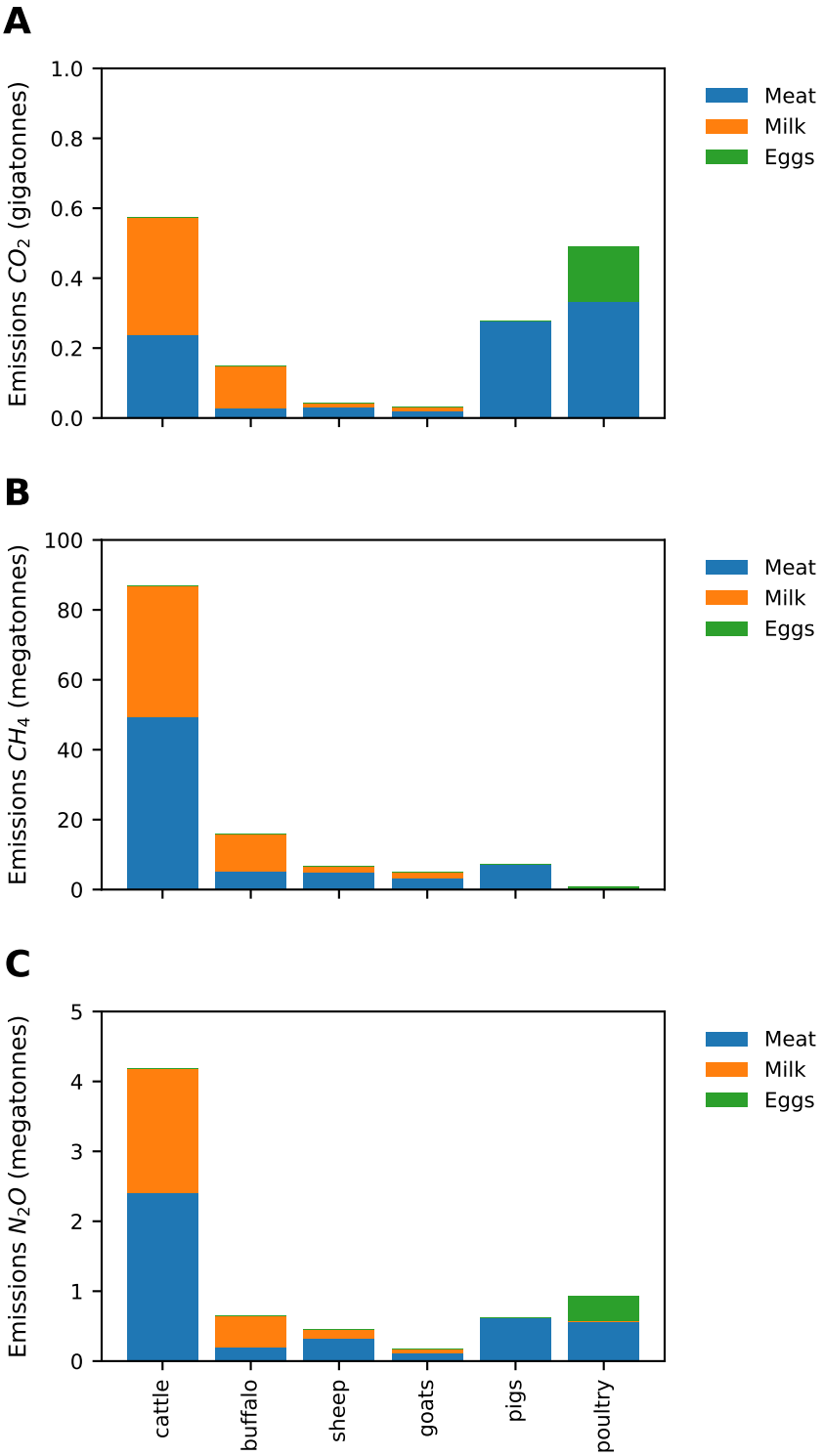

Figure 1-S1. Gas-specific emission footprints of animal agriculture.

Assembled from species, product and country-specific production data from FAOSTAT for 2018 and species, product, region and greenhouse gas-specific emissions data from GLEAM (MacLeod et al., 2018).

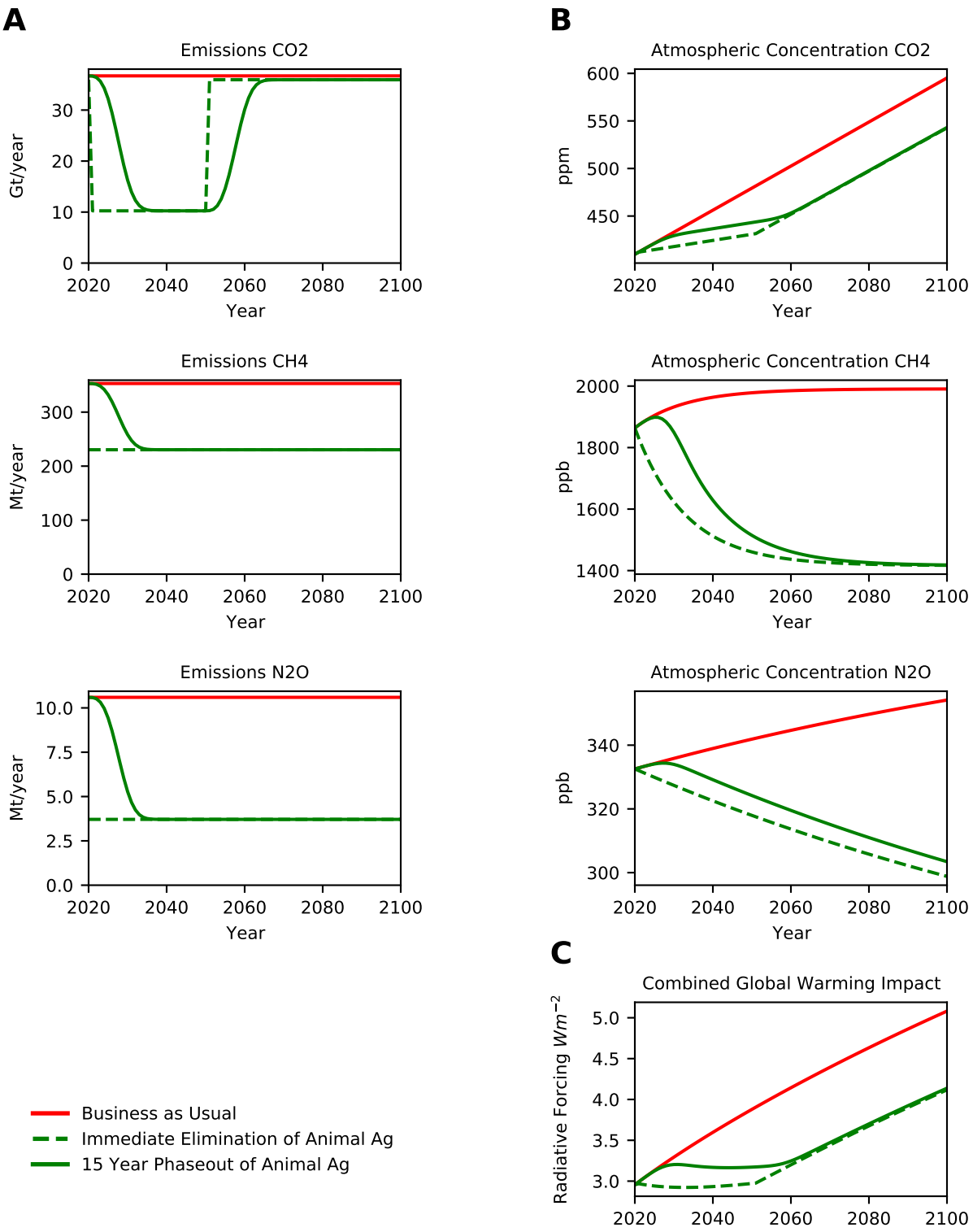

Figure 2-S1. Phaseout compared to Elimination.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

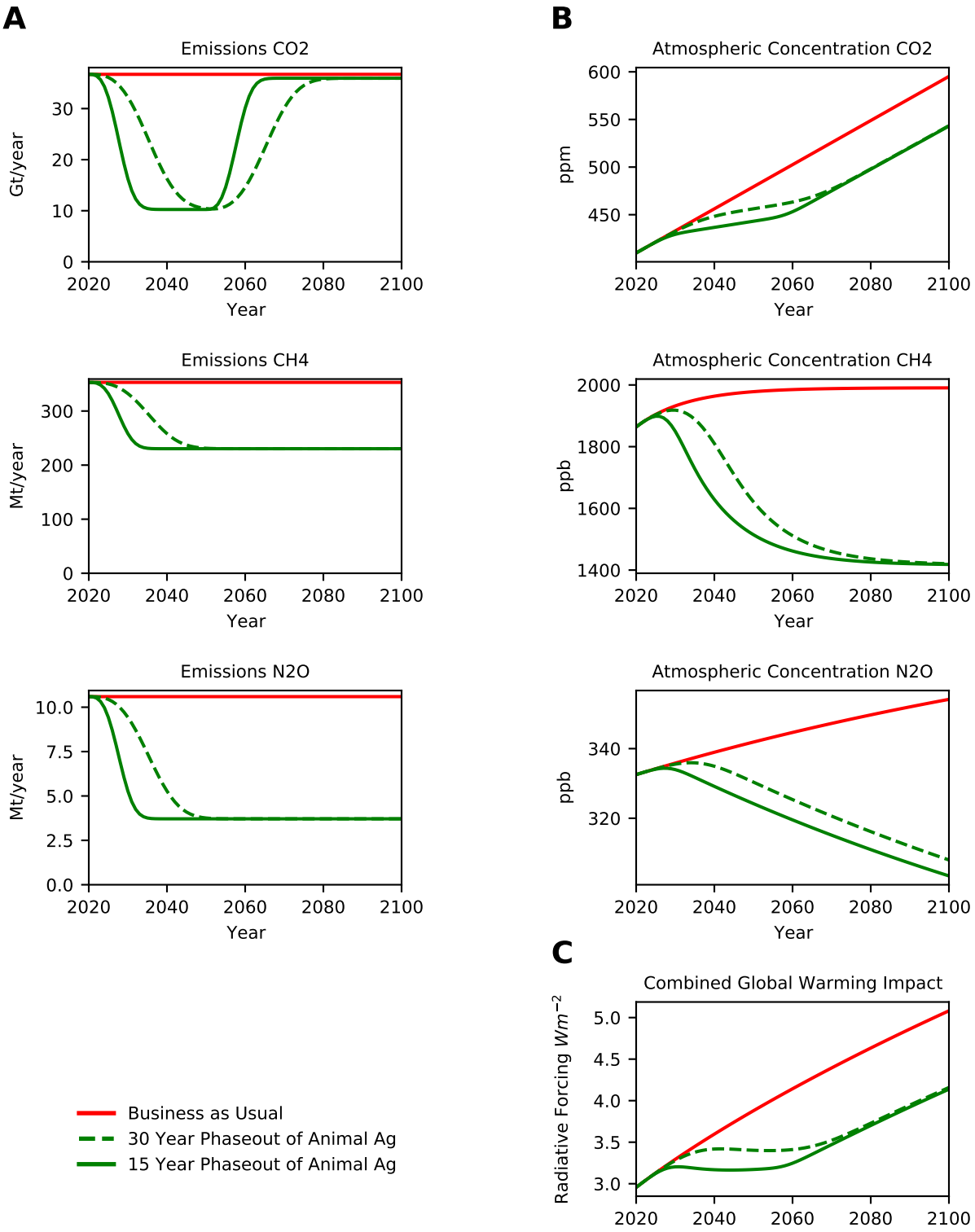

Figure 2-S2. Effects of Slower Phaseout.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

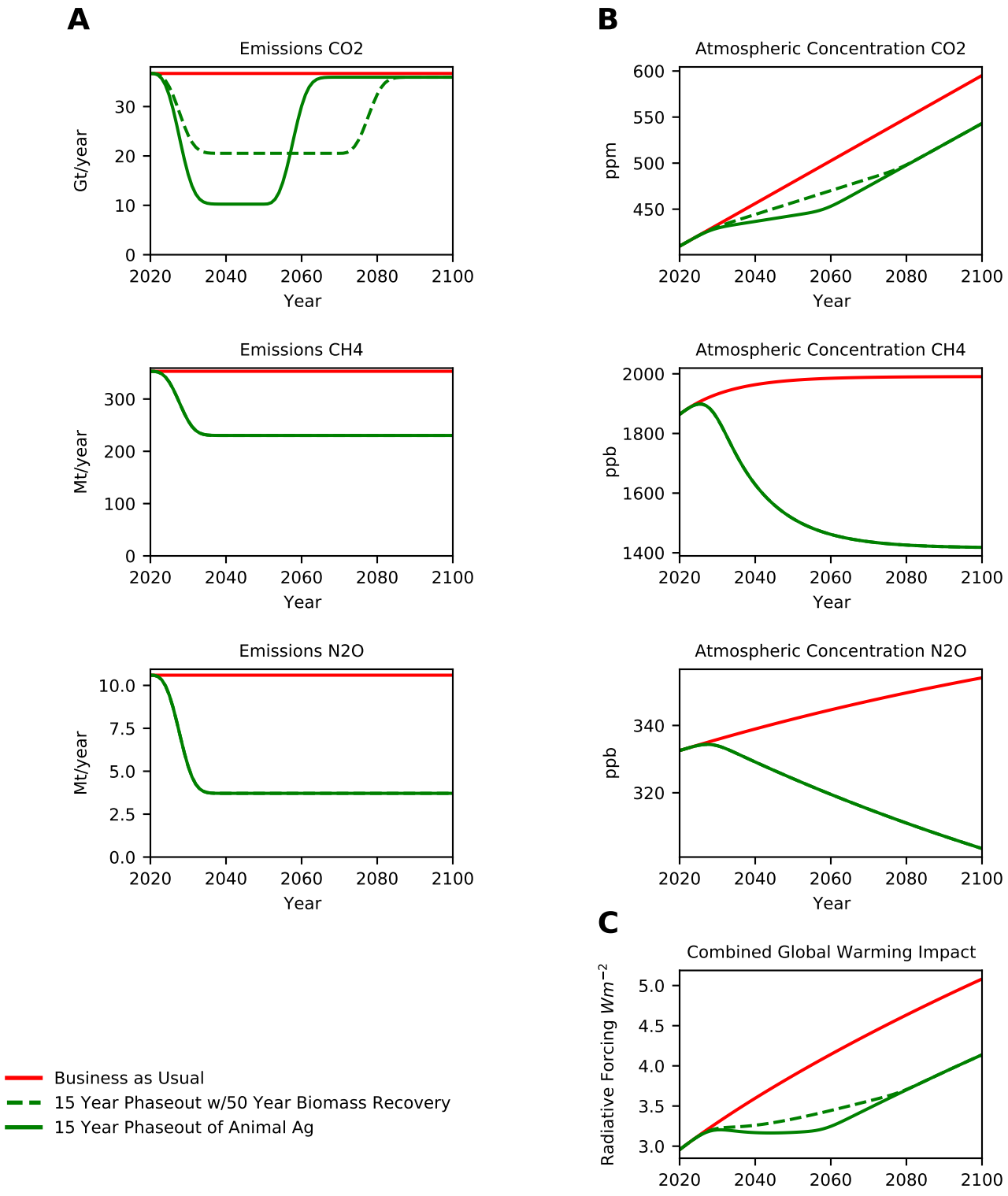

Figure 2-S3. Effects of Slower Biomass Recovery.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

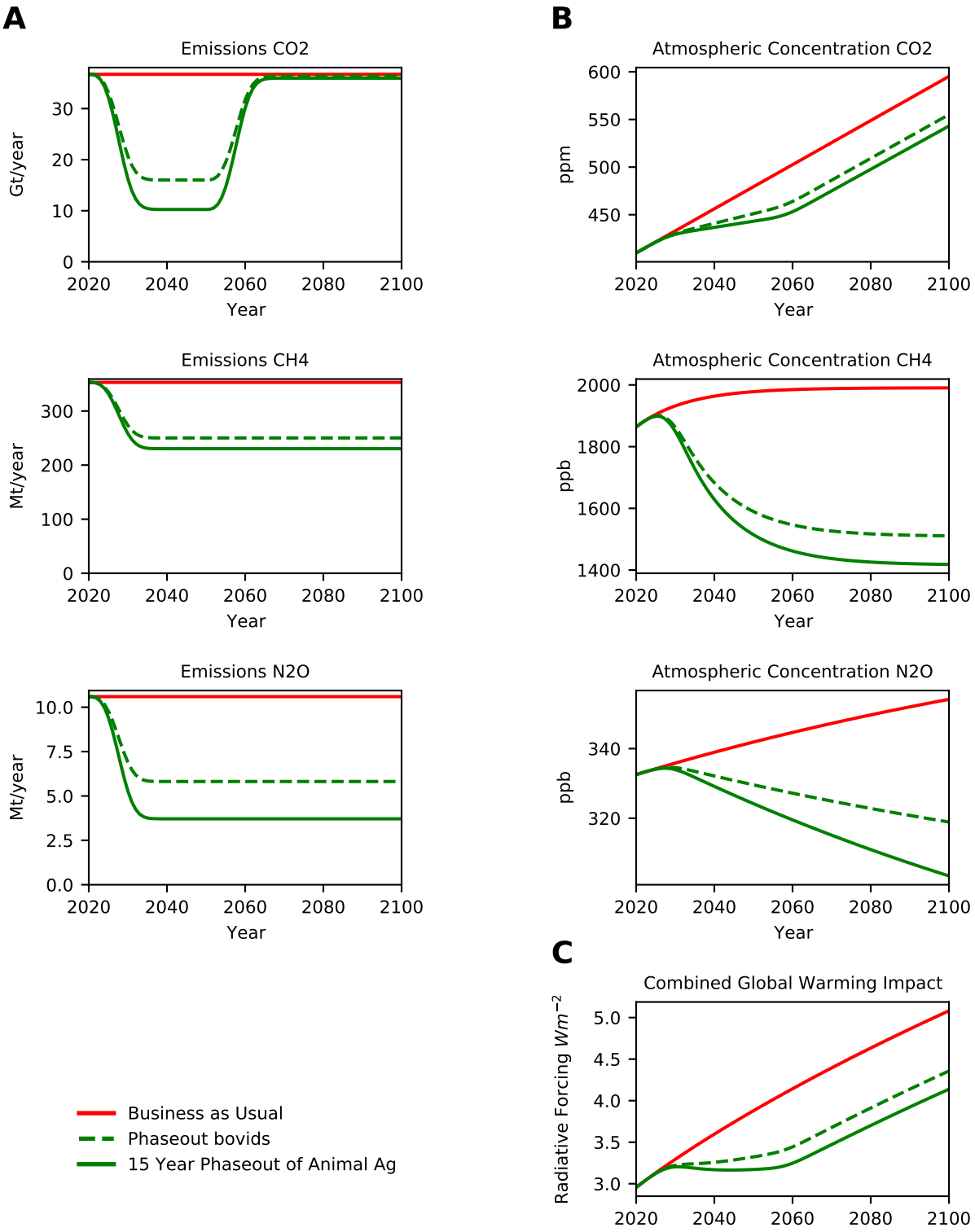

Figure 2-S4. Effects of Eliminating Bovids.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

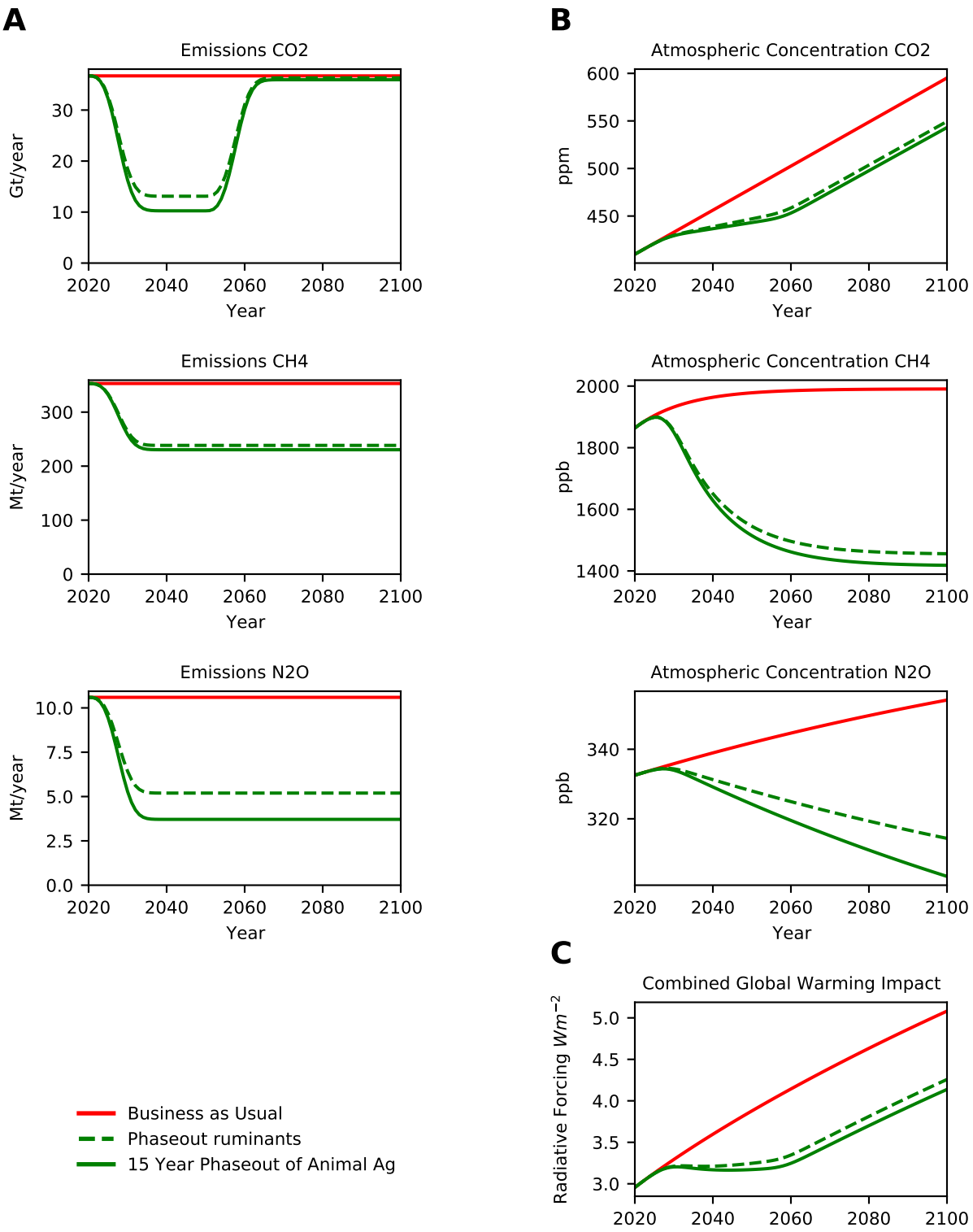

Figure 2-S5. Effects of Eliminating Ruminants.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

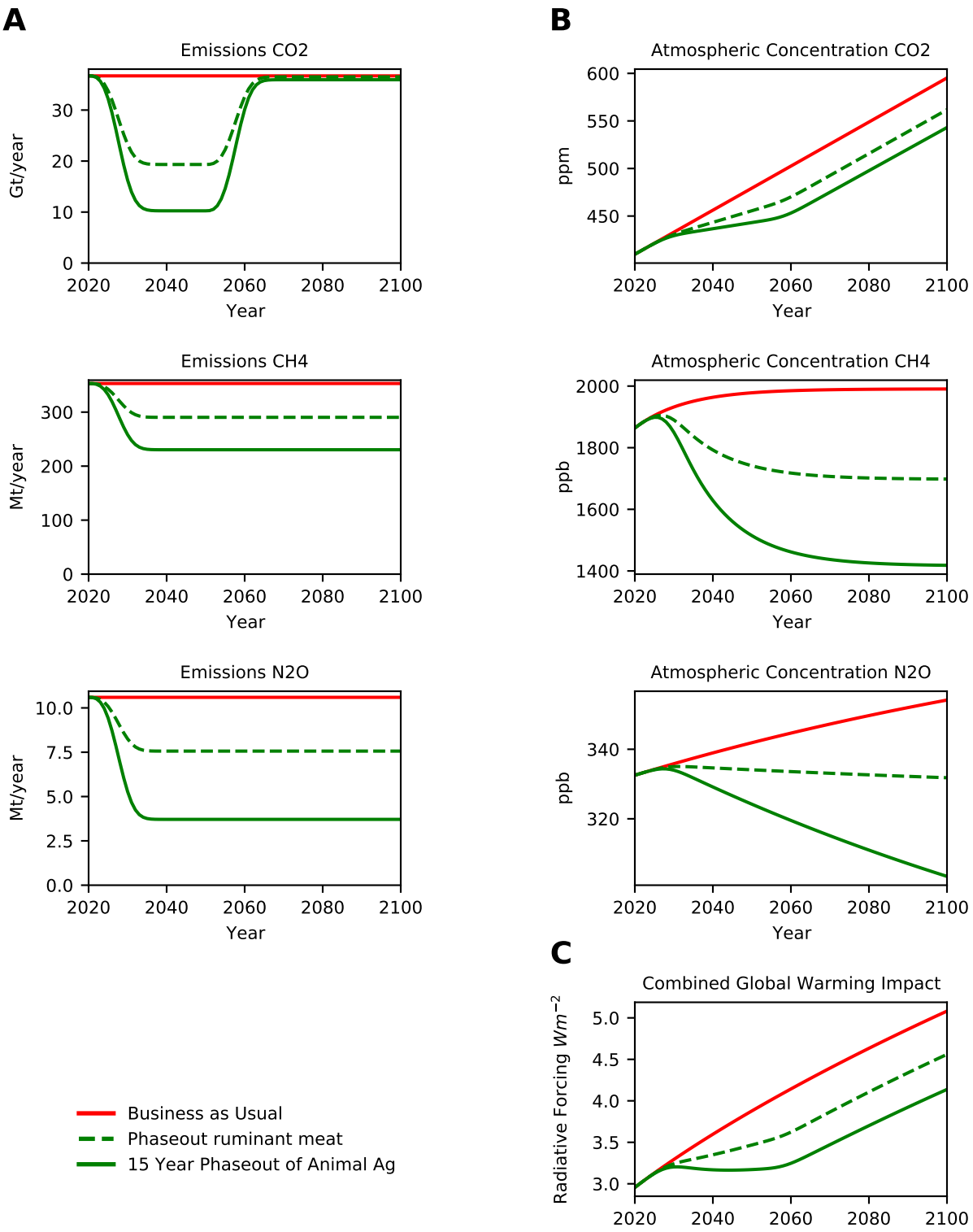

Figure 2-S6. Effects of Eliminating Ruminant Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

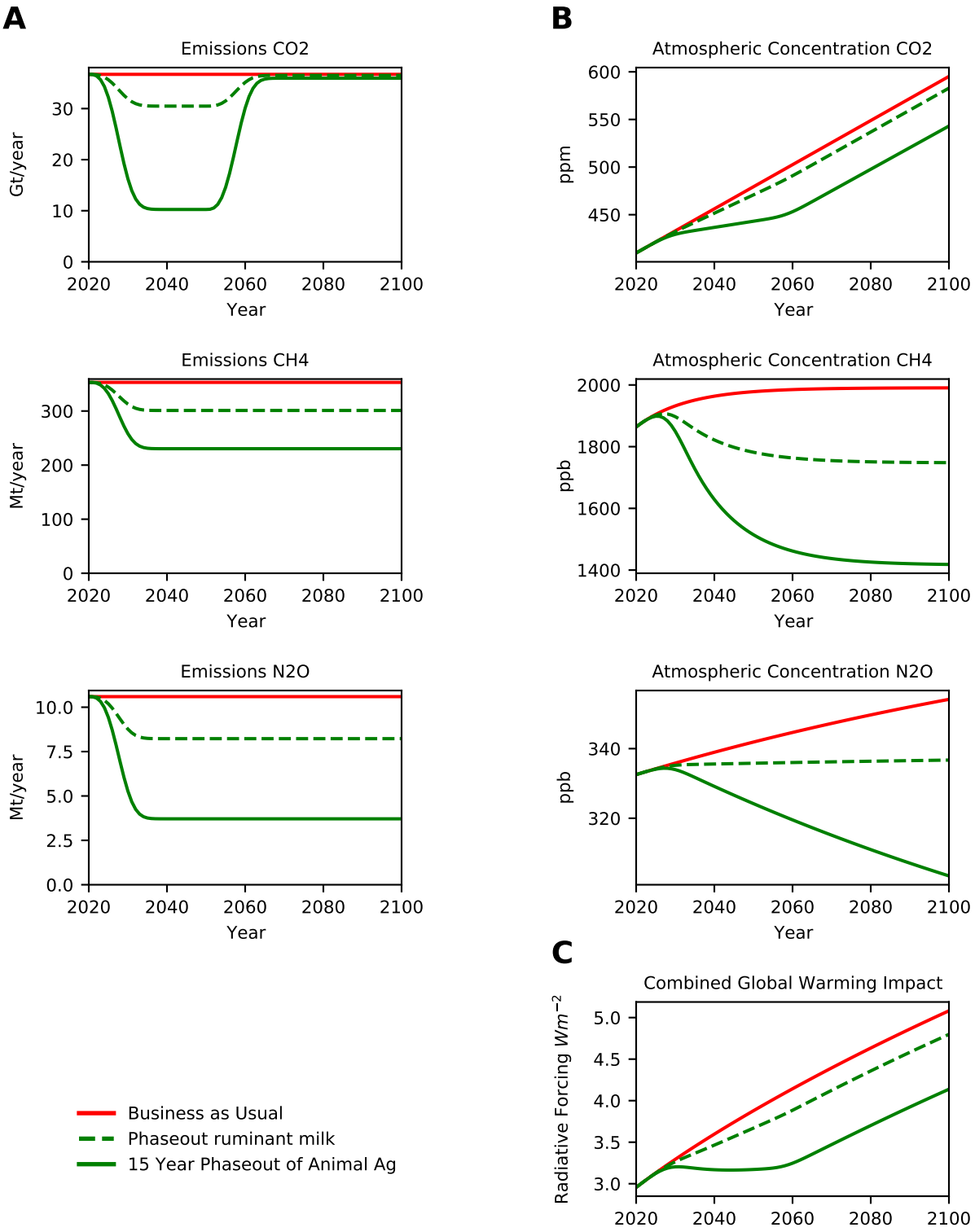

Figure 2-S7. Effects of Eliminating Ruminant Milk.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

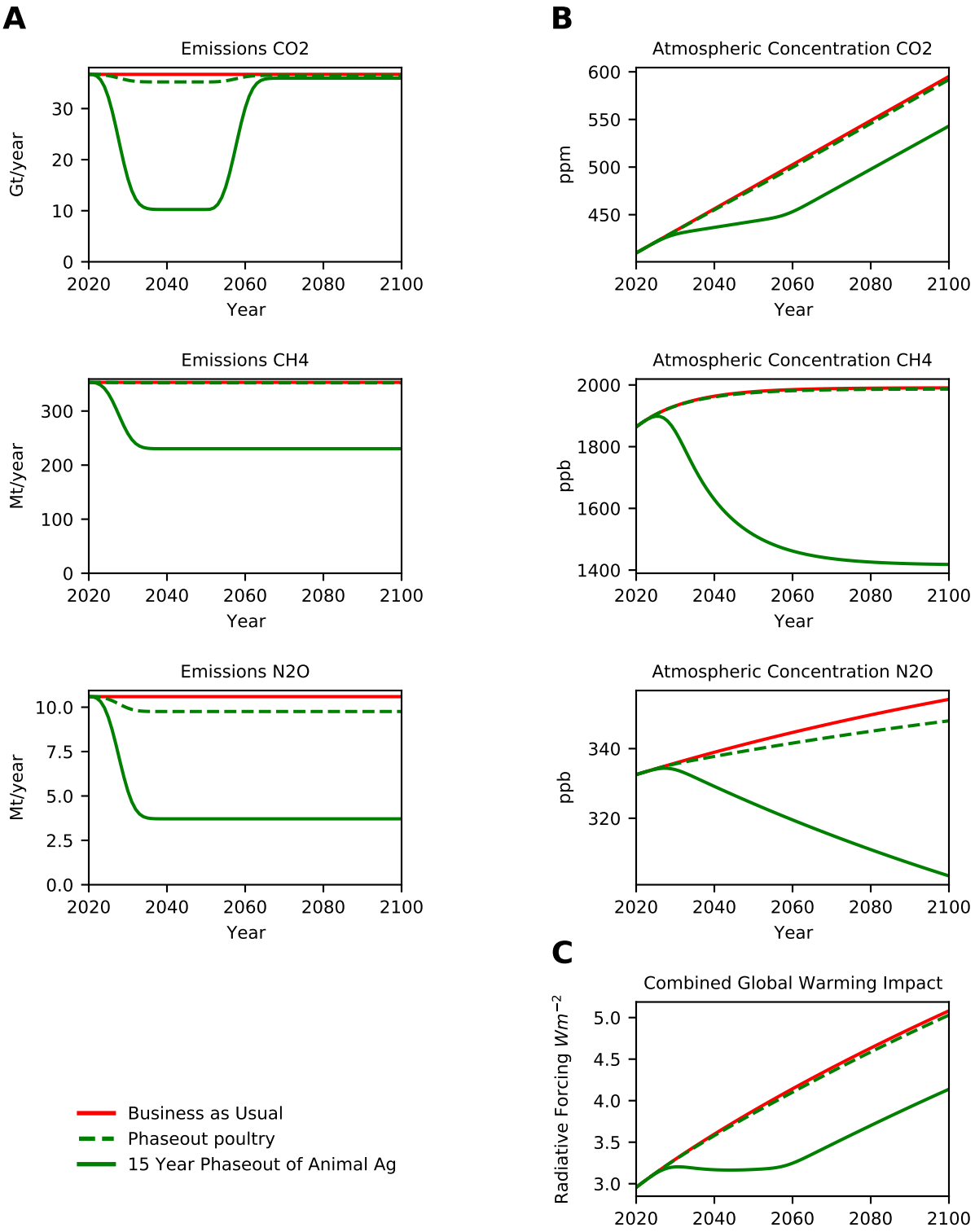

Figure 2-S8. Effects of Eliminating Poultry.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

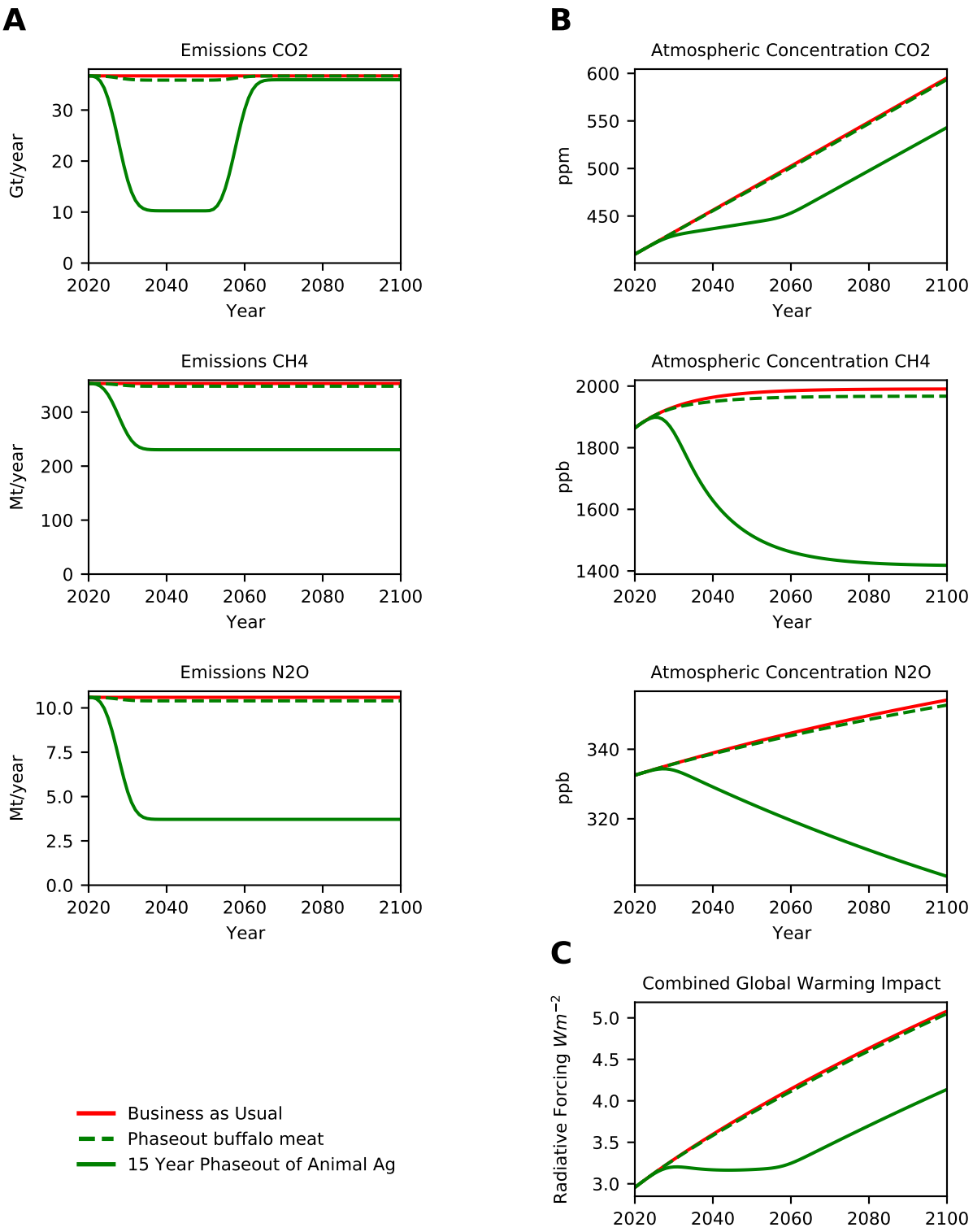

Figure 2-S9. Effects of Eliminating Buffalo Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

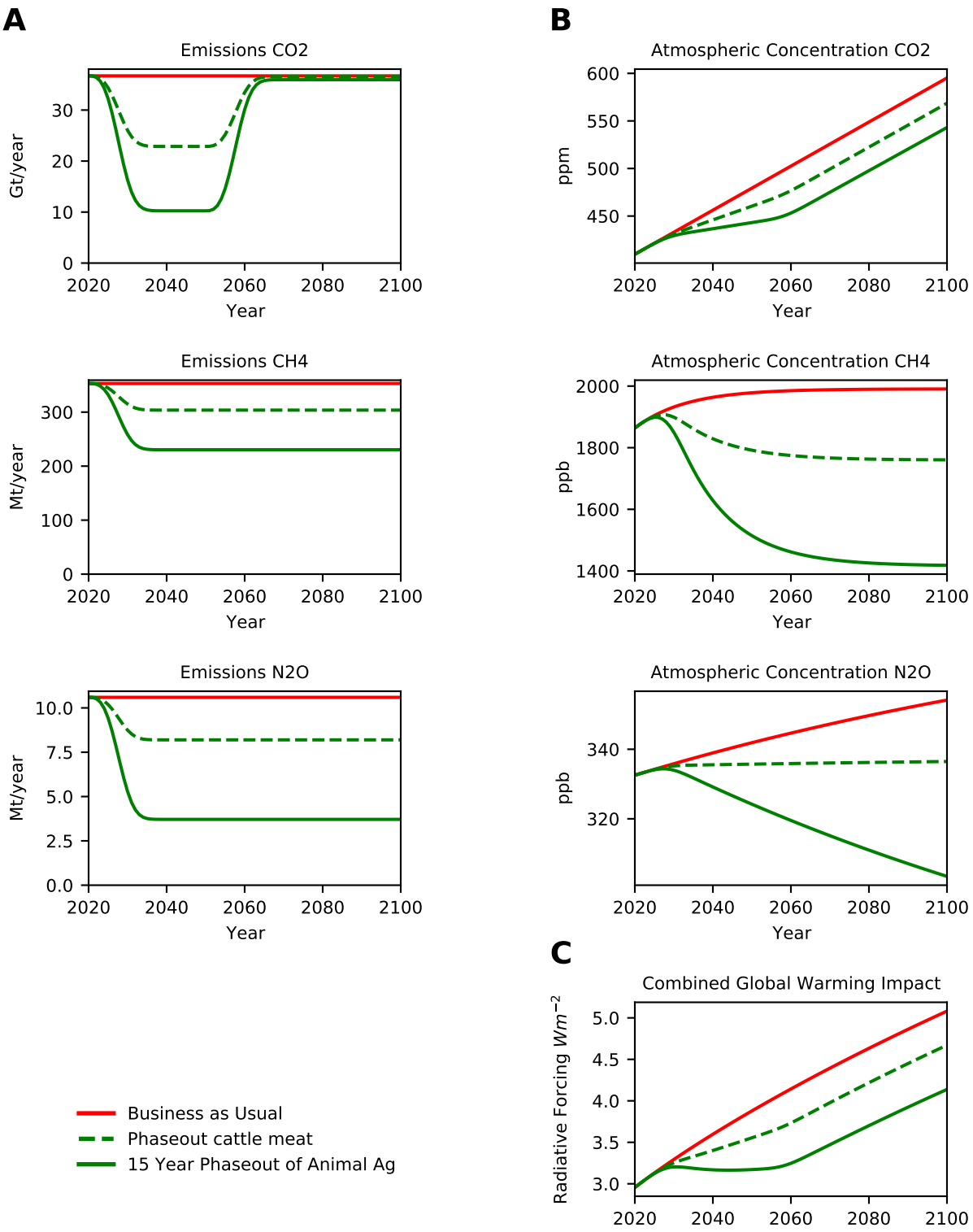

Figure 2-S10. Effects of Eliminating Cattle Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

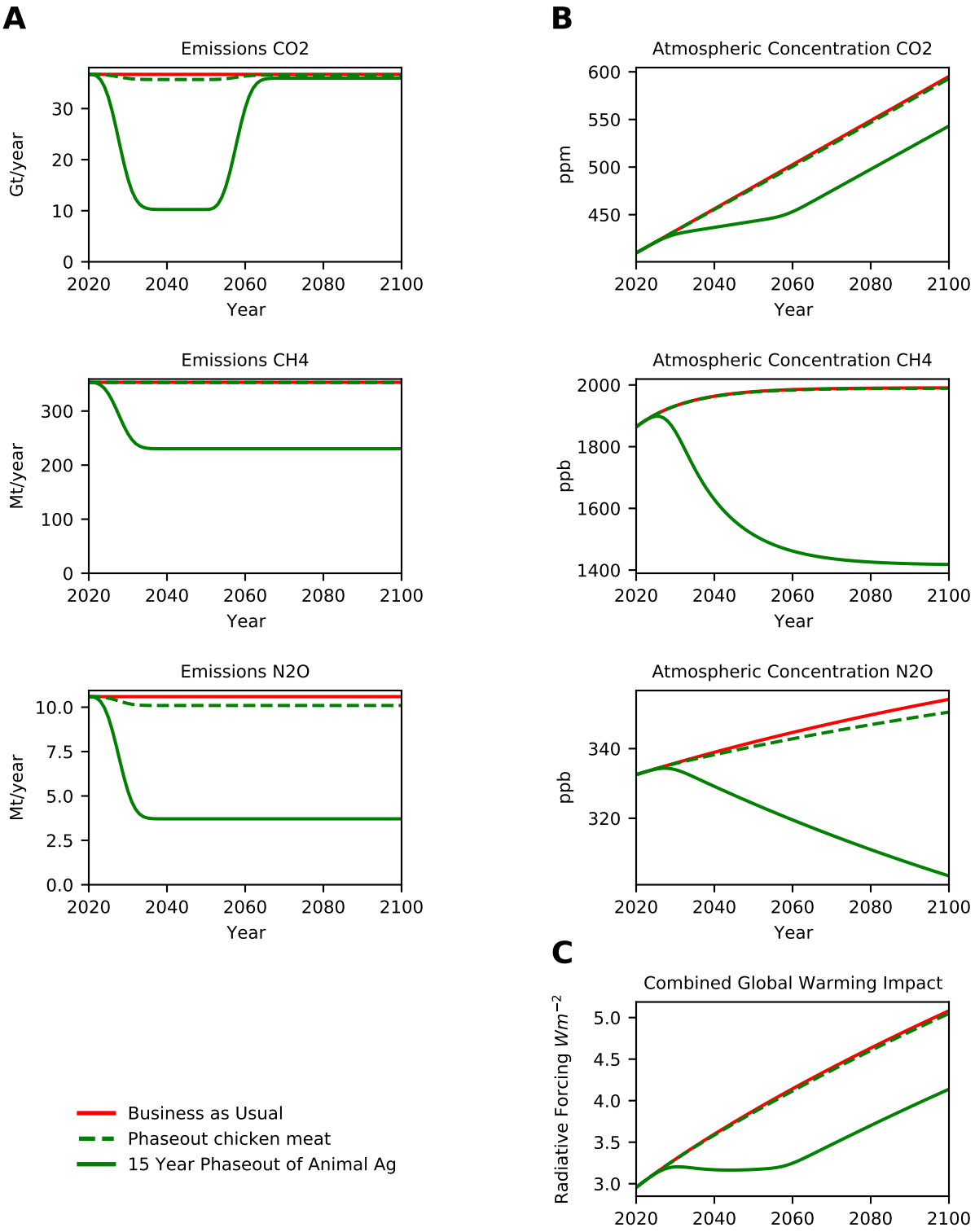

Figure 2-S11. Effects of Eliminating Chicken Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

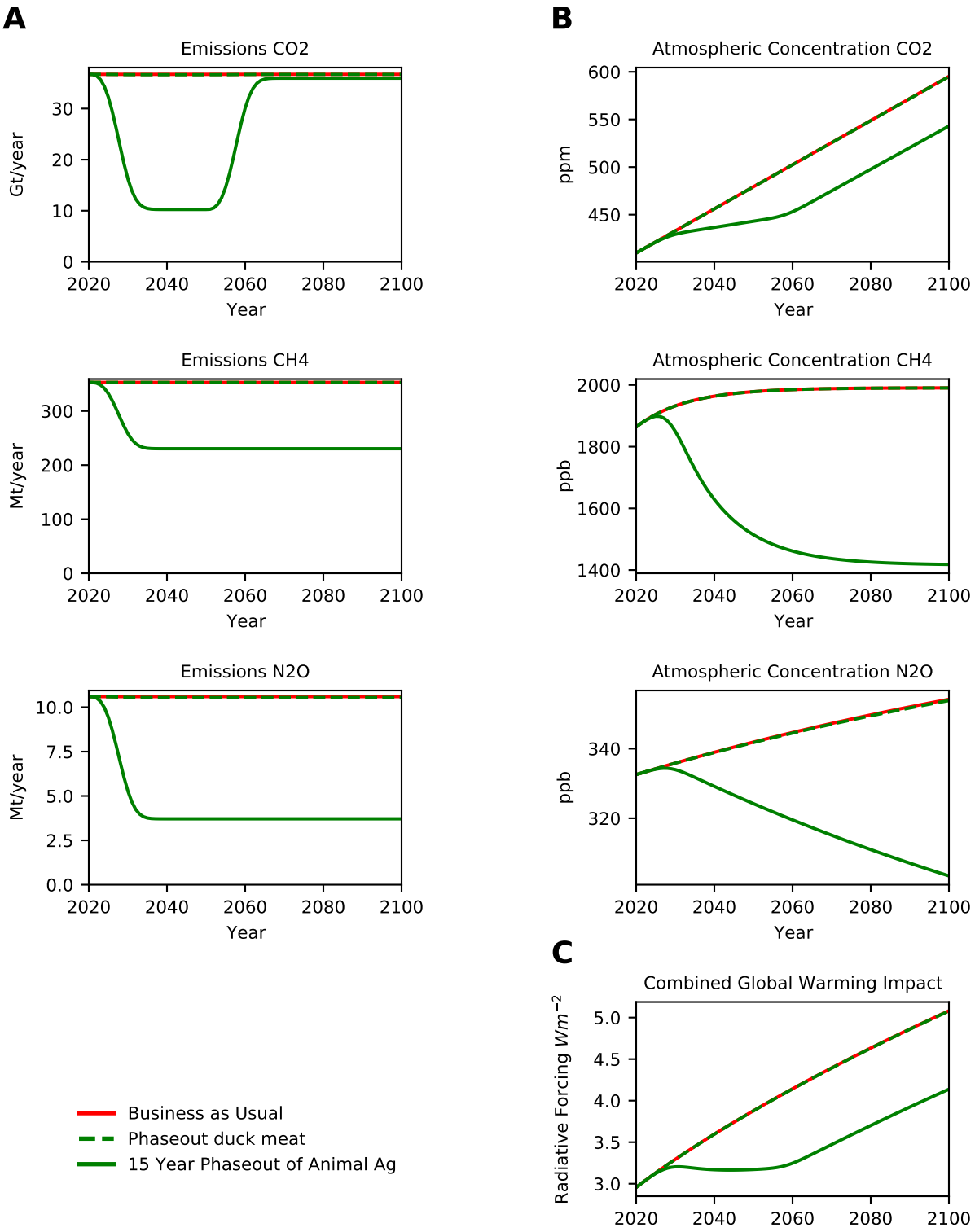

Figure 2-S12. Effects of Eliminating Duck Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

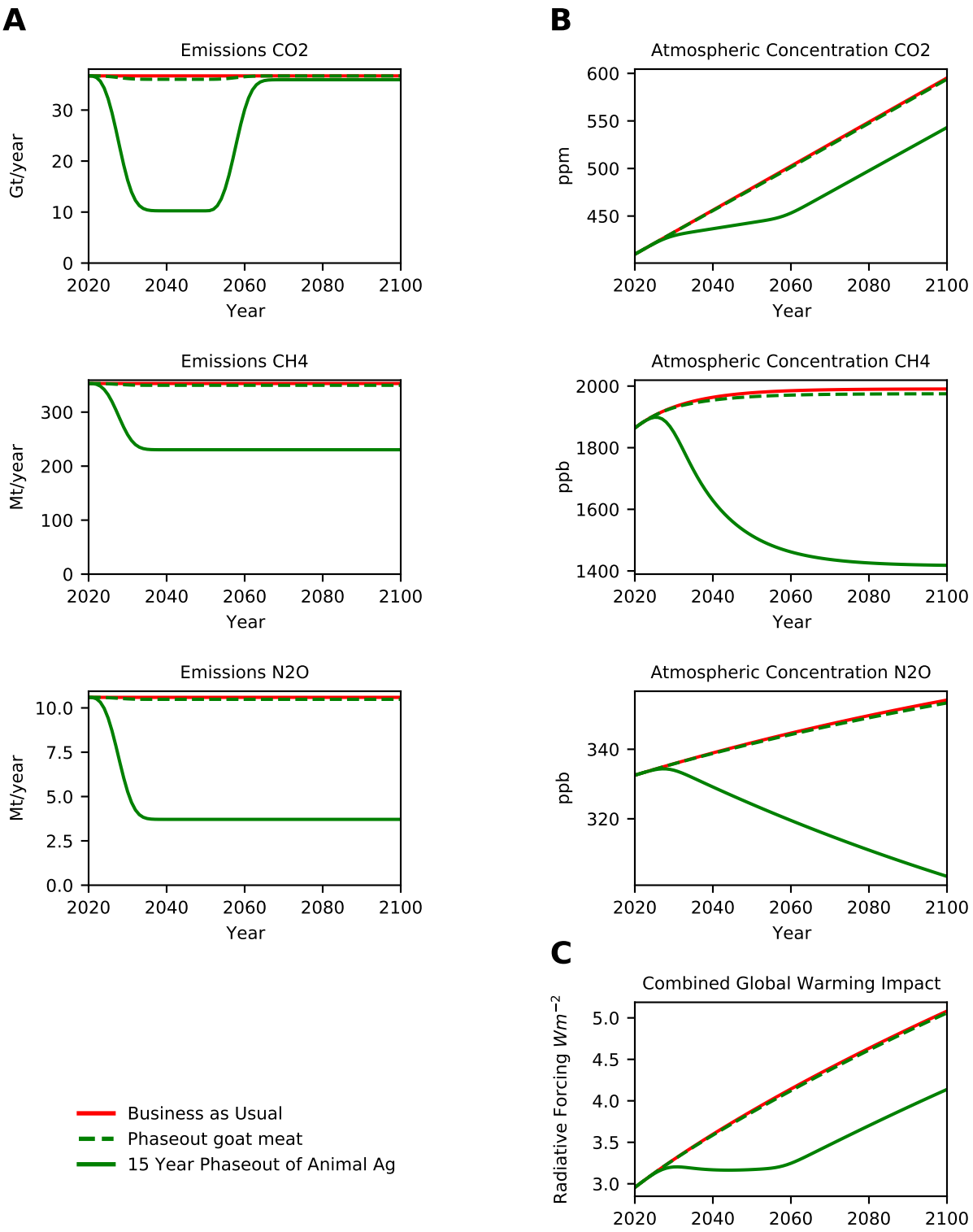

Figure 2-S13. Effects of Eliminating Goat Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

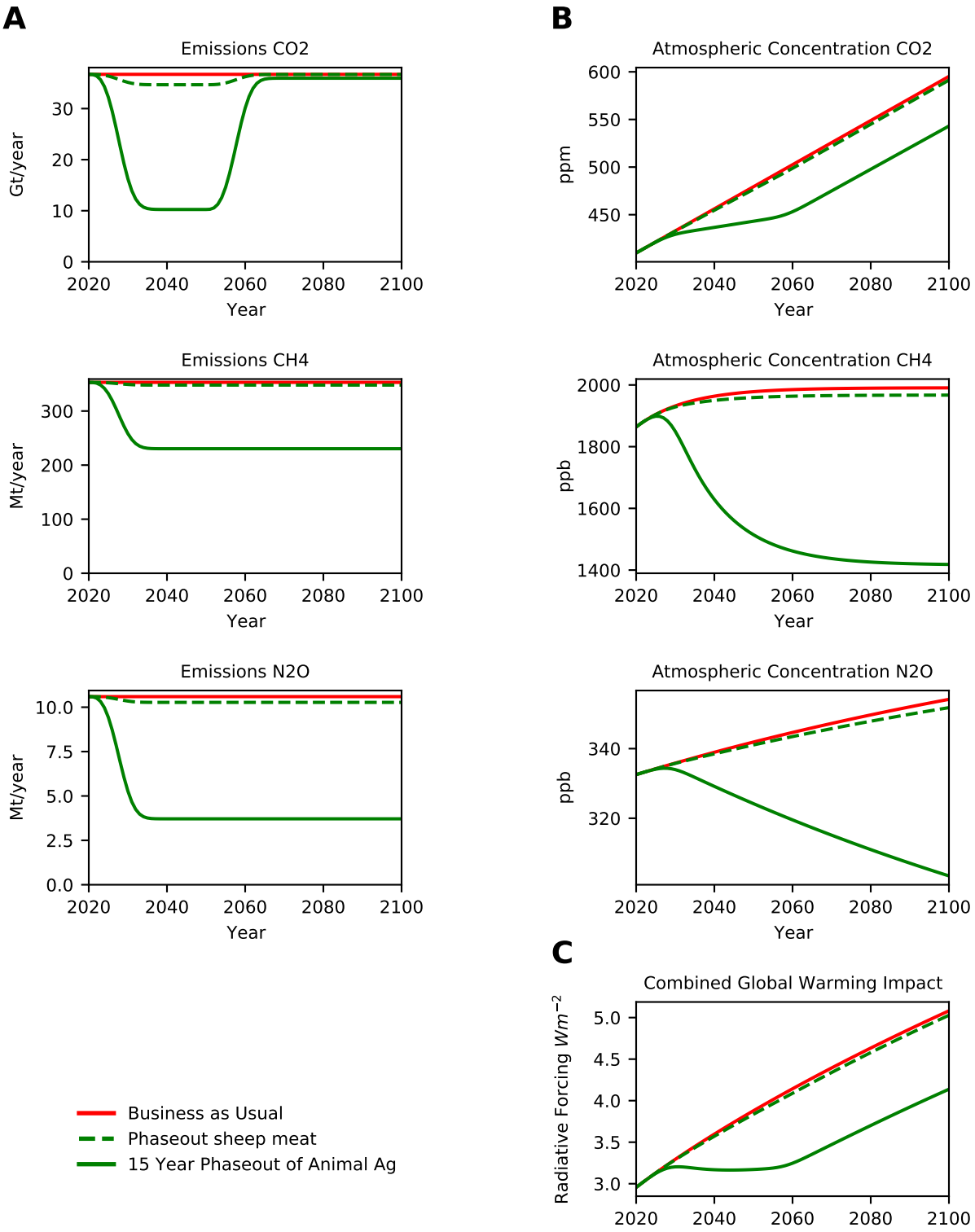

Figure 2-S14. Effects of Eliminating Sheep Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

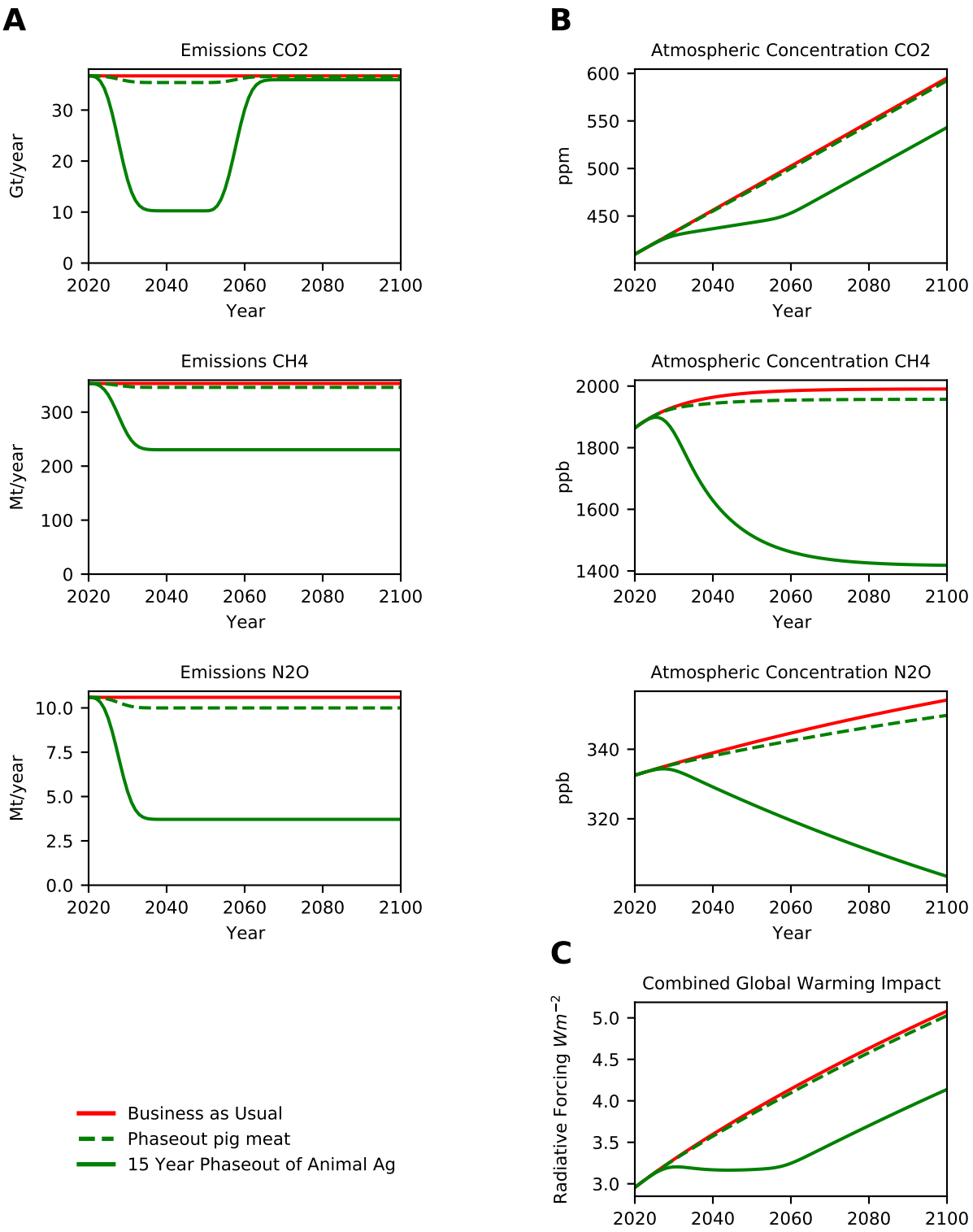

Figure 2-S15. Effects of Eliminating Pig Meat.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

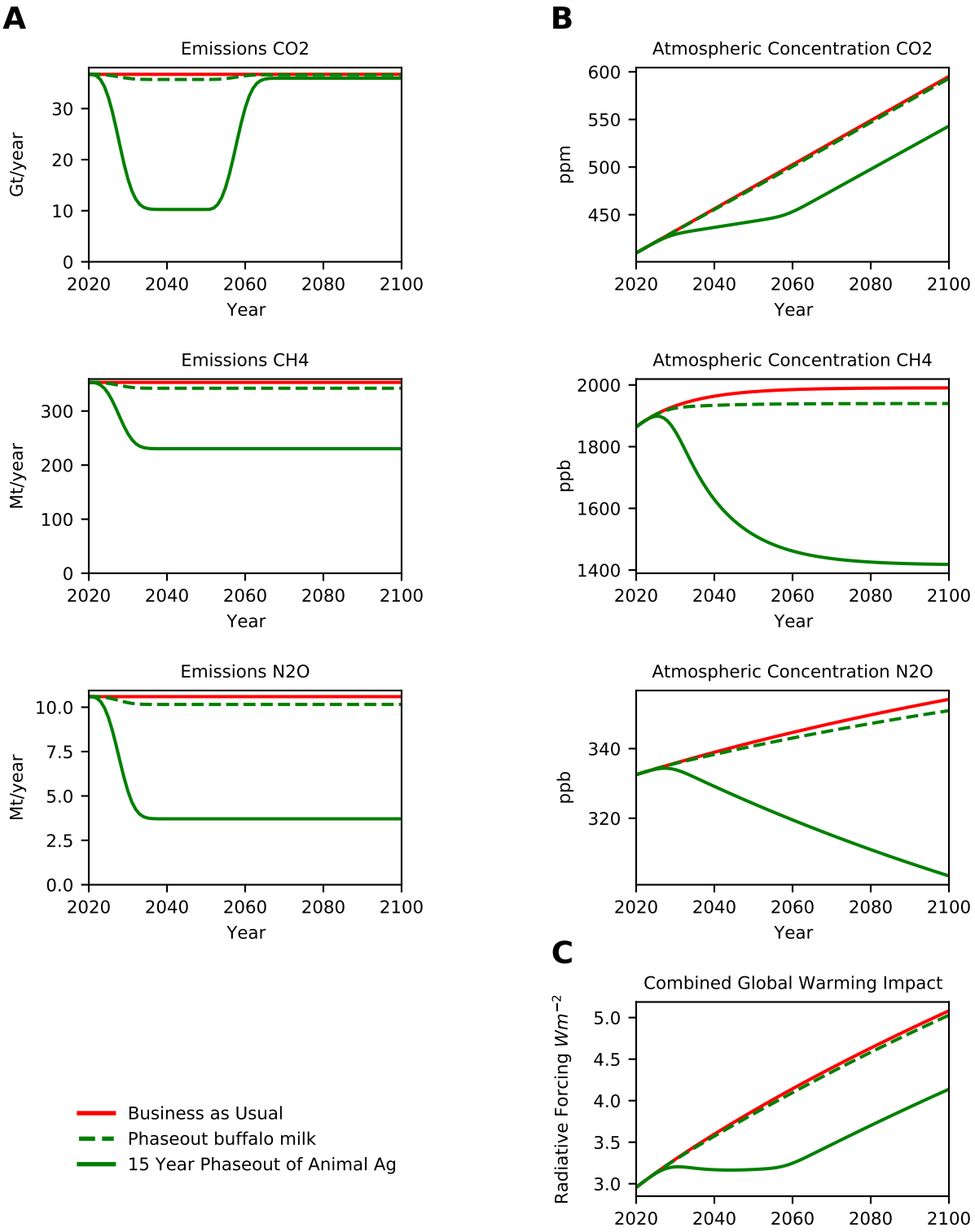

Figure 2-S16. Effects of Eliminating Buffalo Milk.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

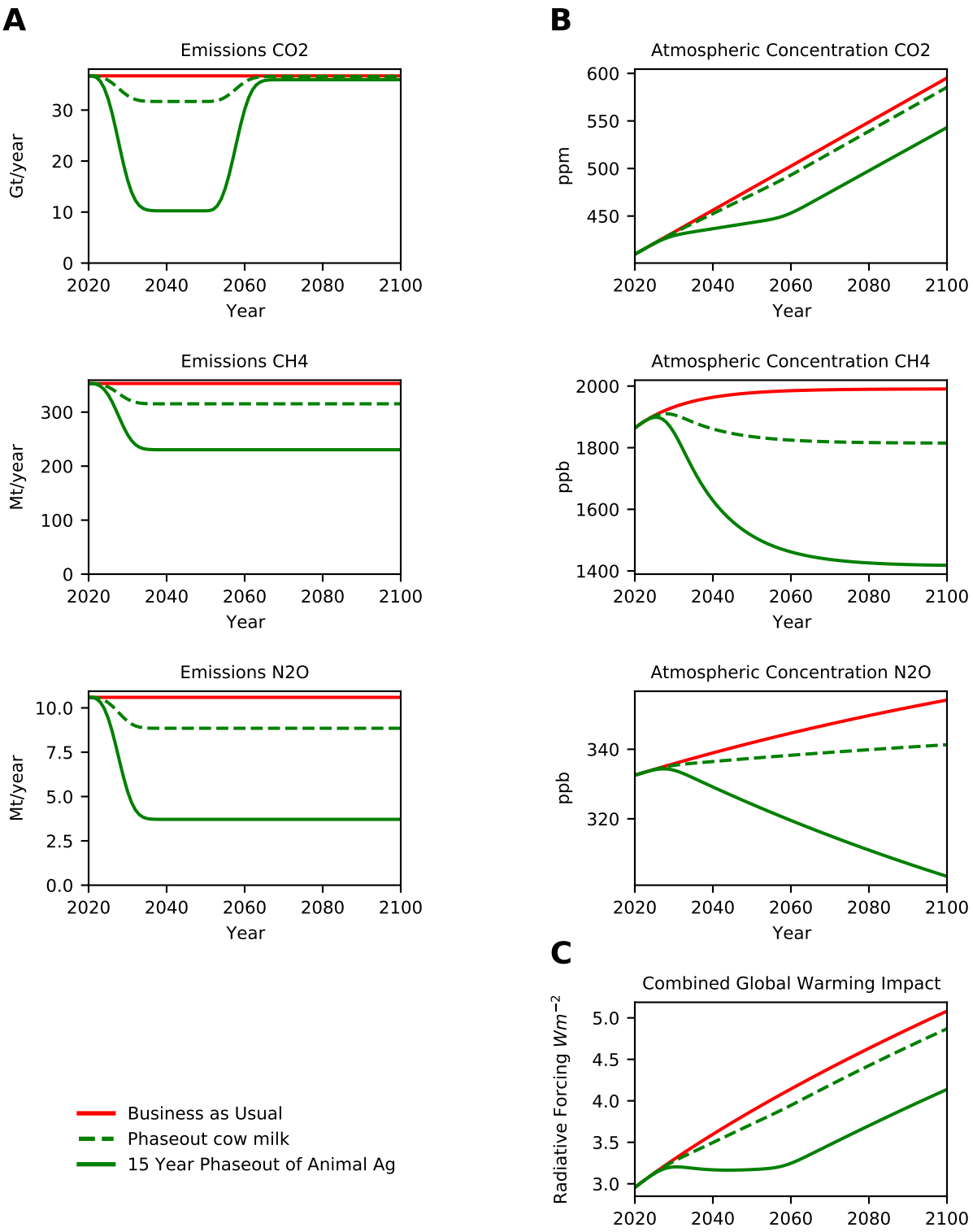

Figure 2-S17. Effects of Eliminating Cow Milk.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

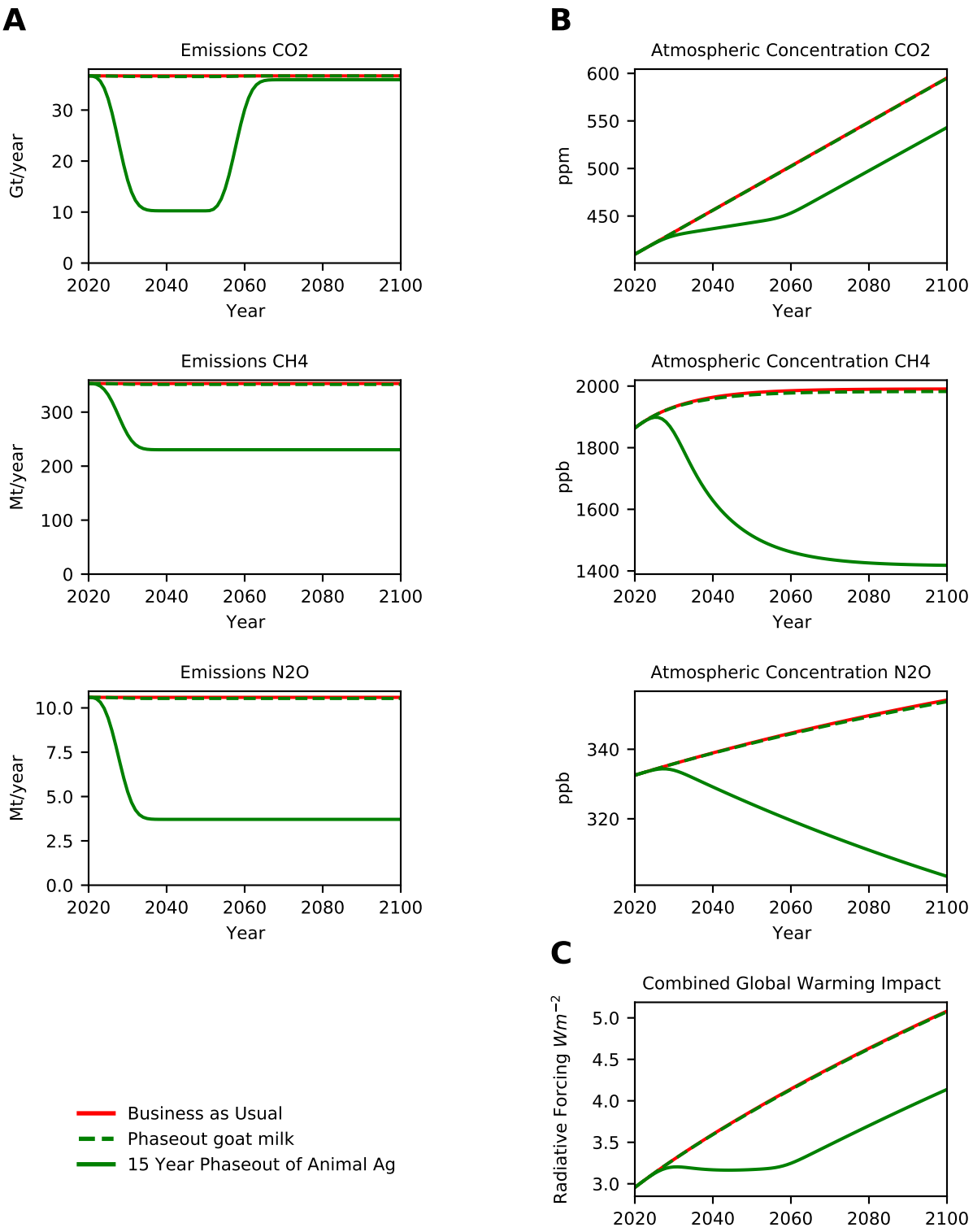

Figure 2-S18. Effects of Eliminating Goat Milk.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

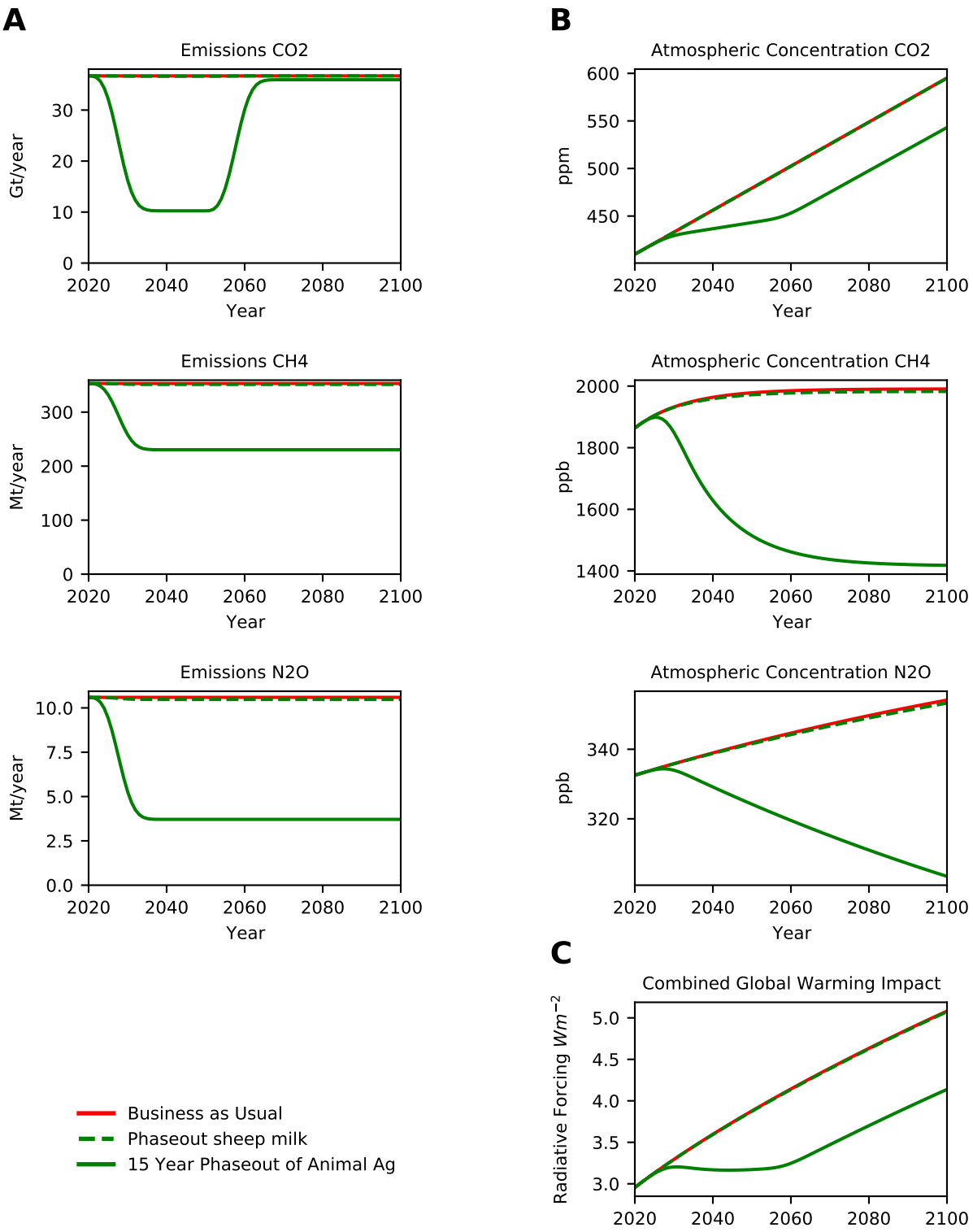

Figure 2-S19. Effects of Eliminating Sheep Milk.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

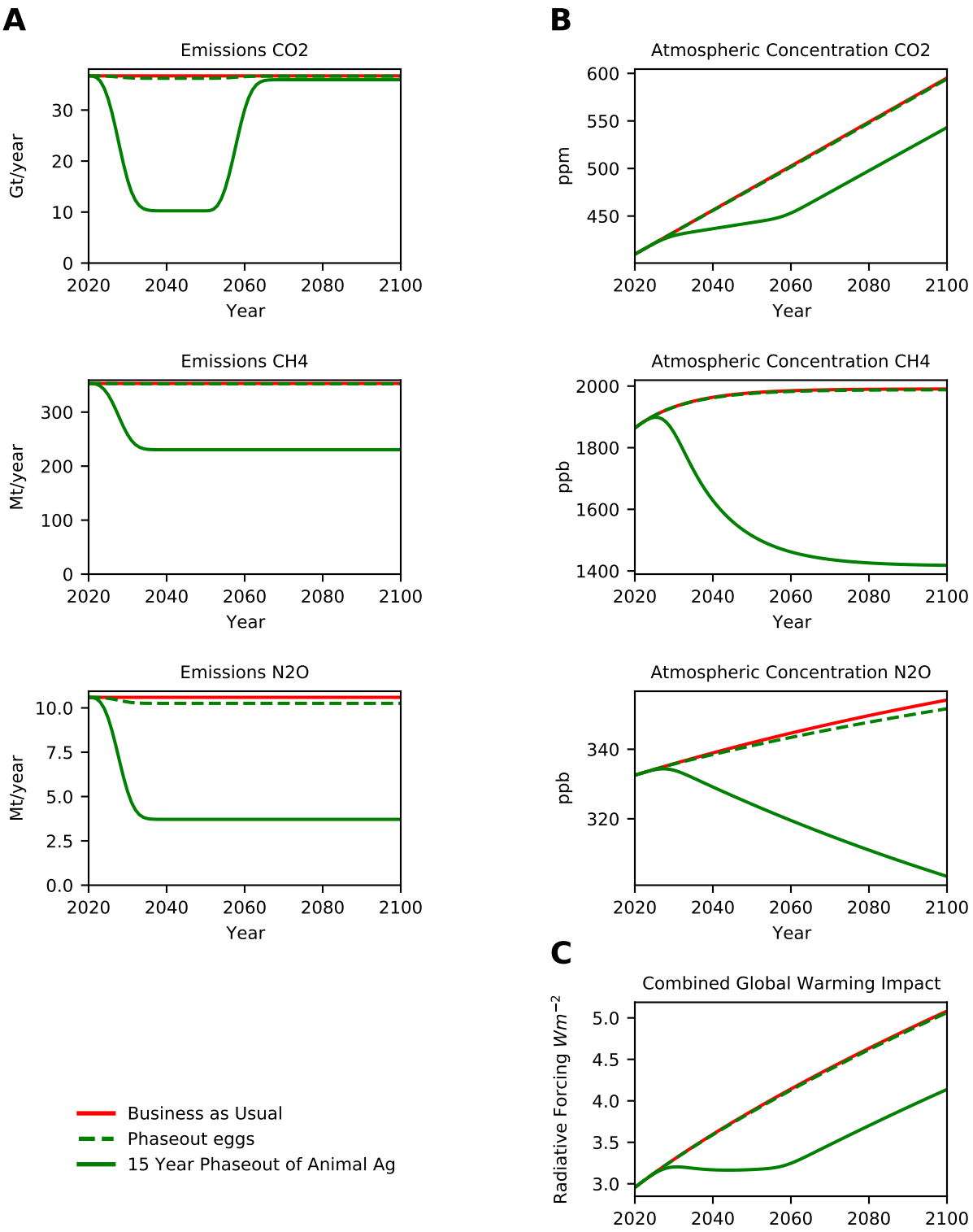

Figure 2-S20. Effects of Eliminating Eggs.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Radiative Forcing (RF) inferred from atmospheric concentrations in (B) by formula of (Myhre et al., 1998; Ramaswamy et al., 2001) as modified in MAGICC6 (Meinshausen et al., 2011).

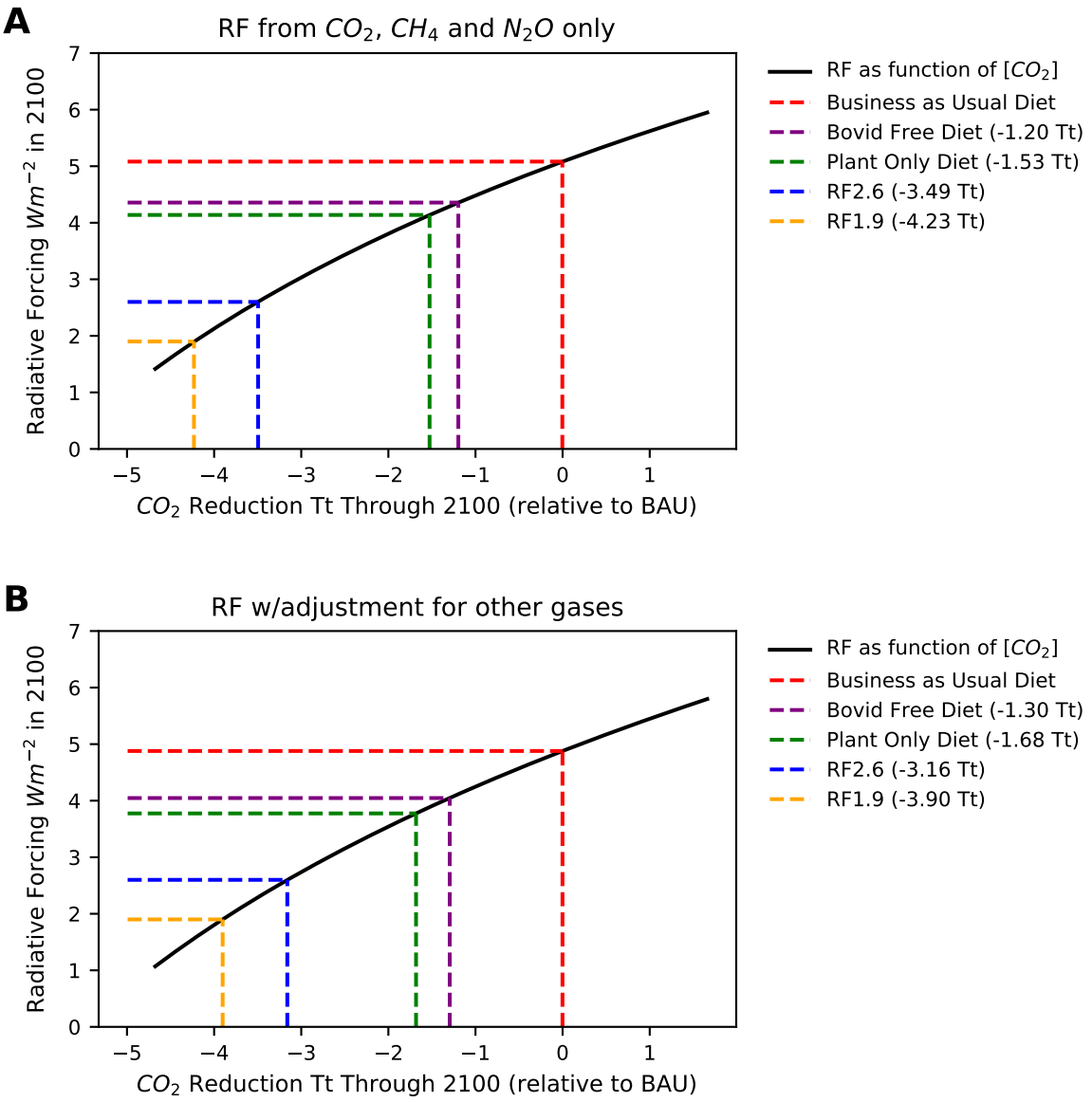

Figure 4-S1. Full carbon opportunity cost of animal agriculture.

We define the Emission and Land Carbon Opportunity Cost of animal agriculture as the total CO_2 reduction necessary to lower the RF in 2100 from the level estimated for a business as usual (BAU) diet to the level estimated for a plant only diet (POD). For these calculations we fix the CH_4 and N_2O levels in the RF calculation at those estimated for the BAU diet in 2100 and adjust CO_2 levels to reach the target RF. We also calculate ELCOC for just bovid sourced foods and determine the emission reductions necessary to reach RF's of 2.6 and 1.9, often cited as targets for limiting warming to 2.0˚C and 1.5˚C respectively. (A) Shows the results for RF directly calculated from CO_2, CH_4 and N_2O, while (B) shows an RF adjusted for other gases using multivariate linear regression on MAGICC6 output downloaded from the SSP database.

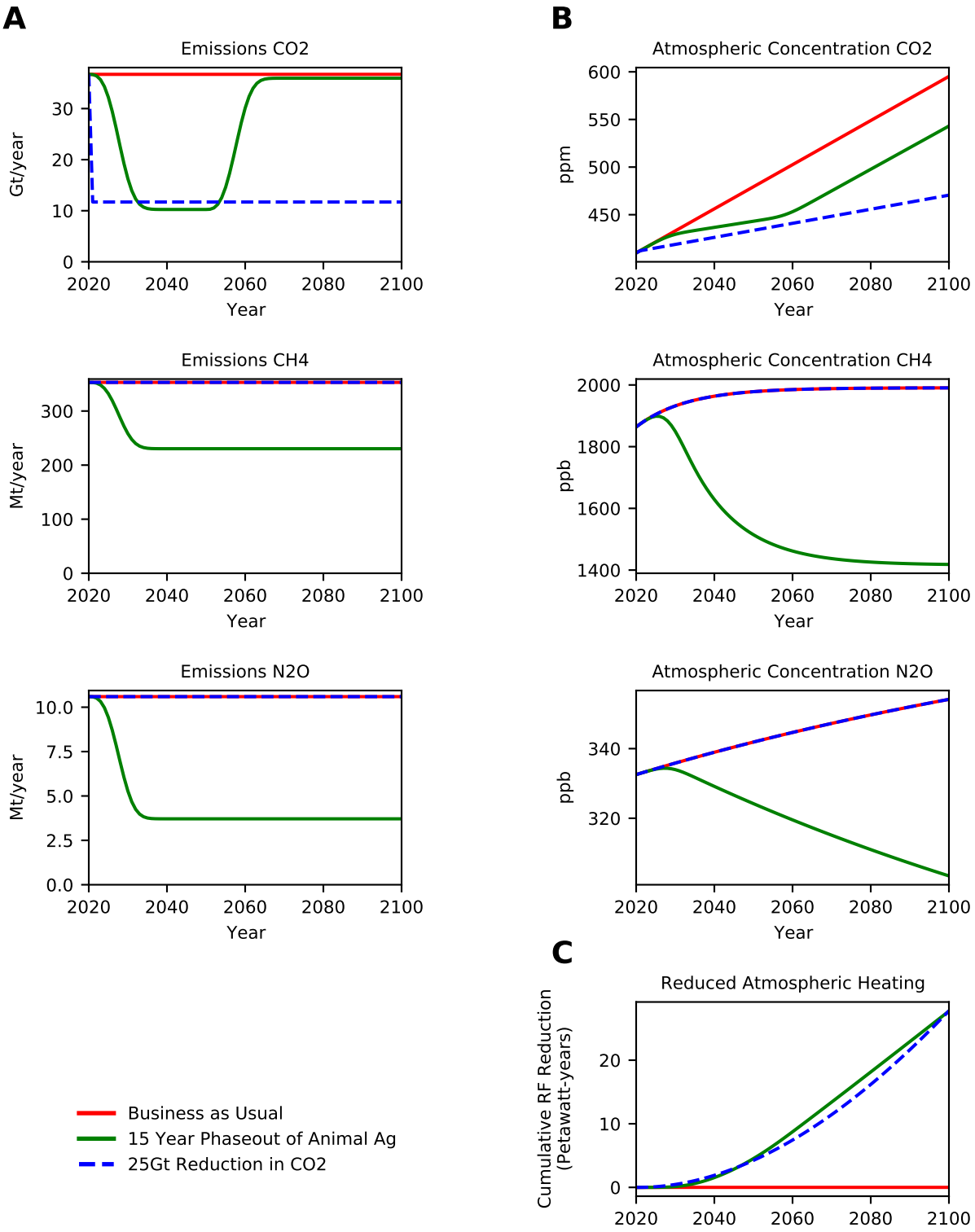

Figure 5-S1. ACO_2eq Calibration for Phaseout.

(A) Projected annual emissions of CO_2, CH_4 and N_2O for shown scenarios. (B) Projected atmospheric concentrations of CO_2, CH_4 and N_2O under each emission scenario. (C) Cumulative difference between scenario and BAU of Radiative Forcing.