Table S2: Resilience metrics identified through scoping review.

		Data extracted		Data inferred		
Nr.	**Source**	**Resilience metric**	**Elements**	**System type**	**Basin(s) of attraction**	**Disturbance**
1	Onta, PR; Dasgupta, A; Harboe, R (1991)	"Resiliency (RES) is considered the maximum number of consecutive periods of shortages that occur prior to recovery to an acceptable state within the planning period."	Not applicable	Socio-technical	single	multiple
2	Harada, Y; Sakuramoto, K; Tanaka, S (1992)	$\frac{-1}{\ln \|\lambda_D\|}$	λ_D: dominant eigenvalue	Socio-ecological	single	continuous
3	Mujumdar, PP; Vedula, S (1992)	$\gamma = P(X_{t+1} \in V_{t+1} \mid X_t \in U_t)$	V_t: set of satisfactory outputs in period t X_t: output in period t U_t: set of unsatisfactory outputs in period t	Socio-technical	single	multiple
4	Ives, AR (1995)	$1/(1 - \|\|\lambda_{\pm}\|\|^2)$	λ: eigenvalue	Socio-ecological	single	continuous
5	Srinivasan, K; Philipose, MC (1996)	"Resilience is computed as the ratio of the number of times the system moved from failure to success, to the total number of periods the system was in a failure state."	Not applicable	Socio-technical	single	multiple
6	Loucks, DP (1997)	$Resilience\ of\ C = \frac{number\ of\ times\ satisfactory\ C_t\ follows\ unsatisfactory\ C_t}{number\ of\ unsatisfactory\ C_t\ values}$	C:selected criterion t:simulated time steps	Socio-technical	single	multiple
7	Xu, ZX; Jinno, K; Kawamura, A; Takesaki, S; Ito, K (1998)	$\beta = \begin{cases} \frac{1}{(1/NF)\sum_{i=1}^{NF} FP_i}, & NF \neq 0 \\ 1, & NF = 0 \end{cases}$	N: length of planning period F: set of all unsatisfactory outputs FP_i: total days of *i*th consecutive period of water deficit NF: not explained	Socio-technical	single	multiple
8	Perrings, C (1998)	$\lim_{t\to\infty} p^t = p(0)P^{\infty}$	p: vector of state probabilities P^{∞}: matrix of limiting state transition probabilities	Socio-ecological	multiple	unclear
9	Arreguin-Sanchez, F; Manickchand-Heileman, S (1998)	$\frac{\frac{B_{max} - B_{min}}{B_{ini}}}{R}$	$B_{max} - B_{min}$: maximum proportional change in biomass B_{ini}: baseline biomass value R: time lapsed from the beginning to the end of the impact	Socio-ecological	single	continuous with abrupt end
10	Batabyal, AA (1999)	$\lim_{t\to\infty} \text{Prob(ecosystem functional at time t)} = \left\{\frac{\alpha_1(\alpha_2+\beta_2)+\alpha_2\beta_1}{(\alpha_1+\beta_1)(\alpha_2+\beta_2)}\right\}\left\{\frac{\alpha_3(\alpha_4+\beta_4)+\alpha_4\beta_3}{(\alpha_3+\beta_3)(\alpha_4+\beta_4)}\right\}$	α_i: mean of life distribution function of species i β_i: mean of death distribution function of species i	Socio-ecological	multiple	continuous
11	de Azevedo, LGT; Gates, TK; Fontane, DG; Labadie, JW; Porto, RL (2000)	$P_{res} = \begin{cases} \frac{1}{N_f N_{cf}}\ for\ N_f \geq 1 \\ 1\ for\ N_f = 0 \end{cases}$	N_f: total number of occurrences of system failures over period of observation N_{cf}: maximum number of consecutive periods of failure over period of observation	Socio-technical	single	multiple
12	Perrings, C; Stern, DI (2000)	"This use of the threshold level of $M_t/\widehat{K}_{t+1}$ below which M is unchanged expresses the idea of loss of resilience. The system is less resilient the further K is from M."	K_t : current carrying capacity M_t : long-run equilibrium carrying capacity	Socio-ecological	single	continuous
13	Ares, J; Bertiller, M; del Valle, H (2001)	$r = -\sum_{i=110-260}(\text{NDVI}_{j,i} - \text{NDVI}_{est,i})$	$i = 110 - 260$: drying part of annual cycle NDVI: Normalized Difference Vegetation Index j: sampling area	Socio-ecological	single	continuous
14	Maier, HR; Lence, BJ; Tolson, BA; Foschi, RO (2001)	$\gamma = \frac{\Phi(-\beta_1, -\beta_2; \rho_{12})}{\Phi(-\beta_1)}$	β: reliability index $\Phi(-x)$: failure probability of x ρ: correlation coefficient	Socio-technical	single	multiple
15	Perez-Espana, H; Arreguin-Sanchez, F (2001)	"[...] resilience was estimated as the inverse tangent of the ratio of resistance versus the *recovery time* or the time biomass requires to reach	Not applicable	Socio-ecological	single	continuous with abrupt end

		a level close to the original value, where 'close' represents a value within ±10% of the original biomass."				
16	Merabtene, T; Kawamura, A; Jinno, K; Olsson, J (2002)	$\mathrm{Res} = \begin{cases} \dfrac{1}{\frac{1}{f}\sum_{i=1}^{f}\mathrm{df}_i} & \text{if } f \neq 0 \\ 1 & \text{if } f = 0 \end{cases}$	f: total number of failures df_i: number of days of performance deficit during ith failure	Socio-technical	single	multiple
17	Kristensen, NP; Gabric, A; Braddock, R; Cropp, R (2003)	"Resilience is defined the negative real part of the eigenvalue closest to zero."	Not applicable	Socio-ecological	single	sudden
18	Chang, SE; Shinozuka, M (2004)	$Pr(A\|i) = Pr(r_0 < r^* \; and \; t_1 < t^*)$	A: predefined performance standards i: magnitude of seismic event r_0: loss of performance r^*: rapidity performance standard t_1: time to full recovery t^*: rapidity performance standard	Socio-technical	single	sudden
19	El-Baroudy, I; Simonovic, SP (2004)	$RS_f = \left[\dfrac{\int_{t1}^{t2} t\tilde{T}(t)dt}{\int_{t1}^{t2} \tilde{T}(t)dt}\right]^{-1}$	$t1$: lower bound of the support of the system recovery time $t2$: upper bound of the support of the system recovery time $\tilde{T}(t)$: system fuzzy maximum recovery time	Socio-technical	single	multiple
20A	Prasad, TD; Park, NS (2004)	$I_r = 1 - \left(\dfrac{P_{int}}{P_{int}^{max}}\right)$	P_{int}: power dissipated in network P_{int}^{max}: maximum power that would be dissipated internally per design	Socio-technical	single	continuous
20B	Prasad, TD; Park, NS (2004)	$I_n = \dfrac{X}{X_{max}}$	X: weighted surplus power X_{max}: maximum surplus power	Socio-technical	single	continuous
21	Peterson, GD (2006)	"The behavior of a discrete state can be assessed in terms of the probabilities of leaving that state and remaining in that state. The probability that a state will persist is a measure of its resilience. If the probability that a state will persist is less than the probability that it will not, then it is vulnerable to change. By mapping these probabilities across space, the areas of vulnerability and resilience in a landscape can be estimated (Fig. 1)."	Not applicable	Socio-ecological	multiple	multiple
22	Mondal, MS; Wasimi, SA (2007)	$\gamma_{r,s}(n) = 1 - \mathrm{Prob}\left[\left(X_{r,s+1} \cap X_{r,s+2} \cap \ldots \ldots \cap X_{r,s+n}\right) \in F \| X_{r,s} \in F\right]$	r: year s: season X: system output state n: steps ahead F: failure state	Socio-technical	single	multiple
23A	Jain, SK (2009)	$\gamma_{\mathrm{mean}} = \dfrac{1}{M}\left[\sum_{j=1}^{M} d_j\right]^{-1}$	M: total number of failure events d_j: duration of failure event j	Socio-technical	single	multiple
23B	Jain, SK (2009)	$\gamma_{\max} = \left[\max\{d_j\}\right]^{-1}$	d_j: duration of failure event j	Socio-technical	single	multiple
24	Petchey, OL; Gaston, KJ (2009)	"Our measure of resilience, R_X, is therefore change in functional diversity caused by the loss (or gain) of a species, subtracted from 1."	Not applicable	Socio-ecological	multiple	sudden
25	Reed, DA; Kapur, KC; Christie, RD (2009)	$R = \dfrac{\int_{t_1}^{t_2} Q(t)dt}{(t_2 - t_1)}$	$Q(t)$: quality curve t_1, t_2: endpoints of the time interval under consideration	Socio-technical	single	sudden
26A	Wang, DW; Ip, WH (2009)	$r_i = \dfrac{\sum_{j=1}^{g} p_j q_j \min\{d_i, s_j, c_j\}}{d_i}$	g: suppliers p_j: supply reliability of node j q_j: reliability of edge j d_i: demand of node i s_j: available supply of node j c_j: flow capacity of edge j	Socio-technical	single	sudden

26B	Wang, DW; Ip, WH (2009)	$R = \sum_{i=1}^{n_1} w_i r_i$	n_1: total number of nodes w_i: weight of demand node *i* r_i: node resilience	Socio-technical	single	sudden
27	Whitson, JC; Ramirez-Marquez, JE (2009)	$R_{(\alpha,\beta)} = P(\varphi(x) \geq d \mid \alpha, \beta) \forall \beta$	α: external failures β: specific α-failure case scenario $\varphi(x)$: network capacity	Socio-technical	multiple	sudden
28	Dolling, OR; Varas, EA (2010)	"[...] function includes the complement of resilience which is the probability that the system does not recover from a state of failure. It is calculated as the probability that the system is in state of failure in the following period given that it is currently in a state of failure."	Not applicable	Socio-technical	single	multiple
29	Cox, A; Prager, F; Rose, A (2011)	$DSER = \frac{\%\Delta DY^m - \%\Delta DY}{\%\Delta DY^m}$	$\%\Delta DY^m$: maximum percent change in direct output $\%\Delta DY$: estimated percent change in direct output	Socio-technical	single	sudden
30A	Lesnoff, M; Corniaux, C; Hiernaux, P (2012)	"The first output considered was the recovery time *T* (in year)"	Not applicable	Socio-ecological	single	sudden
30B	Lesnoff, M; Corniaux, C; Hiernaux, P (2012)	$m = \left(\frac{n}{n(0)}\right)^{1/T}$	m: average annual empirical population multiplication rate n: population size T: recovery time	Socio-ecological	single	sudden
31A	Roe, E; Schulman, PR (2012)	"[...] we developed a graphic display of what we term an "edge resilience trajectory" (ERT). [...] One measure of the ERT is to track a moving range of edge R^2s across the baseline period."	Not applicable	Socio-technical	multiple	multiple
31B	Roe, E; Schulman, PR (2012)	"A second approach to an ERT is to generate a series of R^2s by adding one day at a time to an initial subperiod, such that the final R^2 becomes the baseline R^2 for the entire period."	Not applicable	Socio-technical	multiple	multiple
32	Mumby, PJ; Wolff, NH; Bozec, YM; Chollett, I; Halloran, P (2013)	"Resilience was calculated as the probability that a reef remained above the unstable equilibrium after a prescribed period of time during which external disturbance could occur."	Not applicable	Socio-ecological	multiple	continuous
33	Duveneck, MJ; Scheller, RM (2016)	$r_{jk} = \frac{\sqrt{2} - d_{jk}}{\sqrt{2}}$	d_{jk}: minimum multi-dimensional Euclidean distance between time (*j*) and (*k*)	Socio-ecological	single	sudden
34	Bakhshipour, AE; Dittmer, U; Haghighi, A; Nowak, W (2019)	$HPI = 100 \times \left(1 - \frac{V_{flooding}}{V_{runoff}}\right)$	$V_{flooding}$: total water that overflows the nodes V_{runoff}: total runoff volume	Socio-technical	single	multiple
35	Hassan, D; Burian, SJ; Bano, R; Ahmed, W; Arfan, M; Rais, MN; Rafique, A; Ansari, K (2019)	$\mathrm{Resilience} = \mathrm{P}\{\mathrm{S}(\mathrm{t}+1) \epsilon \mathrm{NF} \mid \mathrm{S}(\mathrm{t}) \epsilon \mathrm{F}\}$	S(t): system state variable under consideration NF: not explained F: not explained	Socio-technical	single	multiple
36	Min, O; Chuang, L; Min, X (2019)	$R = \sum_{i=1}^{m} w_i \times P_R(t_{ci})$	w_i: weight coefficient $P_R(t_{ci})$: real functionality level at time t_{ci}	Socio-technical	single	sudden
37	Leandro, J; Chen, KF; Wood, RR; Ludwig, R (2020)	$FRI_h(t) = \begin{cases} \frac{\sum WF_y \cdot I_y(t)}{\sum WF_y}, t \in [t_s, t_e] \\ FRI_h(t-1) \cdot \left[\prod (I_x)^{WF_x}\right]^{\frac{0{,}001}{\sum WF_x}}, t > t_e \end{cases}$	WF_y: event phase weighting factor I_y: event phase indicators $[t_s, t_e]$: time interval of event WF_x: recovery phase weighting factor I_y: recovery phase indicators	Socio-technical	single	sudden
38	Salomon, J; Broggi, M; Kruse, S; Weber, S; Beer, M (2020)	$Res = E\left[\frac{\int_0^T Q(t)dt}{\int_0^T \mathcal{T}Q(t)dt}\right]$	$Q(t)$: system performance $\mathcal{T}Q(t)$: target system performance	Socio-technical	single	sudden
39	Sharma, P; Chen, ZQ (2020)	$R_{sys} = \frac{\int_{t_{oe}}^{t_{re}} f_{rec}(t)\mathrm{dt} + (T_C - T_{\mathrm{sys}})Q_{100}}{T_C \times Q_{100}}$	$f_{rec}(t)$: system recovery function T_C: control period	Socio-technical	single	sudden

			T_{sys}: time required for the system to recover after the strike Q_{100}: performance measurement when the system is fully functional t_{oe}: time of the event t_{re}: time for the entire system to fully recover			
40	Verol, AP; Lourenco, IB; Fraga, JPR; Battemarco, BP; Merlo, ML; de Magalhaes, PC; Miguez, MG (2020)	$mFResI = 1 - \frac{\left(FRI_{Project}^{Future} - FRI_{Project}^{Present}\right)}{FRI_{Doing\ nothing}^{Future}}$	$FRI_{Project}^{Future}$: Flood Risk Index considering the project in a future condition $FRI_{Project}^{Present}$: Flood Risk Index considering the project in the present condition $FRI_{Doing\ nothing}^{Future}$: Flood Risk Index considering 'doing nothing' in a future condition	Socio-technical	single	sudden
41	Wang, Y; Taylor, JE; Garvin, MJ (2020)	$FI \approx 4\sum_{i=1}^{n}\left[q_i - q_{(i+1)}\right]^2$	n: number of states q: root of the probability of an observed network metric	Socio-technical	multiple	sudden