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##### Creation of district page for land cover atlas #####
##### NFI #####
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rm(list=ls())
rootdir <- "C:/Users/Rashed/himal/office/Ongoing/Atlas/"

setwd(rootdir)
options(stringsAsFactors = F)

results <- paste0(rootdir,"District_page/Results/")
dir.create(results)

#### Load packages ####

library(xlsx)
library(grid) # http://ww2.amstat.org/publications/jse/v18n3/zhou.pdf
library(magick) # https://cran.r-project.org/web/packages/magick/vignettes/intro.html

library(gridExtra)
library(jpeg)

#### Read the data ####

## Read the excel file text for each District
dist_text <- read.xlsx(paste0(rootdir,"District_page/2_Text/District_Description_CRIS_SH.xlsx"), sheet=1)
head(dist_text)
names(dist_text)

## Paths of images

dist_pic <- list.files(paste0(rootdir,"District_page/1_Dist_Pic/"),pattern = "*.jpg")
ind_map <- list.files(paste0(rootdir,"District_page/3_Index/"),pattern = "*.jpg")
pie_chart <- list.files(paste0(rootdir,"District_page/4_Pie/"),pattern = "*.png")
area_table <- list.files(paste0(rootdir,"District_page/5_Area_Table/"),pattern = "*.png")
dist_map <- list.files(paste0(rootdir,"District_page/6_Maps/"),pattern = "*.jpg")

dist_name <- c()
dist_pic_path <- c()
ind_map_path <- c()
pie_path <- c()
area_table_path <- c()
dist_map_path <- c()

for (i in 1:length(dist_pic)){
  dist_name[i] <- substr(dist_pic[i],1,nchar(dist_pic[i])-4)
  dist_pic_path[i] <- paste0(rootdir,"District_page/1_Dist_Pic/",dist_name[i], ".jpg")
  ind_map_path[i] <- paste0(rootdir,"District_page/3_Index/",dist_name[i], ".jpg")
  pie_path[i] <- paste0(rootdir,"District_page/4_Pie/",dist_name[i], ".png")
  area_table_path[i] <- paste0(rootdir,"District_page/5_Area_Table/",dist_name[i], ".png")
  dist_map_path[i] <- paste0(rootdir,"District_page/6_Maps/",dist_name[i], ".jpg")
}

#### Layout preparation ####
## Paper size and orientation

w <- 9.25 # Based on paper size
h <- 11.5
margin <- 0.5
space <- margin/2
space_dist_name <- 0.35

ind_map_ratio <- 16.53/11.69

dist_p_w <- w - 2 * margin
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dist_p_h <- 4.5

# pie_p_w <- 2
# pie_p_h <- 2

ind_p_h <- 2.5
ind_p_w <- ind_p_h / ind_map_ratio

area_p_w <- w - margin * 2 - ind_p_w - space
area_p_h <- h - margin * 2 - dist_p_h - ind_p_h - space

pie_p_w <- h - margin * 2 - dist_p_h - area_p_h - space
pie_p_h <- pie_p_w

dist_name_w <- 1.5
dist_name_h <- 0.5

dist_txt_w <- w - margin * 2 - pie_p_w - space
dist_txt_h <- h - margin * 2 - dist_p_h - area_p_h - space

line_col <- rgb(0/255, 176/255, 77/255) # Green
# line_col <- rgb(0/255, 112/255, 192/255) # Blue

trial <- T
trial <- F

dev.off()
i <- 1

for (i in 1:length(dist_name)){
  name <- paste0(results,dist_name[i],".png")
  png(name, width = w, height = h, units = "in", res = 600, bg = "transparent")
  grid.newpage()

  vp_main <- viewport(x=0.5,y=0.5,width=unit(w,"inches"), height=unit(h,"inches"))
  pushViewport(vp_main)
  if (trial == T){
    grid.rect(gp=gpar(lty="dashed",lwd = 1)) # Turn off
  }

  # Insert District picture
  upViewport()
  vp_pic <- viewport(x=unit(0.5,"npc"), y=unit((h - dist_p_h/2 - margin)/h,"npc"), width=unit(dist_p_w,"npc"), height=unit(dist_p_h,"npc"))
  pushViewport(vp_pic)
  if (trial == T){
    grid.rect(gp=gpar(lty="dashed",lwd = 1)) # Turn off
  } else {
    grid.raster(image_read(dist_pic_path[i]),x = 0.5, y = 0.5, width = unit(1,"native"),height = unit(1,"native"))
    grid.rect(gp=gpar(lty="solid",lwd = 1, col = line_col))
  }

  # Insert index map
  upViewport()
  # vp_pic <- viewport(x=unit((margin + ind_p_w/2)/w,"npc"), y=unit((margin + ind_p_h/2)/h,"npc"), width=unit(ind_p_w,"npc"), height=unit(ind_p_h,"npc"))
  vp_pic <- viewport(x=unit((margin + ind_p_w/2)/w,"npc"), y=unit((h - margin - dist_p_h - dist_txt_h)/h,"npc"), width=unit(ind_p_w,"npc"), height=unit(ind_p_h,"npc"))
  pushViewport(vp_pic)
  if (trial == T){
    grid.rect(gp=gpar(lty="dashed",lwd = 1)) # Turn off
  } else {
    grid.raster(image_read(ind_map_path[i]),x = 0.5, y = 0.5, width = unit(1,"native"),height = unit(1,"native"))
    grid.rect(gp=gpar(lty="solid",lwd = 1, col = line_col))
  }

  # Insert Pie chart
  upViewport()
  # vp_pic <- viewport(x=unit((margin + pie_p_w/2)/w,"npc"), y=unit((margin + pie_p_h/2)/h,"npc"), width=unit(pie_p_w,"npc"), height=unit(pie_p_h,"npc"))
  vp_pic <- viewport(x=unit((w - pie_p_w/2 - margin)/w,"npc"), y=unit((h - ind_p_h/2 -margin-dist_p_h - dist_txt_h)/h,"npc"), width=unit(pie_p_w,"npc"), height=unit(pie_p_h,"npc"))
  pushViewport(vp_pic)

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if (trial == T) {
  grid.rect(gp=gpar(lty="dashed",lwd = 1)) # Turn off
} else {
  grid.raster(image_read(pie_path[i]),x = 0.5, y = 0.5, width = unit(1,"native"),height = unit(1,"native"))
  grid.rect(gp=gpar(lty="solid",lwd = 1, col = line_col))
}

# Insert Area table
upViewport()
vp_pic <- viewport(x=unit((w - margin - area_p_w/2)/w,"npc"), y=unit((margin + area_p_h/2)/h,"npc"))
pushViewport(vp_pic)
if (trial == T) {
  grid.rect(gp=gpar(lty="dashed",lwd = 1)) # Turn off
} else {
  grid.raster(image_read(area_table_path[i]),x = 0.5, y = 0.5, width = unit(1,"native"),height = unit(1,"native"))
}

# Insert district name
upViewport()
vp_class <- viewport(x=unit(((space_dist_name + (margin - space_dist_name)/2))/w,"npc"), y=unit((margin + area_p_h)/h,"npc"))
pushViewport(vp_class)
grid.polygon(c(0,1,1), c(0,0,1), gp=gpar(fill=rgb(91/255,140/255,139/255),lty=0))

upViewport()
vp_class <- viewport(x=unit((space_dist_name + dist_name_w/2)/w,"npc"), y=unit((h - margin*2)/h,"npc"))
pushViewport(vp_class)
grid.roundrect(gp=gpar(fill=rgb(191/255,240/255,239/255),lty=0))
grid.text(dist_name[i],x = unit(0.5,"npc"), y = unit(0.5,"npc"), gp = gpar(fontface="bold", fontsize=11))

# Insert district text
upViewport()
vp_class <- viewport(x=unit((margin + dist_txt_w/2)/w,"npc"), y=unit((margin + area_p_h + dist_txt_h)/h,"npc"))
pushViewport(vp_class)
if (trial == T){
  grid.rect(gp=gpar(lty="dashed",lwd = 1)) # Turn off
} else {
  txt <- dist_text[dist_text$Dist_name == dist_name[i],]

  text_wrapped <- strwrap(txt$Para_1, width = 80, simplify = FALSE) # modify to your needs
  insert_text <- sapply(text_wrapped, paste, collapse = "\n")
  grid.text(insert_text,x = unit(0,"npc"), y = unit(1,"npc"),gp = gpar(fontsize = 11), just = c("left","top"))

  text_wrapped <- strwrap(txt$Para_2, width = 80, simplify = FALSE) # modify to your needs
  insert_text <- sapply(text_wrapped, paste, collapse = "\n")
  grid.text(insert_text,x = unit(0,"npc"), y = unit(0.5,"npc"),gp = gpar(fontsize = 11), just = c("left","middle"))
}

##### Insert highlight for the legend in page #####

# ind_1 <- match(class_1,legend_color$Code)
# upViewport()
# vp <- viewport(x=unit(11.3,"inches"),y= unit(offset+(8/34)*ind_1,"inches"), height=unit(8/40,"inches"))
# pushViewport(vp)
# grid.rect(gp = gpar(lty = "dashed", lwd = 2))
# grid.text(legend_color$Code[ind_1], gp = gpar(fontsize = 9, fontface = "bold"))
#
# ind_2 <- match(class_2,legend_color$Code)
# upViewport()
# vp <- viewport(x=unit(11.3,"inches"),y= unit(offset+(8/34)*ind_2,"inches"), height=unit(8/40,"inches"))
# pushViewport(vp)
# grid.rect(gp = gpar(lty = "dashed"))
# grid.text(legend_color$Code[ind_2], gp = gpar(fontsize = 9, fontface = "bold"))

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```
dev.off() # Comment for single pdf generation
print (paste0("Completed district ", i, " ", dist_name[i], " ", round(100*i/64,0), "%" ))
}
# dev.off() # Uncomment for single pdf generation
```