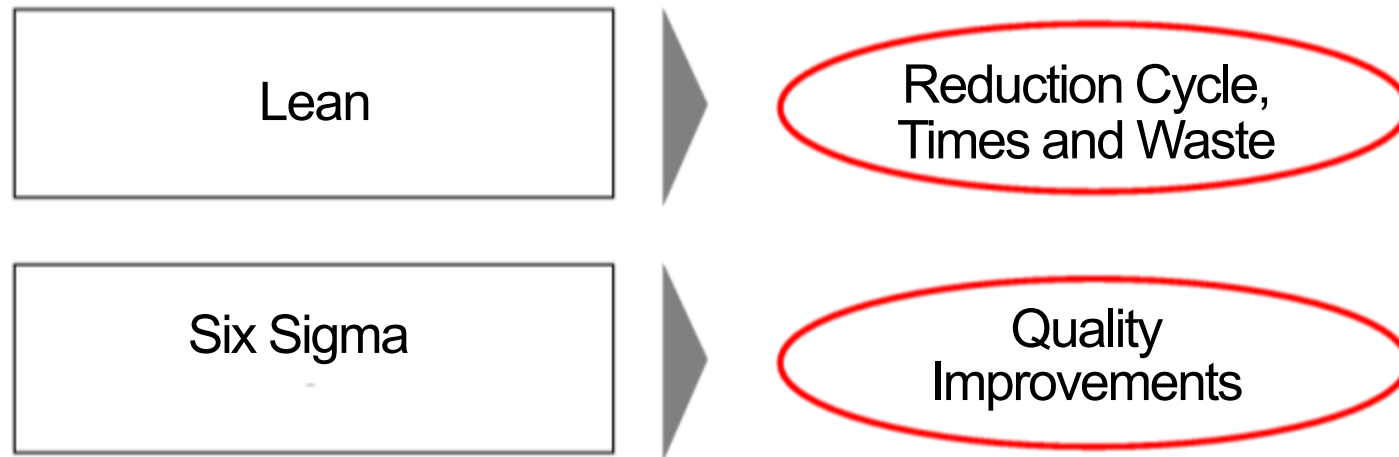
FLOW OF VALUE

FLOW

PULL

PERFECTION

Lean Six Sigma



Splitting of Value-added Activities

Work with added value

Activities adding value to the product/service

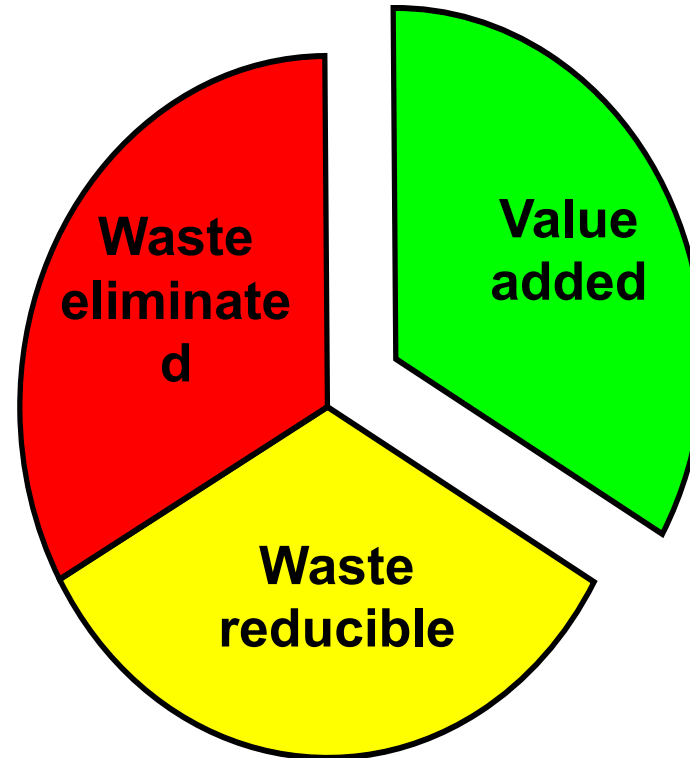
Activities for which the customer is prepared to pay

Waste to be eliminated

Activities that do not add value, but that can be eliminated

Waste to be reduced (hidden)

Activities that do not add value, but that in certain circumstances must be carried out



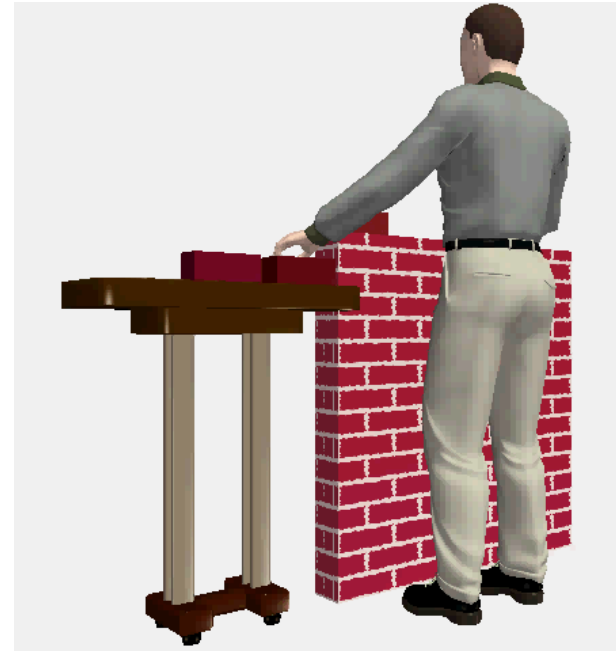
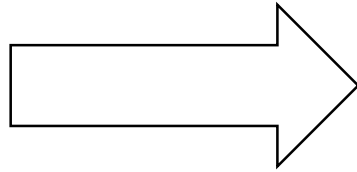
Lean Waste: Seven Plus Two

1. Over production: prior to demand
2. Waiting: for information, materials, people, equipment, etc.
3. Transportation: more conveyance than is necessary
4. Over-processing: e.g., any form of inspection
5. Inventories: having more than absolute minimum
6. Motion: more than necessary to complete the task
7. Defects or Rework

++++

8. Waste or human knowledge in HR resources
9. Waste in resources: Sustainability

Example of Lean



Main Tools of the Lean Methodology

- The Visual Approach (Value Stream Mapping)

- A3

- PDCA

- 5S

- The Five Why

.....

- And so on

Tools Value: Visual Stream Maps(VSM)

The **VSM** helps the team uncover the wastes.

A **Value Stream Map (VSM)** helps you see the big picture of how a process flows from beginning to end.



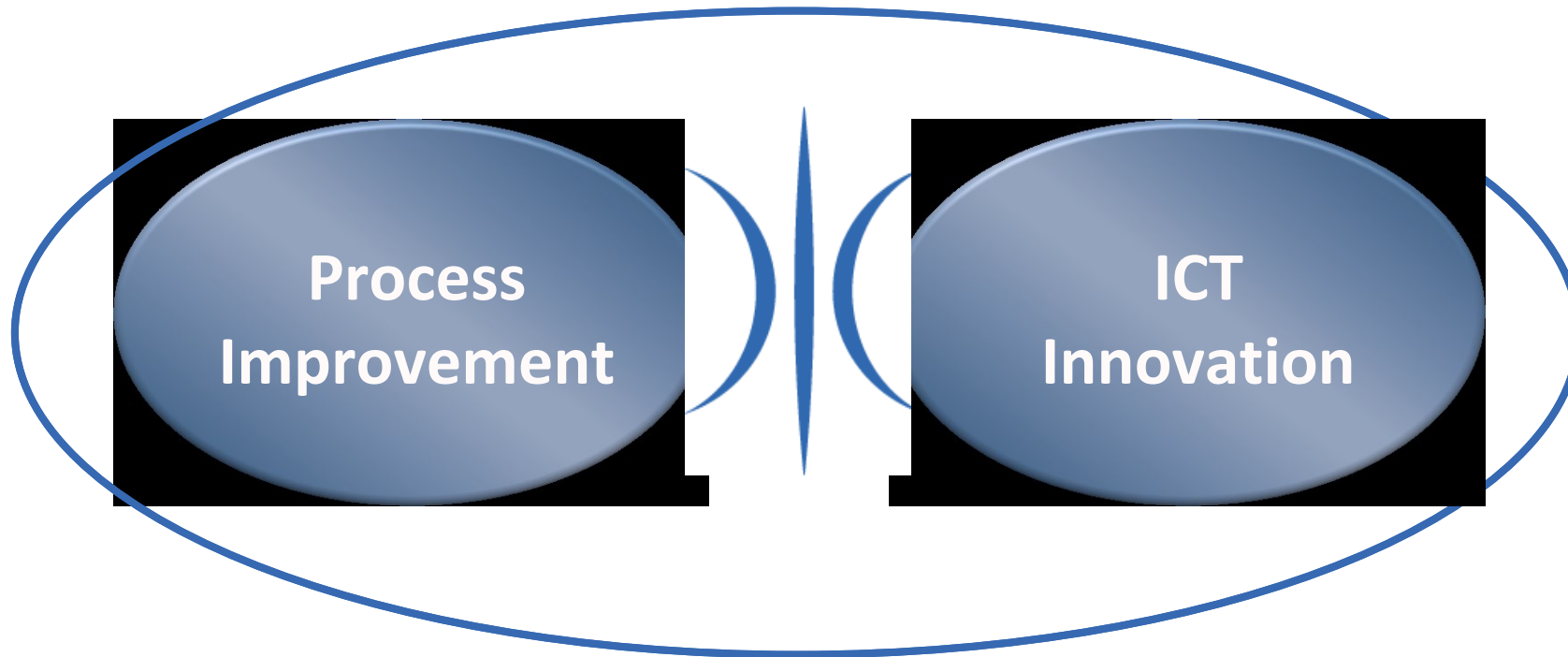
The intent is to make the status of the operation clearly visible to anyone observing that operation
Visual controls are like a nervous system
Visual controls identify waste, abnormalities, or departures from standards"

"Pull" Production Control Systems

- Just-In-Time (JIT)
 - First described by Henry Ford in *My Life and Work* (1922)
- Kanban
- Drum-Buffer-Rope (Goldratt)

- All reduce inventory and its carrying costs, along with cycle time.
- Tie-in with small lot and single unit processing

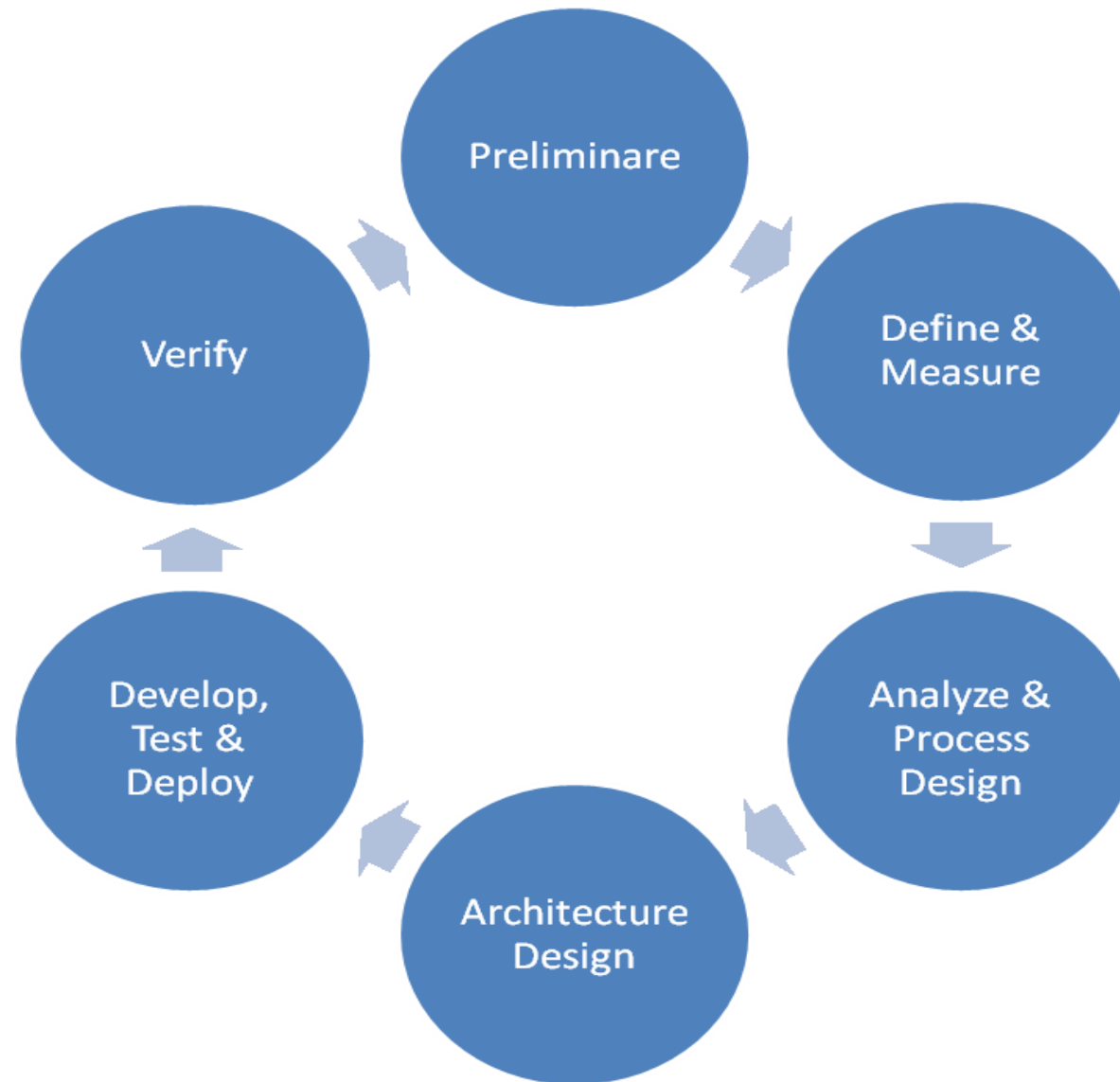
Model for Managing the Change



Lean & Digitize

	<i>Process Improvement</i>	<i>ICT Innovation</i>
	<i>Lean Six Sigma</i>	<i>ICT Project</i>
<i>Origin</i>	Introduced in Toyota	Introduction of the computers around '60
<i>Born</i>	Around '40-'80	Diffuzion around 80-'90
<i>Objectivesi</i>	Improve the process through organized actions on the organizations, layout and using statistical methods	Digitize functions and applications
<i>Dangers</i>	Do not take into account of the automations	Digitize broken process and make defects quicket

La Metodologia del Lean & Digitize



Procurement Management

Procurement management (PM) is the oversight of materials, information, and finances as they move in a process from vendors to manufacturer to wholesaler to retailer to consumer.

Sustainable Procurement (SP) is



... the process whereby organizations meet their needs for goods, services, works and utilities in a way that achieves “value for money on a whole life basis” in terms of generating benefits not only to the organization, but also to society and the economy, whilst minimizing, and if **possible avoiding** damage to the environment



Lean Sustainability

Sustainability commonly refers to the characteristic of a process or state which can be maintained at a certain level indefinitely.

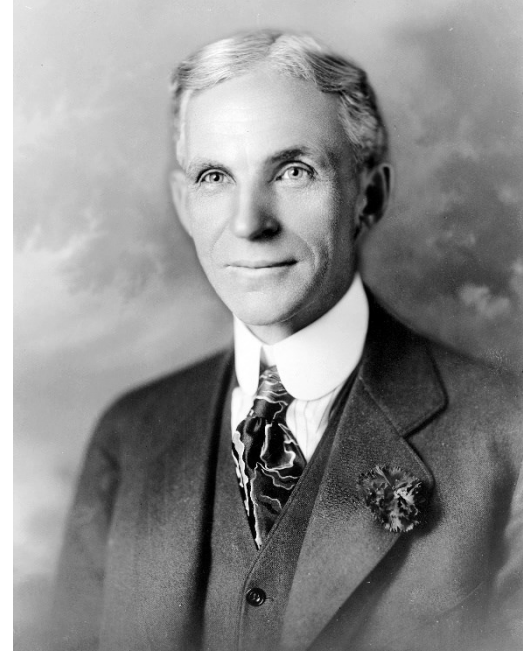
Sustainability addresses how processes and operations can last longer and have less impact on ecological systems.

Non-value adding activities consume resources and therefore, over the long run are not economically sustainable.

If an activity does not add value, it should be reduced or eliminated if possible.

Ford's Green Manufacturing

- Recovery and reuse of solvents
- Distillation of waste wood for chemicals yielded enough money to pay 2000 workers.
 - Kingsford charcoal
- Design of parts and processes to minimize machining waste
- Reuse of packaging materials
- Slag → paving materials and cement



Sustainability vs. “Green”

World Business Council for Sustainable Development:

Sustainability

Meeting the needs of the present without compromising the ability of future generations to meet their own needs

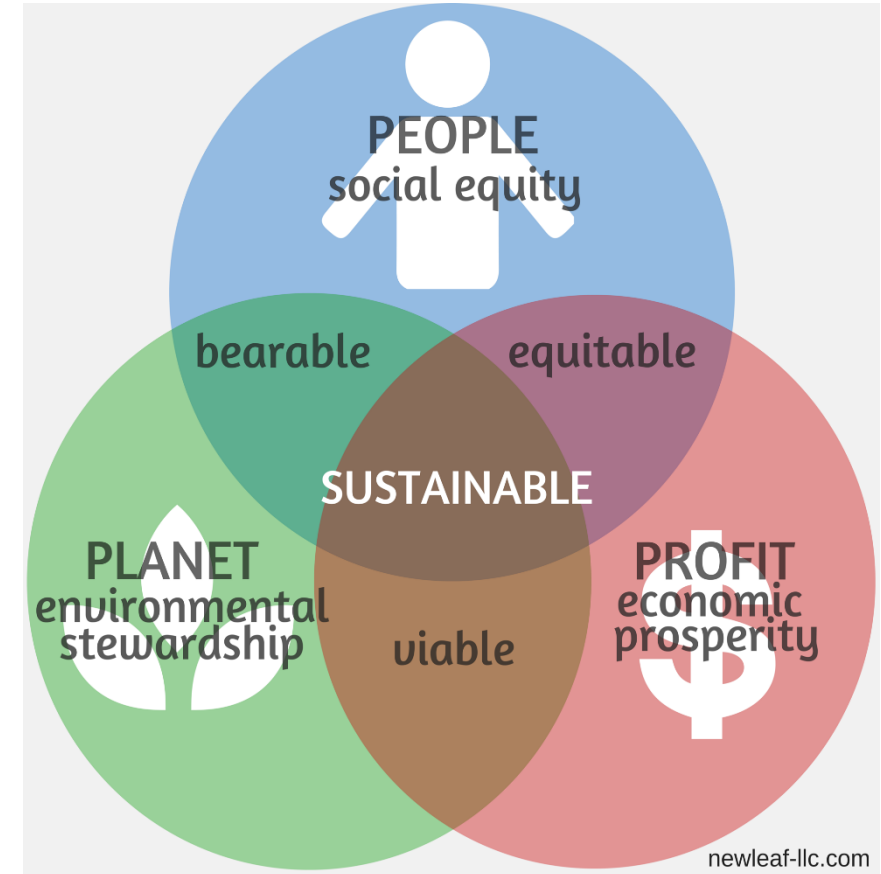
Green has a primary focus on the environment

Sustainable includes environment + social + economics

Triple Bottom Line

The **triple bottom line** (abbreviated as "**TBL**" or "**3BL**", and also known as "**people, planet, profit**" or "**the three pillars**") captures an expanded spectrum of values and criteria for measuring organizational (and societal) success: economic, ecological and social.

Wikipedia



Why now Sustainability is even More Important

Regulatory compliance requirements

Health and safety

Rising ratio of material to labor costs

Cost savings or cost avoidance

Ethical, legal and societal concerns

Opportunity to improve corporate image, community and customer relations

Anticipate and pre-empt customer demands.

Adding Clean to Lean

Lean Waste

Environmental Impact

Defective Products or
Components

Overproduction of
Components or Final
Products

Waiting

Adding Clean to Lean (Cont.)

Lean Waste

Environmental Impact

Unnecessary Transport or Motion

- Energy is used for transport and produces emissions. Transport can cause damage or spills. More space is needed for additional motion, requiring heating and cooling.

Excess Inventory

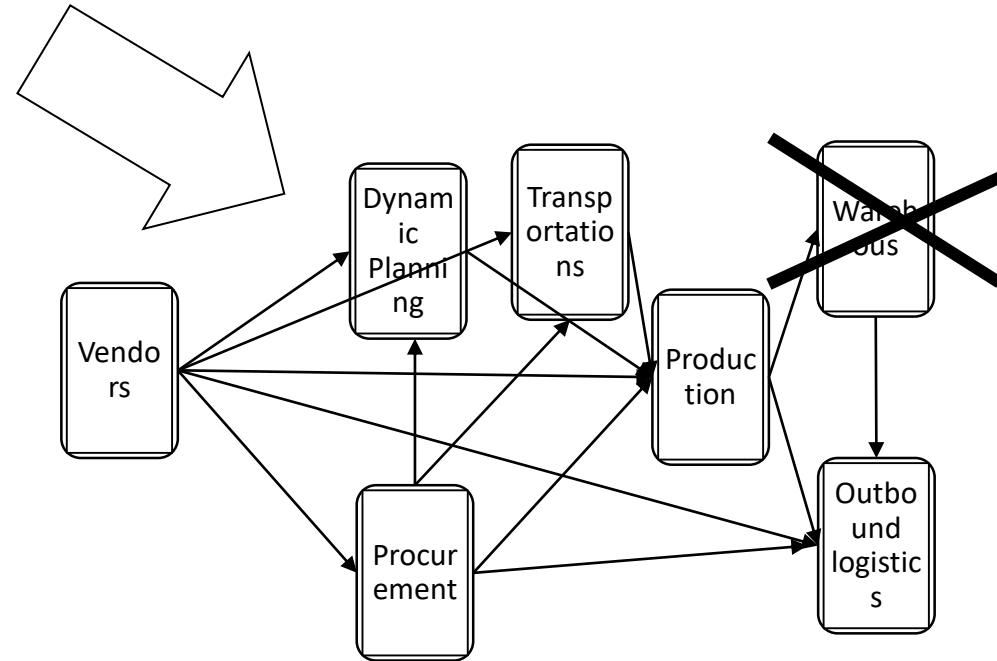
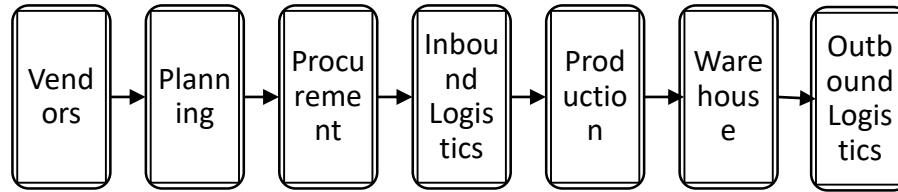
- More packaging and space is needed for excess inventory. Storage could cause deterioration of products and waste. Requires energy to heat, cool, and light inventory space.

Extra Processing

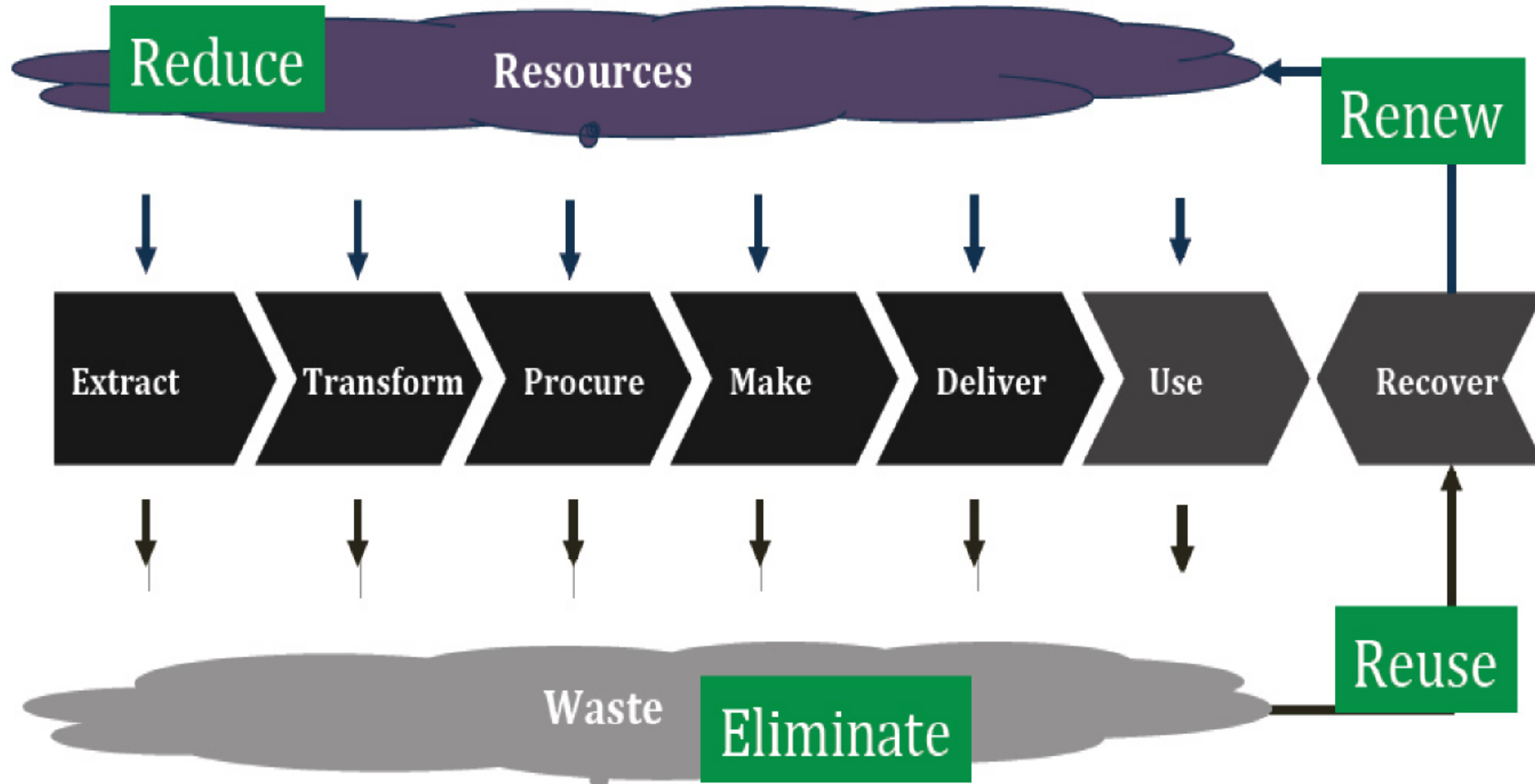
- If processing is unnecessary, increases waste and energy use. Consumes more parts and raw materials.

Sustainable Procurement Management

From the Supply Chain to the Value Network



Sustainable Procurement



Design

An eco friendly design approach leads

- Minimum Operations
- Less material usage
- Proper use of Computational fluid dynamics tools can used to reduce the exhaust emissions at designing level

SUSTAINABLE PUBLIC PROCUREMENT (SPP)

A huge opportunity to

- Promote sustainable
- Development and the 2030
- Development agenda



The 10YFP SPP Programme - working together to accelerate the shift to SPP

The 10YFP Program on Sustainable Public Procurement (SPP), led by UN Environment, is a global multi-stakeholder platform that supports the implementation of SPP.

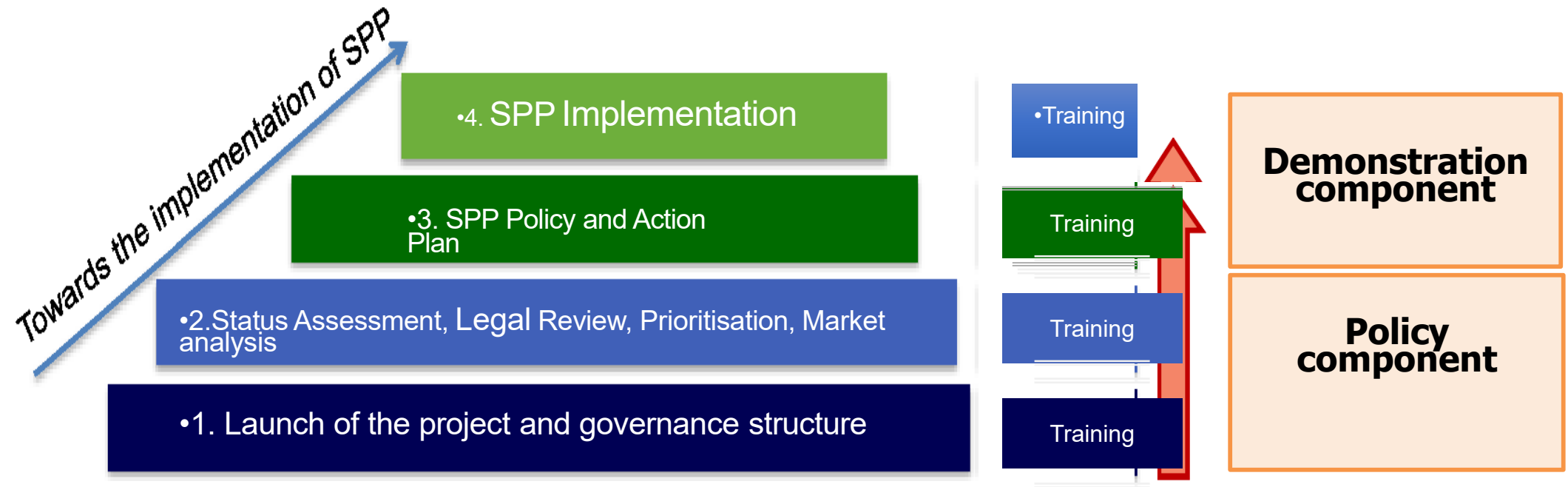


107 Partner Organizations and 14 Individual Experts in more than 40 countries around the globe

Builds synergies between partners to achieve the Sustainable Development Goals (SDG) target on SPP.



UN Environment SPP Approach: Four main steps



Where to Go for Help



- For definitions of other common sustainable manufacturing terms, please see [this](#) guide from the UN Environment Program.
- The EPA also has a [Terms of Environment](#) page with definitions for a variety of sustainability terms.
- [This](#) site from the Pollution Prevention Resource Exchange (P2Rx) has collected a list of sites where you can find case studies on pollution prevention.
- More information on how sustainability can be incorporated into existing lean efforts can be found from the [EPA](#) and the [Green Suppliers Network](#).

Summary

- Business activities can contain enormous quantities of built-in waste (muda, friction).
 - The greatest obstacle to the waste's removal is usually failure to recognize it.
 - Lean and Sustainability includes techniques for recognition and removal of the waste.
 - This delivers an overwhelming competitive advantage.
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- Most of lean and sustainability is common sense!



Resume



- Teacher and consultant
 - Laurea Ingegneria Politecnico di Torino. MESS at the Carnegie Mellon University, Pittsburgh, PA, USA.
 - Experience in manufacturing, service, information systems and financial services
 - Teaching experience in Management Science and Procurement
 - Worked in 10 countries
 - Master Black Belt in GE
-
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Back Up

Environmental Waste

- EPA's [Lean and Environment Toolkit](#) describes environmental waste as *“any unnecessary use of resources or a substance released into the air, water, or land that could harm human health or the environment.”*¹
- Environmental Waste includes:
 - Any energy, water, or other materials used that are more than what is really needed to meet the customer's needs
 - Hazardous materials and substances
 - Pollutants, residuals, and other material wastes released into the environment (air emissions, wastewater discharges, hazardous wastes, solid wastes)
- As mentioned previously, adding “clean” to lean can result in significantly greater returns for your company. The following chart outlines how lean wastes have an environmental impact.

Sort

- **Definition**: Involves the sorting of the contents in an area and removing unnecessary items.
- **Why**: Problems are reduced & it improves work flow & communication.
- **Problems avoided**: Clutter in the workplace. (i.e. Time wasted searching for tools and/or parts. Un-needed inventory such as parts and/or material.)

Set In Order

- **Definition**: Involves the arrangement of the necessary items for easy and efficient access and keeping them in that order.
- **Why**: Eliminates many kinds of waste. (i.e. Scrap, time, lost opportunity.)
- **Problems avoided**: Waste in motion, searching, human energy, excess inventory, & defective products.

Shine

- **Definition:** Involves the cleaning of everything in the work area and keeping it clean.
- **Why:** Use cleaning as a way to ensure that the area & equipment are maintained as they should be “in like new condition”.
- **Problems avoided:** Low moral, safety issues, & hidden defects.

Standardize

- **Definition:** Involves creating or updating SOPS (KSAT – Level of Detail) for keeping the area organized, orderly, clean and make the workplace more visual and **obvious**.
- **Why:** Integrates first 3 Ss into a unified structure.
- **Problems avoided:** helps to prevent regression.

Sustain

- **Definition:** Involves education, communication, and supervisory and management engagement to ensure that everyone adheres to the standards developed for workplace organization.
- **Why:** Benefits of doing it exceed the excuses of not doing it.
- **Problems avoided:** Clutter, chaos, & bad communications.

Product and Process Life Cycle Considerations

- This category of initiatives looks for ways to achieve sustainability objectives over the entire life cycle of a product or service.
- It is common for this category to include look externally, beyond the boundaries of a single transformation process to the entire value chain.
- Sustainability activities in this category span design, development, manufacture, as well as reverse logistical flow of items in a closed-loop value chain.
- The firms implementing initiatives within this category are often more mature in terms of their sustainability programs.
- Examples: reuse, reclamation, refurbish, remanufacturing, recycling, dematerialization, etc.

Environmental Stewardship

- This category of initiatives looks for ways to achieve sustainability objectives given societal concerns of: global warming, resource depletion, energy and water shortages, solid waste disposal and other environmental concerns.
- It is common for activities this category to be confined to a single facility (i.e., they are seldom extended to the value chain).
- Initiatives in this category include industry specific voluntary programs: the Environmental Protection Agency's 33/50 program, International Organization for Standardization (ISO) 14000 environmental management systems standards program.
- Example: reliance upon renewable energy sources (e.g., biomass, solar power, wind power, etc)

Facilities Design, Construction, Environmental Control and Maintenance

This category of initiatives also looks for ways to achieve sustainability objectives given societal concerns of: global warming, resource depletion, energy and water shortages, solid waste disposal and other environmental concerns.

It is common for activities this category to be confined to a single facility (i.e., they are seldom extended to the value chain).

Initiatives in this category examine material use (e.g., using recycled and recyclable materials), reducing natural resource consumption thereby achieving long-term reductions in operational costs (e.g., capturing greywater), employing automatic environmental monitoring, sensing and control systems (e.g., light dimming), reduced maintenance (e.g., living roofs).