We consider a network consisting of a transceiver-receiver pair and n_r relay nodes. We assume that there is no direct link between the transmitter and the receiver. Assuming an amplify-and-forward relaying protocol, the relays collectively materialize a network beamformer to establish a link between the transmitter and the receiver. The transmitter and the receiver are assumed to have their own sources of power such as power grid, however, the relays are assumed to be connected to a central energy harvesting module with a battery with capacity of B^{max}. We consider a communication scheme which consists of k time frames where in each time frame, a specific amount of the harvested energy will be allocated to each relay. Aiming to optimally calculate the relays' beamforming coefficients, we consider two different scenarios. In the first scenario, we consider an offline case where the channel state information for all links over all time frames is available and maximize the throughput of the network subject to two sets of constraints on the total power consumption by the relays over each time frame. The first set of constraints are energy causality constraints which ensure that only the energy which has been harvested up to any given time frame may be consumed. The second set of constraints are to prevent overflow of the battery at any given time frame by optimally using the available energy. We show that this throughput maximization problem is convex, and thus, it is amenable to a computationally efficient solution. In the second scenario, we consider a semi-offline case where only the statistics of the channel coefficients are available. In this scenario, assuming the aforementioned two sets of constraints, we aim to maximize the source-destination throughput averaged over all channel realizations. For this problem, we propose a simple algorithm to optimally calculate the relay beamforming vectors over each time frame. Our simulation results show that the gap between the value of the average throughput of the offline case and semi-offline case remains constant as the energy arrival rate increases. However, for any fixed value of energy arrival rate, this gap increases as the number of time frames increases.