

**GREEN AND  
SUSTAINABLE  
CHEMISTRY:**  
FRAMEWORK MANUAL



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**About the  
Green and  
Sustainable  
Chemistry  
Framework  
Manual**

This Framework Manual on Green and Sustainable Chemistry has been developed pursuant to the mandate received from the United Nations Environment Assembly (UNEA) in 2019 through Resolution 4/8. Its main purpose is to facilitate a better understanding and provide guidance to countries and stakeholders relevant for advancing green and sustainable chemistry. The Manual will be supplemented with an Executive Summary for decision-makers, as well as specific manuals, resources permitting, covering specific topics to be determined.

A group of experts provided guidance on the annotated outline of the Manual at a workshop on 5-6 December 2019 in Geneva, Switzerland. A revised version took into account comments and advice provided. A first draft of the Framework Manual was reviewed at a virtual expert meeting on 22 June 2020. Input received at the meeting as well as written comments provided by experts were taken into account in preparing this revised draft. A final consultative process to provide final input on the draft Manual took place during the fourth quarter of 2020.

**Table of Contents**

**1 INTRODUCTION**

page **1**

**2**  
CHEMISTRY AND  
SUSTAINABLE  
DEVELOPMENT:  
**CHALLENGES AND  
OPPORTUNITIES**

page **9**

**3** WHAT CAN  
GREEN AND  
SUSTAINABLE  
CHEMISTRY ACTION  
ACHIEVE? **OBJECTIVES  
AND GUIDING  
CONSIDERATIONS**

page **27**

**4** **CHEMISTRY  
AND  
TECHNOLOGY  
INNOVATION TO  
ADVANCE GREEN  
AND SUSTAINABLE  
CHEMISTRY**

page **35**





**<sup>5</sup> ENABLING  
POLICIES, TOOLS  
AND INSTRUMENTS**  
TO ADVANCE GREEN  
AND SUSTAINABLE  
CHEMISTRY

page **55**

**<sup>6</sup> ENABLING  
SECTORS AND  
PROGRAMMES** TO  
ADVANCE GREEN AND  
SUSTAINABLE CHEMISTRY

page **67**

**<sup>7</sup> METRICS AND  
REPORTING** TO  
ADVANCE GREEN AND  
SUSTAINABLE CHEMISTRY

page **77**

**<sup>8</sup> DEVELOPING  
GREEN AND  
SUSTAINABLE  
CHEMISTRY ROAD MAPS  
BY STAKEHOLDERS**

page **83**





# INTRODUCTION >

Background	2
Mandate for this Manual	3
Purpose and approach	3
Overview of the framework manual	4
Stakeholder engagement in preparing the manual	7

## Background

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The concepts of green and sustainable chemistry have gained significant attention around the world, given their potential to innovate and advance chemistry to help achieve global sustainable development goals and targets. While the concept of “green chemistry” was elaborated through the well-known 12 principles published in 1998 (Anastas and Warner 1998), “sustainable chemistry” has recently evolved as a closely related, yet more holistic concept (Blum *et al.* 2017; Kümmerer 2017).

This Manual takes stocks of the evolution of, and developments in the field of green and sustainable chemistry, including their scientific and social dimensions. Building on this discussion, it provides guidance considered relevant for various stakeholders to scale-up green and sustainable chemistry innovation action and assess management practices. The Manual builds on the 2019 United Nations Environment Programme (UNEP) report ‘Analysis of Stakeholder Submissions on Sustainable Chemistry Pursuant to UNEA Resolution 2/7’ (UNEP 2019a), which was discussed at the fourth session of the United Nations Environment Assembly (UNEA-4) in 2019.

The above cited UNEP (2019a) report summarized more than 50 submissions from stakeholders presented as best practices in sustainable chemistry. It noted that despite valuable progress made, identifying best practices is a challenging task, given the absence of common assessment criteria. It also pointed out that stakeholders have a broad understanding of sustainable chemistry. Drawing on the analysis, the report welcomed further cooperation to facilitate a common understanding of the sustainable chemistry concept, including the relationship between green and sustainable chemistry.

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