

1    **Supplementary Information**

2    **Environmental and socio-economic sustainability assessment of remediation**

3    **alternatives for a contaminated oil refinery site in Southern China**

4    *Yingluo Jia<sup>a</sup>, Xianglan Li<sup>a,\*</sup>, Hongzhen Zhang<sup>b</sup>, Chunlong Zhang<sup>c</sup>, Yafei Wang<sup>e</sup>, Meijie Zhu<sup>d</sup>, Chunhui  
5    Sang<sup>a</sup>, Yuxin Nie<sup>a</sup>, Hao Meng<sup>a,b</sup>, Peng Liu<sup>a,f</sup>, Jingqi Dong<sup>b</sup>*

6

7    *<sup>a</sup>Faculty of Geographical Science, Beijing Normal University, Beijing 100875, China.*

8    *<sup>b</sup>Chinese Academy of Environmental Planning, Beijing 100006, China.*

9    *<sup>c</sup>University of Houston–Clear Lake, Houston, Texas 77058, USA.*

10    *<sup>d</sup>Faculty of Business, Hong Kong Chu Hai College, Hong Kong 999077, China.*

11    *<sup>e</sup>School of Mechanical Engineering, Beijing Institute of Petrochemical Technology, Beijing 102617,  
12    China.*

13    *<sup>f</sup>Beijing Construction Engineering Environmental Remediation Co., Ltd., Beijing 100015, China.*

14    **\*Corresponding author:**

15    Email: xlli@bnu.edu.cn (Xianglan Li)

16

17    **Contents**

18    **1. Social and economic sustainable indicators**

19    **Table S1** Social and economic indicators for MCA

Category	Label	Sub-category	Category	Priority	Weighting	Unit
Economic	ECON 1	Total economic cost	Quan	1	¥	
	ECON 2	Net present value	Quan	0.5	¥	
	ECON 3	Employment opportunity	Qual	0.5	n/a	
	ECON 4	Net present value ratio	Quan	0.5	n/a	
	ECON 5	Operation time	Quan	1	days	
Social	SOC 1	Installation and operational risks	Quan	1	hrs	
	SOC 2	Ethics and equality	Qual	0.5	n/a	
	SOC 3	Dust, traffic, noise, vibration	Qual	1	n/a	
	SOC 4	Communities and community involvement	Qual	0.5	n/a	
	SOC 5	Robustness of sustainability assessment	Qual	0.5	n/a	

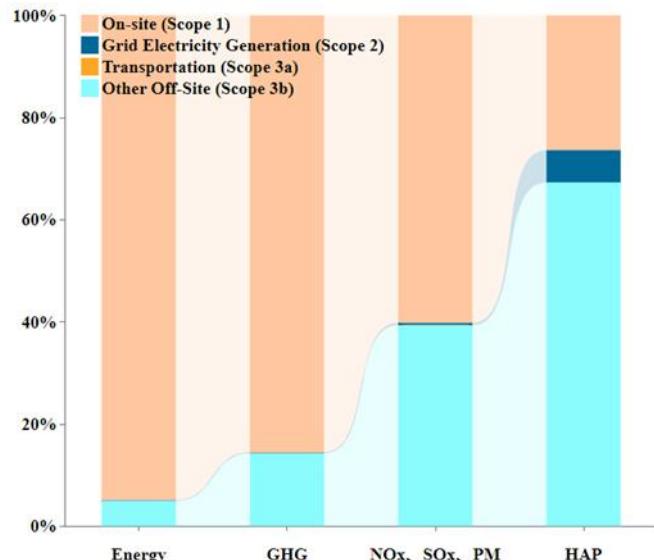
20    Qual= qualitative; Quan= quantitative

21    **2. Overall sustainability appraisal based on BNs**



**Fig. S1** Bayesian network structure of comprehensive benefit

### 25 3. Quantification of environmental impacts



**Fig. S2** Proportion of environmental impacts at different scopes