```
theory Hnr_Recursion
  imports Hnr_Base
begin

lemma hnr_recursion:
  assumes
    mono_option: "⋀x. mono_option (λr. f r x)"
  and
    step: "⋀r ri x xi. (⋀x' xi'. hnr (Γ x' xi') (ri xi') (Γ' x' xi') (r x'))
        ⟹ hnr (Γ x xi) (fi ri xi) (Γ' x xi) (f r x)"
  and
    mono_heap: "⋀x. mono_Heap (λr. fi r x)"
  shows
    "hnr (Γ x xi) (heap.fixp_fun fi xi) (Γ' x xi) (option.fixp_fun f x)"
  sorry

end
```