Zbl 238.10002
Erdős, Paul; Ryavec, C.
A characterization of finitely monotonic additive functions. (In English)
J. Lond. Math. Soc., II. Ser. 5, 362-367 (1972). [0024-6107]

Let $f(n)$ be a real valued function. $f(n)$ is additive if $f(a \cdot b) = f(a) + f(b)$ for $(a, b) = 1$. $f(n)$ is said to be finitely monotonic if there exists an infinite sequence $x_k \to \infty$ and a positive constant λ so that for each k there are integers $1 \leq a_1 < \ldots < a_n \leq x_k$, $n > \lambda x_k$ and $f(a_1) \leq f(a_2) \leq \ldots \leq f(a_n)$. The authors prove: An addiitve function $f(n)$ is finitely monotonic if and only if $f(n) = c \log n + g(n)$ where $\sum_{g(p) \neq 0} \frac{1}{p} < \infty$.

Classification:
11A25 Arithmetic functions, etc.