

FAIR: Policy recommendations summary table

Grouped into the areas used in Netherlands meeting: Asset Management Decisions (AMD) safety (certification) versus risk (failure probability).; Information management (IM) Good Housekeeping and risk based plans on management risk; External Coordination (EC) National versus local decision making; Strategic Perspective (SP) Is green infrastructure legitimate infrastructure, and could it be cheaper?

Topic area	Policy area (expressed as action)	Meaning and information	Comments & experiences of FAIR beneficiaries
Asset Management Decisions (AMD)	Understand and invest in asset health using a risk-based planning framework (including NBS health).	<p>Asset health is measured and reported as a Measure of Success (MoS) by many private water service providers in England, and for some it is a variant of the former serviceability indicators (not necessarily called asset health). In England, Ofwat has included the number of external flooding incidents per year (including the impact of severe weather) as one of its long list of asset health metrics (Ofwat, 2018). Asset condition alone is not considered to be a good asset health indicator (CH2M, 2017). However, it is clear that the role of asset health needs to be considered in the context of a risk-based planning Framework. It is potentially a measure of asset condition/ performance and/ or service and fitness for purpose. There is an understanding that asset health has a number dimensions and is inextricably linked with the concept of resilience, but it is still not fully defined. Different facets of asset health may be more relevant for different asset types and their circumstances: <i>“Understanding how asset health will affect service and outcomes is essential for understanding the costs and benefits of maintaining or improving asset health, and for justifying an asset health focused business case.”</i> There is a need <i>“to improve.... understanding of the relationship between asset health, service impact and underlying levels of expenditure on capital maintenance”</i>.</p> <p>There is a need to consider the applicability and value of using the asset health concept for NBS.</p>	Asset health seems to be a widely-used concept but not in the FRM domain.

	Review and maintain institutional Health	This is the logical extension of asset health and relates to the effectiveness of the Institutions engaged in FRM. Institutional health needs to be considered in the context of a risk-based planning Framework. It is potentially a measure of Institutional condition/ performance and/ or service and fitness for purpose.	This is a new concept that has been developed in FAIR.
	Ensure funding (and funding cycles) are aligned with strategic opportunities	<i>“...low public awareness and a focus on short-term value have constrained action...”</i> NIC (2018). <i>“...funding for maintenance has (also) been committed to 2021. This allows flood risk management authorities to plan work with greater certainty... however, other resource funding is confirmed on an annual basis”</i> (NIC, 2018).	
	Balance total investments, not separating capital, maintenance and operational expenditure boundaries		
	Balance risk bearing with rewards.		
Information management (IM)	Close plan-do-check-act cycle: introduce (improved) monitoring, and adapt maintenance strategy on new insights / prove that meet design situations.	<i>“...shortcomings in asset maintenance and replacement for both water and flood management infrastructure; in addition, risk management authorities are not thought to have a joined-up picture of where infrastructure needs replacing or systems enhancing...”</i> (NIC, 2018).	
	Establish and keep up to date an inventory and maintenance of asset health; using defined metrics	Asset health monitoring and data management using Smart systems, e.g. Bentley (2018): <i>“the right work on the right equipment at the right time”</i> . Requires KPIs.	
	Link strategic and operational levels with tactical handshake.	Move beyond subjectivity into a more formalised condition that minimises the risk of error: <i>“...asset condition and the probability of an asset failing is more of a subjective assessment that normally depends on an asset inspector’s judgement..”</i> (EA, 2017).	
	Utilise latest ideas (international best practices)	There may be financial barriers to investment in innovation, especially related to risks and rewards.	

	and technologies, including real-time sensing.		
External Coordination (EC)	Centralist (strategic) overview in typically decentralised regimes, to deal with existential challenges caused by fragmented ownership, responsibilities and accountability.		
	Balance risk bearing with rewards		
Strategic Perspective (SP)	Establish a strategic perspective and approach	This should include: systems thinking; risk-based frameworks; resilience of assets and asset health (e.g. Ofwat, 2017). Metrics need to be established for e.g. cross-sector asset health (JBA, 2017). In the UK, “... <i>long-term planning for water resources and flood risk management is well established and sophisticated, but discrete plans have been prepared for different types of water infrastructure... better coordination to enable long-term, more efficient and effective planning and delivery, joining up benefits and requirements across different aspects of water management</i> ” (NIC, 2018)	
	Review and sustain Institutional Health		
	Strive for flexibility to ensure robustness and resilience ¹ .		

¹ CH2M (2017) differentiates between resilience and asset health: “*help determine how well companies understand the risks associated with resilience and asset health...*”.

	Understand and act on using Green infrastructure (NBS) as a legitimate asset.	There is a growing usage of NBS for FRM, notably using green infrastructure and natural flood management (e.g. Acteon, 2018). However, the concept that NBS needs to be considered in terms of asset management (e.g. as in ISO 55000) is as yet, only beginning to emerge (e.g. Papacharalampou et al., 2017) with ideas for integrating natural capital into asset management portfolios.	
	Utilise multifunctional assets – new and retrofit.		
	Link strategic and operational levels with tactical handshake.		

References

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