



Department
for Environment
Food & Rural Affairs



Department for
Business, Energy
& Industrial Strategy

 **Met Office**
Hadley Centre



**Environment
Agency**

UKCP18 – Climate impacts narratives

This set of climate impact narratives has been developed to accompany the [UKCP18 User needs for derived products document](#).

The narratives have been developed with subject experts and set out what climate impacts information is needed to enable adaptation, and how this may be derived from UKCP18.

Please explore the [individual narratives and accompanying roadmaps](#) when considering your own research, product development and funding opportunities.

You can also [register](#) for further updates about the UKCP18 project.

Narratives and Roadmaps

Air quality

Coastal erosion

Drought

Flood risk

**Health and
temperature**

Landslides

**River erosion and
bed scour**

**River flows and
levels**

**Soil moisture
deficit**

Air quality

What people want

- To better understand the relationship between climate and air quality
- Information on the frequency of weather events that affect air quality
- Common metrics for air quality and climate change impact assessments

What already exists

- Short-term (five day long) forecasts of air quality
- Tools for medium to long-term climate change and air quality interaction
- Active research by academics, commercial consultants and public sector organisations e.g. the RIDE air quality and climate change working group

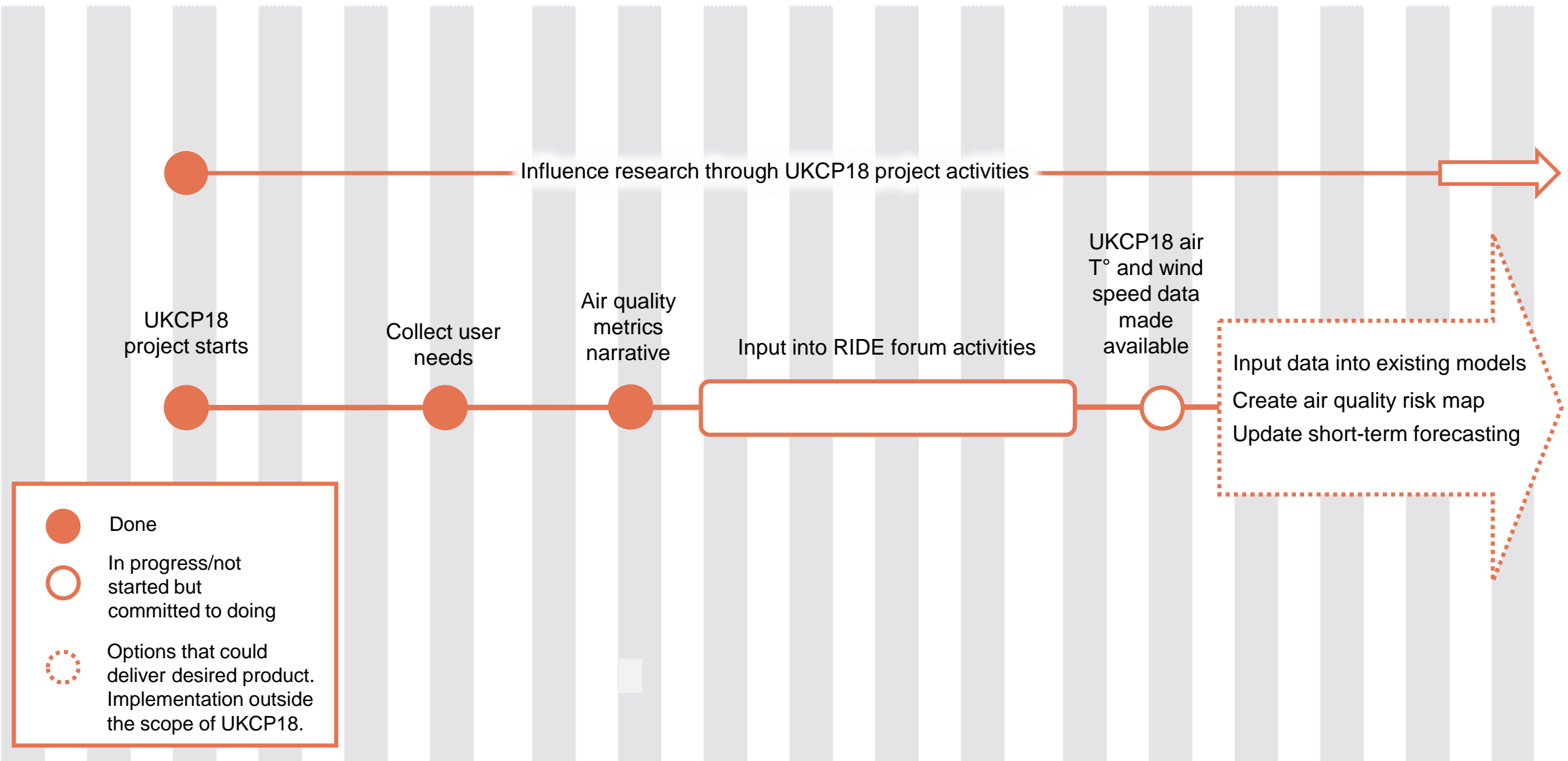
What needs to be done

- Establish the most potent or high-risk pollutants
- Establish the UKCP18 outputs needed to derive air quality metrics
- Develop common metrics for air quality and climate change assessments
- Explore the relationship between air quality and climate

Next steps

- Highlight research gaps and opportunities to utilise UKCP18 in ongoing and planned research projects

Air quality information and product requirements - Roadmap



Coastal erosion

What people want

- Maps of future coastal erosion risk and extent for the UK
- Data on location and condition of existing flood defences
- To understand how changes in coastal erosion risk could impact on flood defences and infrastructure

What already exists

- National quantitative assessments of present coastal erosion risk
- Interactive maps of future coastal erosion extent for some areas
- Case studies of coastal erosion for specific locations
- Shoreline management plans
- Current research on shore and cliff erosion

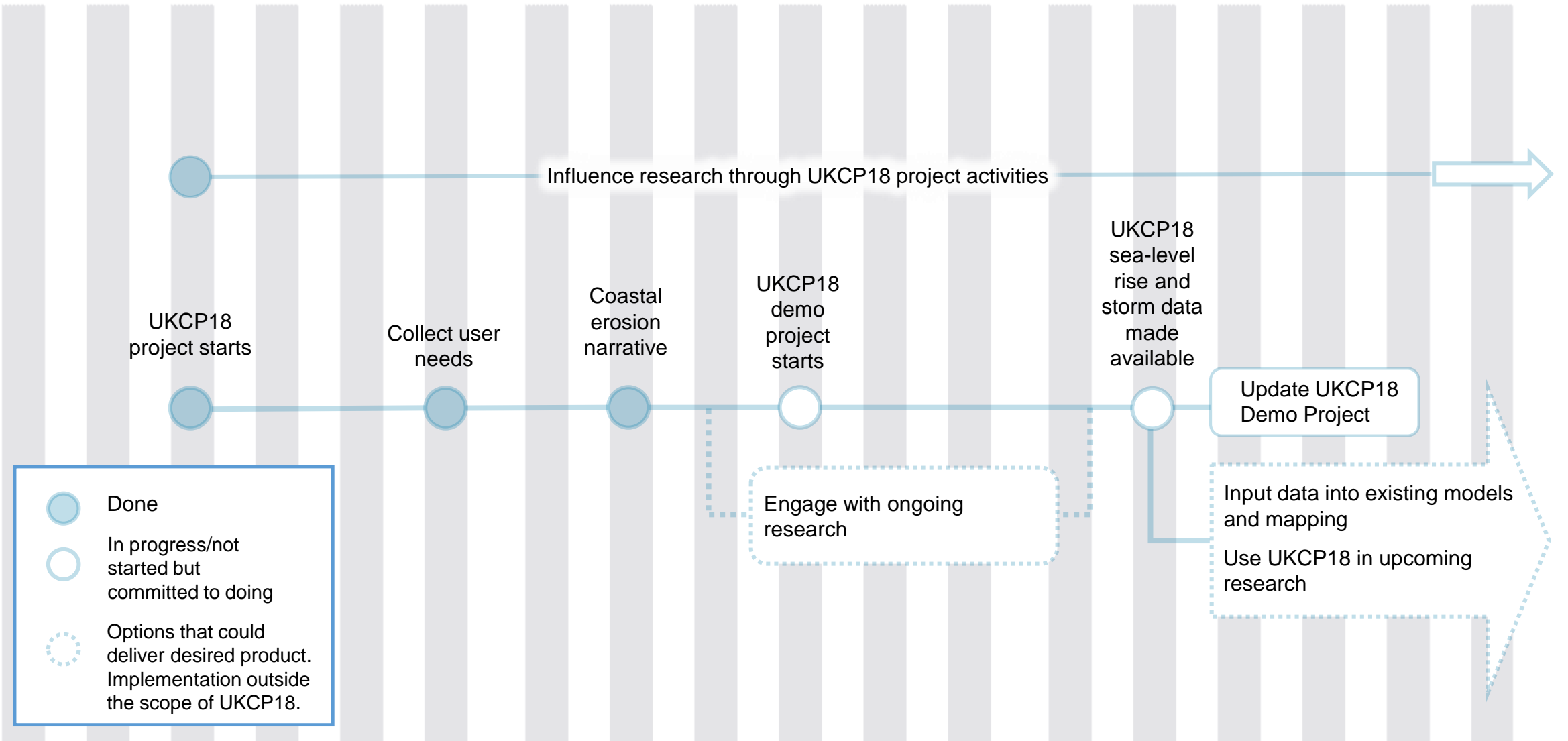
What needs to be done

- Translate UKCP18 outputs for coastal erosion risk
- Review whether existing products should be updated using UKCP18
- Create new products that link changing risk to impact
- Share good practise through case studies

Next steps

- A knowledge exchange event between lead organisations
- Update existing products with UKCP18 data where appropriate

Coastal erosion information and product requirements – Roadmap



Drought

What people want

- Projections of future drought severity, frequency and extent
- Seasonal drought forecasts
- Updated guidance for the Periodic Reviews
- A national assessment of drought risk

What already exists

- Future Flows maps and datasets
- The Hydrological Outlook
- Catchment-scale hydrological models
- Water company and Environment Agency Drought Plans
- An assessment of water supply vulnerability to extreme drought

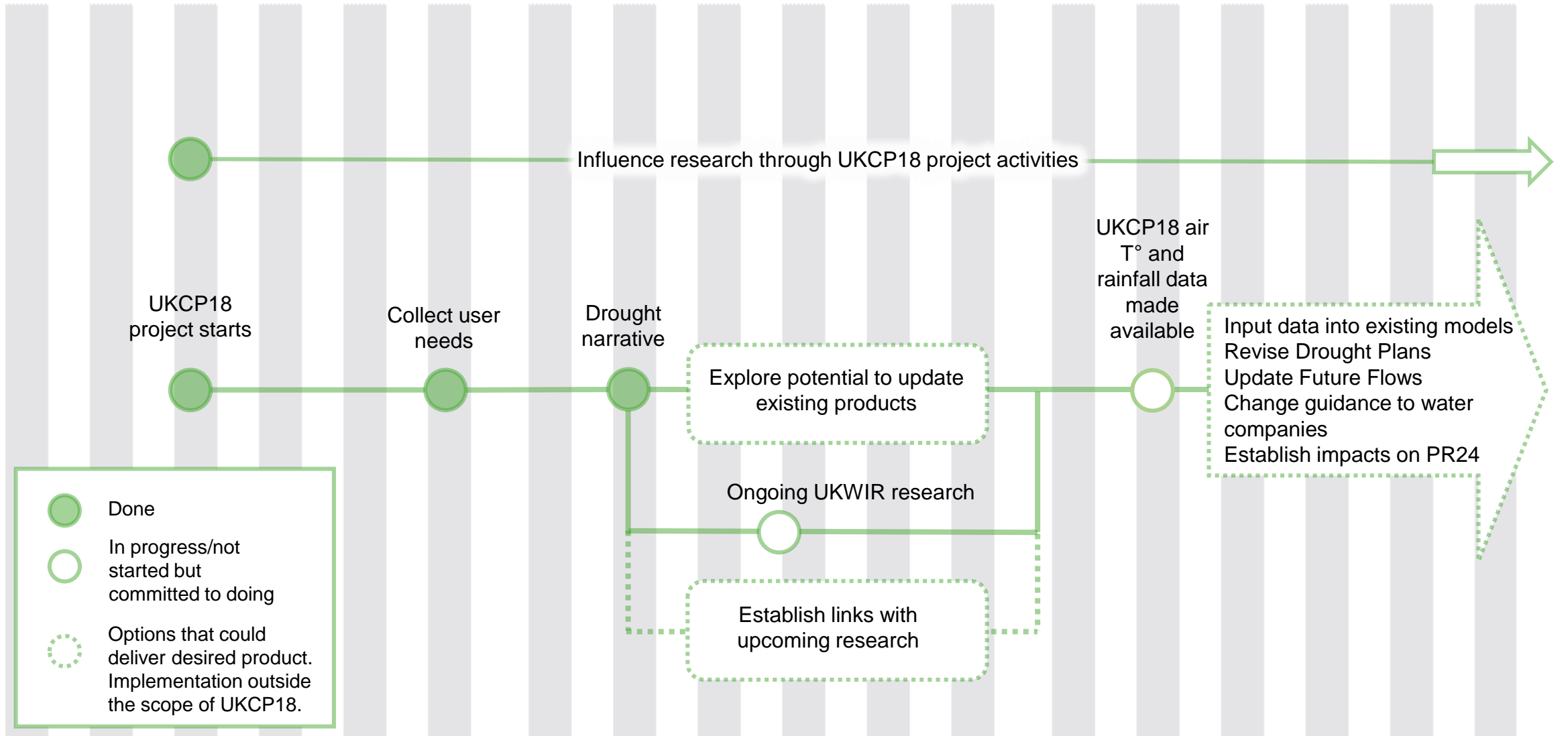
What needs to be done

- Update Drought Plans using the latest climate change data
- Provide drought metrics in time for Water Company Periodic Review PR24
- An assessment of future drought risk under the UKCP18 projections
- Identify locations at greatest risk

Next steps

- Update existing products with UKCP18 data where necessary
- Highlight research gaps and opportunities to utilise UKCP18 outputs in upcoming research projects

Drought information and product requirements - Roadmap



Flood risk

What people want

- Inland flood risk estimates
- Sea level rise estimates
- Surface water and groundwater flood risk projections
- Catchment-scale maps of flood risk

What already exists

- Catchment-scale hydrological models
- National flood risk assessments/maps
- National Coastal Erosion Risk Map
- Flood risk guidance for developers and the design of new assets

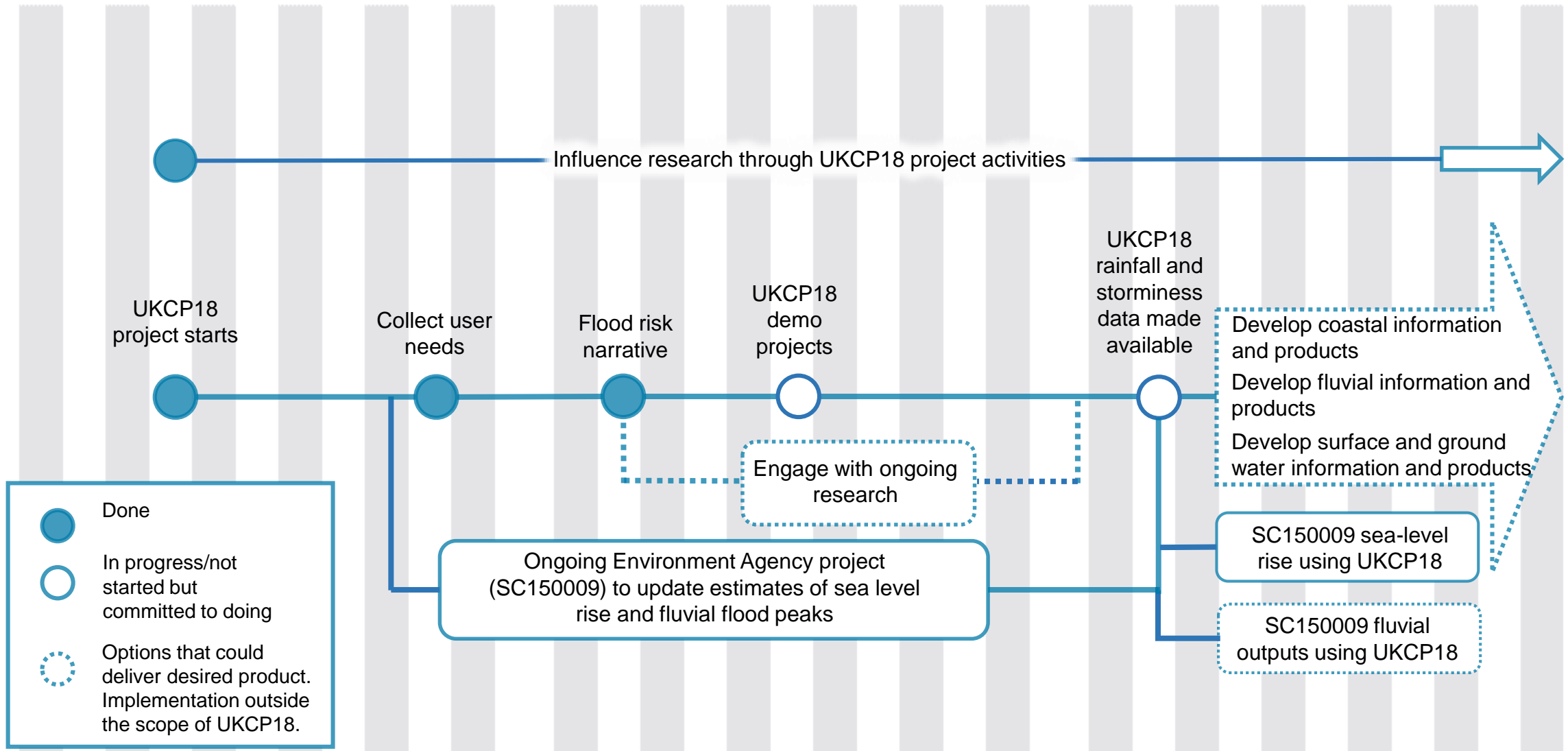
What needs to be done

- Develop estimates of surface water and ground water flood risk
- Assess impacts on coastal flood risk from factors other than sea level rise
- Link future flood severity to impacts and communities at risk
- Update guidance for developers and risk management authorities

Next steps

- Propose a researchers, funders and practitioners event on potential products
- Knowledge exchange workshop around UKCP18 and flood guidance
- Update existing products with UKCP18 data

Flood risk information and product requirements - Roadmap



Health and temperature

What people want

- Information on the frequency of specific (high and low) temperature threshold events and how these might change in future
- Numbers of vulnerable people now and in future
- Interactive heat threshold maps

What already exists

- PHE assessment of climate change impacts on UK health
- ClimateJust interactive maps of present and future vulnerability
- PHE heatwave and cold weather plans with temperature thresholds
- Zero Carbon Hub overheating risk map
- Urban Heat Island maps for Manchester, London, Birmingham

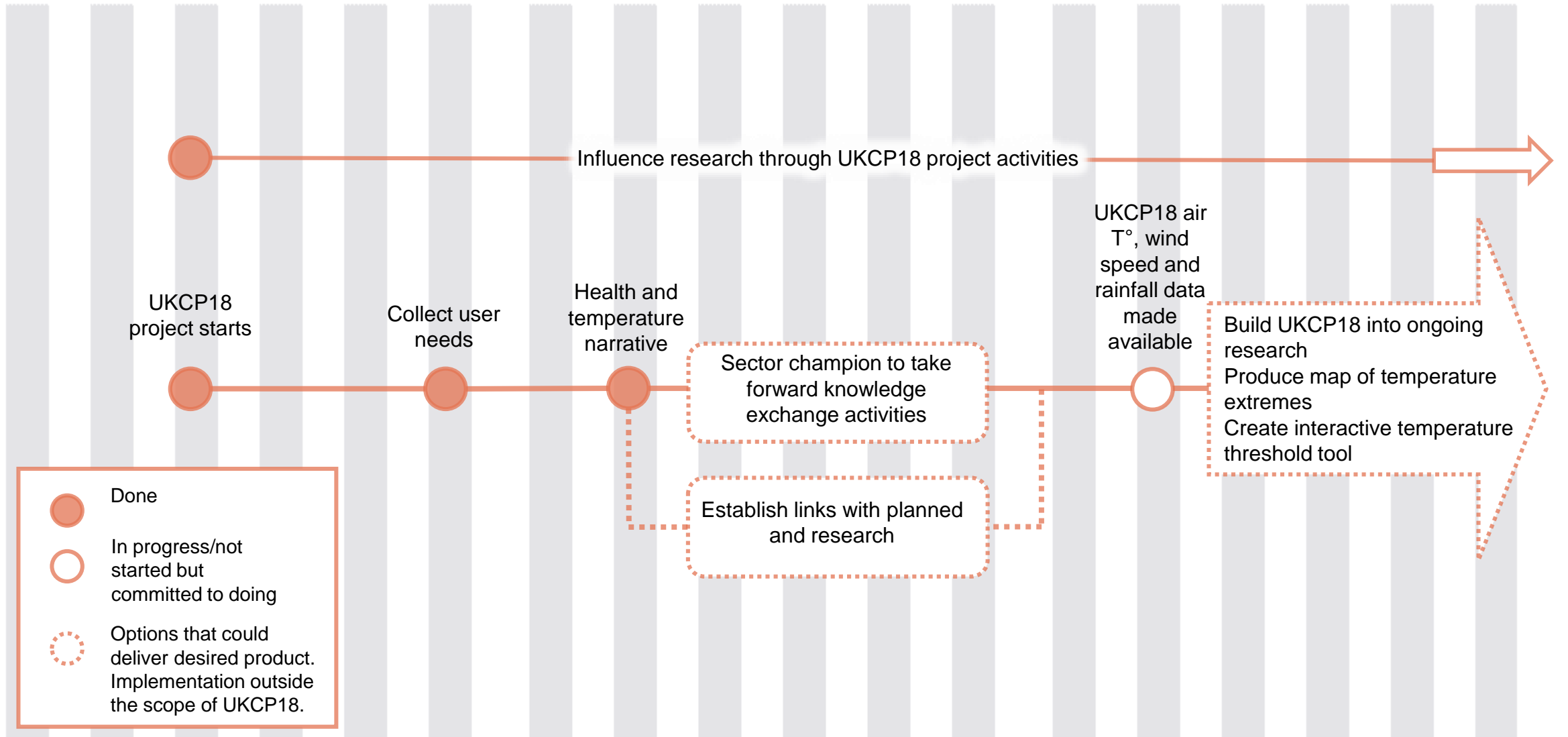
What needs to be done

- Assess how UKCP09 projections differ from UKCP18
- Identify and update appropriate resources with UKCP18
- Apply climate change information to tools that map current vulnerability

Next steps

- Health sector champion to take this forward

Health and temperature information and product requirements - Roadmap



Landslides

What people want

- Maps of landslide risk
- An understanding of how landslide risk is likely to change under future climate scenarios
- An understanding of the causal factors of landslides

What already exists

- Daily landslide risk assessments by the British Geological Survey (BGS)
- Predictive models of mud and debris flow (not climate change related)

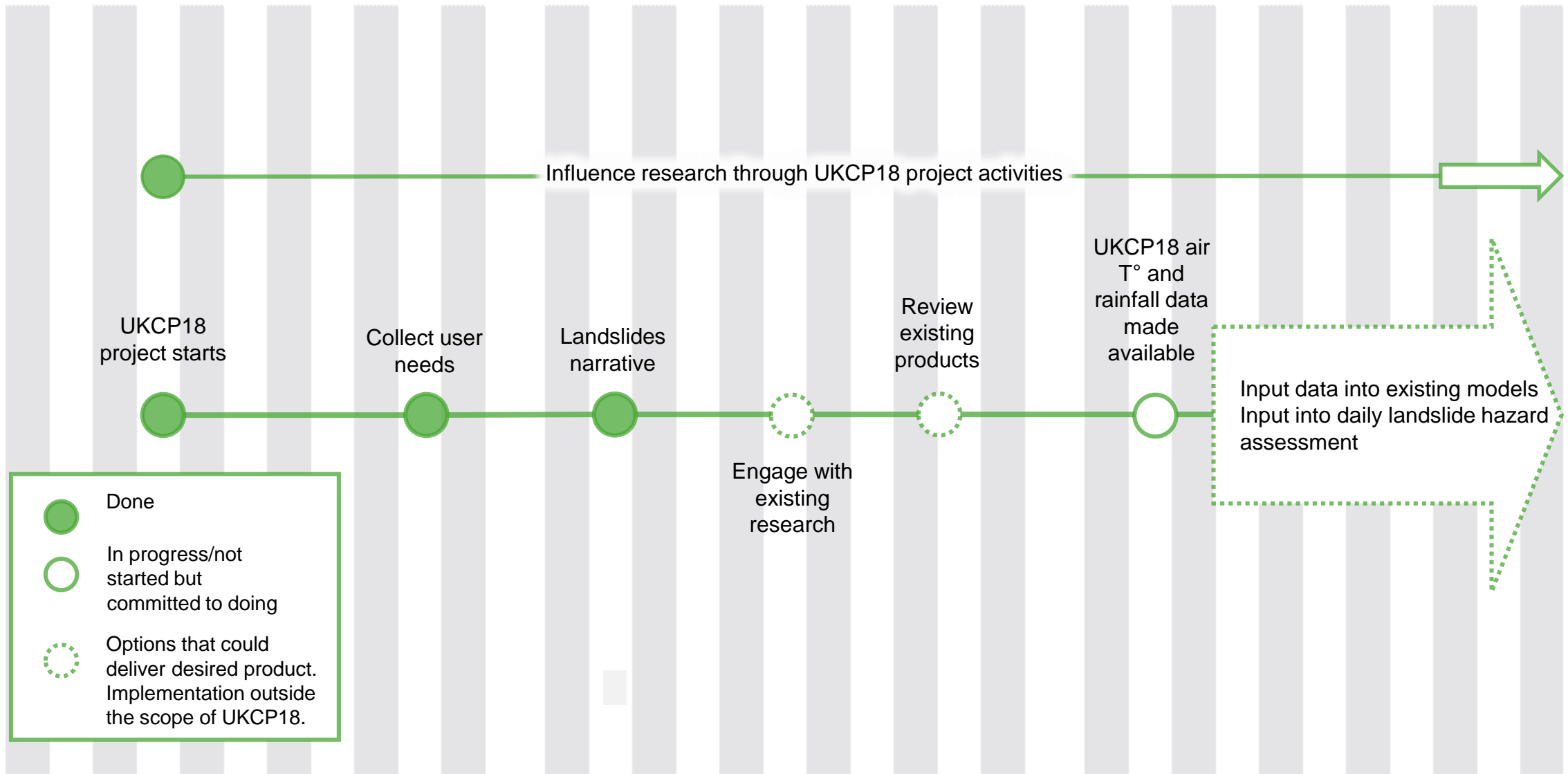
What needs to be done

- Establish the key links between changes in climate and changes in landslide risk
- Determine what type of landslide risk product would be most useful to users (e.g. time step, spatial resolution, etc.)

Next steps

- Highlight research gaps and opportunities to utilise UKCP18 in upcoming research projects

Landslide information and product requirements – Roadmap



River erosion and bed scour

What people want

- To understand present river erosion and bed scour status
- Maps of future fluvial erosion risk for the UK
- Projections of how river paths may change due to climate
- To understand climate change impacts on asset deterioration

What already exists

- Fluvial erosion risk models
- Case studies of erosion for specific fluvial locations
- Flood risk management plans

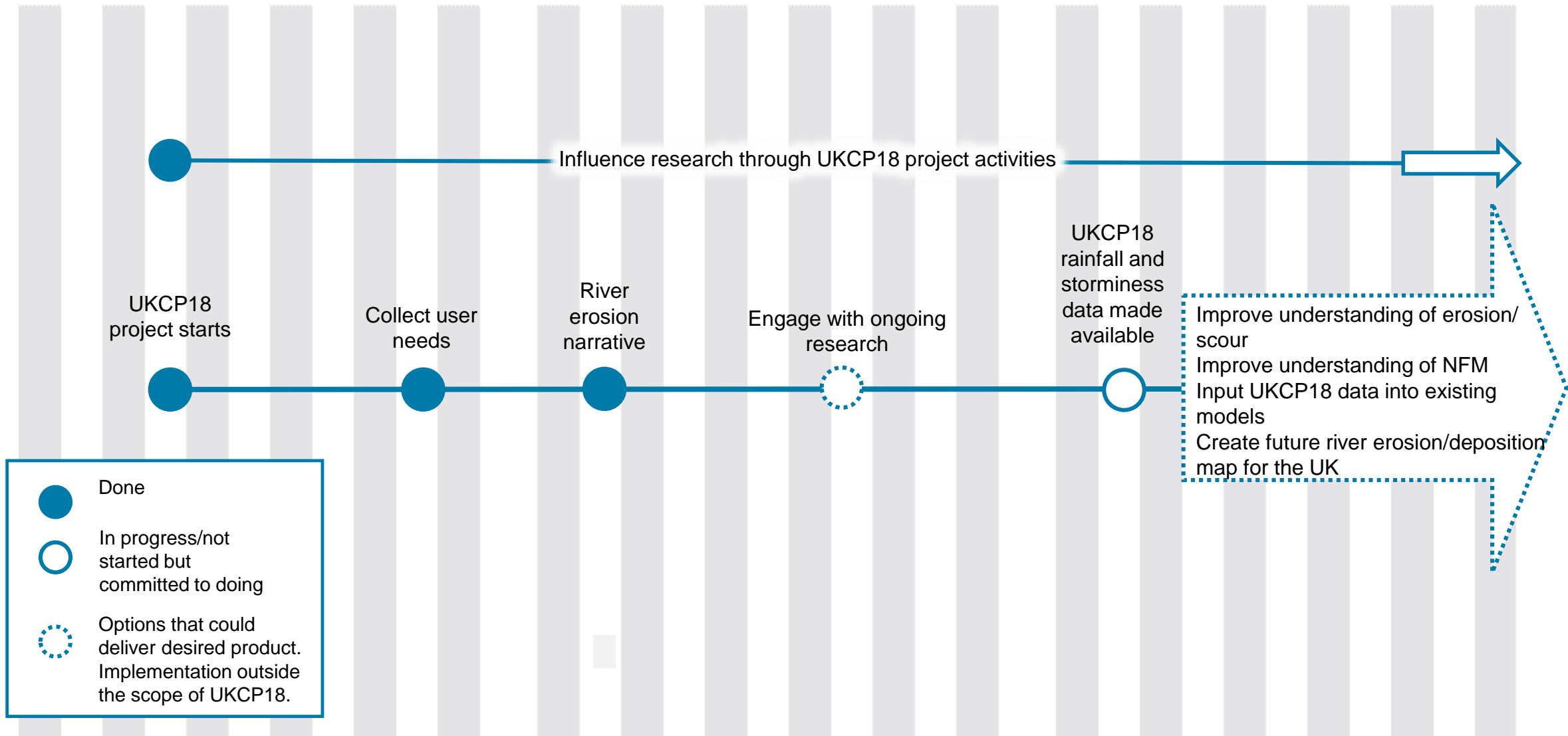
What needs to be done

- Assess implications of UKCP18 for fluvial erosion risk
- Better understand spatial variability in erosion risk
- Develop new products that link risk to impact
- Improved understanding of natural flood management (NFM)

Next steps

- Update existing products with UKCP18 data where appropriate
- Highlight research gaps and opportunities to utilise UKCP18 outputs in upcoming research projects

River erosion and bed scour information and product requirements – Roadmap



River flow and levels

What people want

- Projections of future changes in river flows, particularly high and low flows
- Maps of possible changes in future river flows
- Daily peak flow data
- An understanding of the significance of future changes in flows

What already exists

- The Future Flows and Groundwater Levels project, dataset and maps
- Hydrological models using climate change factors
- A proof of concept web based interface with future flow data and maps across Europe (the EDgE project)

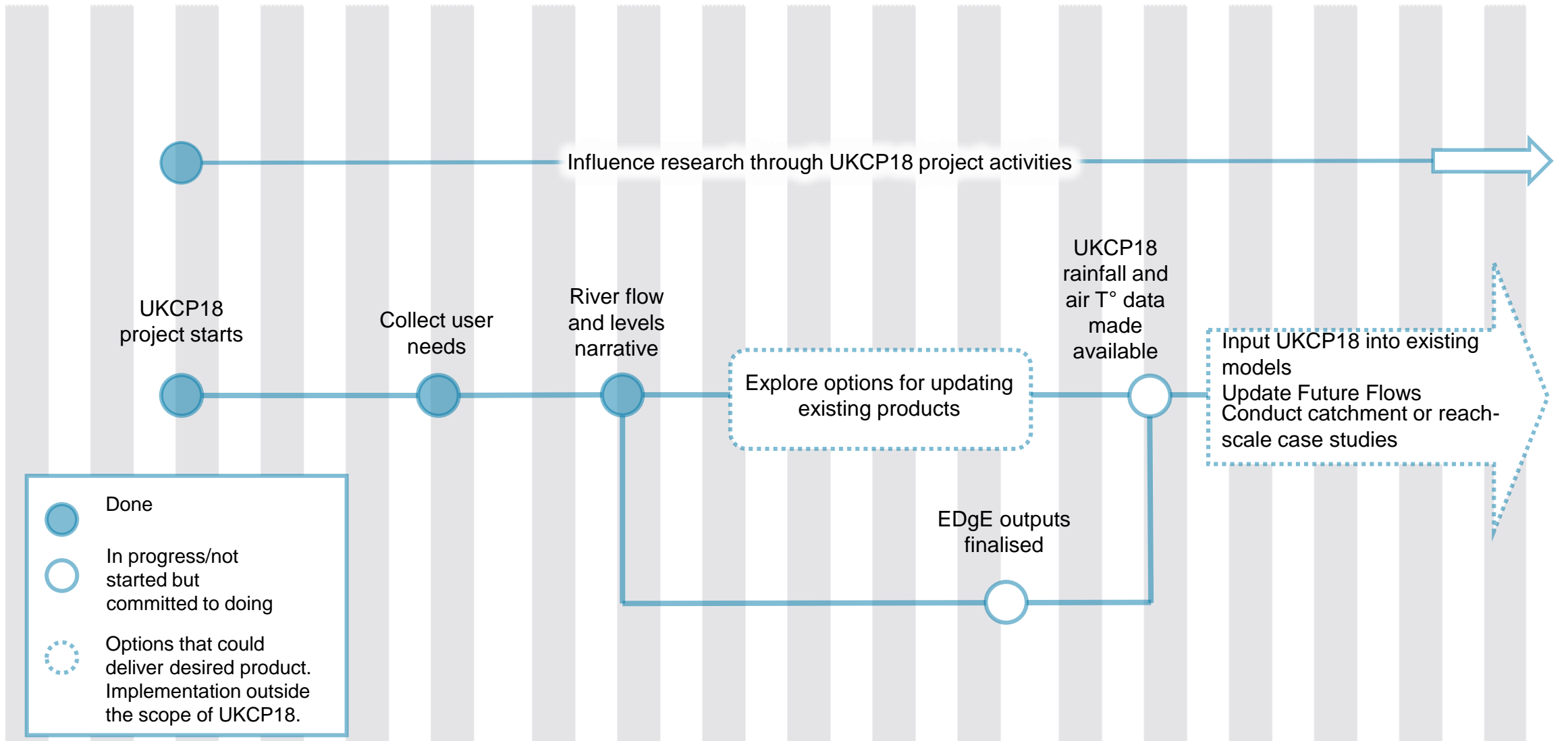
What needs to be done

- Establish how different UKCP18 outputs are from UKCP09 for the purposes of hydrological modelling
- If UKCP18 and UKCP09 outputs are significantly different, assess the viability of updating Future Flows

Next steps

- Hold knowledge exchange workshop to agree best option
- Identify potential funding for a new or updated future river flows product

River flow and levels information and product requirements – Roadmap



Soil moisture deficit

What people want

- Information on how soil moisture deficit (SMD) might change in future
- Data on actual and potential evapotranspiration
- Information on non-climatic influences on SMD

What already exists

- Hydrological Outlook
- Projections of summer SMD for 2021-2050 (European Environment Agency)

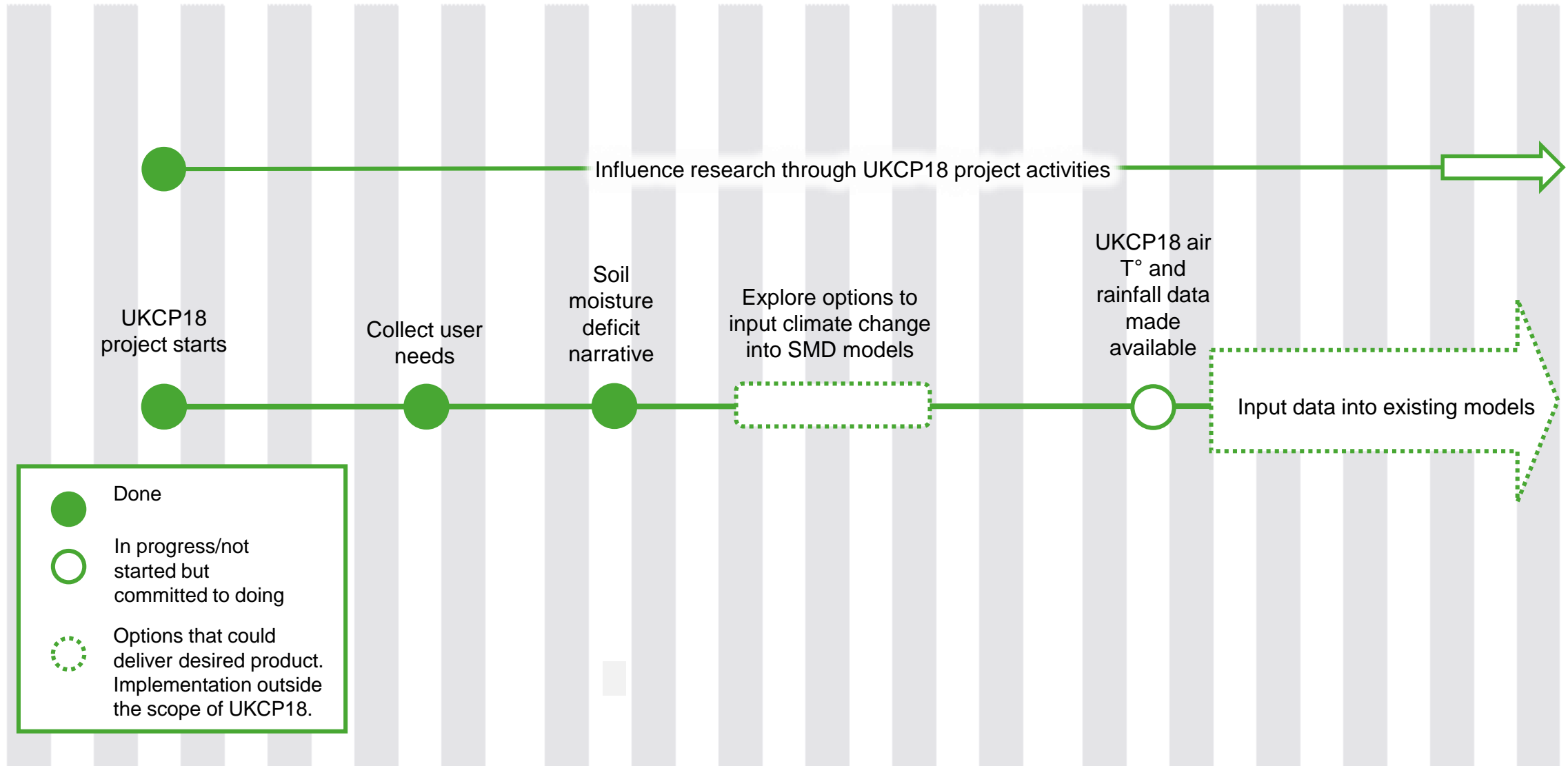
What needs to be done

- Update the Hydrological Outlook with UKCP18 data if appropriate
- Build consensus on SMD modelling and data.

Next steps

- Highlight research gaps and opportunities to utilise UKCP18 outputs in upcoming research projects.

Soil moisture deficit information and product requirements – Roadmap



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